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ABSTRACT

This is the second in a series of progress reports on the Brookline Early Education Project (BEEP), a program which provides diagnostic and educational services for very young children and their families. The 1972-74 programs are described, and plans for the following 3-year period are reviewed. The purpose of this pilot project of the Brookline Public Schools is to work with families throughout the preschool years to provide optimal health and environmental conditions. During the 1972-74 period, 282 children and their families participated in the program. The document presents detailed information on current and proposed diagnostic and educational services and on program evaluation and administration. The health and developmental diagnostic services emphasize an interdisciplinary approach involving pediatricians, psychologists, social workers and teachers. The diagnostic programs consist of two basic sections: (1) an initial diagnostic battery, covering the prenatal period and the first two weeks after birth, and (2) health and developmental evaluations, given periodically through the first five years of life. Several case histories are given, illustrating BEEP's role in early detection, referral and family advocacy. The education program focuses on the family, involving home-based programs in most cases. Included in future plans is a professional training program in educational readiness and developmental health, with workshops for pediatricians, nurses and educators. (Author/BF)

THE SECOND YEAR OF THE BROOKLINE EARLY EDUCATION PROJECT:

Progress Report and Plans for the Future

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October 31, 1974

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BROOKLINE EARLY EDUCATION PROJECT

PROPOSAL CONTENTS

PREFACE

The Brookline Early Education Project (BEEP) is a program of diagnostic and educational services for very young children and their parents. BEEP, a pioneering effort of the Brookline Public Schools, Brookline, Massachusetts, is a demonstration model in which a public school system assumes responsibility for monitoring the health and development of preschool children, and for assisting parents in guiding the educational experiences of their children through the first five years of life.

The project is the outgrowth of unusual collaboration between institutions and individual consultants. The Children's Hospital Medical Center is an active partner in project operations, providing the on-site medical team which administers extensive diagnostic batteries especially developed for early detection of potential handicaps to educational functioning. Harvard Graduate School of Education has been the prime source of project consultants in the areas of early childhood, research design, program evaluation, and economics.

Operating on a pilot basis since November, 1972, BEEP programs have been funded by two-year grants from the Robert Wood Johnson Foundation and Carnegie Corporation of New York. Two hundred and eighty-two children are currently being served by the programs.

BEEP is now seeking funding for continuation of services to these families until their children reach kindergarten age (about four years, nine months). This proposal reviews the programs as they are now operating and describes the plans for the next three years.

The BEEP organizational chart and staff information are given in the appendix. As part of the public school system BEEP operates under the jurisdiction of the Brookline School Committee whose members are:

John Connorton, Chairman
Brian L. Conry
Jacques M. Dronsick
Raymond T. McNally
Viola R. Pinanski
Joseph Robinson
Ellsworth E. Rosen
Ann M. Wacker, Vice-Chairman

The organization is also aided by an advisory committee consisting of BEEP supervisory staff and representatives from the key collaborating institutions. The members of this group include:

Robert I. Sperber, Ed.D. (Columbia) - Superintendent of Schools, Brookline, Mass. 1964-present. Initiator of the Brookline Early Education Project.

Francis W. McKenzie, Ph.D. (Yale) - Senior Advisor for BEEP; Director (Assistant Superintendent) Pupil Personnel Services, Public Schools, Brookline, Mass; Co-Director of BEEP for the planning year, 1971-72.

Larry W. Dougherty, Ed.D. (Harvard) - BEEP/School Liaison; Principal, Heath School; Assistant Director of BEEP for the planning year, 1971-72.

Burton L. White, Ph.D. (Brandeis) - Senior Consultant for BEEP, Lecturer, Harvard Graduate School of Education, and Director of Harvard Preschool Project; Co-Director of BEEP for the planning year, 1971-72.

Melvin D. Levine, M.D. (Harvard) - Coordinator of Pediatric Services for BEEP 1973-present; Director of Medical Outpatient Department, Children's Hospital Medical Center, 1971-present; member, pediatrics faculty, Harvard Medical School.

George Lamb, M.D. (State University of New York) - Senior Medical Advisor for BEEP; Director, Community Child Health Division of Children's Hospital Medical Center.

Julius B. Richmond, M.D. (University of Illinois) - Psychiatrist-In-Chief, Children's Hospital Medical Center and Director of the Judge Baker Guidance Clinic.

Donald E. Pierson, Ph.D. (Harvard) - Director of Brookline Early Education Project, September, 1972-present.

Diana Kronstadt, Ed.D. (University of Florida) - Supervisor of the Diagnostic Program for BEEP, 1973-present.

Mary Jane Yurchak, (Doctoral Candidate, Harvard) - Supervisor of the Education Program for BEEP, 1971-present.

Anthony S. Bryk (Doctoral Candidate, Harvard) - Supervisor of the Evaluation Program for BEEP, 1972-present.

Elizabeth H. Nicol, Ph.D. (Duke) - Historian for BEEP, 1971-present.

THE SECOND YEAR OF THE BROOKLINE EARLY EDUCATION PROJECT:

Progress Report and Plans for the Future

I. INTRODUCTION

A. OVERVIEW

The Brookline Early Education Project is now entering its third year of providing diagnostic and educational programs for very young children and their families. Currently 282 children and their families are enrolled in the project. BEEP's purpose is to work with these families throughout the preschool years to provide for each child the optimal health and environmental conditions in which he may grow toward the full realization of his abilities.

BEEP is based on the idea that the education of a child begins at birth and is primarily the responsibility of the child's family. BEEP is furthermore grounded in the belief that the origins of underachievement in school may often lie in the child's early learning environment. The design of BEEP therefore focuses on assistance to families in their role as the primary educators of their children.

The importance of the BEEP model lies not so much in any one of its several features, but rather in their combination. The features include:

1. Support for the Family as Early Educators -- We acknowledge the family's primary role in the child's learning environment and recognize that the schools can inform parents while being supportive and adaptive to individual family needs.

2. Comprehensiveness -- BEEP's educational programs for parents and later for their children cover the entire span of the child's years from birth to entry into kindergarten.

3. Early Detection -- An important component of the BEEP package is the early detection program that monitors the child's health and development for signs of potential learning dysfunctions.

4. Support for the Family Physician -- Our diagnostic findings are shared with the family's private doctor or public health clinic. Since BEEP does not provide primary health care, we are concerned with supporting the family's relationship with their own doctor.

5. Interdisciplinary Team Operation -- Our staff of educators, psychologists, social workers, nurses and pediatricians are sharing previously overlapping but uncoordinated roles for the benefit of the family.

6. Application of Current Knowledge -- Both our education and diagnostic programs apply the best of present psychological, educational and medical research information, developing new procedures only when the state of the field demands it.

7. Cost Analysis -- We are making a comparative study of costs involved in operating educational programs at three different levels of service and support for the family. Costs are logged in a manner that will enable other communities to isolate cost categories relevant to their situation.

8. Historian's Log -- A research psychologist is extensively describing and documenting all aspects of the operation for the guidance of other communities.

9. Open to All Residents of the Community -- As a component of the Brookline school system, BEEP is available to all families without regard to need or income. This public school model, we believe, is ideally suited for reaching families who most need help without the risk of their incurring any stigmatizing label.

10. Urban-Suburban Collaboration -- A collaborative association (METCO) of approximately thirty suburban school systems enroll as many children from non-white Boston families as their capacity permits (e.g., Brookline takes over 200 a year). Consonant with this effort, BEEP offers its preschool program to Black and Spanish families of Boston. If their parents desire, these children may later continue into the Brookline elementary schools.

11. Multi-lingual/Multi-cultural Orientation -- Our staff and the participating families represent a diverse, heterogeneous group.

12. Planning for Transition to Elementary School -- We are preparing school personnel and programs to receive families who have had BEEP's early childhood support. These processes have begun five years in advance of the BEEP children's arrival at school.

B. ORGANIZATION OF THIS DOCUMENT

This document describes the BEEP programs now in operation and then reviews plans for the next three-year period in the children's lives. During that time we would not only continue to operate certain ongoing programs but would also initiate new programs designed for older children.

In order to describe both classes of programs and their interrelations, we divide this document into three broad sections:

I. Progress to Date: The Current Funding Period (Nov 1972 to Nov 1974) - a review of the programs we have been operating and a report on the services we have given to participating families. In order not to distract from the description of program content, we have relegated to the Administration subsection an account of some experiences and problems encountered in the actual process of operating the programs.

II. The Next Three-Year Period (Nov. 1974 to Nov. 1977) - a description of new program components, and a summary of the work that will be required to serve children and families with both ongoing and new programs. Research and evaluation work to be completed during this period is outlined.

III. Remaining Years - a brief look at the years when the service programs for families phase out and the evaluation effort becomes dominant.

In order that the narrative be as little burdened as possible with lengthy explanations or justifications, we have included more detailed explanations and illustrations in the Appendix.

II. PROGRESS TO DATE: CURRENT FUNDING PERIOD (Nov. 1972 to Nov. 1974)

A. BRIEF OVERVIEW

A complex blueprint of diagnostic and educational services for families during the first five years of their children's lives had been developed during a planning year, September, 1971 through September, 1972. The work of turning the first part of this plan into a practical reality began in October, 1972. The tasks of building and training a staff proceeded concurrently with those of locating and equipping a Center.

One of the most pressing concerns of this early period was to decide the final details of the diagnostic batteries. The attainment of a close working relationship with pediatricians of the Community Child Health Division of Children's Hospital Medical Center led to the extensive modification and improvement of the diagnostic plans. In several areas where diagnostic tools were either nonexistent or inadequate, new instruments were devised by the diagnostic-pediatric staff. Specific medical procedures for the physical examinations were worked out and standardized.

The educational staff of teachers and the medical team of pediatricians and a pediatric nurse had to be trained in procedures peculiar to BEEP and in the extensive record taking required by the research aspects of the BEEP effort.

Concurrently, an energetic campaign for informing the community about BEEP and for recruiting parents accelerated rapidly. BEEP formed ties with the Martha M. Eliot Health Center in the Bromley Heath Housing Project of Boston and with many community agencies in Brookline. These agencies helped inform expecting parents of the BEEP services.

BEEP staff members worked also to explain details of the programs to those segments of the community which might be apprehensive about competition from BEEP: private nursery schools, day care centers, pediatricians, municipal agencies.

Soon after the programs went into operation BEEP found that the new parents were its most valuable communication link to other expectant families and to the community. They became our most powerful recruiting asset.

As the diagnostic and educational programs began full operations, the work of the research staff and the historian picked up rapidly with the need to document the many facets of parent-BEEP interactions -- from diagnostic examinations and home visits by teachers to details

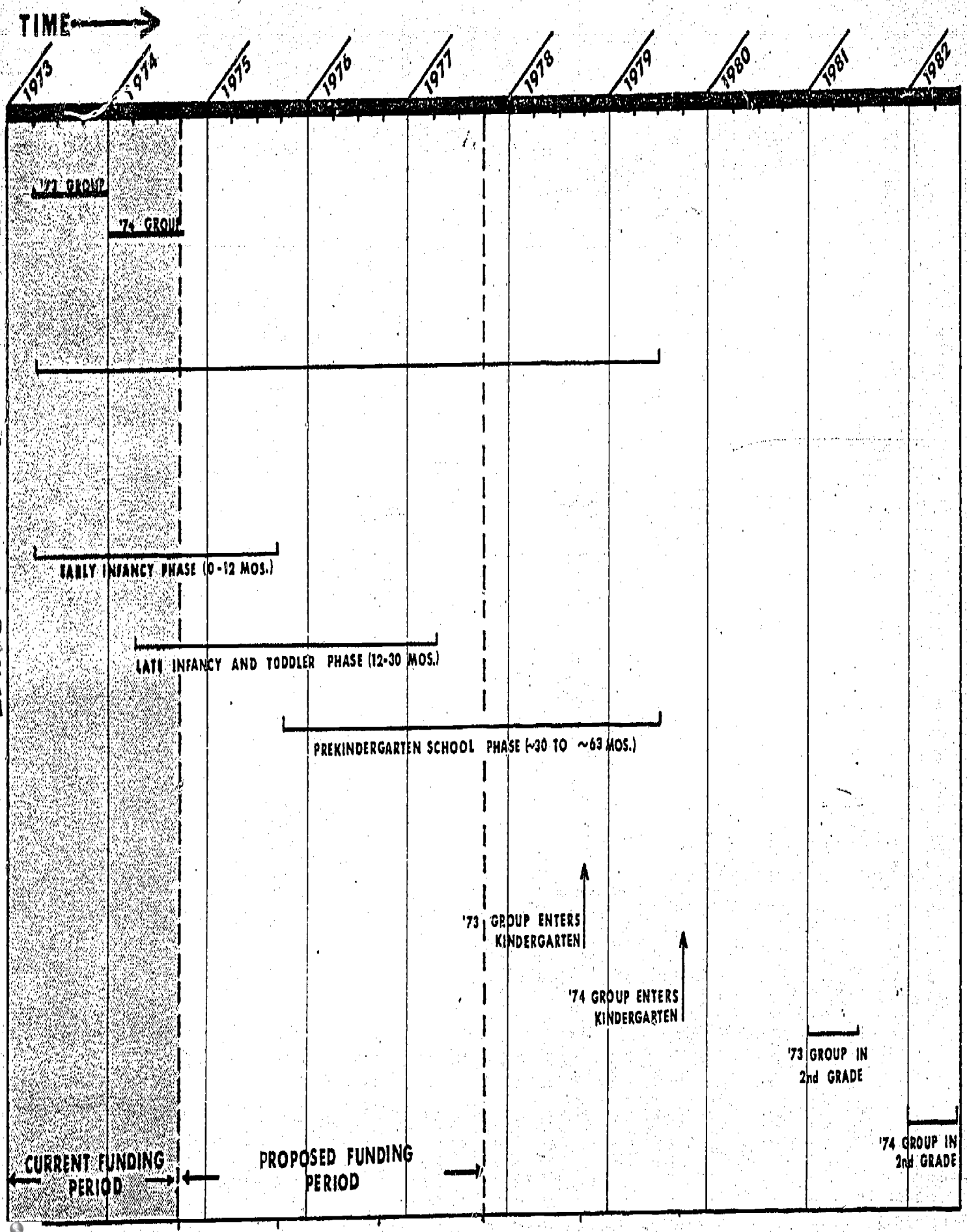
about parents' utilization of the Center's resources.

The last half of the period has seen a heavy investment in planning for the later phases of the programs. Even though some of our "enrolled" babies are not born yet, others are already moving into the 12 - 30 month phase of the program where a different schedule of activities is planned. Planning has also progressed for the prekindergarten program since the first groups of BEEP children will be ready for such experiences in the fall of 1975.

Although the major project evaluation points when the BEEP children are in the Brookline elementary grades seem remote, our evaluation design requires planning for those points now. Specific evaluation procedures are being developed so that next fall they may be used with children currently enrolled in the Brookline schools. Data from successive years will then provide a baseline from which to view the information ultimately obtained from the BEEP children when they reach school age.

Figure 1 shows the duration of programs and program phases over the life of the project. The figures across the bottom of the chart are estimates of the number of children remaining in the program at the end of each grant year. The numbers include a correction for attrition, projected at ten per cent a year.

FIGURE 1. TIME SPAN OF THE BEEP PROGRAMS



B. THE ENROLLED FAMILIES

The following twelve tables provide summary statistics about the participating families after approximately one and a half years of active recruiting. Table 1 shows the total number of children enrolled, as of October 15, 1974.

Table 1.

Number Enrolled

	Boys	Girls	Total
Born in 1973	66	62	128
Born in 1974, to date	83	71	154
Total children enrolled	149	133	282

This total includes three sets of twins as well as two children born in 1973 with siblings born in 1974. Thus the total number of participating families is 277.

Table 2 reports how each family found out about BEEP. Enthusiastic participants have been our most effective recruiters.

Table 2.

Primary Referral Source

Source	Frequency
BEEP Parents	88
BEEP Staff	41
Brookline Schools	21
Community Agencies	16
Martha Eliot Center	19
Medical Contacts	26
Newspapers; Publicity	38
Friends; Miscellaneous	28
Total	277

Families are assigned at random to one of three education service levels. Before enrollment, parents must express not only an understanding of what services each level receives, but also a willingness to participate regardless of level assignment. At this point no one has

refused to participate because of their level assignment, although certainly many have expressed preferences for another level. No changes of level are permitted. Table 3 shows the present distribution of children by assigned level.

Table 3.

Level Distribution

	A	B	C	Total
Group 1973	42	42	44	128
Group 1974	52	52	50	154
Total Children	94	94	94	282

Table 4 shows the Brookline-Boston residence distribution. Our aim has been for the Boston families to comprise between one quarter and one third of the total group.

Table 4.

Residence

	Frequency	Per Cent
Boston	104	38
Brookline	173	62
Total Families	277	100

Brookline has eight neighborhood elementary school districts. With the BEEP open enrollment policy we have been interested in following the enrollment totals in each school district, particularly in those with predominantly lower socioeconomic clientele. Some school districts are more heterogeneous than others and a general rating or ranking of socioeconomic level is therefore not completely accurate. Nevertheless, Table 5 is based on our consensus of the rank order of the socioeconomic levels of the elementary school districts. It shows that BEEP is well represented in all Brookline school districts, particularly in the less affluent areas.

Table 5.

School Socioeconomic Rank and Enrollment Distribution

SES Rank		School	Frequency
Highest	1.	Baker	10
High	2.	Runkle	19
High	3.	Baldwin-Heath	26
Middle	4.	Driscoll	15
Middle	5.	Lawrence	20
Low	6.	Devotion	33
Low	7.	Pierce	29
Lowest	8.	Lincoln-Sewall	23
		Brookline Children Total:	175

The diversity of BEEP families is reflected by the number of different primary languages spoken in the homes (Table 6), by the different racial groups represented (Table 7), and by the age range of BEEP mothers (Table 8).

Table 6.

Primary Language of Family

Language	Frequency
English	226
Spanish	31
Chinese	13
Japanese	1
African	2
Hebrew	2
East Indian	1
Polish	1
Total	277

Table 7.

Racial Distribution

Race	Frequency
White	169
Black	63
Hispanic	35
Oriental	14
East Indian	1
Total Children	282

Table 8.

Maternal Age

Age	Frequency
Less than 20 years	18
20 - 25	85
26 - 29	66
30 - 34	72
35 years or more	18
Unreported*	20
Total	279

There are a substantial number of one parent families participating, as shown by Table 9.

Table 9.

One and Two Parent Families

Status	Frequency	Per Cent
One Parent	32	12
Two Parent	245	88
Total	277	100

Table 10 shows that the education level of the group is high. The percentages are consistent with survey trends reported on this age group across the country and are representative of the Brookline area, as reported by 1970 census data.

Table 10.

Parent Education Level

Level	Mother	Per Cent	Father	Per Cent
Less than High School Diploma	26	9	25	9
High School Diploma	99	36	68	24
College Degree	79	28	47	17
Advanced Degree	52	19	104	38
Unreported**	21	8	33	12
Total	277	100	277	100

*Unreported data indicate either that the family is recently enrolled and BEEP staff have not yet asked the information or that the family prefers not to relate it.

**Although there are 33 one-parent families, we do know the education level for both mother and father in 10 of these families.

National census figures* show that among families with children under age 18 years, approximately 32 per cent have only one child, 30 per cent have two children, 19 per cent have three children, and 20 per cent have four or more children. Table 11 shows that the BEEP sample has a heavier than normal representation of first and second born children.

Table 11.

Birth Order of Enrolled Child

Order	Frequency	Per Cent
First	126	45
Second	101	36
Third	33	11
Fourth	15	5
Fifth	2	1
Sixth	2	1
Seventh	1	0
Tenth	2	1
Total	282	100

In its first year of operation, BEEP has lost contact with eight families who enrolled and participated in at least one exam or home visit. Table 12 lists the reasons for these drop-outs and suggests that family moves are a much greater threat to attrition than disenchantment with the program.

Table 12.

Drop-out Reasons

1. Father objected to program
2. Mother too busy, disinterested
3. Moved to Bellingham, Mass.
4. Moved to Haverhill, Mass.
5. Moved to California
6. Moved to New York City
7. Moved to Acton, Mass.
8. Moved, address unknown

*As reported by the U.S. Bureau of the Census in "Current Population Reports, March, 1972, Household and Family Characteristics."

C. CURRENT DIAGNOSTIC PROGRAM

Introduction

The Diagnostic Program monitors the health and development of BEEP children from birth until entry into the kindergartens of the Brookline school system. Physical, neurologic, vision, hearing and developmental assessments are conducted periodically, in order to detect conditions that might impair the child's learning or ability to function later in school.

The BEEP Diagnostic Program is staffed by the following individuals:

1 Diagnostic Program Supervisor (Psychologist)
1 Pediatric Coordinator
3 Pediatricians
1 Pediatric Nurse
1 Nursing Supervisor
1 Developmental Evaluator (Psychologist)
2 Social Workers

Short biographical sketches for all BEEP staff appear in Appendix I.

A central concept in the BEEP diagnostic strategy is that the total picture of the child is best captured in the melding of medical and developmental information. The pediatrician and developmental psychologist work together in observing the child and sharing insights. Important contributions are made to the team by the BEEP teacher who is assigned to each family. Because of her more frequent contacts with the family, the teacher is in an advantageous position for detecting any suspicious changes in the child's developmental pattern.

Design of the Diagnostic Program

The Diagnostic Program is essentially a system for tracking the health and development of a child through the first five years of life. The procedures and instruments derive from several sources: 1) wherever possible, existing instruments which are well standardized and validated in widespread use have been adopted; 2) in a few instances we have

included others without an established history because they fill a gap in areas judged relevant to learning and school performance; and 3) in other instances it was necessary to develop our own inventories where there were no procedures for systematically gathering and organizing pertinent information.

The predictive power of the procedures can be examined at successive testing points but a final evaluation of their effectiveness will not be known until after the BEEP children are tested in second grade. BEEP's diagnostic batteries are not intended to serve as models in toto for family pediatricians. Instead they are designed to cast a wide net in the search for factors that, either singly or in combination, will improve early detection of potential handicaps to learning. In the final evaluation phase of the project we will determine the yield from this strategy. From computerized analyses, we hope to derive information that will enable us to recommend selected procedures for inclusion in conventional pediatric practice or in early detection programs.

The Diagnostic Program consists of two basic sections:

- the Initial Diagnostic Battery, covering the prenatal period and the first two weeks after birth; and
- Health and Developmental Evaluations, given periodically through the first five years of life.

Each of these will be briefly summarized in the next subsections.

The Initial Diagnostic Battery: We use this battery to gather basic information on the family, and on the medical and psychological aspects of the current pregnancy and birth. In addition, a thorough physical examination of the baby at two weeks of age yields information on the status of the basic physical, neurological and behavioral systems.

The Initial Diagnostic Battery provides a baseline description of the child as he arrives in the world. Five basic classes of information are brought together by this battery:

1. the mother's medical history and health events of the current pregnancy;
2. conditions present at birth and during the lying-in period;
3. the baby's physical, neurological and sensory status at two weeks of age as determined by examination (the 2 week examination)
4. potential or actual psychological stress in the mother or family; and
5. social and environmental conditions surrounding the child, mother or family.

Copies of the major inventories and recording forms for the initial battery are included in Appendix III. Appendix II includes a report by

Melvin D. Levine, M.D., BEEP's Pediatric Coordinator, describing his development of medical inventories for collecting information on the prenatal period and the first two weeks of life. These inventories are part of the Initial Diagnostic Battery.

In the months that follow, periodic reviews reveal how the initial picture of the child and his family is modified by maturation and experience.

Health and Developmental Evaluations: Throughout the first five years of the child's life, examinations are given to assess health and developmental progress. Special attention is paid to the emergence of intellectual and social abilities which are related to educational success in the broadest sense of the word. Our basic strategy is to recognize those possibly minor but persistent weaknesses which are potentially predictive of later learning problems.

The process of evaluating development in these areas is twofold: 1) examination of physical, sensory and neurological systems assumed to be prerequisite to the development of basic skills, and 2) measurement of basic skills, primarily through standardized tests.

Within the child's first year and a half, the Health and Developmental Evaluations are scheduled at 3½, 6½, 11½ and 14½ months. The content varies with the child's growth but the general format is the same for all sessions. Figure 2 shows the areas that are evaluated at each age from 3½ months through age 14½ months. The major instruments used to assess the child's developmental status at these ages are the Bayley Scales of Infant Development and the Denver Developmental Screening Test. The specific forms for the 14½ month battery are included in Appendix IV.

Similar health and developmental evaluations are scheduled at less frequent intervals as the child grows older: at 24 months, 30 months, 42 months, 54 months, entry into kindergarten, and finally when the child is in the second grade. Since some of these evaluations will occur within the next funding period, the description of their content and procedures will be delayed until the next major section of this proposal.

The periodic developmental evaluations from the earliest months give us a picture of the child's pattern of development, strengths and weaknesses. In each instance the pediatrician and the developmental evaluator complete a joint assessment of the child. The information they have gained about the child's physical and developmental status is shared with the parents and with their pediatrician.

After each evaluation, the BEEP pediatrician, the developmental evaluator and the family's assigned teacher hold a case conference to integrate the various findings. If the result of this conference suggests the need, a special plan of action is drawn up. Any unusual or abnormal findings on any evaluation are reviewed at the weekly meeting of the entire Diagnostic Team with the Pediatric Coordinator.

In the event that a potential problem has been noted, plans are made for close monitoring by the Diagnostic Program staff. If problems have

FIGURE 2. HEALTH AND DEVELOPMENTAL EVALUATIONS: PROCEDURES USED FROM 3½ MONTHS TO 14½ MONTHS

RMATION AREA	DIAGNOSTIC PROCEDURES	EVALUATION POINTS 3½ MOS.	6½ MOS.	11½ MOS.	14½ MOS.*
ical Assessment	Physical Examination	✓	✓	✓	✓
ory Screening	Vision Screening Examination	✓	✓	✓	✓
	Hearing Screening Examination		✓	✓	✓
	Vision/Hearing History-Family & Child	✓	✓	✓	✓
	Speech and Hearing Questionnaire - Child	✓	✓	✓	✓
	Devel. Exam: Visual Perceptual Items				
	Receptive Language Items	✓	✓		✓
ological Screening	Neurological Examination	✓	✓	✓	✓
rim Medical History	Interval History Questionnaire	✓	✓	✓	✓
p and Feeding History	Sleep and Feeding Questionnaire	✓	✓		
mental rall Development	Bayley Scales of Infant Development	✓	✓		✓
	Denver Developmental Screening Test	✓	✓	✓	✓
ss Motor Development	Motor Section of Bayley Scales	✓	✓		✓
	Motor Section of Denver Develop.(Supplem)	✓	✓	✓	✓
eptive & Expressive anguage Ability	Harvard Preschool Project Language Exam				✓
	Bayley Scales (items from Mental Section)	✓	✓		✓
	Denver Developmental (supplemented)	✓	✓	✓	✓
ceptual-Motor Ability	Bayley Scales (items from Mental Section)	✓	✓		✓
	Denver Developmental (supplemented)	✓	✓	✓	✓
sonal-Social Development	Bayley Scales (Behavior Section)	✓	✓		✓
	Denver Developmental (supplemented)	✓	✓	✓	✓
	Behavioral Observations	✓	✓	✓	✓

n Evaluation is a major assessment point. Copies of the tests used at this time are in the Appendix.

been noted for which further diagnosis or medical treatment is recommended, we offer assistance to the family physician. If the family is not under regular medical care, we work with them to find the help they need. In all these cases, the resources available from the strong liaison with Children's Hospital Medical Center are invaluable.

Diagnostic Work of the Current Funding Period

Examinations Given: Since BEEP babies (with one exception) were born after March 1, 1973, the diagnostic team has been primarily occupied with examinations at the 2 week, 3½ month, 6½ month and 11½ month evaluation points. The chart below shows the number of examinations administered for each age level through April 30, 1974.

Type of Examination	Number of Examinations
two-week examinations (including Prechtl)	149
late initial physical	29
3½ month evaluations	129
6½ month evaluations	84
11½ month evaluations	20
14½ month comparison children evaluations	75
Total	486

Preliminary Results from the Diagnostic Examinations: A critical function of the Diagnostic Program is the identification, through periodic evaluations, of any anomalies of health or development. Children found to have these may be referred to outside resources for more specialized diagnosis or follow-up, or follow-up may be provided at further BEEP examinations. The incidence of "suspect" findings may provide patterns of borderline findings which ultimately prove predictive of later learnings handicaps. However during the first year of life many behaviors or conditions that appear abnormal often prove to have no lasting significance. Indeed, the BEEP examinations may uncover problems not previously noted by the family pediatrician. This may reflect the transitory nature of certain findings in early infancy rather than discrepancies in examiner judgment.

For purposes of this report we analyzed the results of 362 BEEP examinations completed as of April 30, 1974. The supervisor of the Diagnostic Program and the pediatric nurse examined these results for the presence of any unusual medical or developmental findings. Two very broad categories were established:

1) Generally within normal limits,
2) Some suspicious findings on either the health or developmental examination.

Some of the guidelines used in defining category 2 included:

Health - A notation by the examining pediatrician of any neurological abnormalities; an abnormal or equivocal result on the sensory

screenings; a large variety of physical problems such as head circumference inconsistent with other growth measures, poor weight gain, heart murmur, upper respiratory infection, ear infections (otitis media), hip subluxation.

Developmental - A Bayley score greater than one standard deviation below the mean score of 100; a Denver Developmental Test score of either "questionable" or "abnormal."

No attempt was made to weight the degree of significance or severity of the various findings. The above two categories are a means for portraying some of the preliminary results of the diagnostic program. Future analyses of this type will, of course, be designed to yield far more discriminative groupings.

Table 13 presents the results of this group of 2 week, 3½ month and 6½ month examinations. The results are organized by the categorization of the various examinations as described above, and by the number of referrals made on the basis of the suspicious category. For example: 129 examinations were given at age 3½ months; of these 57 had generally normal results (category 1) and 72 had some suspicious findings (category 2), of which 18 were then referred out for further follow-up. The examinations in the suspicious category are further broken down by those findings which first appeared at this examination, 55; and those still present from a prior BEEP examination, 17. Any child with a suspicious finding, whether an outside referral is made or not, will be monitored carefully at future BEEP examinations.

Four Illustrative Cases: Although the comparative impact of BEEP programs will not be assessed until the children reach age 14½ months, 30 months, school entry, and second grade, individual case histories can help illustrate BEEP's role in early detection, referral and family advocacy. In the cases given here, names have been changed to preserve anonymity.

CASE I: An Interdisciplinary Diagnosis

Roy is the youngest in a family of several children. His two-week and 3½ month examinations showed his health and development were well within the normal range.

Nevertheless the family's BEEP teacher became increasingly concerned about Roy. During her visits to the home, he seemed apathetic and somewhat unresponsive to objects and toys. She also noted that his body did not "feel right" -- there was an unnatural flaccidity to his muscle tone.

Before Roy's 6½ month examination, the teacher discussed her concerns and observations with the diagnostic staff who would be examining him. Roy's developmental scores were again in the normal range, but he was recorded as being lethargic and passive in his exploration of objects.

The BEEP pediatrician found the child unusually pale and, taking into account the teacher's home observations along with those of the developmental evaluator, he suspected anemia.

TABLE 13

SOME PRELIMINARY DATA FROM THE DIAGNOSTIC PROGRAM
(March 1, 1973 through April 30, 1974)

Age At Examination	Total No. of Exams	Exams Within Normal Limits (Category 1)	Exams with New Suspicious Findings (Category 2)	Exams With Continued Presence of Suspicious Findings (Category 2)	Total No. of Suspicious Findings* (Category 2)	Referrals Made**
2 weeks	149	93	56	-	56	17
3½ months	129	57	55	17	72	18
6½ months	84	38	20	26	46	12
TOTAL	362	188	131	43	174	47

*The incidence of "suspicious findings" reflects our very broad definition of this category as described in the text.

**These include referrals to: family doctor, community health centers, Children's Hospital, and social service agencies.

The child was referred to the family's pediatrician for follow-up tests and the next day the diagnosis of anemia was confirmed. The child is presently under treatment.

CASE II: Help for a Sibling

When a family situation seems very likely to detract from the quality of the home environment for the BEEP child, BEEP extends services to other members of the family. For example, the Barton family has a 10 month old BEEP baby who is developing normally. They also have a son, John, two years older who was very active and disruptive during visits to the BEEP Center. John was also a problem at home. Mrs. Barton expressed anxiety and uncertainty about how to deal with him; he had not begun to speak and no nursery school would enroll him because he was not toilet trained.

At the request of the mother and after consultation with the family's pediatrician, the BEEP diagnostic staff administered a modification of the BEEP 30-month examination. Physically and intellectually, John seemed to function in the normal range, but he was unusually impulsive and distractible in the testing situation.

The diagnostic program supervisor and the family's BEEP teacher worked out a coordinated approach. On several occasions, the supervisor and Mrs. Barton discussed John's pattern of development, the problems of managing him at home and some strategies to try. Mrs. Barton was receptive to the suggestions of the BEEP teacher and supervisor. The BEEP teacher was instrumental in gaining a trial nursery school placement for John.

Eventually, however, Mrs. Barton decided that she needed ongoing support and that her husband should take an active role with John. BEEP assisted the family in finding an appropriate family counseling situation. They have continued with this help for several months now. Both the family, the BEEP staff and the nursery school report that John has shown remarkable grow

CASE III: A Child With Several "Soft" Signs

Jill Green was only a few days old when she fractured her skull in an auto accident. While Mr. and Mrs. Green were very concerned about any lasting effect this might have on Jill, the initial BEEP examination at age two weeks was normal.

At age 3½ months the BEEP pediatrician noted esotropia (crossed eyes) as well as several suspicious findings on the neurologic exam. The developmental evaluator recorded scores in the low-normal range as well as some observations about social development: "difficult to console and somewhat unresponsive to faces and voices." Except for the esotropia, these findings had no clear prognostic value, yet the BEEP team had a sense of uneasiness about the baby.

In the feedback session, the BEEP team attempted to focus more on the definitive aspects of the findings rather than on suspicions. With the parent's consent their private pediatrician was contacted in order to share the results with him. He agreed to check on the esotropia and follow the baby carefully.

At Jill's recent 6½ month BEEP exam, most of the "soft" signs had disappeared. Jill was more responsive and the neurologic exam was normal. The diagnosis of esotropia had been confirmed by the family pediatrician and was being treated. Mrs. Green expressed a sense of relief about the developmental progress she had observed at home.

We plan to monitor this baby's progress carefully because the ultimate significance of those early soft signs is not clear. The signs may or may not be manifested in different forms later.

In any event we believe it is important to help the Greens provide a nurturant environment without dwelling on findings of unknown significance or on guilt feelings for the early accident.

CASE IV: A Family with Multiple Significant Difficulties

Mrs. Marvin has a very limited educational background and a history of medical problems. A local health agency was able to persuade her to participate in BEEP, but not until her baby was three months of age. Upon enrollment ir BEEP, the Marvins were assigned at random to "level C" which provides no regularly scheduled home visits.

The BEEP diagnostic team was very much concerned about Carol's lack of weight gain and chronic diaper rash evidenced at the initial examination at age 4 months. Referral to a local visiting nurses' association was made by the BEEP nurse in order to provide Mrs. Marvin with advice and support for nutrition and hygiene.

By the 6½ month examination normal weight gains were being made and the diaper rash had lessened. However the BEEP teacher and the diagnostic team were concerned about Mrs. Marvin's severe feelings of depression. She usually stayed inside her one room apartment with the baby all day and many of her behaviors toward the baby were punitive. At this time Mrs. Marvin was introduced to our staff social worker.

For the past three months the BEEP social worker has maintained an ongoing supportive relationship with the family. Mrs. Marvin brings Carol to the BEEP Center every two weeks and meets with the social worker. She seems to feel happier about being a mother and is even expressing some pride in Carol's developmental achievements. Despite her own initial suspicion and hesitancy at enrolling in BEEP, Mrs. Marvin recently referred an acquaintance to us.

Medical Outreach Efforts

As an adjunct to the Diagnostic Program the pediatric staff is engaged in a series of outreach efforts to the pediatric professior. These include personal contacts with practicing pediatricians in the community as well as presentations and publications reaching a larger audience.

Each local physician who has a patient enrolled in BEEP receives reports on the child's developmental progress. Background literature is made available to him from a collection of reprints on recent pediatric studies, developmental evaluation, and early childhood research.

Through BEEP, pediatric fellows in the Community Child Health Division of Children's Hospital are increasing their knowledge of developmental assessment as well as longitudinal neurologic and psychosocial development.* The tools and procedures being developed at BEEP are expected to play a role also in the training of pediatric residents at Children's Hospital.

The general thrust of most of these efforts has been toward sensitizing pediatricians to issues in the areas of child development and early education. These become increasingly pertinent as pediatrics assumes a larger role in the diagnosis and management of functional school problems.

BEEP's approach to the health and development of the young child and its extensive diagnostic batteries have been presented by the Pediatric Coordinator before medical association conferences, medical society meetings, and various seminars for physicians as well as for nurses. As part of the effort to reach a wider audience, videotaping of examinations and the documentation of BEEP materials are going forward.

* Appendix VIII is a brief summary of the seminars on Early Child Development being given bi-weekly by Burton L. White for the pediatric team.

D. CURRENT EDUCATION PROGRAM

Introduction

The first premise of the Education Program of BEEP is that families are the most formative factors in their children's educational development. For this reason, the focus of our program is on the family, not on infants alone. We work with parents to help them understand their child and what he can do, to design a physical world suited to nurturing his emerging interests, and to set up guides for his behavior.

Our position is supported by evidence from many sources. Among them, the studies of Thomas, Birch, and Chess* (1963) and of Escalona (1968) have emphasized the early emergence of temperamental styles in infants and have suggested the importance of appropriate family adaptations during the first months of life. Ainsworth et al. (1971) present convincing evidence that prompt and appropriate parental response to infants' vocal overtures during the first six months of life are associated with less frequent crying behavior during the subsequent months. Finally, and most important, the work of White and Watts (1973) identifies the ten-to-eighteen month period of life as a period of particular importance for the development of overall ability in children. During these first years, the responsibility for child rearing in American society currently rests in the hands of the family. Even in those families where both parents work and alternative child care conditions substitute for full-time mother care, substantial periods of time are usually spent by the child at home, and ultimate responsibility for his educational success rests with his family.

*References are given at the end of the Current Education Program.

The BEEP program spans the years from birth to kindergarten. The content and form of the program vary with the changing abilities and interests of the child and with the individual needs and life-styles of the families. The content focuses on issues relevant to the child's emerging skills, to the environmental conditions appropriate to them, and to the potential management decisions which they present to parents. Each child's strengths are emphasized. Should evidence of potential learning disabilities be detected, special programs will be developed with appropriate consultation. BEEP will concentrate on helping parents prevent the secondary disabilities that frequently develop because primary deficits are undiagnosed or misunderstood.

The form of the program is a combination of visits and teaching sessions in the home (home visits), small group teaching sessions in the home or in the BEEP Center (education group sessions), lectures, and discussion groups, and parent organized group activities. Planned education sessions are scheduled more frequently during times of potential parental stress and less frequently during less challenging times.

Three Service Levels

Consistent with the BEEP commitment to the development of three programs of significantly different costs, the Education Program provides three service levels. Each prospective family makes a commitment to join BEEP before being given a random assignment to a particular level. Because of the process of randomization, therefore, one third of all families in BEEP falls into each service level and each level reflects the total BEEP population on all major variables.

The information gained from later evaluations and comparison of service levels will enable Brookline and other communities to weigh cost differences against benefits from the programs. The services offered at each level are expected to have significant advantages for each child. Each level is a reasonable model for a community to consider adopting. For further reference in this proposal, service levels will be designated in terms of cost, from most expensive to least expensive, as:

Level A
Level B
Level C

Program Structure

Basic Services. A basic set of services is available to all families at BEEP, regardless of level assignment, through the

Education Program. These services include:

- a family Center available for use while children are cared for in a supervised playroom
- a staff of teachers available for consultation on matters relating to child development
- a library of books and pamphlets available in the Center or on loan
- a library of toys available in the Center or on loan
- a library of films and videotapes on child development and related topics available in the Center
- a series of special events such as workshops, films, and lectures
- a staff car or taxi available to transport them to and from the BEEP Family Center.

Program Characteristics By Level. In addition to the Basic Services the three service levels offer the following services:

Level A - This is a home-based program. It provides frequent BEEP-initiated contacts with families. These are usually home visits made by a teacher permanently assigned to each family or group education sessions conducted by a member of the teaching staff. This service level has the highest intensity of information input to families, and places least responsibility on them to seek help or to initiate contact. It is extremely flexible in being able to accommodate to family needs and desires by varying contact frequency from one to as many as four home visits per month. It provides three two-hour periods of free, unrestricted child care per month. One teacher serves as a staff consultant for all parent-initiated group activities. Service level A is the most expensive program to implement.

Level B - This is also a home-based program. It provides regular, though less frequent, BEEP-initiated contacts. These are usually home visits, made by a teacher permanently assigned to each

family or group education sessions conducted by a member of the teaching staff. This program is flexible to the extent of being responsive to emergencies by increased input, but for most families it provides a standard input frequency on a schedule significantly below that of level A. The assigned frequency of home visits is one every six weeks. It provides two two-hour periods of free unrestricted child care per month. One teacher serves as a staff consultant for all parent-initiated group activities. Service level B is the middle program in terms of cost.

Level C - This is a Center-based program. Families are not assigned a permanent teacher although one full time C-level Coordinator is available in the Center throughout the working week. All contacts occur at BEEP, not in the home. Responsibility for initiating contacts rests with individual families. The C-level Coordinator consults with parents in planning group activities but because these are the only contacts BEEP has with these families she takes a more active planning role and opportunities for information input than do staff consultants for service levels A and B.

Operational Phases

For convenience in describing the changing nature of the educational programs throughout the first five years of life, three phases, defined in terms of the child's age, have been identified:

- The Early Infancy Phase (0-12 months)
- The Late Infancy-Toddler Phase (12-30 months)
- The Prekindergarten School Phase (30 months to entry into kindergarten).

Only the first phase has been wholly operational since our enrollment consists of some 200 children under 12 months and only ten over one year of age (as of April,1974). The programs for the Early Infancy Phase will be described in this current funding period section.

Because the programs for families of older children will be a major effort of the proposed funding period, their description will be deferred until the section on proposed work.

Program for the Early Infancy Phase (0-12 months)

Home Visits. For families in service levels A and B, the primary vehicle for conveying educational information during this period is the home visit. The emphasis during the early part of this period is on helping parents to become accurate observers of their child's development in order to increase their sensitivity to his particular needs and characteristics. Teachers observe with families their baby's growth, mark his new achievements, his emerging skills and interests, and support the establishment of early, smooth routines of healthy care. They may suggest toys or games that are appropriate for a given developmental level.

Toward the end of this period issues related to family child-rearing practices are more directly addressed. Teachers discuss with parents the characteristics of children at one year of age. Specifically,they stress the one-year old's curiosity, his natural interest in exploring and learning about his world and they discuss the implications of the child's increasing mobility, both in terms of its potential for increased exploration and in terms of the increased hazards it presents. The teacher's role is to help parents understand the significance of what is happening to the child developmentally, to anticipate consequences in terms of child-rearing practice, and to act as consultant in making choices. Occasionally they may offer direct suggestions.

Appendix V of this proposal includes the BEEP Teacher Training Guide. This serves the teachers not only as a training manual but also as a resource in preparing home visits and other educational sessions with parents. It includes:

- Principles of Child Development and Related Parent Behaviors
- Themes of the BEEP Education Program
- BEEP Developmental Curriculum Sequences
- Questions to Structure Home Visits
- Criteria for Evaluating Home Visits (pending)
- Bibliography

Originally, families in service level C were assigned to individual teachers who were to act as their primary liaisons with BEEP. No home visits were provided. All contact with their teacher was left to the initiative of the individual family.

When contact was sought, the same curriculum content was made available.

Judged by the number of Center contacts initiated (see Table 17, page 34) and by direct feedback from participating families, this did not provide a sufficiently structured program. We have therefore sought ways that would allow us to increase contact with families but still permit us to differentiate this program as a Center-based operation.

A level-C Coordinator has recently been appointed and all families in level C shifted to her charge. She will be available to them in the Center throughout the work week. She will meet with interested families, help them to coordinate their interests and skills, and act as resource and consultant for their planned activities. She will also suggest important areas of discussion and take responsibility for information input that is consistent with, if not as intensive as, that received by other BEEP families.

Videotapes. Toward the end of this first program phase each family will be asked to allow one home visit to be recorded on videotape. These tapes will be used in subsequent teaching sessions with the family. They have proved useful in illustrating characteristics of style of both infant and parent(s). They provide parents and teachers with an objective view of themselves, the child and the home environment. Frequently things missed in the rush of ongoing daily activity are identified on later playback.

The videotapes are also used for staff training and for self evaluation and supervision of the teaching staff.

Lectures and Discussion Groups. Originally it was proposed that parent seminars on topics related to early childhood education and child development would be scheduled for parents during this early phase of the program. These were scheduled as follows:

Level A - One lecture and one discussion group per month

Level B - One lecture per month

Level C - Videotapes of the lectures available on request

In the fall of 1973, evening sessions with outstanding speakers were inaugurated. While these were fairly well attended and did bring in a number of fathers, we realized that the same families were coming to the meetings and that only a small proportion of the total enrollment was being served by the seminars. Feedback from parents suggested several things:

- During the first few months of life with a new baby,

most families are too caught up in adjusting to be interested in formal seminars

- Families who were interested in coming and able to do so preferred to learn more about BEEP. During this early phase it seemed more important to spend a lot of time describing who we at BEEP are, what our goals are, what services we offer, the purposes and rationale for our diagnostic procedures and the nature of our balance between service to them and to research.

The content of the sessions was therefore adapted to help parents better understand BEEP and to help us all to develop a deeper sense of rapport with one another.

Parent Group Meetings. It is still felt that group meetings can serve a variety of useful functions.

- They can provide a way for parents with young children to get to know one another and provide a sense of community to many who are new to the Brookline area.

- They can promote the exchange of ideas of practical information among families.

- They can provide a mechanism for parents to work together toward common goals.

- They can serve as a forum where BEEP parents can take a more active role in the operation of BEEP.

Therefore, in early 1974, a series of parent meetings was initiated to identify ways in which BEEP resources could be used to better serve the families' needs and interests. These meetings had several outcomes:

- Parent groups were formed by service level. Each group has available to them a staff consultant. Staff consultants for levels A and B are available only on a part time basis. Staff consultant for level C is available full time. These groups will take the initiative in planning volunteer services, community information services, and activities for special interest groups. Participation is voluntary and organization of all activities is the responsibility of parents involved. A limited budget will be made available for materials and outside consultants.

- Special interest groups of Black families and of Hispanic families met in consultation with Black

and Hispanic teachers. Their purpose was to consider the values of BEEP and to evaluate its role in their lives. They will continue to meet as they feel the need for further discussion or as they identify specific content areas that they wish to have addressed. A limited budget will be made available for materials and special consultants.

The Role of Fathers in BEEP. The role of fathers in the child rearing process has been an issue of much interest at BEEP. Our original bias was that our program would be directed at mothers, stressing their importance as primary caretakers. Increasing concern in the education literature and interest on the parts of many of our participating families have caused us to re-examine this position. In many BEEP families fathers share child care responsibilities with working mothers. In others, although the mother is the primary caretaker, the father participates regularly in after-work and weekend care. Certainly, many of our fathers really want to be well informed about their child's growth and development and to share in important child-rearing decisions. Many fathers have come regularly to lectures and discussions. Others have arranged to be present at home visits and diagnostic evaluations. Still others have participated in group parent meetings, often initiating topics for discussion that are of particular relevance to them.

We at BEEP view this whole-family involvement in child-rearing as a positive development. It does, of course, impose operational difficulties from time to time. Evenings and weekends are in increasing demand for scheduled activities. Groups functioning with fathers present are often different in content and in dynamics than groups composed only of mothers. We are, however, increasingly committed to the philosophic position and we are constantly working to make our operational procedures reflect this. We look forward to providing additional services such as:

- more teachers available for weekend and evening home visits
- more diagnostic evaluations available on weekends or evenings
- more evening and weekend hours during which the BEEP family Center will be available for use with staff to provide child care
- more scheduled evening and weekend activities in the BEEP family Center
- more special interest groups focusing on the issues of interest to fathers.

Participation in the Education Program

While the effectiveness of the Education Program cannot be determined for several years, it is now possible to document the amount of participation and the use of the BEEP services. Tables 14 to 20 summarize group data on participation and use. The data were derived from three sources: 1) parent contact records, showing each occasion of parent-staff interaction, 2) a sign-in/sign-out log book in the Center, and 3) periodic spot check observations of Center activities.

Table 14 shows the awesome number of telephone contacts between parents and staff during the first months of this year. We feel that these have been essential to develop initial rapport, trust and understanding. It is interesting to note the present ratio of staff-initiated to parent-initiated calls as well as comparisons among levels A, B and C. We plan to follow these indices, looking for shifts reflective of the increased initiative and involvement of parents.

Table 14

Telephone Contacts
Jan. 1, 1974 to April 30, 1974

	From Staff to Parent				From Parent to Staff				
Level	Jan	Feb	Mar	April	Jan	Feb	Mar	April	Total
A	114	90	93	105	28	29	31	26	516
B	113	77	81	89	14	17	17	21	429
C	55	56	60	53	17	8	13	16	278
Total	282	223	234	247	59	54	61	63	1,223

Table 15 shows the total number of home visits conducted since the inception of the program. Families assigned to level C have no regularly scheduled home visits while those in level A have had, on the average, 1½ times more than those in level B. We also monitor "Special Home Visits." These contacts are in addition to regularly scheduled home visits. They are made to provide emergency help, special consultation about a parent concern, follow-up on interdisciplinary case conference recommendations, or a courtesy service such as dropping off a toy or book. This equal distribution of the Special Home Visits across levels seems to reflect the random assignments of families to levels, in that we would expect special

needs and courtesy service to be evenly distributed across levels.

Table 15

Home Visits
March 1, 1973 to April 30, 1974

Level	Regular, Education Home Visit	Special Home Visit	Total
A	311	67	378
B	222	86	308
C	0	78	78
Total	533	231	764

From October through April a total of 23 meetings and seminars were held for parents. Twelve of these were held in the evening or on weekends. Due to cost restrictions, ten meetings were limited only to A and/or B level families. Table 16 reports the parent responses to these meetings and seminars.

Table 16

Meeting and Seminar Attendance
Oct. 1, 1973 to April 30, 1974

Level	Mother	Father	Total
A	101	24	125
B	56	16	72
C	49	18	67
Total	206	58	264

Parents are encouraged to stop by the Center often. Table 17 shows that the response to this invitation is increasing each month and that families in level A tend to drop by most often. Visits for examinations and scheduled meetings are not counted here.

Table 17

Parents' Drop-In Visits to the Center
Jan. 1 to April 30, 1974

Level	Jan	Feb	Mar	April	Total
A	42	57	60	71	230
B	27	40	67	54	188
C	24	29	54	65	172
Total	93	126	181	190	590

Table 18 indicates similar trends in data on use of the toy lending library as for the drop-in data. In other words, one reason parents often stop by the Center is to borrow a toy.

Table 18

Toys Borrowed
Jan. 1, to April 30, 1974

Level	Jan	Feb	Mar	April	Total
A	28	30	43	42	143
B	23	13	30	29	95
C	21	14	26	35	96
Total	72	57	99	106	334

In order to help relieve stress and provide a convenience to parents BEEP offers child care on a limited basis. Three two-hour occasions per month to families in level A, two two-hour occasions per month for families in level B, and emergency or special consideration occasions to families in level C. Table 19 reflects the differential use of this ancillary service.

Table 19

Child Care While Parent Absent from Center

Jan. 1, to April 30, 1974

Level	Jan	Feb	Mar	April	Total
A	13	25	23	23	84
B	8	9	10	17	44
C	1	1	2	6	10
Total	22	35	35	46	138

Table 20 shows the frequency count of families who received transportation to and from the Center from January through April.

The lack of difference among levels can perhaps be traced to the random assignment, and the lack of increase in transportation over the past few months may indicate that warmer weather offsets the generally increased participation.

Table 20

Transportation Provided to and From the Center
Jan. 1, to April 30, 1974

Level	Jan	Feb	Mar	April	Total
A	22	17	22	28	89
B	23	18	28	24	93
C	19	30	19	18	86
Total	64	65	69	70	268

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E. CURRENT EVALUATION PROGRAM

Overview

The BEEP evaluation program has the complex assignment of determining the multi-faceted impact of BEEP as a service program, as a research project, and as a social change agent. We have identified four primary areas of investigation:

1. assessment of program effectiveness
2. assessment of diagnostic instrument effectiveness
3. process analysis of BEEP programs
4. analysis of program operating costs.

Considerable effort has been expended on the development of an evaluation plan for assessing program effectiveness. We have defined five areas of interest that are currently at different stages of development:

a. effects on the child
b. effects on the family
c. effects on the school
d. effects on the medical community
e. effects on the community at large

With regard to diagnostic instrument effectiveness, we will begin the necessary analyses as outcome data become available.

In the process analysis area, we intend to examine the actual unfolding of the project -- the structures and mechanisms employed in the delivery of services. Our interest in this type of analysis has grown out of our experience in implementing BEEP programs and has been accentuated by an increasing awareness that the operations of complex innovative social programs are often very different from their paper model. We are still in the early stages of formulating the scope of this analysis.

To facilitate the cost analyses of our programs, we have devised practical methods for monitoring program costs and have formulated decision rules for allocating costs to the categories of our general cost model.

This overview has presented only the broad outlines of the Evaluation Program. In the next sections, we describe more fully the work of the current funding period and indicate those aspects of the evaluation program to be implemented in the proposed funding period.

Program Effectiveness

General Evaluation Design: Our approach recognizes that any short term impacts we achieve are likely to dissipate unless we reach beyond the immediate child and family to the institutional and community network.

Indeed, BEEP is a complex long-term social innovation whose effectiveness can only be fully assessed through broad-based longitudinal evaluation. Implicit in the long term nature of this project are certain temporal dependencies: to be effective in the long run, there are certain moderating variables which must be affected in the short term.

In order to determine the effectiveness of BEEP, we will be studying its impact in each of the general areas shown in Figure 3. We have been concerned first with examining the specific effect of BEEP on children and the families who participate in it. This involves not only extensive assessments of the child's health and development but also documentation of parental response to the Education Program and other support services.

In addition, we intend to examine the more general impact of BEEP on the pediatric community, the public schools, other social agencies within the Brookline network and the broader community both local and national.

Our principal concern to date has been with laying the groundwork for the major evaluations of child outcomes. This work is reviewed in the next subsection. Following that, we discuss the assessment of outcomes in other areas.

Assessing Child Outcomes: In this area we are asking two specific questions:

- does exposure to BEEP services significantly affect a child's health and development, and thereby improve future functioning in school?
- are there different benefits from the three levels of service offered by the BEEP Education Program?

FIGURE 3. OUTLINE OF OUTCOME ASSESSMENT AREAS FOR BEEP

A. Specific Impact

1. the child
   a. health
   b. development

2. the family
   a. parent education
   b. family support

B. General Impact

1. model for the parent-school-pediatrician relationship

2. pediatric community -- new training model for pediatricians

3. public schools -- changing structure of the public schools

4. broader community -- dissemination of BEEP concept

We intend to examine these questions at the following points:

1. 14½ months of age
2. 30 months of age
3. entry into school
4. during the second grade year

To explore the first question we needed a research design which provides comparative information on the likely development of BEEP children in the absence of BEEP. The traditional approach here would have been to employ a randomly assigned control group. For a variety of reasons, we found that approach neither feasible nor desirable in our setting. As an alternative, we decided to draw the comparison data from previous cohorts of children from the Brookline-Boston community, who were either ineligible or not exposed to the program. For our first two evaluations, when the child is 14½ months and 30 months of age, we will gather evaluative baseline data on children born in 1972. For our "in-school" assessment, we will gather data on children born from 1967 to 1972 as they enter and progress through the first two grades of the Brookline Schools. These data, together with comprehensive background data, will form a time series which should provide an extensive base for estimating the long term effect of BEEP programs on children. The details of this data collection schedule are presented in Figure 4.

FIGURE 4. THE ASSESSMENT PLAN FOR DATA COLLECTION ON BEEP PROGRAM CHILDREN (P) AND ON COMPARISON CHILDREN (C)

Age Cohort	14½ Mo.	30 Mo.	School Entry	During 2nd Grade
1974 BEEP	P	P	P	P
1974 Non-BEEP[1]			C	C
1973 BEEP	P	P	P	P
1973 Non-BEEP[2]			C	C
1972 Cohort	C	C	C	C
1971 Cohort			C	C
1970 Cohort			C	C
1969 Cohort			C	C
1968 Cohort			C	C
1967 Cohort			C	C

[1]The 1974 Non-BEEP group will consist of the following: children born after the recruitment deadline (Sept. 30, 1974), children of families not interested in BEEP, and children not enrolled in BEEP because families heard about the program too late.

[2]The 1973 Non-BEEP group consists of the following: children born prior to the start of recruitment (March 1, 1973), children of families not interested in BEEP, and children not enrolled in BEEP because families heard about the program too late.

In order to provide a precise answer to the second question, we randomly assigned families to the three education service levels. We attempted to explain the necessity for this random assignment to each family before they agreed to enroll and, thus far, no one has declined to participate because of their level assignment.

A paper which discusses in more detail the rationale underlying the BEEP research design is presented in Appendix VII.

In preparing for the evaluation of BEEP effects on the child, we have been concerned with the selection of measures. This has involved the combined efforts of the evaluation staff, the diagnostic staff, and Brookline school personnel. The composition of the 14½ month and 30 month batteries has already been discussed in the context of the Diagnostic Program.

The measures for the last two assessment points -- entering kindergarten and during second grade -- are still under consideration. Whenever possible we will select procedures which serve as good summative evaluation instruments, and which also generate useful diagnostic information for teachers and school psychologists. To help BEEP in reaching a final choice of measures for the kindergarten evaluation, Dr. Larry Dougherty, Supervisor of Language Arts for the Brookline Schools, has undertaken a small scale

validation study of a set of assessment procedures that are potential candidates for our final battery. The experiences gained collecting this data will be valuable in the selection of a final assessment battery. Further, when linked with other school data, this information should constitute a useful validation study.

Assessing Outcomes in Other Areas: In addition to preparing for the evaluation of child outcomes, we have worked on developing assessment procedures for the other outcome areas outlined in Figure 3. Many data-gathering procedures are already in operation but the detailed plans will not be completed until the next funding period. Thus, in the interest of clarity of presentation, we will discuss those plans in the section on the work of the proposed funding period.

Diagnostic Instrument Effectiveness

We have assembled much more extensive assessment batteries than we are likely to recommend as desirable or practicable for another setting. We intend to examine the components of these assessment batteries and determine which elements, either singly or in combination, significantly improve early detection of learning dysfunctions.

During the current funding period we have developed numerous procedures for monitoring the quality of the data gathered. We have also developed record keeping forms to facilitate computer processing of those data (see Diagnostic Forms in Appendices III and IV).

Analyses of the predictive power of the diagnostic instruments will follow the collection of outcome data at the successive major evaluation points. A time table for these analyses is presented in the proposed funding section.

Process Analysis

In the first attempt at implementing complex programs such as BEEP, many adjustments or modifications are inevitable in adapting the plan to the reality of personalities and institutions. At the same time, we must continually remind ourselves of specific program definitions and limitations and to document any changes that occur as well as forces that necessitated the changes. We believe that other communities attempting to replicate our experience will find this "process" information useful.

During the current funding period we have developed the rationale for a process analysis and have initiated some data

collection procedures. Since implementation of these plans lies in the future, we will describe the plans in the proposed funding section.

Cost Analyses

Introduction: One of the main objectives of BEEP is to be able to report the precise costs of operating our programs and to provide a set of procedures that will enable other communities to project accurate costs of starting similar programs. The reported benefits can then be weighed against these costs.

The general framework for the cost analysis was developed in the planning period. During the first year of the current funding period, we focused on the task of developing the data-gathering procedures. This has been a time-consuming task because of the complexity of the BEEP operation. The major and most difficult item for us to monitor has been personnel time because our staff work at many diverse activities which cut across major accounting categories.

Procedures were first instituted in the spring of 1973 for monitoring personnel time. During the next six months we refined these procedures through feedback from staff attempts to apply these procedures in allocating their own time. The data were sufficiently reliable by September, 1973 to be of use for analysis. One final modification was introduced in January, 1974, to expand the information generated by this system.

Cost Monitoring: A series of time accounting and cost allocation procedures provide us with detailed cost data on the operation of the project. All BEEP personnel (full-time, part-time, consultants, and volunteers) are required to keep a detailed time account for each work day. All full-time and part-time personnel and volunteers submit weekly time accounts; all consultants file monthly accounts. Instructions for allocating time and an example of a completed weekly time account are presented in Appendix VII.

In addition, receipts are required for all purchases. Thus all nonpersonnel costs are also monitored. As a check on our accounting system the Town of Brookline maintains a separate computerized budgeting system for BEEP. We are furnished with detailed monthly statements to verify our records.

We organized our cost data (both personnel and nonpersonnel) into three major categories (operational costs, start-up or planning costs, and research costs) and several subcategories (Appendix VII). For example, operational costs are divided into service levels; within these service levels the costs are organized by education

program and diagnostic program; and within the programs, costs are further classified into personnel costs, consultants, and nonpersonnel costs.

This system is fully operational now, and we are beginning to analyze the data. A more detailed description of this system is presented in Appendix VII along with an illustrative analysis based on the cost data for the B-level program from September to December, 1973.

F. ADMINISTRATION

Ongoing Functions
Issues and Problems

Ongoing Functions

Apart from secretarial, custodial and the usual support services, BEEP administration has been responsible for other project functions during the current funding period.

1. Recruitment -- We have placed a high priority on maximizing the rate of enrollment particularly with regard to reaching families who are not likely to hear about or seek out such a program. We have attempted to establish a referral alliance with every possible contact that expectant families might have. These have included: obstetricians, pediatricians, prenatal care clinics, public health centers, welfare department, mental health association, recreation department, churches, nursery schools, elementary schools, posters in drug stores, grocery stores and maternity shops, and local newspapers.

2. Community Relations -- In order to enhance understanding of the purpose and scope of BEEP, we have maintained communication with the Brookline School Committee and with town agencies who have an interest in the health or education of young children. These efforts have overlapped with the recruiting function.

In addition we have held a series of staff development sessions with consultants for minority and ethnic studies.

3. Advisory Committees -- To give guidance to the administration three kinds of advisory committees have been formed. A Policy Review Committee, consisting of representatives from the three institutions collaborating for BEEP, decides major policy issues. This group consists of Drs. Sperber, McKenzie and Dougherty, representing the Brookline School administration; Drs. Lamb and Levine representing the Children's Hospital; Dr. White representing the Harvard Graduate School of Education; and the Director, the three Program Supervisors and the Historian representing the BEEP staff.

A Professional Advisory Committee has met bi-monthly to keep posted on BEEP progress and to advise on emerging plans. The members of this committee are listed in Appendix I. Finally, parent advisory groups have been initiated to advise on matters related to client privacy, informed consent, and outside requests for access to BEEP research data.

4. Dissemination -- While it is too early to report results of our experience, we have been deluged by requests for help -- from schools, universities, state departments, community agencies, and interested individuals who hope to benefit from our experience. To date we have been forced to place a lower priority in this area; our response

has been limited to providing rather general information. In the next three years, we hope to respond in a more systematic way to these inquiries and requests for help. A dissemination plan is proposed later in this report.

5. History -- Extensive documentation of all aspects of BEEP has been an important function of the operation. Dr. Elizabeth Nicol, a research psychologist, is responsible for assembling and reporting observations and anecdotal details which give insight into the program's operation and evolution. These records will eventually be important sources for communities who want to build on the BEEP experience.

6. Funding Proposals -- BEEP is committed to the premise that if its model of early education is to receive widespread implementation, then the federal and/or state governments will eventually have to become partners in the venture. Therefore, considerable time has been invested in fund-raising efforts.

Private foundations are also being surveyed for possible interest in helping with the considerable budget required to keep a project of this magnitude in operation to its completion.

Issues and Problems

In the course of the current grant period, the supervisory staff have faced a number of issues or concerns which surfaced in operating the programs. Some issues have absorbed hours of discussion time and yet remain unsolved. Others have been less intractable and have been satisfactorily closed. Some questions involve program content, others concern a mode of operation, and still others, administrative policies.

These issues will form a substantial part of the history of the project and will be documented there. Nevertheless, to indicate the range and flavor of the issues and problems that arose, we summarize some of them here:

1. The "Truth-Telling" issue cut across all our areas and has occupied doctors, educators, parents and lawyers. We have made strides toward clarifying the issue by articulating certain guiding principles. Questions which arose included:

   a. Who should be informed of diagnostic results first, parents or family pediatrician?

   b. Should any information be withheld from any families on the grounds that they would be unable to cope with the anxiety?

   c. What is BEEP's obligation when a family physician forbids disclosure to one of his families?

   d. What is BEEP's obligation when evidence of inadequate medical care and or even malpractice on the part of the family physician emerges?

e. How should information be shared with the schools and with other community agencies?

f. How can accurate and complete records be kept by BEEP's doctors, psychologists and teachers if parental access to family information files is considered a basic right?

2. Research requirements sometimes frustrate the diagnostic and education staff members who have overriding commitments to service.

-- Example: the random assignment-to-level process puts a family with multiple needs into C-level where no home visits by the teacher are scheduled. Or a family in B-level needs sustained support for a period, but the research design stiuplates an average of one visit in six weeks.

-- Example: Quality control and program documentation requirements call for periodic tape recording or videotaping of pediatric examinations and home visits. Staff members feel these intrude upon their relationship with a family and impair rapport.

3. The record keeping requirements of such an extensive research undertaking are burdensome to many of the "service" staff -- neither teachers nor doctors are accustomed to documenting fully their contacts with families. The research team has worked out recording forms and monitoring procedures to ensure the quality and completeness of these data.

4. BEEP's commitments to minority, low income, and bilingual groups has led to consideration of a number of questions: building trust in all neighborhoods, increasing staff sensitivity through race awareness seminars, hiring policies, helping all families feel welcome at the Center, making significant responses to their needs.

5. A cluster of issues and problems involve project personnel:

a. Communication lapses arise because many staff members, including three program supervisors, work part-time. Dissemination of information on policy,

procedures, and events is awkward. Nevertheless, we agreed that the highest priority had to be the hiring of the most competent person even if full-time commitments were not possible.

b. The requirement that teachers be mothers means that some teachers cannot work a five-day week, that work schedules may be disrupted if there is illness in the family, and that school holidays and mid-year vacations create added demands for childcare of the teachers' own children.

c. The commitment that BEEP be responsive to family needs means that special provisions must be made to serve BEEP's working fathers and mothers. Home visits, health and developmental examinations, and parent activities can be scheduled for evening or week-end hours. These commitments intrude on teachers' and evaluators' own family schedules.

6. Some problems were encountered at the interface between the professions. The initial isolation of the diagnostic and education staffs had to be overcome; at first the pediatricians felt they understood little of the research objectives and the roles played by the teachers. Both professions had to learn something of each other's language. The pediatricians remarked on the fact that this type of team experience was new to them -- it was strange to be with other professionals and not be in charge of the operation.

Methods to increase understanding and interchange include staff meeting discussions, interdisciplinary lunches, seminars in child development for the pediatric staff. New pediatric fellows arriving in July received an orientation program designed to hasten the integration process.

7. Decision-making in a collaborative project is a time consuming and sometimes frustrating process. Even a seemingly trivial decision in one area can have repercussions in another area -- and each must be checked against the evaluation design. Tasks of planning for later phases or preparing proposals entail successive rounds of discussions before consensus is reached.

8. The flood of inquiries, requests for permission to visit BEEP or to obtain diagnostic batteries, curriculum materials and progress reports may have its flattering side but it does create problems. Apart from the increased pressure on the staff to produce documentation, there are misgivings about indiscriminate dissemination of materials that are still undergoing their initial trial to untrained individuals planning immediate application.

III. THE NEXT THREE-YEAR PERIOD (Nov. 1974 to Oct. 1977)

A. THE PROPOSED DIAGNOSTIC PROGRAM

Examination Schedule
Content of the Diagnostic Examination
Coordination with 766 Evaluations

Examination Schedule

In the next three year period, all the BEEP infants will be more than one month old. Therefore, the Initial Diagnostic Battery charting the newborn's status and background will no longer be needed.

The Health and Developmental Evaluations will continue to be performed at specified times in the lives of enrolled children. The projected number of examinations required within the next three-year period is shown here:

Age at Scheduled Examination	Number of Children*
3½ months	30
6½ months	72
11½ months	144
14½ months	189
24 months	243
30 months	229
42 months	148
54 months	10
Total	1065

Added to these requirements are those for examining comparison children at 14½ and 30 months of age. According to present projections, we expect to perform examinations for:

30 children at 14½ months
200 children at 30 months

Content of the Diagnostic Examinations

The content of the examinations up through 14½ months of age was described in the Current Funding section and the areas covered were charted in Figure 2.

The batteries for the later BEEP evaluations follow the format and philosophy reflected in the design of the early

*These include correction for an attrition rate estimated at ten per cent yearly.

batteries. The physical examinations will continue to include the neurologic component, the visual and hearing screenings, and an orthopedic and dental examination will be added beginning at 24 months.

The developmental evaluations will differ in the choice of instruments but they are still aimed at covering the major areas of a child's development, which include increasingly larger components on social skills observed in school setting, abstract reasoning and other cognitive skills. Figure 5 shows the major procedures and instruments planned for examinations from 24 months on into school.

As the children become older it is possible to assess their patterns of development with increasing reliability. Many of the "soft" findings we have monitored throughout a child's infancy will become more firm in their prognostic implications.

The 30 month examination constitutes an important assessment of the child from a diagnostic point of view. Both the physical and developmental portions of the assessment can yield substantially valid and reliable results about a child's status. At 30 months the children will begin their BEEP prekindergarten school experience. For children found to have educationally related problems on the 30 month examination, special plans may be made and implemented through continued consultation with the teaching staff.

The 30 month examination is also an important evaluation point in the research design. Because of its importance it will be performed outside the BEEP Center under stringent conditions by independent evaluators. There are two main reasons for establishing this format for the 30 month and also for the later BEEP evaluations:

1. The BEEP diagnostic staff knows which children are BEEP children and which ones are comparison children. Even within the group of BEEP children they may be aware of the service level to which the family belongs. These facts can lead to unconscious bias in the interpretation of examination results. Therefore independent evaluators will conduct the examination procedures without knowing of the child's BEEP membership status. Both pediatricians and developmental evaluators will be hired and trained for this undertaking only.

2. In both developmental and health evaluations, a child's behavior and performance may be affected by his familiarity with the surroundings. Since BEEP children will have been in the Center a number of times in the course of their 30 months, the testing situation at BEEP would be quite different for them than for the comparison child who might be coming to the Center for the first time or, for some, only the second time after a 15 month interval.

FIGURE 5. DIAGNOSTIC AND EVALUATION PROCEDURES

24 MONTHS	30 MONTHS*	42 MONTHS	54 MONTHS	ENTERING KINDERGARTEN*	MID SECOND GRADE*
A. HEALTH					
Physical Examinations Medical Event Record Hearing and Speech Questionnaire Hearing Evaluation Vision Evaluation Neurologic Examination Orthopedic Examination Dental Examination	→	→	→	→	→
B. DEVELOPMENTAL					
Bayley Scales of Infant Development 1. Mental 2. Motor	Stanford-Binet Intelligence Scale	McCarthy Scales of Children's Abilities	Stanford-Binet	McCarthy Scales	California Achievement Tests**
	Harvard Test of Abstract Abilities			General Information Inquiry	Short Form, Academic Aptitude**
Denver Developmental Screening Test	→	→	→	→	
Selected Developmental Items - to assess gross motor development	→		→		→
Social Competency Rating	→	→	→		
Harvard Preschool Project Language Exam	→			Language Sample** (Exploratory)	
					Writing Sample**
				Circus** Teacher ratings Observations of Task Competence & Social Skills	

* Major Evaluation Points - Examinations to be conducted by independent evaluators.
**Procedures under consideration

In order that any test score differences between BEEP and comparison children not be attributable to test-condition differences, the 30 month evaluations will be conducted outside BEEP in a place (probably a school) that is equally unfamiliar to both groups.

Because the 30 montn examination is both part of the BEEP diagnostic program and also a major evaluation point in the research plan, the specific content of the examination must be designed to serve both needs.

A main feature of the developmental portion of the 30 month evaluation will be the use of the Stanford-Binet Intelligence Scale. The advantages of incorporating the Binet at this point are that it correlates with school performance; and it is so widely used in other studies for early childhood education that it affords us the opportunity for comparing our results with those of these other studies.

However, for purposes of diagnosis, the scope of the Stanford-Binet is somewhat narrow. Therefore the independent evaluator will administer the Stanford-Binet and, in cases where there is any question about a child's performance, will suggest that the child be seen for more extensive diagnostic testing by the regular BEEP diagnostic staff.

The 42 month and 54 month examinations will again be conducted by BEEP staff at the BEEP Center (comparison children are not evaluated at either point). The physical examinations will cover the same areas as before. The developmental evaluations will, for the first time, employ the McCarthy Scales of Children's Abilities at 42 months. These are new but well standardized scales for measuring a wide range of a child's skills and abilities: verbal, perceptual, performance, quantitative, general cognitive, memory, and motor. The developmental evaluation at 54 months of age will rely again on the Stanford-Binet. This will give an additional measure of the child's intellectual functioning and will provide useful data to cross-validate those derived from the McCarthy Scales. As before, further developmental testing will be done when deemed necessary to obtain a clear picture of a child's abilities.

Throughout these early years, the Diagnostic Program will continue to monitor children who either have or are suspected of having health or developmental problems that could endanger their chances for school success. The referral services for children found to need more specialized diagnosis or intervention will continue with the assistance of the BEEP social workers.

As before, the diagnostic staff and the family teachers will work as a team in the management of behavioral and emotional

disorders as well as in problems of educational function. Special consultants, including child psychiatrists and speech therapists, will be employed to advise or to supplement the teacher in planning and/or conducting remedial programs when necessary.

Coordination with 766 Evaluations

In 1972 the Massachusetts legislature passed a special eduation law, commonly referred to as Chapter 766, which will go into effect in September, 1974. The law has implications for BEEP in that the basic premise is that public schools have a responsibility to provide educational services to all children including those with special needs. All persons, ages three through 21 who do not have a high school diploma, are entitled, if referred by a school official, parent or guardian, judicial officer, social worker or family physician, to an in-depth evaluation by an interdisciplinary "core evaluation team." The core evaluation team must share findings with the parents and recommend an individualized educational prescription for each child within 30 days after referral.

Since BEEP is already planning intensive evaluations of preschool children, it seems essential that the BEEP team work closely with Brookline's 766 core evaluation teams in order that the evaluations and prescriptions complement each other and avoid duplication. Further, most Massachusetts schools are woefully unprepared to implement the spirit of this law by this fall and are seeking advice from all possible sources, including BEEP. Thus there seems to be an opportunity for BEEP to make an impact on the quality of the state-wide evaluations and educational prescriptions for three and four year old children with special needs.

B. THE PROPOSED EDUCATION PROGRAM

Program for Early Infancy Phase (0 - 12 months)

The parent education program is expected to continue as it is presently operating. With parent activity groups now functioning, parents of the 1974 babies can be expected to find it easier to become involved in BEEP activities than did the 1973 parents. No major program differences are anticipated.

At present 175 of the families we are serving have infants under 12 months of age. The number of children in this Early Infancy Phase will decline steadily until by September, 1975, all BEEP children will be over one year of age.

Program for Late Infancy-Toddler Phase (12 - 30 months)

Introduction: White's evidence (1973) strongly suggests that the second year of life is of particular importance for the development of educational competence in healthly children. This is consistent with information from other sources (Piaget, 1936; Erikson, 1950; Bowlby, 1969).* Several processes accelerate. First, the

*References are given at the end of the Proposed Education Program.

development of the capacity for receptive language increases conspicuously during this period. Second, the emergence of locomotor ability (crawling, walking and climbing) combines with intense curiosity about things and places in the home environment, poor control of the body and ignorance of common dangers in a potentially hazardous way. Third, sometime toward the end of the first year of life, babies become increasingly aware of themselves as independent agents with separate identities. The form of this identity is shaped largely through interactions with the family, particularly the primary caretaker(s). These interactions seem to shape the baby's basic orientations toward people in general and contribute greatly to the kind of social being he will become.

This period involves several sets of choices in child-rearing decisions. The education staff of BEEP will help parents to identify the issues involved and their own attitudes toward them. They will be encouraged to make choices appropriate to the needs of the child but also consistent with the rights of other people. Teachers will continue to watch the child's development with his parents, pointing out his particular styles and characteristics and stressing the concept that each child is unique.

Program for Service Levels A and B:

Basic Services. The same basic services available to families during the Early Infancy Phase will be available to them during the Late Infancy-Toddler Phase (see Current Funding Section, p. 29).

Home Visits. These will continue as a primary source of information input to families at these service levels. Typically, a portion of each home visit will be spent observing the child as he pursues his usual activities at home, a portion will be spent discussing with the parent(s) his growth and his interests and a portion will be spent responding to parents' questions and concerns about educationally relevant issues.

Education Group Sessions. Because of the special significance of this period, it was felt that more opportunities for information input should be made available to those families who wanted or needed them and to those families who, in the best judgment of the BEEP staff, could benefit most from them. One way of doing this is to increase the number of home visits made during a given period of time. This option will be available to families in service levels A and B. Another way is to invite small groups of parents whose babies are close to the same age to meet together for teaching sessions.

This option will also be available. These education group sessions will focus on topics relevant to the children's stage of development. They will enable parents to watch their own child and other children, to share attitudes and values toward life in general, toward young children, particularly during this formative period, toward possessions, housekeeping, safety, and the myriad of other things relevant to raising successful children in today's society. Members of the BEEP staff will plan the sessions and will be responsible for developing concepts and suggesting possible parent behaviors relevant to them (see Appendix V for resources available for planning family contacts). The exact style of delivery will vary with the composition of the different groups and will be decided by the teacher in charge. She will work in consultation with her supervisor.

Scheduled Frequency of Home Visits and Education Group Sessions. The basic unit of time used to determine frequency of contact for families in service level A is four weeks. For families in service level B it is six weeks. Thus, the average number of required and optional contacts for each program may be viewed schematically as in Figure 6 . Home visits and education group sessions will not be initiated for families in service level C.

Figure 6 . Scheduled Frequency of Education Contacts for Families in Service Levels A and B During the Late Infancy-Toddler Phase

SERVICE LEVEL	REQUIRED/FREQUENCY	OPTIONAL/FREQUENCY
A	1 Home Visit/Month	1 Home Visit/Month OR 1 Education Group Session/Month
B.	1 Home Visit/Six Weeks	1 Home Visit/Six Weeks OR 1 Education Group Session/Six Weeks

Parent Group Meetings. These will continue to function on initiative of participating families. As in the Early Infancy Phase, an education staff consultant will be available to them on a limited basis.

Play Groups. Sometime toward the end of the children's second year of life, it is expected that some parents will want to involve them in play groups. Should this be the case, it is tentatively planned that the membership of the education group sessions will be adjusted so that interested and compatible families will be able to work together in organizing the play groups. Geographic proximity to one another may be a relevant feature in group membership.

BEEP staff will be available on schedules consistent with those previously described. They will be prepared to advise parents and to help in such ways as planning and equipping play areas; planning reasonable daily schedules, demonstrating techniques for working successfully with small children in groups, suggesting appropriate activities, dealing with behavior problems, and evaluating individual children and their educational development.

For families not interested in participating in play group organization the established format of education group sessions or extra home visits will still be available.

Special Characteristics of Service Level C: As before, this minimal input service level will function as a Center-based program, depending largely on the interest and initiative of participating families. One teacher will be available to them exclusively. She will guide them in selecting relevant content for meetings and discussions but the frequency of any individual family's contact with BEEP rests with them.

Children with Special Needs: During this period it is expected that we will begin to detect children with a variety of potential learning disabilities. The BEEP professional staff from all disciplines will cooperate in refining diagnosis and in identifying areas of particular need. When necessary, we will refer out to other agencies. During this phase the BEEP Education Program will continue to offer information and support to parents as well as suggestions on ways to create an appropriate environment for their child. Families of children with special needs will receive more frequent input from BEEP.

To the extent that specific disabilities are identified among BEEP children, our thinking about special programming for the Prekindergarten School Phase will be refined.

Program for Prekindergarten School Phase

In late 1975 or early 1976 the Education Program will move into direct education for the children themselves. This will be done in several school settings, hopefully located within some existing public school facilities in Brookline. Consistent with previous operations, there will be three separate service levels. Cost differences will be largely obtained by varying personnel patterns for classes at each service level. Families will remain in the service levels to which they were assigned when they joined BEEP.

Program and Curriculum: Detailed curriculum planning for this phase of BEEP operation will be a task of the proposed funding period. Our present position is based on reviews of programs currently operational. To the extent that our objectives apply to the total population, the program will strongly resemble the Weikart Cognitively Oriented Curriculum (Weikart 1971). Based on the observations and the developmental theory of Jean Piaget, this program seems to us philosophically sound. It has repeatedly proved effective particularly in the areas of cognitive and language growth, for children from a variety of backgrounds and with a variety of special needs (Bissell 1971; DiLorenzo et al 1969). It also has the advantage of a clearly defined treatment to which existing outcome measures can be applied.

To the extent that our basic objectives cannot apply to the heterogeneous total population, we will supplement the basic curriculum with materials, techniques and activities from other programs. Essentially, there will be two reasons for diversity within the BEEP program: parent goals and individual needs of children.

During the 1971-72 planning year, parents in Brookline were involved in defining goals for the proposed program. As the program becomes a reality, parents of children actually participating in BEEP will be given the same opportunity. To the extent that parents wish to promote the development of autonomy, curiosity, social skills and the like we will rely upon the Bank Street Programs. These also encourage spontaneous behavior, play, and the child's self selection of activities.

To the extent that the development of motor and perceptual-motor skills become goals, some of the Montessori materials will be used (Stodolsky, 1972).

Children with Special Needs: BEEP has a strong commitment to providing the best possible education programs, particularly for children with special needs. By this phase of the program we expect to have identified such children. In addition to scheduled evaluations, they will be provided with additional diagnostic procedures to refine diagnosis of specific disabilities.

We expect these children to fall into four major groups:

- those with broad delays in development attributable to environmental conditions
- those with developmental delays attributable to sensory deficits or minor (physiological) disabilities
- those with substantial emotional disabilities
- those with substantial physical or cognitive disabilities attributable to physical conditions

For children in the first two groups, it is our judgment that the Weikart curriculum provides the most promise of successful program. For the latter groups, substantial modifications will undoubtedly be necessary. Some children may have to be referred to more intensive special programs. Techniques of behavior modification seem to offer the most promise for these children. In all cases, all members of the BEEP team will work closely together to identify each child's needs and to provide educational experiences relevant to them.

Participation: School programs will be available at all service levels for four three-hour morning sessions per week. They will operate on the public school calendar. Age of entry for each child and frequency of attendance will be a joint decision by individual families and BEEP personnel. It will depend upon the child's readiness to join and enjoy group activities and upon parents' goals for him at this time. There will be three possible points of entry into each class: September, December, and March.

Facilities: All facilities will be adequate for groups of 35 children. These will be divided into two functional classes of approximately seventeen children each with a teacher-child ratio of 1:5. Two functional classrooms (one for each group) will be set up with a shared central space for special needs classes or special group activities. The shared space may also double as a music, dance and special exercise room, thus freeing it from any stigma and making it attractive to children and their parents.

Outdoor play areas will also be available so that children may easily shift from more circumscribed indoor activities to active outdoor play. The number of necessary sites is as follows:

1975 - 1976 - three
1976 - 1977 - six
1977 - 1978 - six
1978 - 1979 - three

Personnel: A single supervisory staff will be responsible for the entire BEEP Prekindergarten School Phase. Beyond that there will be three service levels or cost models, each with a comparable professional staff but with varying support staffs of paraprofessionals and parent volunteers. The staff-pupil ratio will be maintained at 1 to 5 in each service level. Thus variations in support staff account for the major cost differences among service levels. (See Appendix VI for job descriptions and qualifications for each position.)

Extra Services: Other ways in which costs will be varied include the availability of extra services:

- home visits
- parent education programs
- availability of staff for frequent conferences at the request of parents.

The exact scheduling of these services remains to be planned.

Operation: The Prekindergarten School Phase will begin in January, 1976 although staffing and equipping will begin in October, 1975. It will reach its maximum enrollment of about 220 children during the school year of 1976-77. The school will phase out in June, 1979 when the last group of children will become eligible for public kindergarten.

Summary of the Education Program

Figure 7 presents a summary of the major service differences for the three service levels during the Early Infancy Phase and the Late Infancy-Toddler Phase.

Figure 8 summarizes the differential services planned for the Prekindergarten School Phase.

Table 21 shows the projected number of families participating in each program phase at specified points in time.

Projected numbers of school sites required is summarized thus:

September 1975 to June 1976 - 3 (one for each cost level)

Sepetmber 1976 to June 1978 - 6 (two for each cost level)

September 1978 to June 1979 - 3 (one for each cost level)

FIGURE 7: MAJOR DIFFERENTIAL SERVICES FOR THE THREE SERVICE LEVELS DURING EARLY INFANCY AND LATE INFANCY-TODDLER PHASES

PROGRAM PHASE	SERVICE LEVEL	REQUIRED/FREQUENCY	OPTIONAL/FREQUENCY	CHILD CARE UNRELATED TO BEEP ACTIVITIES
EARLY INFANCY (0-12 months)	A	1 Home Visit/Month	1 or 2 Extra Home Visits/Month as needed	3 two-hour sessions/month
	B	1 Home Visit/Six Weeks	Extra Home Visit in case of need	2 two-hour sessions/month
	C	None scheduled	Help available in case of emergency	None except in emergency
LATE INFANCY-TODDLER PHASE (12-30 months)	A	1 Home Visit/Month	1 Home Visit/Month or 1 Education Group Session/Month	3 two-hour sessions/month
	B	1 Home Visit/Six Weeks	1 Home Visit/Six Weeks or 1 Education Group Session/Six Weeks	2 two-hour sessions/month
	C	None scheduled	None scheduled	None except in emergency

FIGURE 8. OVERVIEW OF DIFFERENTIAL SERVICES FOR THREE SERVICE LEVELS
PREKINDERGARTEN SCHOOL PHASE (30 months - 5 years)

SERVICE LEVEL	CHILD'S AGE	SCHOOL PROGRAM	CORE STAFF	SUPPORT STAFF	HOME VISITS	PARENT GROUP ACTIVITY	CHILD CARE	USE OF RESOURCES
A	30 months to 5 years	4 morning sessions of 3 hours each	One 0.8 FTE* teacher One 0.6 FTE teacher One 0.6 FTE assistant teacher	One 0.6 FTE assistant teacher 3 Paraprofessionals	Available Average expected per academic year = 5	At initiative of families Teacher available for consultation	None	Unlimited
B	30 months to 5 years	4 morning sessions of 3 hours each	One 0.8 FTE teacher One 0.6 FTE teacher One 0.6 FTE assistant teacher	3 Paraprofessionals 1 Parent Volunteer	Available Average expected per academic year = 3	At initiative of families Teacher available for consultation	None	Unlimited
C	30 months to 5 years	4 morning sessions of 3 hours each	Two 0.6 FTE teachers One 0.6 FTE assistant teacher	2 Paraprofessionals 2 Parent Volunteers	None	At initiative of families No teacher available	None	Unlimited

* Full-time equivalent

TABLE 21. Projected Quarterly Enrollment Figures in Each Phase of the Education Program (Corrected for Estimated 10% Yearly Attrition)

	Early Infancy Phase	Late Infancy-Toddler Phase	Prekindergarten Phase	TOTAL
1973 April	17			17
July	55			55
Oct	112			112
1974 Jan	175			175
April	193	17		210
July	200	55		255
Oct	173	112		285
1975 Jan	107	171		278
April	71	200		271
July	28	236		264
Oct	0	241	15	256
1976 Jan		201	48	249
April		147	95	242
July		91	144	235
Oct		60	170	230
1977 Jan		23	201	224
April		0	219	219
July			213	213
Oct			207	207
1978 Jan			202	202
April			196	196
July			191	191
Oct			84*	84
1979 Jan			82	82
April			80	80
July			0	0

*Enrollment drop when 102 children born in 1973 enter public kindergarten.

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C. THE PROPOSED EVALUATION PROGRAM

Program Effectiveness
- Assessing Child Outcomes
- Assessing Outcomes in Other Areas

Diagnostic Instrument Effectiveness
Process Analysis
- Rationale
- Assessment Procedures
- Analysis

Cost Analysis
List of Projected Reports

Program Effectiveness

Assessing Child Outcomes: During the proposed period our collection of child outcome data will continue. Two reports on child outcome evaluation will be generated during this period. The first short-term, summative evaluation, at 14½ months of age, should be completed by March 1, 1976. The second summative evaluation, at 30 months of age, should be completed by October 1, 1977.

Also during this period, the assessment batteries for the in-school evaluations will be finalized and the collection of baseline data for the in-school evaluations will be initiated. The first data for the kindergarten assessment will be collected in the fall, 1974. The first data for the second grade evaluation will be collected in the fall, 1975. Data collection at both points will be repeated in the succeeding years until the BEEP children enter school.

Assessing Outcomes in Other Areas: In terms of impact on families, we will consider such questions as:

- How much satisfaction do parents express for various aspects of the program?
- How have parents responded to program offerings?
- Do parents perceive changes in their behavior as a result of BEEP?

In terms of the more general impact of BEEP, we will ask:

- Has the BEEP collaborative model encouraged closer working relationships among pediatricians, parents and schools?
- Has the frequency and type of contact between parents and the schools changed as a result of BEEP?

- Are the programs that we construct, both philosophically and operationally, closely linked with the primary school programs?
- Has the presence of BEEP produced any other changes, intended or unintended, in the structure and operation of Brookline schools?
- Has there been any assimilation of BEEP diagnostic procedures into local pediatric practice?
- Has BEEP been succe ful in integrating itself into the local pediatric community?
- Has the BEEP model influenced pediatric training programs?
- Has BEEP influenced other communities to adopt similar early childhood programs?

During the next year we will determine final details of assessment procedures in these areas. Our current thinking here is summarized in Figure 9. Some procedures are already operational, others (marked with an asterisk) are currently under consideration.

Diagnostic Instrument Effectiveness

Diagnostic evaluations will continue during the next period. We will also be able to begin examining, in retrospect, which of the early diagnostic instruments (singly or in combination) were most effective in predicting subsequent medical, psychological, and education findings. This analysis will examine the relative benefits of diverse assessment procedures in the first year of life, with regard to both instruments and frequency of use. The results of this study should prove useful in suggesting modifications in the Diagnostic Program. An interim analysis based on the 14½ month child outcome data should be completed by October 1, 1976. A more definitive analysis based on the 30 month data, including confirmed clinical judgments, will be reported by January 1, 1978.

Process Analysis*

Rationale: Early experiences have convinced us of the importance of expanding the process assessment of BEEP. Complex social programs

*The length of discussion in this area is not intended to imply a reduced emphasis for the three other areas of evaluation which we consider important ongoing functions.

FIGURE 9. OUTCOME ASSESSMENT PROCEDURES

A. Specific Impact: The Family

AREA	ASSESSMENT TECHNIQUES	EVALUATOR	USED AT:
Parent Education	i) Parent Interview*	Special Interviewer	12 mo., 18 mo., 24 mo., 30mo., and ?
	ii) Unobtrusive Data	Historian	Continuous Documentation
Family Support	i) Case Studies	Historian	Continuous Documentation

B. General Impact

Collaborative Model	i) Project History ii) Informal Interviews With Key Individuals	Historian	Continuous Documentation in Project History of the Changing Structure of Relationship Between BEEP Parents-Schools-Pediatric Service
Pediatric Community	i) Test of Child Development in pediatric practice	Self Administered by Pediatric Staff	Beginning and End of BEEP Residency
	ii) Survey of Local Pediatricians (baseline information on Pediatric care in the Community)*		
	iii) Informal Interviews	Historian	Continuous Documentation
Public Schools	i) Project History and History of Brookline Schools	Historian	Continuous Documentation
Broader Community	i) Descriptive Data on Frequency and Type of Inquiries About BEEP (National)	Historian/Secretarial Staff	Continuous Documentation

*Procedures marked with an asterisk are under consideration and are not operational.

such as BEEP are organizational as well as technological innovations. The impact of the program upon the BEEP child and family is influenced by amorphous but unique interactions among institutions, personalities, values, and traditions. The results of these interactions are thus contingent upon the specific nature of the surrounding social network. When a complex social program is attempted in only one setting, the notion of generalizability is greatly restricted. Even if BEEP were conducted in 30 sites, although we might then have a better grasp of the possible range of outcomes and forces encountered, we would still be unable to make explicit statements about expected effects in another setting. The logic of social change processes is far more complex than the logic of sampling; an argument for the generalizability of social change based on one BEEP experience would be fraught with errors.

Furthermore, the notion of generalizing valid results is contingent upon the notion of precise treatment. Unfortunately, in most social innovations, the program is not well-defined (Cohen, 1973).* This lack of clarity is often due to a weak or uncertain theoretical foundation. Further, even if the theoretical underpinnings are sound, the program actually designed is the result of a complex system of continual adjustments among conflicting values.

A social change program can often mean different things to different people, and rarely emerges as originally conceived. In addition, such innovations when first instituted may be very responsive to the social setting and as a result undergo major changes during implementation. Thus, it is important to analyze the stage of development of a particular innovation. If one has a field-tested, well-developed curriculum, the notion of a randomized trial may be more applicable. When we are considering, however, an innovation in its first stages of development, as BEEP is, we must be equally concerned about the changing structure of the innovation itself and its internal dynamic processes. The description of how a complex program of services operates in fact, not just on paper, becomes a prima research objective.

While our diagnostic services are rather easily specified and measured, our educational services are not so easily described. The BEEP education services are multi-faceted with initial emphasis on parent education and later heavy investment in a prekindergarten program for children. The theoretical basis of these services is drawn from early childhood research. This is, however, the first time that a comprehensive program of services of this type has ever been assembled in a public school setting. While these services are based on a theory about change, we have no prior evidence to indicate that we can, in fact, produce change or that the services are even responsive

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*Cohen, D. Social experiments with schools: What has been learned? Paper presented at the Brookings Institute conference on social experimentation, Washington, 1973.

to perceived family needs. Further, our "treatment" is not uniform across parents, but rather is individualized for each family through a complicated network of interactions between our best professional judgment of parents' needs and their own sense of personal needs. We offer many services, but the degree to which they are utilized and how they are utilized become important questions. If we cannot specify what is really going on within the program, then questions about program impact and its generalizability are without meaning. The importance of examining questions about the program content and its relevance, as well as how parents perceive and respond to it, cannot be overstated.

Thus we believe an introspective, formative analysis constitutes most useful and generalizable information as we work through the complex BEEP innovation. We can feedback this information to improve our own programs, and it should prove invaluable to others who might seek to initiate similar programs.

Assessment Procedures: We have already operationalized several procedures for gathering process data and others are under consideration. The list includes:

1) unobtrusive data on parent utilization of various BEEP resources:

   a) human resources -- The frequency and content of all contacts between BEEP staff and participating families are recorded.
   b) physical resources -- Complete records are kept on parental use of the toy and book library and the child care facilities.
   c) other -- Families are encouraged to use our 40 Centre Street location as a drop-in center and as a place for social gatherings of parents and children. The use of our resources for this purpose is also monitored.

2) informal feedback by parents to staff is recorded following every scheduled contact between BEEP staff and a family. The key points of the interactions and specific suggestions are noted.

3) formal feedback by parents -

   a) suggestion box -- A suggestion box in the BEEP Center provides one mechanism for parental feedback.
   b) parent group sessions -- On an occasional basis, parent meetings are held to provide us with feedback on our service programs. The minutes of these meetings record the issues discussed.

c) parent interviews -- Each family will be interviewed periodically by a professional interviewer. The purpose of this structured interview is to solicit from each family their candid responses to our services. This approach may generate feedback from individuals who are unlikely to respond to any of the other procedures outlined above. Some of the areas to be covered in this interview are as follows:

(i) why do parents join BEEP?
- initial expectations, hesitancies
- current expectations, hesitancies

(ii) parental response to BEEP Center
- accessibility of resources

(iii) parental response to frequent diagnostic exams
- helpful vs. unnecessary
- useful vs. harmful
- adequacy of explanation of exams and feedback of results

(iv) parental response to home visits
- helpful vs. intrusive
- perceptions of purpose of these visits
- comfort level

4) videotaping of home visits -- Since the home visit is the primary component of the BEEP parent education programs, videotapes of selected home visits will allow us to examine many issues related to this approach for delivery of services. Some of the issues that could be examined in a structured analysis are:

a) variability across teachers in style
b) adaptability of program content to the individual setting
c) ability of teachers to adapt personal style to family style
d) parent receptivity to the educational content of the home visits.

In addition these tapes should provide useful insight in attempting to develop a profile of a competent home visitor.

Each of these approaches has its own strengths and weaknesses. The emphasis also varies across approaches. Taken together they should provide a clear picture of the internal dynamics of BEEP from both our own point of view, and also from the family or consumer point of view. Implementation of the plan is a primary activity of the next funding period.

Analysis: In terms of analyzing this process data there are several concerns. Because of the "softness" of process data and

the limitations of our research methods, drawing valid inferences from a process evaluation is a difficult task. The possibility of biased data resulting from the choice of a research method or a particular researcher's point of view is quite real. It is for this reason that we have proposed multiple data collection strategies. This same rationale also suggests multiple analysis strategies. Each strategy has its own assumptions and invariably will have its own strengths and weaknesses. By choosing strategies judiciously, the pattern of results from the whole set of analyses will hopefully provide more insight than would be possible with any single analysis strategy. If a pattern of effects shows up across analyses, added credibility must be attributed to these results.

With this in mind, we will undertake three different analyses of the process data. First, we will detail a descriptive historical account of the major issues encountered in developing our service programs to be responsive to family needs. The focus of this analysis will be on general implications for delivery of comprehensive diagnostic and educational services.

Second, we will develop case studies of the BEEP programs in operation. With these case studies we will examine in depth the relationship between family styles and their responses to the services offered. We will examine family variables and service level as key factors in this relationship. Wherever feasible, the possibility of interactions among factors will also be explored. In addition to the process data, the process evaluator will be able to draw from the extensive operational records maintained on the BEEP child and his family constellation. This analysis should be of considerable interest because of its implications for the operation of programs similar to BEEP with diverse populations in diverse settings.

Third, we will undertake a descriptive statistical analysis (e.g., frequency distributions, contingency table analyses, basic statistics) of the unobtrusive center utilization data, the parent interviews, and the structured variables gleaned from the home visit videotapes. The thrust of this data analysis, however, is not toward rigorous statistical inferences or confirmatory data analyses which assume a priori hypotheses and explicit probabilistic statements. Rather, this approach can be characterized as an exploratory analysis or a hypotheses-generating experience.

Cost Analysis

During the next three year period the collection of cost data will continue. All data for delivery of the BEEP programs in the Early Infancy Phase should be collected by November, 1975. We will report an analysis of this data by April 1, 1976. The data on the Late Infancy-Toddler Phase should be compiled by May, 1977. We will report an analysis of this data by August 1, 1977.

Additional cost accounting procedures will have to be devised for the prekindergarten school program. In some ways these latter procedures will be more simplified since different education program personnel will serve the three levels. Supervisory personnel will still be responsible for all levels and therefore their costs will still be prorated.

List of Reports to be Completed During the Next Three Year Period

14½ month Evaluation	March 1, 1976
Cost Analysis for the Early Infancy Phase (0-12 months)	April 1, 1976
Preliminary Report on the Effectiveness of the Diagnostic Instruments	October 1, 1976
30 month Evaluation	July 1, 1977
Cost Analysis for the Late Infancy-Toddler Phase (12-30 months)	August 1, 1977
Preliminary Report on the Effectiveness of the Diagnostic Instruments (30 month data)	October 1, 1977

D. THE PROPOSED ADMINISTRATIVE WORK

With completion of enrollment, the major efforts for family recruitment, which were required during the current funding period, will no longer be necessary. We envision a shift in administrative priorities to seven functions.

We expect the ongoing work in the three areas of community relations, involvement with advisory groups, and pursuit of federal and state funding to consume a total of about twenty per cent of administrative time. In these areas, we recognize the importance of building a strong community support base by working closely with other town agencies, of drawing from the wealth of experience which our advisors make available, and of persuading the federal and state governments to support and join us on the exciting forefront of reorganizing educational and medical priorities.

We expect four other areas each to occupy about twenty per cent of administrative time. First, providing staff direction, coordination and support in each of the program areas will be vital to the success of the project. We believe that the individuals who staff a program represent critical ingredients for the program's success; the best of theory cannot be implemented without competent inspired staff. We were therefore very deliberate in personnel selection and were particularly concerned with the intangible personal qualities of the individuals hired. In the coming years we will be concerned about providing a kind of administrative leadership and atmosphere which will not only facilitate highly effective staff functioning, but which will also serve as a replicable precedent for other programs.

Another area for increased administrative priority in the coming years is establishing and reinforcing expectancies which enable more BEEP parents to become genuine partners, not just recipients, in the program operation. Our role as a catalyst for parent involvement is very challenging because the participating families form such a heterogeneous group that blanket policies and procedures almost never succeed in evoking positive responses from all families.

As the BEEP children grow toward the age of entry into school, the BEEP administrative priority of working closely with the schools becomes even more crucial. We hope to establish a strong supportive base in the schools by encouraging BEEP to be perceived as an integral part of the schools, as a project in which many school staff have key roles from the outset. As a former elementary school principal, the BEEP Director appreciates how difficult it can be to mobilize desired changes in curricula or teaching style with staff who do not see the importance of such adaptation.

The final administrative priority of dissemination will involve a major new effort, proposed in the following section as "Professional

Training Programs in Educational Readiness." In addition to this effort we propose to provide:

1. Operational manuals explaining how to perform the various BEEP diagnostic procedures (in progress).

2. Teacher training materials to guide home visits and parent education programs (in progress, see Appendix V).

3. Annotated lists of books and toys for parents and educators (in progress).

4. Videotapes of diagnostic procedures, educational training sessions, and conversations with noted child specialists (continuing).

5. Theoretical and research reports on the BEEP experience for presentation in professional journals and at professional conferences.

6. Articles for local and national press on a regular basis.

7. A collection of reprints on pertinent medical studies, developmental evaluation, and early childhood research. Loan copies to be circulated to local obstetricians, pediatricians and other physicians (in progress).

8. Distribution of selected materials to a mailing list of professionals and others who have asked to receive publications and materials. (To date the list exceeds 650 names.)

9. Scheduling of "professional days" once a month to accommodate the many requests to visit the BEEP Center and learn about the program at first hand.

10. Conferences for groups who have special interests. Examples this past year included visiting Russian educators and representatives from the Education Commission of the States.

E. PROFESSIONAL TRAINING PROGRAMS IN EDUCATIONAL READINESS AND DEVELOPMENTAL HEALTH

Introduction

The educational philosophy, its theoretical bases, the applied instruments, and the understanding of very young children in the Brookline Early Education Project ultimately must be shared with a wide range of professional personnel if the project is to have a constructive impact on the educational nurturing of children in America. The influence of BEEP will be a function of its communicability. The techniques of assessment and the components of education will need to find broad understanding both within and beyond the boundaries of Brookline. Within the community, it is crucial that professionals in education and health become acquainted with and, in fact, proficient in the total content of BEEP so that the project can become a natural and well-integrated part of the process of growing up in Brookline. Professional education will need to be invoked as the instrument for helping BEEP to become a part of Brookline and also as a means of potentiating the impact of the project throughout the rest of the country.

Professional educational programs will continue to include the distribution of background materials to interested professionals through reprints as well as reports by members of the BEEP staff. Physicians will continue to be informed of the progress of children in BEEP and will thereby receive some information on the kinds of developmental testing being utilized in the project. Health and educational professionals will continue to be welcome to visit BEEP on certain specified days to view videotapes, inspect the center, and participate in discussions of BEEP activities.

In addition to these mechanisms of professional education, the Brookline Early Education Project will organize and sponsor a series of workshops and formal teaching programs on developmental health and educational readiness. These programs will be established for professionals within Brookline as well as from other parts of the state and the country. There will be four basic series of workshops. Each of these will be aimed at a different kind of health or educational professional. Included will be: workshops for practicing pediatricians, for nurses (school, office, and clinic nurses), for professionals involved in early education (day care personnel, nursery school teachers, Head Start staff, kindergarten teachers and principals) and a comprehensive teaching program for pediatric residents at The Children's Hospital Medical Center. It is hoped that these programs

will not only help school personnel to see the health related issues in early education, but will also provide health professionals with an opportunity to gain greater understanding of developmental and educational readiness factors in very young children.

The workshops for educational personnel will involve a large number of individuals from within the Brookline School System. It is expected that these workshops will function strategically to facilitate the transition of children from BEEP into the regular Brookline Schools. If BEEP is to develop its position in a smooth continuum of education, it is essential that Brookline school personnel gain a rich background in such BEEP concerns as the heavy emphasis on developmental issues, the active participation of parents in education, and the close relationship between health and childhood function.

It is anticipated that the workshops for health professionals will represent stages in a process that will alter significantly some of the content of pediatric and nursing practice. First, it is hoped that these workshops will help develop the subject matter of a relevant school health program for infants, toddlers, and pre-kindergarten children. Moreover, it is anticipated that this kind of program will be felt in its effect on school health services for older children. That is to say that BEEP's strong emphasis on interdisciplinary effort, careful evaluation of neurodevelopmental intactness, and the assessment of function will set an example for the way school health programs could operate from kindergarten through twelfth grade.

The workshops for pediatricians in practice are aimed at exploring with physicians the content of their assessments of children prior to traditional school entry. Whether or not programs like the Brookline Early Education Project become disseminated throughout the country, community pediatricians will continue to constitute a critical resource in the establishment of accountability for optimal early childhood development. BEEP has the potential to have a major impact upon physicians. The pediatric workshops will be oriented toward the propagation of screening techniques and background knowledge concerning health related factors in educational readiness. Ultimately, one would hope, for example, that pediatricians could predict that an individual two-, three-, or four-year-old child might have trouble learning how to read by the time he or she reaches second grade. The diagnostic armamentarium for this kind of assessment may now exist in the fields of child development, education and psychology. A major function of BEEP would be to select, modify, and distribute this technology so that it can be integrated into the activities and assessments within a pediatrician's office. The teaching programs aimed at pediatric residents at The Children's Hospital Medical Center also will have their impact on the nature of pediatric practice. It is hoped that the early introduction of techniques of developmental assessment and early education will alter the priorities and enhance the skills of young pediatricians entering practice in the community.

For evaluation of children in BEEP, the interdisciplinary staff has been assembling diagnostic "packages" consisting of the best available instruments for assessing the health and function of two-, three-, and four-year-old children. In addition, a substantial diagnostic program has been assembled to look at educationally relevant health factors in infancy. These "packages" will form the core of workshops and teaching programs for professionals. The curricula for these programs will include surveys of the theoretical background or justifications for the measurements, instructions in the proper utilization of these assessments, and careful review of the interpretation of results and justifications for further referral or treatment of at-risk children.

The professional workshops are considered a high priority component of BEEP's activity. If self-replication is a central objective of the project, then the workshops can become a critical mechanism to meet this end.

Workshops For Practicing Pediatricians

A. Introduction:

A series of workshops will be designed specifically for community pediatricians. The group will include physicians in private practice as well as those practicing in neighborhood health centers and health maintenance organizations. A series of six full-day workshops will be held on Saturdays. These will emphasize the application of office techniques for the screening of health and development relevant to educational readiness. An attempt will be made to evaluate the impact of these workshops. A pre-test and post-test will be administered. In addition, there will be follow-up visits to the physician's office to help in the application of techniques discussed in the workshops.

B. Components of Curriculum
   1. Developmental Office Screening
      a. Motor Development
      b. Audition and Language Capacity
      c. Visual Perceptual Skills
      d. Sequencing Skills
      e. Social Development
      f. Attentional Capacity
   2. Neuro-Maturational Screening
      a. The "Age-Appropriate" Neurologic Exam
      b. Modification of Prechtl's Neurologic Examination of Older Children
   3. Sensory Screening
      a. Vision
         (1) acuity testing at various ages
         (2) assessing extraocular movements
         (3) examination of the eyes
         (4) understanding school related ocular abnormalities

b. Hearing
(1) acuity testing at various ages
(2) pneumatic otoscopy
(3) other ear examinations
(4) understanding school-related otologic abnormalities

4. Screening for Other School-Related Health Factors
a. Nutritional Evaluation
b. Psychiatric Screening
c. Musculoskeletal Screening
d. Hematologic Screening
e. Miscellaneous Screening
(1))toxicologic (e.g., lead) screening
(2) special ethnic screening
(3) metabolic screening
(4) occult infection screening
(5) dental screening
f. Screening Perinatal Medical At-Riskness

5. The Relevance of Abnormal Findings
a. The Natural Educational History of Handicapping Conditions
b. Learning Problems Associated with Specific Developmental Deficits
c. Psychiatric, Social, Cultural, and Legal Implications of Handicapping Conditions

6. Referral Resources and Their Remediating Technologies
a. Developmental Delay
b. Sensory Loss
c. Language Disabilities
d. Hyperactivity
e. Orthopaedic Problems
f. Early Education Curricula

C. Logistics
1. One Series of Six Weekly All-Day Workshops
2. Pre-Test-Post-Test Administered
3. Teaching by Staff and Consultants
4. Accompanying Manual and Background Reading Materials for Each Workshop
5. Possible Joint Sponsorship with American Academy of Pediatrics
6. Limit: 40 Participants

Workshop for Nurses

A. Introduction:

Using a format very similar to that of the physicians' workshops, a series of programs for nurses will be established. The nursing workshops will emphasize screening techniques for use in the office, the clinic, or the day care center. Special emphasis will be placed on nurse counselling and the role of nursing in educational assessment.

B. Participants
1. Nurse Practitioners
2. Office Nurses
3. Clinic Nurses
4. Health Center Nurses
5. School Nurses
6. Nursing School Faculty

C. Curriculum Components
   1. Basically Same as for Physicians
   2. Emphasis on Nursing Roles
   3. Emphasis on Counselling, Education of Parents of Children with Special Needs

D. Logistics
   1. One Series of Six Full-Day Sessions
   2. Pre-Test--Post Test
   3. Possible Joint Sponsorship with a School of Nursing, Massachusetts Chapter of A.M.A.
   4. Staff and Consultant Faculty
   5. Reading Materials and Manuals Available
   6. Limit: 40 Participants

Workshops For Early Educato

A. Introduction:
   The workshop for early educators will not be as extensive as that for physicians and nurses. It will consist of a two-day workshop emphasizing health issues that affect educational function. The emphasis will be on the role of the early educator as an observer of health and development.

B. Participants
   1. Day Care Personnel
   2. Nursery School Teachers
   3. Head Start Staff
   4. Kindergarten Teachers
   5. Elementary School Principals
   6. Special Education Staff

C. Components of Curriculum
   1. Observing Developmental Progress in an Early Education Setting
      a. Motor Development
      b. Language Acquisition and Skill: Reception, Integration, Vocabulary, Word-Finding, Syntax, Articulation
      c. Visual-Perceptual, Attentional, Sequencing Skills
   2. Health Observations in an Early Education Setting
      a. Nutrition
      b. Sensory Assessments
      c. Other Health-Related Issues
   3. Assessing the Health Needs of "Preschool" Children
   4. Looking at Social Growth, Mental Health, and Interactional Effectiveness of "Preschool" Children

D. Logistics
   1. One Two-Day Workshop
   2. Staff and Consultant Faculty from Education, Psychiatry, Pediatrics, Nursing
   3. Materials and Manual
   4. Limit: 100 Participants

Teaching Program For Pediatricians in Training

A. Introduction:

As pediatricians become increasingly involved in educational issues, it seems appropriate for training programs in Pediatrics to integrate issues of educational assessment into their curricula. As a part of the function of the Brookline Early Education Project in the next three years, assessment packages and background materials will be introduced into the Pediatric Residency Program at The Children's Hospital Medical Center. As a part of their residency training in the Out-Patient Department, they will be taught to use the diagnostic packages developed in BEEP while working in the clinics. In order to teach this, a series of videotapes will be made at BEEP and played back for residents before each clinic session. These videotapes will demonstrate the techniques of developmental evaluation, neurologic examination, and sensory screening in young children. It is also thought that the newborn neurologic examination should be introduced into pediatric training through such a teaching program. In addition to the videptapes, personnel from the BEEP staff will be asked to provide consultation and a number of teaching sessions for the pediatric residents. There will also be a collection of background reading materials and a manual developed for the residents.

B. Curricular Content -- Same as for Practicing Pediatricians

C. Logistics
1. Series of Six Teaching Conferences Repeated Three Times a Year
2. Videotapes of Examination Techniques Available in Clinic
3. Pre-Test and Post-Test
4. Collection of Reading Materials
5. Faculty from BEEP Staff and Consultant Group

III. THE REMAINING YEARS

In the years that remain after the proposed funding period, the tasks that must be accomplished to complete the BEEP plan are:

. to operate the prekindergarten school for one year of full enrollment (October 1977-June 1978 for about 200 children) and one year of reduced enrollment (October 1978-June 1979 for about 80 children). The last group of of BEEP children will be eligible for public school kindergarten in the fall of 1979.

. in the fall of 1977, the research team will continue monitoring the yearly testing program for entering kindergarten children. This will be the last occasion for kindergarten testing of pre-BEEP classes. The following two kindergarten classes will have a substantial representation of children with BEEP experience.

. the major in-school evaluation points (as Figure 1 shows) will occur in

- the fall of 1978 for kindergarten children born in 1973
- the fall of 1979 for kindergarten children born in 1974
- the early months of 1981 for second grade children born in 1973
- the early months of 1982 for second grade children born in 1974.

These evaluations will be conducted by independent evaluators under the aegis of the Brookline Public Schools. The BEEP research team will monitor the data collection procedures.

. the process of evaluating the results will have already begun in the proposed funding period. The data from the 14½ month and 30 month evaluation points will be undergoing various analyses.

. as the data from kindergarten and second grade evaluations are collected, they will be processed by the computer programs that will have been developed.

. throughout the later years, the reporting of results will become the dominant effort. As the two major operations of diagnosis and education phase out, reports will summarize the lessons learned in the years of experience.

As the information from each major evaluation point becomes available, it will be reported and related to previously reported information.

Various t areas have been described in earlier sections (pa s the data for each of these become available, re s will be prepared.

And finally, after all operations have been documented and the statistical results digested, a series of reports will summarize the findings and suggest recommendations in the areas of early detection, early childhood education and public education policy.

Ultimately, we believe the BEEP experiment can have pervasive significance. If it is successful, it will extend beyond the local community and can be expected to:

. influence national educational policy toward an increased concern for the earliest years of life;

. serve as a prototype for other communities who wish to start early childhood programs;

. change the distribution of resources within school systems by increasing funds for the preschool years;

. draw the family, schools and medical profession into a relation of shared responsibility for the early development of the child;

. shift the orientation of school and community health services toward prevention rather than remediation;

. influence the training of pediatricians by extending the range of their diagnostic tools for early recognition of incipient handicaps to learning;

. influence the training of teachers, paraprofessionals and parents to respond to the needs and interests of young children and to help them grow in competence and confidence.