# FAMILY ECOLOGY AND THE EFFICACY OF EARLY INTERVENTION



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BY

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**ABSTRACT**

Using Social Systems Theory as a theoretical basis for evaluation research, this study sought to examine the role family ecological variables play in the intervention process. 132 families actively involved in the Direct Home Services Early Intervention Program in Newfoundland and Labrador responded to questionnaires and provided information about themselves and their children. Program records were also accessed to obtain information pertaining to the child's handicap and developmental progress. The analysis considered the relationship between child developmental, program, and family ecological variables. Results indicated that family ecological variables significantly effect the intervention process and ultimately the developmental progress of the child.

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# CHAPTER 1

# INTRODUCTION

## A. Purpose

The purpose of this study was to examine the role family ecological variables play in the intervention process. The study undertook to determine if there was empirical support for the ecological approach to early intervention. This was accomplished by closely examining the relationship between child developmental, program, and ecological variables.

## B. Background to the Problem

During the last 25 years, many researchers in the field of early intervention have focused their efforts on trying to determine whether or not early intervention works. Despite the many efforts, the end results have been inconclusive and in some cases contradictory.

A critical analysis of the evaluation research conducted suggests that methodological flaws inherent in much of the research conducted is largely responsible for the difficulty faced by researchers attempting to address the efficacy question (Bricker, Seibert, & Casuso 1980; Soboloff 1981; Dunst & Rheingrover 1981; Simeonsson, Cooper & Scheiner 1982; Marfo & Kysela 1985). This observation coupled with the presence of a broad array of variables open to investigation has served to further compound the problem of evaluating programs.

While some researchers have successfully managed to group intervention programs, even within specific groupings a wide array of diversity exists (White & Casto, 1989, Marfo & Kysela, 1985). The setting of the program, the duration and intensity of the service, provision of support to families, and philosophical orientation are just a few examples of factors that can vary considerably from one intervention program to another. The difficulty in addressing the intervention efficacy question is obvious.

Dunst and Rheingrover (1981) concluded that the manner in which early intervention has been conceptualized has almost certainly been a major factor in determining evaluation approaches. The assertion that early intervention is efficacious typically begins with the belief that children provided with an intervention program will show progress that would otherwise not be made if intervention had not been provided. Such a position fails to acknowledge the impact of factors known to influence child development. In taking such a narrow approach one can only conclude that studies of early intervention have been based on a number of implicit assumptions that may not be as tenable as once thought. Dunst (1985) calls for a much broader view of intervention that takes into consideration the impact and influences of the child's environment. He argues that we should stop asking the question, does intervention work, and instead investigate the dimensions of intervention that are related to changes on different outcome measures.

Although the efficacy question has never been resolved, it has almost been accepted that intervention

programs have some value. This is particularly obvious in view of the support given to the Head Start Program. Conceptually, early intervention has a tremendous amount of potential and an underlying premise of this study is that intervention programs have positive attributes and indeed work.

In order for intervention programs to grow to better meet the needs of the children they serve, a change in research focus, away from the efficacy question has to occur. A new approach to intervention research that examines the extent to which specific variables are related to effectiveness in intervention is required. A need exists to better understand the extent to which intervention effects are different for different children and families, and what it is that makes the difference.

Theoretical support for such an approach to intervention research has its basis in Social Systems Theory (Bronfenbrenner, 1979). In basic terms, this theory implies that we cannot effectively examine intervention by viewing the interaction between the

child and the intervention as an isolated entity. Both the child and the intervention program function within an environment that is subject to a multitude of influences. In examining early intervention program characteristics, we must at the same time monitor child characteristics, family characteristics and all other variables that potentially impact the environment in which the intervention occurs. Early intervention takes place within a context which Bronfenbrenner (1979) refers to as the ecological environment. A fundamental tenant of his theory is that ecological units do not operate in isolation but interact both within and between levels so that changes in one unit or subunit reverberate and impact upon other units. Given that the intervention program is subject to the limits of the child and the circumstances of the family within which the intervention is provided, it is necessary to look at these elements in terms of the extent to which they are related to the efficacy question.

## C. Rationale

It is evident from the literature that ecological variables which impinge upon early intervention are critical with respect to child development. In researching this relationship, the approach has generally involved the identification and evaluation of a specific variable, and to date a number of these relationships have been demonstrated (Affleck, Allen, McGrade & McQueeney, 1982; Dunst, Trivette & Cross, 1986; Siegal, 1985). Given the basic tenet of Social Systems Theory which emphasizes the interactive nature of social systems, it appears logical that the next step in the research should undertake to look at ecological variables collectively in an effort to understand the relationship that exists among these variables and the outcome of intervention efforts. This study will seek to explore a combination of variables with a view toward identifying significant relationships.

## D. Research Questions

This study will seek to:

1. define the population of families involved in the program in terms of parent age, education level, income, and family size and the child's developmental level.

2. examine the expectations of parents involved in the intervention program.

3. examine the nature of the parent-child interaction.

4. examine parents' satisfaction with the program and their child's progress.

5. examine parents' perception of knowledge and competence gained from the program.

6. examine the relationships among the variables identified above such that the study will

yield a correlational analysis of demographic, child developmental, family environmental, and parental perception variables.

## E. Definition of Terms

1. Developmentally Delayed is a term used to describe children who manifest signs of slow development and language/communication problems, but do not exhibit clear signs of associated physical or biological impairments. Consequently the aetiology of the developmental delay is largely unknown (Bernheimer & Keogh, 1986). A significant proportion of the children in the Direct Home Services Program are identified in this category.

2. Direct Home Services Program is the name given to the early intervention program sponsored by the Division of Mental Retardation Services, Department of Social

Services, Government of Newfoundland and Labrador.

3. Child Management Specialist (CMS) refers to the intervention worker employed by the Department of Social Services to deliver the Direct HOme Services Program. These individuals are responsible for the delivery of the home based intervention program. In addition to the six week training program, each CMS holds an undergraduate degree(s) in the area(s) of education, psychology or social work.

## F. Limitations

As with most research, some caution must be taken when interpreting the results of this study. The following points highlight the primary research considerations when applying the data herein:

1. The questionnaires used in the study allow for a combined measure of facts, definitions, attitudes and perceptions.

2. The background and training of parent respondents varied considerably, creating the possibility of greater variance on more technical questions.

3. Respondents may inadvertently bias results in favour of answers that are perceived to support their opinions rather than fact. In the case of this study, parents were aware of the purpose of the study.

# CHAPTER II

## REVIEW OF THE LITERATURE

### A. What is Early Intervention?

Early intervention refers to a therapeutic or educational intervention that occurs during the first 36 months of a child's life. This intervention is of a planned nature aimed at eliminating a current or anticipated deficiency in the target population (Sigel, 1972).

That the term early intervention means many different things to different people should not come as a surprise given the broad expanse of programs that can potentially fall under its umbrella. Services provided in the past have ranged from spinning a child with cerebral palsy in a chair for a few seconds, to 40 hours a week of multidisciplinary efforts that begin at birth and last through to the time the child starts school (White & Casto, 1989). Home-based visits, medically oriented, and educationally oriented

intervention all fall under the umbrella of early intervention. The cost for such programs can range anywhere from a few hundred dollars to tens of thousands of dollars per child per year.

Simeonsson, Cooper and Scheiner (1982), have developed a definition of intervention which seemingly takes into account the diversity which exists across programs.

> Early intervention is a term that encompasses a range of stimulation and training activities for a variety of infants and young children. The particular type of program provided has often been a function of the perceived needs of children served and the philosophic orientation of the discipline(s) involved. (p.635)

Bailey and Bricker (1984) and Worley (1985) have proposed four general models of intervention. However, they are quick to point out that within these four models many combinations and variations exist. Their models are self-explanatory and include: home based;

centre based; home and centre based; and parent consultation model.

Marfo and Kysela (1985) have identified three distinct models of early intervention based on an analysis of 20 studies carried out in five countries over a period of 10 years. The three models include; The Parent Therapy, Parent Training/Infant Curriculum, and the Parent-Infant Interaction Models of early intervention. Each of the models involves the provision of support to families in dealing with the development of the handicapped child. However, each model of intervention emphasizes different aspects of the families needs. The following summary illustrates the shift in emphasis associated with particular program models.

The Parent Therapy Model focuses primarily on the parent as opposed to the child. Counselling and guidance techniques are used to promote competent parenting. Emphasis is placed on helping the parent deal with feelings associated with the birth of a handicapped child.

In the Parent Training/Infant Curriculum Model, parents are taught behavioral strategies for teaching their children specific skills. This didactic approach is aimed at improving the development of the child in several domains including motor, cognitive, language, social, and self-help skills.

The Parent-Infant Interaction Model also represents a didactic approach. The model is based on the notion that optimum development of the child is contingent upon the existence of a mutually satisfying relationship between mother and child. Emphasis is placed on training the mother to be sensitive and responsive to cognitive and developmental weaknesses as well as attending to and expanding the child's communicative responses.

White and Casto (1989) have taken a slightly different approach to the grouping of programs and as a result, have identified seven dimensions along which early intervention programs can vary. These include the setting of the program, the instructional grouping, the duration and intensity of the service, staffing,

the type of service, the degree of family involvement, and the philosophical orientation. It is interesting to note that the philosophical orientation dimension alone can represent a minimum of 16 possible approaches.

In summary, while it is generally accepted that the primary goal of intervention is focused on the optimal development of the infant or young child, the approach used is specific to the individual intervention program. In the final analysis it is difficult to present a single model of early intervention that is all encompassing from a program point of view.

## B. HISTORICAL PERSPECTIVE

The development of Early Intervention Programs for children has its historical beginnings primarily in Germany, Italy, England and the United States. The earliest efforts can be linked to the specific use of infant or nursery schools to help children of the poor. This approach had been advocated by Rousseau in the

1700's and by Pestalozzi in the 1800's (Rusk, 1967). During the early 1800's, Frobel established the first kindergarten in Germany. His efforts are regarded as the first truly "solidified approach to the direct instruction of young children" (Peterson, 1987; p.117).

In Frobel's kindergarten, emphasis was placed on training children between the ages of 3 and 6 in habits of cleanliness, neatness, punctuality, courtesy, deference toward others, language, numbers, forms, and eye-hand coordination. While Frobel's kindergarten was growing across Germany, several individuals were responsible for introducing a similar concept in the United States.

Margarethe Schurz, one of Frobel's former students, established the first kindergarten for German-speaking children in Watertown, Wisconsin, in 1856. Elizabeth Peabody established the first English-speaking kindergarten in Boston in 1860 (Peterson, 1987). During the later part of the 19th century and the early part of the 20th century, various private agencies, mothers' clubs and philanthropic groups

continued to promote and sponsor kindergartens in the United States in an attempt to solve the problems caused by industrialization and urbanization that affected young children. The goals of these programs included socialization of the children to middle-class norms and broader social reform. They also attempted to change family life in the slums through the education of parents. Those who worked in kindergartens visited the homes of children and instructed parents in the physical and emotional care of their children (Lazerson, 1972; Peterson, 1987).

Another well known European advocate for early intervention was Maria Montessori. Trained as a medical doctor she began her work with mentally retarded children in Italy. In 1907, she established the Casa di Bambini for deprived children in the basement of a slum apartment house in Rome. Her school was supported by private funds from local businessmen who hoped her program would prevent unruly children from vandalizing their property. Through her program, not only was vandalism curtailed, many children in the program learned basic academic skills such as reading,

counting and writing before they were 5 years old (Lazerson, 1972; Peterson, 1987). Montessori's success far surpassed the expectations of her sponsors and drew attention world wide.

Also in the 1900's, Margaret McMillan founded the first nursery school in London, England, for deprived children living in slums. Emphasis was placed on health as well as education issues and the philosophy of the school was based on the nurturance and concern for the whole child (Condry, 1983). McMillan's work had significant impact on services to children, and in 1918, the government in England established nursery schools as part of their national school system (Condry, 1983).

Early childhood education has been present in the United States for over a century, but unlike the programs that were developed in the 60's, the earlier emphasis had little to do with cognitive development. Due to an ongoing influx of immigrants to the United States, child care was being provided to minorities for the primary purpose of freeing parents to go to work

(Condry, 1983). However, things slowly began to change in the 1920's due to the influence of MacMillan and Montessori as well as the efforts of Stanley Hall and John Dewey. Hall and Dewey began a process which linked research and scientific thinking in psychology with education including early childhood education.

More specifically, Hall is credited with introducing the notion that educational practices should evolve from empirical, objective observations of the child. He introduced techniques for data collection, anecdotal records and the analysis of children's products (Peterson, 1987). Dewey, one of Hall's students, carried this approach a step further espousing that education should involve active learning and problem solving, social interaction, and learning by doing things that were of interest to the child.

The depression of the 1930's and World War II significantly influenced the nursery school programs of the United States. With the depression came an inability to fund programs however the need for women to work in the war industry and to fill vacancies left

by men brought with it the need for child-care services. Federal funds were again provided through the Lanham Act from 1940 to 1946 to establish educational and care services for young children. Many of these programs continued to run, after federal funds were removed, under the sponsorship of local government agencies and philanthropic organizations. However, many of these programs became exclusive to the affluent rather than the poor primarily because of funding pressures. As a result many poor families were unable to participate in these programs (Peterson 1987).

Dramatic changes in intervention began to occur during the 1960's as widespread poverty began to threaten the social and economic well being of the United States. There are two major forces in addition to the history of American nursery schools that are responsible for these dramatic changes. Research in the area of intelligence and developmental psychology, coupled with sociopolitical factors, significantly influenced the development of cognitively oriented programs for poor children.

During the 1950's the field of social science underwent a shift with respect to the Nature-Nurture issue in favour of the latter. Prior to this, an appreciation of the environment as a variable in the area of human development was discounted as having no basis. However, studies began relating changes in IQ to changes in socio-economic status thereby challenging the hereditarian point of view. The immediate environment of the child and, in particular, the nature of the mother-child interaction were thought to significantly impact intellectual growth (Hunt, 1961). Particularly influential among these studies were the findings reported by Skeels and Dye (1939). In their research, the effects of lack of stimulation on the development of children were shown to have lasting results.

Two infants in a state orphanage were committed to an institution for the mentally retarded because of their low IQ scores and behavioral lags. Six months after being placed on a ward with 'moron' women, testing indicated that their IQ's appeared normal. Upon examining the ward environment, it was discovered

that each baby had been adopted by a woman who in turn gave the child considerable attention and affection. On the basis of these findings, Skeels set up a controlled study involving a group of 13 orphans who were transferred to similar wards. All of the transferred children showed substantial IQ gains. By comparison, the control group of children who remained in the orphanage showed a decrease in IQ over the same time period. Skeels did a follow up study when these subjects became adults, and found important differences between the two groups. The median educational level achieved by the experimental group was 11.7 years, compared to 4.0 years for the control group. Of the control group, one-third were institutionalized at the time of follow-up, whereas none of the experimental group was institutionalized.

In addition to the research just summarized, theoretical work in psychology began focusing attention on the early childhood years as a time when special learning takes place. These theories, and especially the work of Hebb and Piaget, did not address issues of heredity or deprivation, and Hunt (1961) later

integrated these theories to argue that intelligence was plastic and that the environment of the child was a critical factor in his or her development.

The dramatic research of Bloom (1964), which subsequently resulted in the recognition of Critical Periods of Development, associated with the first five years of life, resulted in the development of a general theory of stability and change in human characteristics. Using longitudinal and cross sectional data to support his view, he proposed that development in intelligence, as in height and other human characteristics, was predictable and could be graphically presented as a curve of development. Bloom argued that just as people achieve half their adult height by 2 1/2 years of age, they achieve half of their adult intelligence by 4 years of age. Bloom also argued that the effect of the environment is greatest during the period of most rapid normal development, and its effect is least in the periods of least rapid normal development. In summary, Bloom believed that to ameliorate the effects of environmental deprivation, it

is necessary to intervene in the individual's development as early as is practically possible.

By the 1960's another line of research in the area of environmental deprivation suggested that socio-economic factors could contribute to language, achievement motivation, IQ, and other areas of development. A cultural deficit model was broadly accepted at this time as the bases for attempts to address the environmental deprivation of children from low-income families (Condry, 1983).

Concern over the detrimental effects of poverty on children's academic development also began mounting at this time. This was echoed in a growing realization by Americans that in the midst of their countries prosperity, large groups of Americans were impoverished. At the same time the civil rights movement resulted in broad social support among blacks and whites for racial and economic equality.

In attempting to deal with this problem, the United States government agreed that education was the

key necessary to break the poverty cycle. President Kennedy proposed a program aimed at the municipal level through which federal funds for anti-poverty programs would be channelled. Kennedy was unable to get the necessary Human Resources Development Act passed through Congress in order to have these programs implemented. However, following his assassination, President Lyndon Johnson took responsibility for the act by declaring a "War on Poverty" (Kunesh, 1990, p. 17). As a result, a Task Force on Manpower Conservation was launched, and its findings, coupled with the findings of the Presidents Panel on Mental Retardation, concluded that the failure of the poor to achieve middle-class incomes was attributed to a lack of education. Children from poor families were ill equipped to benefit from the educational program offered through public school. As a result, the enhancement of the intellectual development of children became a major goal.

Encouraged by the outcome of the Task Force, government responded by passing the Economic Opportunity Act in 1964. Its mandate included the

provision of aide to communities for the planning and administration of their own assistance programs for the poor. In light of the magnitude and implications of this Act, Child Development Specialists were among the slate of professionals consulted about subsequent social policy emanating from this Act. Their input became critical in terms of future direction. At the same time, Congress established the 1968 Early Childhood Assistance Act, which emphasized the needs of handicapped preschool children.

In February, 1965, President Johnson announced the establishment of Project Head Start, which would open its doors to children that summer. Three months after the announcement the first programs were underway. More than half a million children were enroled in 13,000 centres. The programs involved 41,000 teachers, 46,000 nonprofessional aides and 256,000 volunteers (Richmond, Stipek, & Zigler, 1979). This national program continued to develop despite governments long standing reluctance to interfere in the traditional domain of the family. Both community and government support have continued to keep it alive.

During the 1970's, these initiatives were strengthened and refined. In particular, the 1974 Economic Opportunity and Community Partnership Act revitalized Head Start and stipulated that ten percent of the children enroled must be handicapped (Bender, 1979). This was followed by what is currently the most significant federal commitment, the 1975 Education for All Handicapped Children Act (Public Law 94-142). This Act provided the impetus for state departments of education to provide a free appropriate public education to all handicapped children including the previously under served preschool population. It provided formula grants to states for funding direct services to handicapped children, and included preschool incentive grants based on the number of handicapped preschool children receiving special education (Bender, 1979, Neisworth, 1980).

In summary, the early intervention movement was founded as a result of a number of emerging forces. The apparent success of early intervention programs for the environmentally at risk and mildly handicapped children, plus relevant court cases and legislation,

and improvements in educational technology for severely handicapped children, all contributed to early intervention as we know it today.

While there were considerable advances in the treatment and education of these children, there did not follow a corresponding evolution of evaluation methods for documenting the efficacy of early intervention programs. When these programs first began to appear, it was probably enough to simply provide data showing that severely handicapped children were being served in programs offering some kind of stimulation or enrichment. Documentation of developmental gain was not necessary or, for that matter, even expected. It was enough that programs were based on humanitarian intent and that they had presumed value (Ackerman & Moore, 1976). In the next section, the issue of program evaluation and accountability will be discussed.

## C. Accountability and Evaluation

The next step in this review process calls for an examination of evaluation in early intervention. In tracing the historical evolution of early intervention, one quickly discovers that issues of accountability and evaluation assumed a particular direction the 60's and have for the most part remained unchallenged.

Carol Tingy (1989), makes an interesting point with respect to evaluation. Time, money, distance, length, weight, and volume can, using the appropriate equipment, be measured with precision for a variety of reasons; however, human characteristics and values cannot. These reasons may be grouped into four complicated clusters of unknowns that create the difficulty in determining: 1) exactly what is being measured, 2) the exact unit of the measurement, 3) how the characteristics to be measured are to be measured in relation to other characteristics, and 4) a standard that can be used to measure the entity for a variety of purposes and circumstances.

> Human behaviour and values are both complicated and interrelated; neither has discrete or consistent units. Therefore even when circumstances are similar, nuances of an event can cause the evaluation to change. The whole question of evaluating the effectiveness of early intervention programs segments of programs can change, depending on who is interested and for what reason, (Tingy, 1989; p. 95)

Evaluation research initiated during the 60's and 70's was designed to answer two questions: the first being, does early intervention work; and secondly, does it work well enough to justify the expenditure required. The growing need to justify the implementation and/or continued support of social action programs, especially in times of fiscal austerity became an important consideration given that the provision of services to children and their families represented government expenditures in the billions of dollars annually. Taxpayers and policy makers were legitimately concerned with whether these programs succeeded or failed and whether they were

worth the cost. Based on this frame of reference, which realistically reflected the mind set of politicians, social scientists and the consumers of the 60's, one can easily conclude that evaluation in early intervention was critical as a policy tool. Though one might question the ethics of such a position, one hardly needs to belabour the point that the purpose of evaluation can be two-fold. It can be looked upon as a means of addressing accountability issues that included questions on the cost effectiveness of programs. Secondly, it can be used as a tool to provide information or knowledge to those who are interested in finding relationships regardless of whether or not dollars should be spent. Simeonsson and Wiegerrink (1974) refer to the notion of efficiency which for them is a measure in which a result or product is compared with cost in terms of energy, time and/or money expended. As it relates to programs for the children with handicaps, it is thought of as the greatest amount of developmental change which can occur in children given a certain program and time.

It is obvious that much of the research done in the initial years of intervention, and some of what continues to be done, reflects concern for the need to demonstrate to people that intervention really does work, and therefore justifies the monetary expenditures involved. Research conducted in the 60's clearly indicated that outcome measures were seriously biased by self-fulfilling prophecy and expectancy.

In response to pressure for accountability, the most often used outcome measure over the 20 year history of childhood intervention programs has been the IQ score (Zigler & Trickett, 1978). Through their research, Zigler and Trickett (1978) summarized a number of factors which resulted in the continued use of the IQ score as a measure of efficacy. Standardized IQ tests were well developed with documented psychometric properties. They were easy to administer, and no other measure had been found to be related to so many other behaviours of theoretical significance. Since early childhood intervention programs were popularly regarded as efforts to prepare children for school, the fact that the IQ score was the best

available predictor of school performance was a particularly compelling rationale for its use as an assessment criterion. The final reason for its attractiveness had to do primarily with the interests and desires of those responsible for initiating the intervention programs to show they were beneficial. The work of Hunt (1961) and Bloom (1964), did much to spur the notion that IQ could be improved, and provided much of the reason for pursuing this method of evaluation. Methodologically, the over concern with accountability ultimately resulted in evaluation procedures which compared program recipients to non-program recipients on the basis of only one outcome measure. This evaluation procedure was designed initially for intervention programs that were designed for socially and culturally disadvantaged children. Intervention with children who were handicapped, by virtue of the fact that it followed the Head Start Model, blindly used the same outcome measures in evaluation. Several researchers have identified problems associated with the pursuit of this evaluation approach (Bricker, Bailey, & Bruder, 1984; Dunst & Rheingrover, 1981; Simeonsson, Cooper, & Scheiner, 1982).

In conducting evaluation research that involves a group design, one of the first problems encountered is determining a basis for matching subjects. In the case of early intervention research, the problem facing the investigator is the decision to match on the basis of developmental quotient, diagnostic label, chronological age, or the degree of sensory or motoric impairment. The list can undoubtedly be extended to include many more variables, however the point is that the procedure in and of itself represents a major methodological concern.

According to Simeonsson et al (1982), variability of criteria for success and methodological difficulties have made the determination of effectiveness in early intervention problematic. The difficulties associated with the assessment of infants is enhanced when the additional factor of a handicapping condition is added. Some of the limitations identified by this researcher include definitional issues, the nature of the instruments used, characteristics of the child and the examiner, and the appropriateness of the analysis.

A more specific focus on limitations in relation to the nature of the instrument brings us once again to the concerns around using IQ test results as outcome measures. Despite the many arguments that have lent support to the use of IQ tests, there have emerged an equally impressive number of arguments which challenge this position. Probably the strongest of these stems from the fact that the target population of intervention represents a breadth of potential sufficient to expect a reasonably wide range of individual outcomes. For many reasons, standard intelligence tests are inappropriate measures of change for this population which is known to fall three to five standard deviations below the normal population mean. Since normative data on the handicapped population is non-existent one readily questions the actual validity of its use.

Dunst and Rheingrover (1981) present an extensive review and analysis of studies designed to assess the impact of early intervention programs with biologically impaired infants (see also Bricker, Bailey and Bruder, 1984; Simeonsson, Cooper, & Scheiner, 1982). Their

review focused on how well the experimental design employed in these studies controlled for threats to internal validity. Dunst and Rheingrover focused on validity threats because without proper controls over competing explanatory variables, the findings of a study are generally uninterpretable from the standpoint of implicating a particular treatment for the effects observed.

Their review included 49 studies that were conducted between the years 1967 and 1980. The major conclusion of the authors' analysis was that the majority of studies (over 80%) were so methodologically flawed that the findings were fundamentally impossible to interpret. Consequently, Dunst and Rheingrover concluded there is little scientific evidence to support the contention that early intervention is efficacious with biologically impaired infants. It should be made explicit that the authors did not conclude that early intervention does not work. What they suggested was that researchers have failed to conceptualize and conduct experimental evaluations in a manner that permits them to document the efficacy of

intervention efforts. Therefore, the manner in which early intervention has been conceptualized has almost certainly been a major factor toward the creation of numerous problems in assessing the impact of early intervention programs.

Since the early 1980's, the Early Intervention research Institute at Utah State University, Logan, Utah, has collected more than 2,000 different articles addressing the effectiveness of early intervention programs (White & Casto,1989). The articles presented program descriptions and philosophical statements however in some cases they did not actually report any data. Out of the 2,000 articles, approximately 600 articles reported actual data of 400 studies of early intervention research. These have been systematically analyzed and summarized by White and Casto (1989). Each of the articles was carefully coded as to the type of intervention provided, the nature of the participating children and the families, the type of experimental design used, the outcomes measured, and the results. The analysis pointed out that children who participated in interventions ranged from low birth

weight infants with no discernable delays to profoundly retarded deaf-blind infants and preschoolers who often spent their lives in custodial institutions. Frequently, applied interventions ranged from rocking low birthweight babies on waterbeds in neonatal intensive care units to comprehensive, interdisciplinary, educational, psychological, and medical intervention services beginning at birth and lasting through the preschool years. The annual cost of early intervention programs ranged from a few hundred dollars to tens of thousands of dollars. Given this range, in terms of type and comprehensiveness of intervention programs, and the variety of populations of children served, the author concluded that it is easy to see how simple answers to the question of efficacy can be incomplete and misleading. This is particularly obvious given that much of the previously completed research did not meet rigid criteria for scientific research.

In another study by Carl Dunst (1989) a total of 57 studies were reviewed. This review served to further demonstrate metholodological problems with the way in

which investigations of Early Intervention Programs were conducted. The comparison of the studies included an analysis of the type of experimental design employed. Three design types were considered: pre-experimental, quasi-experimental, and true experimental. Nearly half (49%) of the studies used pre-experimental design, and only 10 studies (18%) used true experimental designs. Campbell and Stanley (1966) describe seven major concerns that pose threats to the internal validity of evaluation efforts. These include: history, maturation, testing, instrumentation, statistical regression, selection, and subject attrition. Control of validity threats increase as one moved from pre-experimental to true experimental designs.

In addition to concern over the type of design employed, none of the 57 studies included subjects that were randomly selected from a larger population of handicapped children. Only in the 10 true experimental design studies (18%) was some type of randomization procedure used to assign subjects to experimental and control conditions.

The use of large sample sizes increases the power of tests to predict significant differences (Campbell & Stanley,1966). The studies reviewed by Dunst fell significantly short in this regard. On average only 10 to 30 subjects were included in the experimental groups of the various studies. The true experimental designs included only about 10 subjects in the treatment condition.

Very few studies provided information about the subjects' level of intellectual functioning. Developmental and/or mental ages of the subjects were not reported in the majority of studies and in some cases chronological ages were not reported.

Outcome measures were used with the exception of the quasi-experimental multiple element design studies. Between 50% and 90% of the investigations used standardized intelligence tests as outcome measures. On average, one-third of the studies used other psychometric instruments as outcome measures in addition to or instead of IQ tests. Between 33% and 50% of the studies, with the exception of the quasi-

experimental nonequivalent control group, employed some type of project developed scale or checklist. Taken together, the 57 studies used a wide range of dependent measures that assessed a host of different child outcomes, including cognitive, motor, language, social adaptive, and intellectual performance.

Dunst pointed out that several of the outcome indices used to assess child progress may not have been appropriate for a number of reasons. He states that the use of gains in developmental ages between measurement occasions in the pre-experimental one group pretest-posttest design is highly questionable, in as much as changes in performance would almost certainly have occurred in the absence of the provision of intervention services. That is, children would have been expected to have shown developmental gains due to either maturation or nonintervention-related experiences. Thus any intervention gains would be expected to be confounded with these as well as other variables.

According to Dunst, failure to establish the reliability of the dependent measures is perhaps the most striking methodological problem in the 57 studies. He pointed out that very few studies (16%) established interrator reliability. With the exception of the true experimental design, persons aware of the purpose of the study and/or persons providing intervention were generally the same individuals collecting outcome data. As a result, the potential becomes much greater for biased results.

With the exception of those studies employing a true experimental design, between 25% and 63% of the studies did not even use any type of statistical techniques for judging the efficacy of intervention. In a number of other studies statistically significant results were reported but, the methods used to assess the efficacy of the interventions were not described. Dunst found that if a study did not use a statistical analysis, the investigator was more likely to report a positive finding.

In summary, Dunsts' findings paint a rather bleak picture. The majority of the 57 studies analyzed had major methodological problems. Many studies were poorly designed, failed to control for extraneous explanatory variables, did not provide adequate information about the characteristics of the subjects, failed to establish the reliability of the dependent measures, and failed to use scientifically acceptable methods for discerning the impact of the intervention efforts. These problems raise serious questions about the internal and external validity of the studies. On methodological grounds alone, nearly 75% of the investigations reviewed were seriously flawed for one or more reasons.

Scrutiny of Early Intervention Programs has been carried out for over two decades. As of yet a consensus about their effectiveness has not been reached. Based on the reviews of intervention studies presented, there appear to be at least two factors responsible for the controversy. The first is the use of different criteria for gauging program success. The

second pertains to the use of methodologically unsound program evaluations.

A third reason for dispute, according to Bricker, Seibert, and Casuso (1980), is directly related to the inappropriate nature of the question under investigation. "To ask whether early intervention is effective is to ask a question so general that it is almost meaningless" (Bricker, Seibert, & Casuso, 1980 p. 226). According to the authors, the question fails to consider the reality that any given intervention will not succeed with all families or show the same kinds of effects on all participants.

Increasing public support for Early Intervention Programs continues to raise questions about efficacy and accountability (Dunst, 1985; Marfo & Kysela, 1985; Simeonsson, Cooper, & Scheiner, 1982). However researchers in this area are now suggesting that such evaluations should target the broader goals of intervention and not just child developmental gains as has traditionally been the case (Dunst, 1985; Marfo & Kysela, 1985). By emphasizing short-term gains in

child developmental progress, researchers have failed to recognize the long-term importance of positive changes in variables related to the child's social-emotional and cognitive environment: parental attitudes and coping skills; parent-child and overall family interactions; parental instructional competence; and utilization of relevant community support services. Because these mediator variables are more likely to demonstrate greater sensitivity to short-term program impact than child developmental status variables, emphasis is necessary to place the value of intervention in a broader perspective. Additionally, it is also necessary to ensure that the variables upon which child developmental progress hinges are adequately monitored (Marfo & Kysela, 1985).

Parents and family environments serve as critical mediators between the intervention program and the child (Marfo & Kysela, 1985). As a result, a comprehensive evaluation of any intervention program should include measures of what changes occur in parents and in the child's overall family ecology. The work of ecological theorists (e.g., Bronfenbrenner,

1979; Cochran & Brassard, 1979) and adherents of social systems theory (e.g. Dunst & Trivette in press, Dunst, Trivette, & Cross, 1986) is causing early interventionists to reappraise their methods and redefine their target populations.

In the following section theoretical support for altering the approach to intervention research, to look beyond the child to include the environment in the evaluation process, is presented.

## D. SOCIAL SYSTEMS THEORY

Theoretical support for the notion that success of early intervention is a consequence of the interaction of a broad range of variables is demonstrated through the ecological perspective, conceptualized by Hobbs (1975). The process he presents focuses on exchanges between the child, the settings in which the child participates, and the significant individuals who interact with the child.

The manner in which human behaviour is affected, both directly and indirectly by persons and events in different settings, is a major focus of an ecological perspective of development. Specifically, there is "concern for the progressive accommodations between a growing human organism and its immediate environment, and the way in which this relation is mediated by forces emanating from remote regions in the larger physical and social milieu" (Bronfenbrenner, 1979, p.13). Bronfenbrenner (1979) called these mediating influences second-order effects to indicate that factors beyond the developing person and the immediate setting set the agenda for the types of interactions that are likely to be used by caregivers with their children. According to Bronfenbrenner (1979),

> whether parents can perform effectively in their child-rearing roles within the family depends on role demands, stresses, and supports emanating from other settings.....parents' evaluations of their own capacity to function, as well as their view of their child, are related to such external factors as flexibility of job schedules, adequacy of child care arrangements, the presence of

> friends and neighbours who can help out in large and small emergencies, the quality of health and social services, and neighbourhood safety. The availability of supportive settings is, in turn, a function of their existence and frequency in a given culture or subculture; (p.7).

In illustrating the concept of ecological influences, Bronfenbrenner (1979) conceives ecological units or systems as a nested arrangement of concentric structures embedded within one another. At the inner most level of the concentric structure, is the developing child and his or her family. The family unit is embedded in broader ecological systems consisting of blood and marriage relatives, friends, neighbours and acquaintances. These units are embedded further in larger social units including neighbourhoods, churches, social organizations, the parents place of work and school. That these ecological units do not operate in isolation, but interact both within and between levels such that changes in one unit or subunit impact other units is the basis of Social Systems Theory.

A fundamental tenet of the model is that individuals interact both within and across these systems so that events occurring in different systems impact the behaviour of members in other systems. When applied to early intervention research, this model suggests that when identifying caregiver styles of interaction, in addition to individual parent and child characteristics other factors that affect parenting behaviour need also be examined.

Dunst & Trivette (in press) have summarized evidence from a number of sources indicating multiple determinants of parental interactive styles used with normally-developing children. These include child age and sex, maternal age, marital status, social economic status and parental belief systems. Their review also identified maternal health and well-being, family roles, family climate, and support from friends, neighbours, church and others as influencing caregiver styles of interaction.

In addition to reviewing the literature, Dunst & Trivette (in press) conducted four studies which

clearly demonstrated that factors beyond the individual characteristics of family members including intrafamily and informal support, family well-being, and child-related personal well-being, most notably accounted for independent and statistically significant amounts of variance in caregiver interactional behaviour.

It follows logically that intervention does not occur in isolation. Instead, intervention occurs within a context such that it is subject to the limits of the child, and the circumstances of the family within which the intervention is provided.

According to Cochrane and Wooleuer (1983), the view of the ecology of human development as a set of nested structures leads one to conclude that it is not enough to aim at individuals perceptions of themselves or others in isolation. It is important to keep all aspects of family ecology in mind while engaging in both the development and evaluation of intervention. Examinations of the extent to which ecological variables impact intervention have been limited up to this point in time. However, there is strong evidence

to support the conclusion that ecological variables do have a critical role to play in intervention.

# CHAPTER III

# METHODOLOGY

## A. Subjects

One hundred thirty two families of developmentally delayed infants and preschool children voluntarily served as the subjects in this study. The families represent a sample drawn from the Direct Home Services Early Intervention Program (DHSP). The criterion for selection was to ensure that each of the families was active on the program caseload.

At the time of data collection the mean chronological age of the children was 48.5 months (sd. 14.7; range 11-82 months). The average amount of time spent by children in the intervention program was 20.1 months. A breakdown of subjects by sex indicated 42.4% were females, and 57.6% were males. 85.5% of the children were considered by their parents to fit the mild to moderate level of developmental delay, and a breakdown of the various conditions associated with the

delay are presented in Table 1. For the vast majority of children (64.9%), the clinical label of developmental delay (DD) was indicated on program records. Of the more specific conditions indicated Down Syndrome, Cerebral Palsy and Spina Bifida were the most prevalent.

**Table 1. Breakdown of Children by Clinical Label**

| LABEL | % OCCURRENCES (N=132) |
|---|---|
| Developmental Delay | 64.9 |
| Down Syndrome | 13.0 |
| Cerebral Palsy | 8.4 |
| Spina Bifida | 6.9 |
| Hydrocephalus | 2.3 |
| Multihandicapped with Visual Impairment | 1.5 |
| Cre du Chat | 0.8 |
| Hypoglycaemic | 0.8 |
| 18Q Syndrome | 0.8 |

## B. Demographic and Family Characteristics

An overview of parent characteristics is presented in Table 2. On average the parents of children in the study were in their early thirties with an age range of 20 to 53 years. Of the 132 families surveyed, 22

failed to disclose their marital status. Of those who did report, 90 were married, 15 were single parents, and 5 were separated or divorced.

It was observed that more fathers than mothers had university education, however the reverse was true of parents having completed high school. The overall picture suggests that parents were not well educated with only 43% of mothers and 37% of fathers having completed high school.

Family size varied form 1 to 14 children with the average being 3 children. Family income was disclosed by 99 families.

Overall income levels were considered low as a substantial number of families (57.6%) indicated earnings of below $15,000. per annum. Most families involved in intervention lived in rural communities across the province, with 60% residing in communities with a population of less than 5000.

In the final analysis it appears that the families involved in intervention are clustered at the lower end of the socioeconomic continuum.

Table 2. Family Demographic Characteristics

| Mean Ages in Years | Mean | Std. Dev. | Range |
|---|---|---|---|
| Mothers (n=100) | 30.9 | 6.5 | 20.0 - 52.7 |
| Fathers (n=91 | 33.9 | 6.8 | 21.2 - 52.5 |

| Education | % of Mothers (n=107) | % of Fathers (n=97) |
|---|---|---|
| Grade School | 31.8 | 26.8 |
| High School | 43.0 | 37.1 |
| Vocational Training | 16.8 | 22.7 |
| University: Undergraduate | 6.5 | 9.3 |
| University: Postgraduate | 1.9 | 4.1 |

| Family Income (Thousands of Dollars) | (N=99) |
|---|---|
| 10 or less | 39.44% |
| 10 - 15 | 18.2% |
| 15 - 25 | 25.3% |
| 25 - 40 | 10.1% |
| Above 40 | 7.1% |

| Size of Community by Population (Thousands) | (n=103) |
|---|---|
| Up to 5 | 60.2% |
| 5 - 15 | 14.6% |
| 15 - 30 | 5.8% |
| 30 - 125 | 19.4% |

## C. The Intervention Program

In Newfoundland and Labrador, the Provincial Government, through the Department of Social Services is responsible for the delivery of an in-home training program for families with children who are developmentally delayed.

The Direct Home Services Program (DHSP) provides services to children who are developmentally delayed for a period lasting from birth to 7 years, or until the child has been successfully prepared for entry into a more advanced educational program. Any child who is functioning significantly below his age level in any of five developmental areas: cognition; self-help; motor; language; and socialization, is eligible for entry into the program. Early intervention with infants who are considered to be at high risk for developmental delay are also assessed for inclusion in the DHSP.

As its name implies, the intervention program is delivered in the child's home. As a result, the child's first and primary teacher, the parent, is

utilized in service delivery. In addition, the skills acquired in the process remain in the home after the program is terminated, and may often be applied to behaviour problems experienced with other children in the home.

The primary goal of the program is to help each child reach his or her fullest potential in each of the developmental areas mentioned above. Secondary to this goal is the reduction and removal of maladaptive behaviours which would interfere with entry into a regular school setting.

Implementation of the program involves sending the intervention worker into the home of each family. During the first home visit, goals of the program are explained and the child's functional level is determined using the Alpern-Boll Developmental Profile. During the second home visit another more thorough behavioral examination of the child's abilities is conducted with the Portage Project Checklist (Sturmey & Crisp; 1986). The results of this examination are combined with the results of the Alpern-Boll so that by

the third home visit, the assessment results are explained to the parent(s). Having determined which behaviours are in the child's repertoire, the worker in cooperation with the parent selects one or two emergent behaviours which will then be taught by the parent during the week. The intervention worker models the procedure to be used by the parents to teach the child during the week and explains the record keeping procedure.

The teaching process learned by the parents relies heavily on precise but simple record keeping so that the parent and the worker alway know what has been accomplished and what can be taught next. Therefore, accurate records are an integral part of the program, providing for ongoing program planning and program evaluation.

The Alpern-Boll Developmental Profile is administered at 6 month intervals to provide an index of program success. Post termination follow-up involves the re-administration of the Alpern-Boll as well as a parent satisfaction questionnaire at yearly

intervals up to 5 years. The worker spends approximately one and a half hours per week with a case load of 13 children.

## D. Research Design

One hardly needs to belabour the point that traditional research designs and procedures suitable for laboratory research are very difficult to apply in program evaluation of social action programs such as early intervention with handicapped and at risk preschool children. In part, this results from the fact that the intervention is geared toward a specific population in need of such a program. Secondly, it is not always appropriate from an ethical standpoint to assign subjects to experimental or control groups with control subjects being deprived of intervention completely. The research design employed in this study was dictated by practical issues such as those cited above. As a result, a correlational design was utilized to examine the relationship among variables of child developmental level, parental characteristics, family ecological variables, and program variables all

of which were obtained through program records and parent self-report surveys.

## E. Instruments and Procedure

During the course of the data collection, 132 parents were asked to complete 5 independent questionnaires. The Parent Evaluation Questionnaire (PEQ) was the first to be sent out, and was mailed directly to families in the intervention program. The PEQ was accompanied by a letter of explanation prepared by the Provincial Coordinator of the DHSP (see Appendix A and B).

Three weeks after the PEQ was sent, another package containing 4 additional questionnaires was distributed to parents by the intervention workers. The 4 questionnaires included: The Home Screening Questionnaire (Coons, Gray, Fandal, Kerr, & Frankenburg, 1981); The Family Resources Scale (Leet & Dunst, 1985); The Child Expectation Scale (Dunst, 1984); and the Parent-Child Play Scale (Dunst, 1986). Intervention workers were permitted to provide

assistance to parents requiring help with the questionnaires however they were not permitted to assist with the actual selection of responses to specific questions.

In addition to the self-reporting survey type instruments described above, additional information regarding families in intervention was retrieved directly from program records. Dates of birth, clinical/diagnostic labels, program status and duration, as well as longitudinal developmental data from Alpern-Boll assessments was procured for all the children in the intervention program. The following section describes in detail each of the instruments utilized in the study and procedures for their administration.

## ALPERN-BOLL DEVELOPMENTAL PROFILE

The Alpern-Boll Developmental Profile was used to obtain longitudinal developmental data on all children in the study. Actual assessment results were retrieved from program records. Two sets of scores were

obtained: scores from point of entry into the program; and from the last assessment prior to the onset of this study.

The Alpern-Boll Developmental Profile was designed to provide a multidimensional description of the child's development without bias to sex, race or social class (Alpern, 1972). The profile represents an inventory of skills which have been designed to assess the child's development from birth to pre-adolescence. The inventory provides an individual profile which depicts a child's developmental age in five developmental areas: physical; self-help; social; academic; and communication. The Developmental Profile consists of 217 items arranged according to the five domains described above. Each of the scales has the items arranged in age levels which proceed in 6 month intervals from birth to 3 1/2 years and proceed thereafter by year intervals.

Administering the test is done by determining whether the child has the skill described in each of the 217 questions on the five scales. If the answer is

"yes", it is considered a "pass". If the answer is "no" it is considered a "fail". The "pass" and "fail" is then recorded on a scoring form by simply circling the corresponding numeric. The numerics indicate how many months credit the child gets for that item. When the questioning is over, the scorer finds the highest or "oldest" age section in which the child has passed all the items. This is referred to as the "basal level". The basal credit for each scale is written in the scale summary. In addition, the sum of all the digits circled in the "pass" column beyond the basal level is also included in the scale summary as an additional credit. These two figures are then added to produce the child's developmental age in the tested area. When the child's developmental age in all five skill areas has been scored, they are recorded on the front of the scoring form and make up the child's developmental profile.

An IQ equivalency score can be obtained from the Developmental Profile, however the author of this scale cautions that in no way can it be considered a substitute for a comprehensive intellectual evaluation.

The IQ equivalency can be computed by converting the child's chronological age (CA) into months and determining the academic age (AA) in months from the academic scale. The AA is then divided by the CA and multiplied by 100 to produce an intelligence equivalency score.

A 1971-72 standardization study provided normative information on 318 items for over 3000 carefully screened "normal children" through maternal interviews. An item analysis reduced the items to 217 and provided five scales empirically demonstrating no bias by sex or race. Both scorer reliability and test retest studies demonstrated the instruments extremely high reliability. A group of validity studies also affirmed the instruments usefulness.

## ALPERN-BOLL DEVELOPMENTAL PROFILE - DATA REDUCTION

Two types of child developmental indices were computed from the Alpern-Boll scores: The Developmental Delay severity Index (DDSI) and the Relative Developmental Gain Index (RDG). The DDSI was based on

the entry level Alpern-Boll scores and represents the difference between developmental age divided by chronological age. The RDG was based on the entry level and the most recent developmental age scores, and represents the current developmental age minus the developmental age at program entry, divided by duration in intervention.

## PARENT EVALUATION QUESTIONNAIRE

The Parent Evaluation Questionnaire (PEQ) was designed to evaluate parents perceptions, impressions, and satisfaction with the Direct Home Services Program as well as their awareness of issues relevant to their child's handicap. The PEQ is a self-reporting survey type instrument that is comprised of two parts.

Part one is a fact sheet that asks parents to provide biographical information regarding their child, other family members and themselves. General information including: community size; annual income; and marital status was obtained. Parents were also

asked to rate their child's development level using a four point scale: mild, moderate, severe, or profound.

Part two of the PEQ was designed to evaluate a number of aspects of the intervention program based on the perceptions of the parents who were involved in the intervention. Part two was arranged into four sections which addressed specific elements of the program. Section 'A' evaluated the manner in which parents became aware of their child's developmental problem as well as the extent to which they were satisfied with the information provided. This section also addressed how parents became aware of the DHSP and the support groups with which they were affiliated. Section 'B' evaluated parents initial and current impressions of the DHSP as well as their satisfaction with their child's gain and methods used to change behaviour. Section 'C' represented an evaluation of the DHSP Worker based on an eight item scale. The scale focused on the worker's ability, sensitivity, knowledge and rapport with the family. In section "D" parents were asked to indicate how much knowledge and specific skills they felt they had gained from their

participation in the program. They were also asked to rate their satisfaction with the amount and quality of attention paid to each of the five developmental/skill domains and their child's progress in each of the domains. The final section 'E' of the PEQ evaluated whether parents had ever participated in a group based parent training workshop, whether they would be interested in doing so, and whether they would recommend DHSP to other parents with developmentally delayed children.

## PARENT EVALUATION QUESTIONNAIRE - DATA REDUCTION

In order to obtain information pertaining to parent's evaluation of the intervention program, a series of composite scores were derived from clusters of items within the PEQ. As a result three indices were composed including: a parent rating of the intervention worker; a parental index of perceived knowledge gain; and a parental index of satisfaction with the intervention program and child progress.

The section representing parental rating of the intervention worker consisted of eight items. Response options of inadequate, poor, fair, good, and excellent with associated weights of 1, 2, 3, 4, and 5 respectfully were assigned to these items. The minimum and maximum obtainable score for this section was 8 and 40. Translated this implies that the higher the overall score, the more positive the parents rating of the intervention worker.

The Parental Index of Perceived Knowledge Gained was derived from 16 items in the PEQ. Response options of gained nothing, gained a little, gained some, gained a lot, and now an expert, with associated weights of 1, 2, 3, 4, and 5 respectively were assigned to these items. The minimum and maximum obtainable score for this section was 16 and 80. Translated this implies that the higher the overall score, the more perceived knowledge gained by the parents.

The Parental Index of Satisfaction with the Program and Child Progress consisted of 12 items. Response options of extremely dissatisfied,

dissatisfied, neutral, satisfied, and extremely impressed, with associated weights of 1, 2, 3, 4, and 5 respectively were assigned to these items. The minimum and maximum obtainable score in this section was 12 and 60. Translated this implies that the higher the overall score, the higher the degree of satisfaction.

## THE HOME SCREENING QUESTIONNAIRE

The Home Screening Questionnaire (HSQ) is a self-reporting survey type questionnaire consisting of multiple choice, fill-in -the-blank, and yes/no questions. It also includes a toy checklist on which parents are asked to indicate those toys which are available to the child in the home.

The HSQ was written at 3rd or 4th grade reading level based on the Fog Index (Gunning, 1968). Depending on parent's reading ability, it takes approximately 15-20 minutes to complete. Two forms of the HSQ were developed. One form is for children from birth to age three while the other is for children from 3 to 6 years of age.

The actual items on the HSQ cover a wide variety of factors including, availability of materials such as books and toys, how often the child is read to, parents involvement in the child's play, the time the child spends with the adults outside the home, time spent with the primary care giver, opportunities to interact with peers, opportunities for exploration in different settings, verbal stimulation, and exposure to experiences in and outside the home. The items on the HSQ were selected from the more lengthy HOME Inventory developed by Caldwell and Bradley (1978). Unlike the HOME, the HSQ is completed entirely by the parent.

The purpose of the HSQ is to provide an index of the quality of the home environment by sampling certain qualitative and quantitative aspects of the social, emotional, and cognitive support available to a young child in his or her home. The HSQ was initially developed for use by health professionals and educators who were interested in promoting child development. As a result of the impact of environmental factors on growth and development, the HSQ was developed to screen the home environment.

Scoring criteria for the HSQ and the toy checklist have been developed separately for the two age groups. On both forms, each HSQ item which positively contributes to a child's development is printed with the appropriate scoring shown. A brief description of how to score the item immediately follows each item. Because HSQ is essentially designed for screening purposes, each of the two scales has a cut-off score for identifying children with environmentally suspect backgrounds. Scoring of the toy checklist is based on types of toys provided to the child, and not on the quantity. The HSQ total and the HSQ toy score are simply derived by summing the values assigned based on the scoring criteria.

Kuder-Richardson Formula 20 analysis indicated an internal consistency coefficient of .74 for the 0-3 HSQ, and an .80 for the 3-6 HSQ. Test-retest reliability coefficients are .62 for 0-3 HSQ and .86 for the 3-6 HSQ. The test-retest reliability is considerably lower for the 0-3 HSQ, however, when calculations were done only on children from 1 to 3 years of age, the test-retest reliability coefficient

was .82. Therefore the HSQ appears to be less reliable for children under the age of one year.

## THE FAMILY RESOURCES SCALE

The Family Resources Scale (FRS) is a self-reporting survey type instrument designed to measure the extent to which different types of resources are adequate in households with young children. The scale includes 30 items rank ordered from the most to the least basic. The hierarchy employed was derived from a conceptual framework (Leet & Dunst, 1985) that predicts a direct relationship between adequacy of resources to meet basic needs: food; clothing; shelter; and well being and parent commitment to early intervention related activities (Dunst & Leet, 1985).

To render this scale appropriate for use with the Newfoundland sample, 10 of the original items were dropped. This was done to avoid including items considered socially or culturally inappropriate or too sensitive to elicit accurate responses. As a result, the instrument contained a 20 item scale. The most to

least basic order was retained. Resources evaluated in the final version of the instrument included: social assistance; special child welfare; dependable transportation; time to get enough sleep or rest; time to be by self; time for family to be together; time to be with children; time to be with spouse or close friend; access to telephone; babysitting or day care for children; money to buy special equipment or supplies for children; someone to talk to; time to socialize; time to keep in shape and look nice; money to buy things for self; money for family entertainment; money to save; and vacation.

Parents were asked to rate the extent to which specific resources were adequate using a 5 point likert rating scale. An index of family resources was derived by summing the numeric value of the responses. The minimum and maximum obtainable scores for this scale were 20 and 100. Consequently, the higher the overall score, the more adequate the resources.

Both the reliability and validity of the scale was established in a study of 45 mothers of preschool age

retarded, handicapped, and developmentally at risk children participating in an early intervention program. Correlation alpha computed from the average correlation among the 30 items was .92. The split-half reliability was .95 corrected for length using the Spearman-Brown formula. The short term stability of the FRS was determined for all 45 subjects administered the scale on two occasions, 2 to 3 months apart. The stability coefficient for the total scale score was .52 ($p < .001$). The results of this study can be found in Leet & Dunst (1985).

## THE CHILD EXPECTATION SCALE

The Child Expectation Scale (CES) is an informal 10 item self-report survey type instrument designed by Dunst (1984), at the Family, Infant, and Preschool Program, Western Carolina Centre. The scale is designed to evaluate parent's expectations for their children in the domains of schooling, financial independence, socialization and community involvement, and living and working environments.

Parents were simply required to check the answer that best represented their expectation for their child in each domain. The within item responses were rated from low to high expectations. The minimum and maximum obtainable scores for this scale were 10 and 40. Translated this implies that the higher the overall score, the greater the expectations held by parents for their children.

## THE PARENT CHILD PLAY SCALE

The Parent Child Play Scale (PCP) was designed to provide a measure of the types and frequency of games parents play with their preschool aged children. The PCP is a self-report survey type instrument with 24 items organized into six categories with four items each. The categories vary on a developmental continuum from 2 to 3 months up to 3 to 4 years of age. The six categories are represented by the following labels: responsive games; lap games; mastery play; pretend play; verbal play; and discovery play.

The scale yields several different measures of parent-child play opportunities: (1) total number of games played; (2) frequency at which the number of games are played; (3) total number of games played in each category; and (4) the frequency at which the games within categories are played (Dunst, 1986). Parents were asked to indicate if they had played a specific game with their children during the past several months. If so they were asked to circle a response that best described how often they played that game during the previous two weeks. The response options provided were: none; one or two times a week; three times a week; and almost everyday. The numeric values of 0 to 3 were assigned to these responses respectively.

The reliability and validity of the scale was examined in a study of 96 mothers of preschool retarded, handicapped, and developmentally at risk children. Coefficient alpha computed from the average correlation among the 24 items of the scale was .89. Coefficient alpha computed from the average correlation of the 24 items with the total score was .96. Twenty

five of the subjects completed the scale on two occasions, two months apart to determine the short term test-retest reliability. The stability coefficient was .87 ($p < .001$) for the total scale scores. The average test-retest correlation for the individual items was .73 ($p < .001$).

The criterion validity of the scale was determined in terms of covariation between the six subscale scores and the children's chronological age, mental age, developmental quotients, mothers age, and educational level. Age tended to be negatively correlated with the first year games (responsive play, lap games, and mastery play) and positively correlated with the second and third year games (pretend, verbal, and discovery play). Also, child DQ was found to be significantly correlated with the more developmentally competent types of games. The type of games played by mothers tended to be correlated with mother's educational level but not their ages. As educational level increased, the mothers indicated that they played the games more frequently with their children.

## F. Data Analysis

Correlational and descriptive analysis were used to examine the relationships among critical variables identified through the above instruments. Specific variables related to the intervention program itself as well as child developmental level and family and parental characteristics were examined.

In addition a step-wise regression analysis was conducted on these variables to determine the best predictors of developmental progress, satisfaction, parent-child interaction, quality of the home environment and parents expectations for their child's future. The data were analysed using the Statistical Package for the Social Sciences (SPSSX).

# CHAPTER IV

## RESULTS AND DISCUSSION

This chapter presents a comprehensive analysis of the data gathered to investigate the six research questions outlined in Chapter One. As stated in the introduction, the purpose of this study was to examine the role family ecological variables play in the intervention process by looking at the relationship between child developmental, program, and ecological variables.

Developmental progress will be examined in terms of two derived scores including: the developmental delay severity index (DDSI) which is derived from Alpern-Boll scores at entry into the program and the index of relative developmental gain (RDG) which represents overall gain in development divided by months in program.

Initially, parental perceptions and satisfaction with the early intervention program will be address by

looking at the following variables: initial and current perceptions of the intervention program; willingness to recommend the intervention program; satisfaction with their child's gain; satisfaction with methods used in the program; satisfaction with the intervention worker; and satisfaction with their own knowledge gained.

Family ecological and intervention variables to be examined include: parental expectations for academic achievement, independence, physical care, socialization, living and work environments. The quality of the parent-child interaction will be examined in terms of the variety and frequency of parent child play. Socio-economic variables, family resources, and the quality of the home environment will also be examined.

Child developmental characteristics are underlying variables in both levels of analysis under examination, therefore we will begin by reviewing these variables.

## A. Child Developmental Progress

The mean relative developmental gain made by children was .70 (SD=.56) indicating that, on average, the rate of progress made by children in the program was 70% of the normal rate of development (see Table 3). In examining the relationship between amount of time spent in intervention and amount of developmental gain achieved we find a significant negative relationship (Table 18). Although this finding is open to interpretation, it would appear that developmental gain is greater at the earlier stages of intervention, than in the later stages. When children enter intervention a discrepancy between developmental age and chronological age is identified. The purpose of the intervention is to narrow the gap between the two. During the initial stages of the intervention one would expect to see steady progress, however as the child neared his/her developmental potential progress would begin to slow. This would not suggest that the intervention was not working but rather that a ceiling effect had been reached.

Table 3. Developmental Characteristics of the Children (All Scores Expressed in Months)

| VARIABLES | MEAN | SD |
|---|---|---|
| Chronological Age at Program Entry | 25.2 | 15.8 |
| Developmental Age at Program Entry | 14.3 | 10.7 |
| Developmental Delay Severity Index | 0.38 | 0.31 |
| Current Chronological Age | 52.3 | 41.1 |
| Current Developmental Age | 25.9 | 13.9 |
| Months Spent In Intervention | 20.1 | 13.7 |
| Relative Developmental Gain | 0.70 | 0.56 |

Before examining the expectations held by parents for their children, we were first of all interested in discovering the extent to which parents perceptions of their child's developmental level agreed with the results of formal testing. As can be seen in Table 4, parental rating of the severity of their child's handicap was significantly highly correlated with the Alpern-Boll Severity Index .32 ($p<.001$), and with the child's current developmental age .45 ($p<.001$). This finding would suggest that parents did not hold distorted or inappropriate views of the extent or severity of their child's delay.

Table 4. Intercorrelations Among Indices of Severity of Handicap, Current Developmental Age, and Relative Developmental Gain

| | PSR | A-BSI | CDA | RDG |
|---|---|---|---|---|
| Parental Severity Rating (PSR) | - | .32*** (n=103) | -.45*** (n 97) | -.36*** (n 93) |
| Alpern-Boll Severity Index (A-BSI) | | - | -.42*** (n - 123) | .29** |
| Current Developmental Age (CDA) | | | - | .50*** (n 118 |

p <.05 ** p <0.1 *** p <.001

B. Parent's Perceptions of the Intervention Program

The following presentation examines parents initial and current impressions of the DHS Program, satisfaction with child progress and program components, satisfaction with the intervention worker and knowledge gained through the program.

Table 5 presents parents initial and current impressions about the DHSP. While 33.3% of parents were uncertain about the program prior to their involvement, only 8.8% remained uncertain following

their participation in the program. Overall, parents rated the program very highly.

Table 5. Parents' Initial and Current Impressions About DHSP

| | Percentage of Parents by Impression Rating | | | | |
|---|---|---|---|---|---|
| | Extremely Impressed | Impressed | Not Sure | Unimpressed | Extremely Unimpressed |
| Initial (N = 114) | 18.4 | 45.6 | 33.3 | 0.9 | 1.8 |
| Current (n = 113) | 34.5 | 54.0 | 8.8 | 0.9 | 1.8 |

The summary presented in Table 6 depicts a very high level of parent satisfaction with child progress. Overall, 89.3% of parents expressed satisfaction or extreme satisfaction with their child's progress. Between 83 and 88 percent of parents rated specific developmental area progress such as social, self-help and motor development as satisfactory and extremely satisfactory. Approximately 76% of parents gave a similar rating to academic and language development, suggesting that not as many parents were pleased with their child's progress in these particular areas.

Table 6. Parents' Satisfaction with Child Progress

| Percentage of Respondents by Satisfaction Rating (n = 103) | | | | | |
|---|---|---|---|---|---|
| | Extremely Satisfied | Satisfied | Not Sure | Dissatisfied | Extremely Dissatisfied |
| Developmental Domain | | | | | |
| Social | 34.0 | 48.5 | 9.7 | 4.9 | 2.9 |
| Self-help | 29.1 | 54.4 | 5.8 | 8.7 | 1.9 |
| Academic | 15.7 | 59.8 | 18.6 | 4.9 | 1.0 |
| Language | 27.7 | 49.5 | 14.9 | 7.9 | - |
| Motor | 34.0 | 54.4 | 7.8 | 3.9 | - |
| Overall | 26.8 | 62.5 | 8.9 | 1.8 | - |

The summary presented in Table 7 depicts a very high level of satisfaction with program components and the methods used for behaviour change. Over 82% of parents expressed satisfaction or extreme satisfaction with the quality of programming in all five developmental domains.

Table 7. Parents' Satisfaction with the DHSP

| Percentage of Respondents by Satisfaction Rating (n=108) | | | | | |
|---|---|---|---|---|---|
| | Extremely Satisfied | Satisfied | Not Sure | Dissatisfied | Extremely Dissatisfied |
| Program Component | | | | | |
| Social | 29.6 | 53.7 | 12.0 | 1.9 | 2.8 |
| Self-help | 30.6 | 51.9 | 9.3 | 4.6 | 3.7 |
| Academic | 24.1 | 57.4 | 13.0 | 3.7 | 1.9 |
| Language | 28.7 | 54.6 | 12.0 | 2.8 | 1.9 |
| Motor | 37.6 | 49.5 | 9.2 | 1.8 | 1.8 |
| Methods | 29.0 | 56.1 | 13.1 | 1.9 | - |

Table 8. Parents' Ratings of the Intervention Worker

| Percentage of Responents by Satisfaction Rating (n = 115) | | | | | |
|---|---|---|---|---|---|
| | Excellent | Good | Fair | Poor | Inadequate |
| Worker Skill/Attribute | | | | | |
| Ability to Explain Program | 65.2 | 28.7 | 6.1 | - | - |
| Sensitivity to Parent Needs | 53.5 | 38.6 | 7.0 | - | 0.9 |
| Knowledge and Skill | 57.0 | 36.0 | 7.0 | - | - |
| Relationship With Child | 64.6 | 30.1 | 4.4 | - | - |
| Deal With Questions and Problems | 60.0 | 36.5 | 3.5 | - | - |
| Welcome Parents' Opinion | 62.3 | 33.3 | 4.4 | - | - |
| Acting on Parents' Suggestions | 53.1 | 37.2 | 8.1 | - | 1.8 |
| Attitude Toward Parent During Visit | 74.6 | 21.9 | 2.6 | - | 0.9 |

Table 8 summarizes parents rating of the intervention worker. Parental satisfaction with the worker was consistently rated very high, with 91 to 97 percent rating the worker good or excellent. Table 9 summarizes parents' rating of the knowledge they gained through the program in specific areas. Overall,

parents did not rate their knowledge gained from the program as positively as they rated satisfaction with their child's developmental progress, program components or the ability of the intervention worker. Parents tended to rate knowledge gain in the area of their child's development, their own ability to cope, evaluate and meet their child's needs, much more positively than broader less personal issues such as school options, principles of normalization and integration, parental rights and knowledge of other community resources. While the low level of satisfaction with these less immediate issues might imply a lack of attention on the part of the program or the worker, it is worth noting that information and discussions around these topics does not usually occur until just prior to graduation from the intervention program. Graduation occurs when the child has "caught up " developmentally, or has reached school entry age. The mean age for children under study was 48.5 months so it is therefore conceivable that these broader issues had not been addressed by the worker in many cases. With respect to the low rating given knowledge of school/preschool options and the availability of

Table 9. Parents' Rating of Knowledge Gained From Participation in the DHSP

| % of Respondents by Satisfaction Rating (n = 113) | | | | | |
|---|---|---|---|---|---|
| Knowledge Skill/Area | Now an Expert | Gained A Lot | Gained Some | Gained a Little | Gained Nothing |
| Evaluation Ability | 7.1 | 53.1 | 33.6 | 5.3 | 0.9 |
| Child's Ability and Needs | 15.9 | 59.3 | 19.5 | 3.5 | 1.8 |
| Behaviour Management | 9.0 | 38.7 | 36.9 | 10.8 | 4.5 |
| Coping Skills | 8.2 | 50.9 | 26.4 | 13.6 | 0.9 |
| Recording Child Progress | 19.3 | 51.8 | 21.9 | 6.1 | 0.9 |
| Selecting Appropriate Toys and Books | 17.7 | 52.2 | 17.7 | 5.3 | 7.1 |
| Knowledge of Social Skills Development | 10.2 | 50.0 | 24.1 | 12.0 | 3.7 |
| Knowledge of Self-Help Skills Development | 10.1 | 55.0 | 15.6 | 12.8 | 6.4 |
| Knowledge of Academic Skills Development | 9.4 | 47.2 | 27.4 | 12.3 | 3.8 |
| Knowledge of Language Development | 12.1 | 44.9 | 26.2 | 11.2 | 5.6 |
| Knowledge of Motor Development | 9.4 | 53.8 | 20.8 | 11.3 | 4.7 |
| Knowledge of Preschool Options | 11.6 | 29.5 | 27.4 | 13.7 | 17.9 |
| Knowledge of School Placement Options | 7.1 | 28.6 | 28.6 | 15.3 | 20.4 |
| Knowledge of Parental Rights | 13.3 | 36.2 | 23.8 | 11.4 | 15.2 |
| Knowledge of Normalization and Integration | 8.8 | 34.3 | 27.5 | 15.7 | 13.7 |
| Knowledge of Other Community Resources | 5.9 | 30.4 | 23.5 | 18.6 | 21.6 |

other community resources, a contributing factor may well be that 60.2% of the families surveyed came from populations of 5000 or less. In smaller communities, one would not expect to find an abundance of service options available.

## C. Parents' Expectations Regarding Their Child's Future

In examining the expectations parents held about their child's future, a clear trend toward higher expectations for less severely delayed children was observed. Table 10 reveals that parents of children rated as profoundly delayed did not expect their children to attain placements beyond special education classes. However, 54.6% of parents with severely delayed, 55.1% of parents with moderately delayed, and 79% of parents with mildly delayed children expected their children to have up to high school, vocational or college education. While parents of profundly delayed children expected their children to be totally or highly dependent, increasing degrees of independence was expected by parents of severely, moderately and midly delayed children.

Table 11 reveals parents expectations regarding the physical care and socialization of their children. Increased need for physical care is positively correlated with increased severity of delay.

Additionally, the more severe the delay the less opportunity for higher order levels of socialization.

Table 12 depicts parents expectations regarding living and work environments for their children. All parents of the profoundly delayed children expected them to live at home with their family during their teen and adult lives. As was observed in relation to the previous components, parents of less severely delayed children expected more independence in relation to living and work arrangements with one exception. 50% of parents of severely delayed children expected them to participate in competitive employment. 77% of parents of mildly delayed children expect them to reside in their own apartments as adults with the same holding true for over 50% of the parents of moderate and severely delayed children.

It is important to note at this point that the philosophy of the DHSP strongly opposed segregation and institutionalization. This in all probability accounts for the fact that none of the parents saw

institutionalization as an option for their child regardless of the severity of their delay.

Table 10. Expectations Regarding Schooling and Independence

| % of Parents Choosing a Response Within Levels | | | | |
|---|---|---|---|---|
| | Mild (n=30) | Moderate (n=49) | Severe (n=11) | Profound (n=3) |
| SCHOOLING | | | | |
| No Schooling | - | - | 9.1 | 33.3 |
| TMH Class | - | 8.2 | 18.2 | 33.3 |
| Special Ed. Class | 6.7 | 20.4 | 9.1 | 33.3 |
| Regular Grade 1 - 6 | 6.7 | 12.2 | 9.1 | - |
| Junior High School | 6.7 | 4.1 | - | - |
| High School | 20.0 | 24.5 | 36.4 | - |
| Vocational | 23.3 | 4.1 | - | - |
| College | 36.7 | 26.5 | 18.2 | - |
| INDEPENDENCE | | | | |
| Always Entirely Dependent | 3.3 | 14.3 | 20.0 | 100.0 |
| Contribute Toward Own Support | 36.7 | 30.6 | 20.2 | - |
| Become Self Supporting | 60.0 | 53.1 | 50.0 | - |
| Need Constant Supervision | - | 6.1 | 30.0 | 75.0 |
| Need Help With Day-to-Day Plans and Supervision | 3.3 | 22.4 | 10.0 | 25.0 |
| Need Help and Advice in Making Decisions | 50.0 | 28.6 | 30.0 | - |
| Take Responsibility for Own Affairs | 46.7 | 40.8 | 30.0 | - |

Table 11. Expectations Regarding Physical Care and Socialization

| % of Parents Choosing a Response Within Levels | | | | |
|---|---|---|---|---|
| | Mild (n=30) | Moderate (n=49) | Severe (n=11) | Profound (n=4) |
| PHYSICAL CARE | | | | |
| Need Care all Day Long | 3.3 | 10.2 | 18.2 | 75.0 |
| Some Help Every Day | 3.3 | 18.4 | 36.4 | 25.0 |
| Help in Unusual Situations | 30.0 | 34.7 | 18.2 | - |
| Entirely Self Sufficient | 63.3 | 34.7 | 27.3 | - |
| SOCIALIZATION | | | | |
| Unable to Join in Community Activities | - | 12.5 | 18.2 | 100.0 |
| Able to Join, No Active Role | 23.3 | 29.2 | 27.3 | - |
| Able to Join As Active Member | 66.7 | 45.8 | 36.4 | - |
| Assume Leadership Roles | 10.0 | 12.5 | 18.2 | - |
| Relate Only to People In Family | - | 6.0 | 9.1 | 75.0 |
| Relate With Relatives, Family and Friends | 3.4 | 10.0 | 27.3 | 25.0 |
| Will Make Own Friends | 96.6 | 84.0 | 63.6 | - |

TABLE 12. Expectations Regarding Living and Working Environments

| % of Parents Choosing a Response Within Levels | | | | |
|---|---|---|---|---|
| | Mild (n=30) | Moderate (n=48) | Severe (n=11) | Profound (n=4) |
| RESIDE AS TEENAGER | | | | |
| An Institution | - | - | - | - |
| A Group Home | - | 4.2 | 9.1 | - |
| With Own Family | 100.0 | 95.8 | 90.9 | 100.0 |
| RESIDE AS ADULT | | | | |
| An Institution | - | - | - | - |
| With Family | 16.7 | 36.4 | 45.8 | 100.0 |
| Supervised Group Home | 6.7 | 2.1 | 9.1 | - |
| Own Apartment | 76.7 | 52.1 | 54.5 | - |
| WORK AS AN ADULT | | | | |
| Prevocational Workshop | - | 8.7 | 25.0 | - |
| Sheltered Workshop | - | 13.0 | 22.5 | 100.0 |
| Supervised Employment | 53.3 | 50.0 | 12.5 | - |
| Competitive Employment | 46.7 | 28.3 | 50.0 | - |

## D. Parent-child Play Interactions

The variety and frequency of play activities that parents engaged in with their children were examined in relation to two child developmental characteristics. Tables 13 and 14 reveal significant relationships between child developmental age and the variety of

verbal and discovery play, as well as the frequency of responsive, pretend, verbal and discovery play. Significant relationships were also found between child developmental gain and the variety of discovery play as well as the frequency of verbal and discovery play. The only negative correlation occurred between developmental age and the frequency of responsive play. This would suggest that parents engaged in more responsive play with developmentally younger children while engaging in more pretend, verbal and discovery play with developmentally older children. When total scale scores were reviewed, child developmental age and child developmental gain correlated significantly with variety and frequency of parent-child play ($r=0.05$ $p<.001$ & $r=0.03$ $p<.001$, respectively). Results of the data would suggest that child developmental characteristics influence parent-child play interactions and vice-versa.

Table 13. Correlations Between Variety of Parent-Child Play and Child Developmental Characteristics

| | Respon-sive | Lap-games | Mas-tery | Pre-tend | Verbal | Discov-ery | Total |
|---|---|---|---|---|---|---|---|
| DA (n=110) | NS | NS | NS | NS | .19* | .56*** | .50*** |
| RDG (n=105) | NS | NS | NS | NS | NS | .16* | .19* |

* p <.05 ** p <.01 *** p <.001

Table 14. Correlations Between Frequency of Parent-Child Play and Child Developmental Characteristics

| | Respon-sive | Lap-Games | Mas-tery | Pre-tend | Verbal | Dis-covery | Total |
|---|---|---|---|---|---|---|---|
| DA (n=11 | -.18* | NS | NS | .29** | .61*** | .52*** | .33*** |
| RDG (n=105) | NS | NS | NS | NS | .26** | .18* | NS |

* p <.05 ** p <.01 *** p <.001

DA = Developmental Age; RDG = Relative Developmental Gain

## E. Relationships Between Family Ecological Variables and Intervention Outcomes

Table 15 depicts composite scores derived for each of the three dimensions of parental rating of the intervention program and for the four family ecological

variable scales for child expectation, family resources, quality of the home environment and parent-child play interactions.

Table 15. Means, Standard Deviations, and Ranges of Composite Parental and Family Ecological Variables

| Variable | Mean | SD | Range |
|---|---|---|---|
| INTERVENTION VARIABLES: | | | |
| Parental Rating of Intervention Worker | 36.4 | 3.9 | 25-40 |
| Parental Perceived Knowledge Gain | 54.8 | 12.3 | 16-80 |
| Parental Satisfaction with Program | 49.0 | 6.5 | 29-60 |
| PARENTAL FAMILY ECOLOGICAL VARIABLES: | | | |
| Child Expectations | 28.4 | 7.4 | 6-37 |
| Family Resources | 60.0 | 13.2 | 32-87 |
| Quality of Home Environment | 33.8 | 8.4 | 13-49 |
| Parent - Child Play - Variety | 17.1 | 4.9 | 3-24 |
| Parent - Child Play - Frequency | 36.3 | 13.3 | 0-68 |

Table 16. Correlations Between Child Developmental Characteristics, Quality of the Home, Parental Expectations and Intervention Variables

| | Home Environment | Expectations | Time In Program | Knowledge Gained | Satisfaction |
|---|---|---|---|---|---|
| Current Developmental Level | .4168*** | .5381*** | .2143** | .2875** | .4344*** |
| Severity of Delay | -.2351** | -.3437*** | - | -.2346* | -.3031** |
| Relative Developmental Gain | .2241** | .3883*** | -.2794*** | - | - |

* p <.05 ** p <.01 *** p <.001

In Table 16, the correlations between child developmental characteristics, quality of the home environment and intervention variables show a strong positive correlation between the parents expectations for their child's future, their home environment and the child's overall developmental level. This could suggest that the parents of higher functioning had higher expectations and provided a higher quality home environment. Parents' with higher functioning children reported greater satisfaction with the intervention

program and more knowledge gain. Child development gains correlated positively with the quality of the home environment and parent's expectations.

Table 17. Correlations Among Family Ecological Variables and Socio-Economic Variables

| | Family Resources | Family Income | Mother's Education | P-C Play Variety | P-C Play Frequency |
|---|---|---|---|---|---|
| Home Environment | .49*** (n=95) | .32*** (n=93) | .30*** (n=97) | .48*** (n=114) | .49*** (n=114) |
| Parental Expectation | .19* (n=95) | -.21 (n=92) | NS | .43*** (n=112) | .49*** (n=114) |
| Family Income | .40*** (n=74) | - | .41*** (n=93) | NS | NS |

* p <.05 ** p <.01 *** p <.001

Table 17 presents intercorrelations among family ecological and socio-economic variables. The quality of the home environment correlates significantly with the families resources and income as well as the mothers education level and the variety and frequency of parent-child play. Family income correlated significantly with the families resources and the mothers education level, but not with parent child

play. Parents expectations for their child's future correlated significantly with the families resources, their income and the variety and frequency of play.

18. Zero-Order Correlations Between Independent and Dependent Variables and Corresponding Multiple RS Regression Analysis

| | DEPENDENT VRIABLES | | | | | |
|---|---|---|---|---|---|---|
| | Dev-Pro-gram | Satis-fac-tion | Play (Var) | Play (Freq) | Home Enviro-ment | Expec-tation |
| Expectation Independent Variables<br><br>DA: Entry Level | .55*** | .18* | - | - | .16* | .39*** |
| DA: Current | - | .43*** | .50*** | .33*** | .41*** | .53*** |
| Detection Age | NS | - | - | - | NS | NS |
| Develop-mental Progress | - | NS | .19* | NS | .22** | .38*** |
| Time Spent in Program | -.28** | - | - | - | - | - |
| Knowledge Gained | NS | .39*** | .53*** | .55*** | .49*** | .36*** |
| Worker Rating | NS | .50*** | .23** | .19* | .36*** | NS |
| Satisfac-tion | NS | - | - | - | NS | .38*** |
| Home Environment | .22** | NS | .48*** | .49*** | - | .19** |
| Expecta-tions | .38*** | .38*** | .43*** | .31*** | .19** | - |
| Mother's Education | NS | NS | NS | NS | .30*** | NS |
| Income | NS | NS | NS | NS | .32*** | -.21* |
| Family Resources | NS | NS | .26** | .32*** | .32*** | .19 |

Table 18. CONTINUED

| | DEPENDENT VARIABLES | | | | | |
|---|---|---|---|---|---|---|
| | Dev. Program | Satis-fac-tion | Play (Var) | Play (Freq) | Home Environ-ment | Expec-tation |
| Parent Child Play (Var) | .19 | - | - | - | .48*** | .43*** |
| Parent-Child Play (Freq) | NS | - | - | - | .49*** | .31*** |
| Best Predic-tors | 1/10 | 7/2 | 10 | 6 | 2/11/10/13 | 2/14 |
| Multiple R | .49 | .46 | .70 | .63 | .66 | .76 |
| Variance-(Adjusted R2) | 29.9% | 18.4% | 47.4% | 37.6% | 42.5% | 55.9% |

Table 18 presents the results of regression analysis carried out to determine the best predictors of child developmental progress, parental satisfaction, quality of the home environment, variety and frequency of parent-child play and parental expectations.

In the first regression analysis the impact of program variables and family ecological variables on child development characteristics was considered. Of

the 15 variables entered into the regression equation, children's developmental age upon entry into the program and parents expectations of their child's future were the best predictors of developmental progress (R=.49). These two variables accounted for 29.9% of the variance.

The best predictors of parents' satisfaction with the intervention program were the parent's rating of the worker, and the child's current developmental level (R=.46). These two variables accounted for 18.4% of the variance.

A third regression analysis indicated that parents expectations for their child's future was the strongest predictor of the variety of play they engaged in with their children (R=.70) Parents' expectations is obviously a very strong predictor as it accounted for 47.4% of the variance. The frequency of play was best predicted by parents' knowledge gained in the intervention program (R=.63), accounting for 37.6% of the variance.

The quality of the child's home environment was best predicted by variables which accounted for 42.5% of the variance. These variables in descending order of significance are the child's current developmental level, mothers education, parents' expectation for their child's future and the families' resources (R=.66).

Parent expectations was the most frequent determinant of several variables including: child developmental progress, variety of parent-child interactive play and quality of the home environment. A stepwise regression analysis to determine predictors of parental expectations indicated that the child's current level of development (R=.76) and the variety of play activities are the best predictors. Together, these variables accounted for a substantial proportion of the variance (55.9%) .

# CHAPTER V

## SUMMARY AND RECOMMENDATIONS

The major themes emerging from this study are presented under headings reflective of the six research questions presented in Chapter I. The headings are as follows: (1) socio-economic characteristics of the families involved in the intervention; (2) parent's expectations for their child's future; (3) the nature of the parent-child interaction; (4) parent's satisfaction with the program and their child's progress; (5) parent's perceptions of knowledge and competencies gained from the program; and (6) relationship between family ecological variables, the intervention process and child developmental gain.

### A. Socio-economic Characteristics

The families involved in the intervention program were clustered in the lower end of the socio-economic continuum. Parents of children in the intervention program were not well educated with only 43% of mothers

and 37% of fathers having completed high school. Overall income levels were considered low with a substantial number of families (57.6%) indicating earnings below $15,000. per year. It is not surprising to discover that mother's education and the families resources are both predictors of the quality of the home environment. Given that over 50% of the families involved in the intervention program live in socio-economic circumstances that are less than optimal, the need exists to address this concern through the provision of financial and educational support. The need for educational support requires more than a traditional academic approach to include such topics as child development and effective parenting practices. This recommendation is further supported based on the significant relationship observed between family resources and the quality of the parent-child relationship. Central to this discussion is the finding of a significant positive relationship (.23**) between child developmental gain and the quality of the home environment. In other words, children who come from "better" home circumstances tend to demonstrate more developmental gain. The need exists to support

families in such a way as to positively impact the quality of the child's home thereby enhancing the opportunity for growth.

## B. Parents's Expectations

In addition to the quality of the home environment, parent's expectations for their child's future also turned out to be a strong predictor of the child's developmental progress. Interestingly, a strong predictor of parents expectations is the quality of the parent-child interaction. This lends additional support to a recommendation that educational intervention for parents is essential to optimizing the child's developmental progress. If parents are taught to engage in more meaningful interactions with their children, the potential for higher parent expectations resulting in greater child developmental gain may be realized.

The perception held by parents regarding the severity of their child's delay is in keeping with the results of formal testing. The significance of this

observation is that it suggests that parent's expectations for their children are based on accurate views of the nature and extent of the child's delay. It was therefor not surprising to find that parents of higher functioning children tended to hold higher expectations. What was surprising was the finding that none of the parents saw institutionalization as an option for their child regardless of the extent of the child's level of functioning. In all likelihood this does not so much discredit parents perceptions but rather is reflective of the philosophy of the intervention program which espouses total integration and social role valorization.

## C. Parent-Child Interaction

A significant relationship was identified between parent-child play and child developmental characteristics. The analysis of this relationship indicates that the variety of play as opposed to the frequency of play correlated significantly with child developmental progress. This implies that the quality and not the quantity of the parent-child interaction is

more important to the developmental growth of the child.

The best predictors of child developmental progress were the child's level of development at the time of entering the intervention program, and the parents expectations about the child's future. In other words, children who were higher functioning upon entering the intervention program and who had parents with higher expectations, made greater developmental gains.

Overall, the results of this study lend support to the notion that family ecological variables significantly impact the intervention process and ultimately the developmental progress of the child.

These observations are undoubtedly a commentary on the philosophy of the Direct Home Services Intervention Program which adheres to the principles of normalization through the promotion of total integration within and across all aspects of community living. The philosophy of Direct Home Services is

opposed to institutionalization, and it is interesting to note that none of the parents saw institutionalization as an option for their child. An interesting follow-up study might involve an examination of the formal school placement of these children including parents satisfaction with programming options.

## D. Parent's Satisfaction with the Intervention Program and Their Child's Progress

Overall, parents rated the program highly. They were very satisfied with program components and the methods used in behaviour change. In addition their ratings of the Intervention Worker were also very high.

Parents were more satisfied with their child's progress in the areas of social, self-help and motor development as opposed to their progress in academic and language development.

The best predictors of parental satisfaction with the program and with their child's progress were the

parent's ratings of the worker and the child's current level of development. In other words, parents were satisfied with the program when they viewed the worker as competent and saw their children as high functioning.

## E. Knowledge and Competencies Gained by Parents

Knowledge gained through participation in the program did not rate as high as did the other program components just mentioned. Within the domain of knowledge gained parents indicated having gathered more knowledge on child development and how to better cope as a parent in meeting their child's needs. Less knowledge was gained in the area of school options, availability of community resources, principals of normalization, and parental rights. The program schedule calls upon the Intervention Worker to address these latter issues just prior to the exit of a child from the program. Given that all the children in this study were actively involved in the intervention program, it is likely that the Worker would not have begun addressing these issues.

## F. The Relationship Between Family Ecological Variables, the Intervention Process and Child Developmental Progress

In keeping with the conclusions of researchers involved in the field of early intervention (Bronfenbrenner, 1979; Cochrane & Woodeur, 1983; Hobbs, 1975), the results of this study clearly support the significance of family ecological variables as a critical mediator between the intervention process and the developmental progress of the child. In providing an intervention program, the design and delivery of such programs has to take into consideration the nature of this relationship.

To exemplify the interactive nature of these variables consider the following findings of this study. Children who were relatively higher functioning upon entering the intervention program and who had parents who held higher expectations made greater developmental gains. Parents were most likely to express extreme satisfaction with the program if they perceived the worker a highly competent and whose child

was relatively high functioning. Parents who were more likely to expose their child to a greater variety of play, were those who held higher expectations about their child's future. Parents who were more likely to engage in frequent play interactions were those who reported greater knowledge gain from the intervention program. The variables that best predicted the quality of the home environment included the child's current level of development, maternal education, parental expectations, and family resources.

It is clear from this study that relationships exist between the child's developmental level, parent expectations, program satisfaction and knowledge gained, the nature of play between parent and child, parent's education, the families resources and the overall quality of the home environment.

In delivering an early intervention program that recognizes these relationships, the focus of such programs must be sufficiently broad to incorporate initiatives toward the provision of services to families that extend beyond specific skill teaching.

These services should include the provision of educational and financial support to parents directed at improving the quality of the home environment.

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# APPENDICIES

A. DIRECT HOME SERVICES FACT SHEET

B. DIRECT HOME SERVICES PARENT EVALUATION QUESTIONNAIRE

# APPENDIX A

## DIRECT HOME SERVICES FACT SHEET

# DIRECT HOME SERVICES

## FACT SHEET

1. **BIOGRAPHICAL INFORMATION**

| | | | |
|---|---|---|---|
| **A.** | **Child** | **B.** | **Other Family** |
| 1. | Identification No. | 1. | Total number of children |
| 2. | Date of Birth | 2. | Number living at home now |
| 3. | Sex | 3. | Age and sex of those living at home |
| **C.** | **MOTHER** | **D.** | **FATHER** |
| 1. | Age: | 1. | Age: |
| 2. | Educational Level: check one | 2. | Educational Level: check one |

( ) Grade School

( ) High School

( ) Vocational Training

( ) University

( ) Post Graduate

( ) Grade School

( ) High School

( ) Vocational Training

( ) University

( ) Post Graduate

3. Occupation:

3. Occupation

2. **GENERAL INFORMATION:**

(a) The size of your community is:

( ) 5,000 or less

( ) 5,000 to 15,000

( ) 15,000 to 30,000

(b) Your family income is:

( ) Less than $10,000

( ) $10,000 to $15,000

( ) $15,000 to $30,000

( ) Over 30,000 ( ) $25,000 to $40,000

( ) Over 40,000 ( ) Over $40,000

(c) Marital Status:

( ) Single Parent

( ) Married

( ) Divorced/Separated

3. How would you rate your child's developmental level?

( ) Mildly Delayed

( ) Moderately Delayed

( ) Severely Delayed

( ) Profoundly Delayed

# APPENDIX B

## DIRECT HOME SERVICES PARENT EVALUATION QUESTIONNAIRE

# DIRECT HOME SERVICES PROGRAM

## PARENT EVALUATION QUESTIONNAIRE

**ID CODE:**

**INTRODUCTION**

Please answer the following questions to give us your feedback about the Direct Home Services Program. The questions are designed to give us an indication of how our program works across the Province, and, as such, all answers will be analyzed for the whole group. Individual identities will not be disclosed in presenting results.

Please answer all questions as honestly as you can. Feel free to make additional comments whenever you find it necessary to do so.

After completing the evaluation, we ask that you please return it by mail to the provincial office of

the Direct home Services Program in the self-addressed envelope provided.

SECTION A

1. How did you become aware of your child's developmental problem?

_____

_____

_____

_____

2. How old was your child when you found out about the problem?

_____

3. Were you satisfied with the way in which you were informed about your child's problem(s)?

( ) Yes ( ) No

Comments: _____

_____

_____

_____

4. How did you become aware of the Direct Home Services Program? Who informed you?

_____

_____

_____

5. Do you have any contact with the following groups? If so, indicate how often.

**Yes** _____ **No** _____

**How often?** _____

1. Association for Mentally Retarded/Community Living.

**Yes** _____ **No** _____

**How often?** _____

2. Parent support groups.

**Yes** _____ **No** _____

**How often?** _____

3. Other specialized groups (e.g.,Spina Bifida Assoc).

**Yes** _____ **No** _____

**How often?** _____

4. Other parents of delayed children (informally).

**Yes** _____ **No** _____

**How often?** _____

SECTION B

1. What were your initial impressions about the Direct Home Services Program?

**( ) Extremely Impressed** **( ) Impressed**

**( ) Not Sure** **( ) Unimpressed**

**( ) Extremely Unimpressed**

Comments: _____

_____

2. What are your current impressions about the Direct Home Services Program?

( ) **Extremely Impressed** ( ) **Impressed**

( ) **Not Sure** ( ) **Unimpressed**

( ) **Extremely Unimpressed**

Comments: _____

_____

_____

3. How satisfied are you with the gains made by your child in this program (new behaviours or skills learned)?

( ) **Extremely Satisfied** ( ) **Satisfied**

( ) **Not Sure** ( ) **Dissatisfied**

( ) **Extremely Dissatisfied**

What do you consider to be the most important gains made by your child?

_____

_____

_____

If your child has not made any gains in the program, why do you think this is so?

_____

_____

_____

4. How satisfied are you with the methods used to change your child's behaviour?

( ) **Extremely Satisfied** ( ) **Satisfied**

( ) **Not Sure** ( ) **Dissatisfied**

( ) **Extremely Dissatisfied**

Comments:_____

_____

_____

5. How satisfied are you with the quality of program attention paid to each of the following developmental areas? (Please check one response for each area)

A. Socialization: the ability to play and interact with others.

( ) **Extremely Satisfied** ( ) **Satisfied**

( ) Not Sure ( ) Dissatisfied

( ) Extremely Dissatisfied

B. Self-help: toileting, eating, dressing, etc.

( ) Extremely Satisfied ( ) Satisfied

( ) Not Sure ( ) Dissatisfied

( ) Extremely Dissatisfied

C. Academic: problem solving and thinking skills.

( ) Extremely Satisfied ( ) Satisfied

( ) Not Sure ( ) Dissatisfied

( ) Extremely Dissatisfied

D. Language: what the child says and understands.

( ) Extremely Satisfied ( ) Satisfied

( ) Not Sure ( ) Dissatisfied

( ) Extremely Dissatisfied

E. Motor: crawling, walking, running, etc. Small and large muscle coordination.

( ) Extremely Satisfied ( ) Satisfied

( ) Not Sure ( ) Dissatisfied

( ) Extremely Dissatisfied

6. How satisfied are you with your child's actual progress in each of the following areas? (Please check one response)

A. Socialization: the ability to play and interact with others.

( ) Extremely Satisfied ( ) Satisfied

( ) Not Sure ( ) Dissatisfied

( ) Extremely Dissatisfied

B. Self-help: toileting, eating, dressing, etc.

( ) Extremely Satisfied ( ) Satisfied

( ) Not Sure ( ) Dissatisfied

( ) Extremely Dissatisfied

C. Academic : problem solving and thinking skills.

( ) Extremely Satisfied ( ) Satisfied

( ) Not Sure ( ) Dissatisfied

( ) Extremely Dissatisfied

D. Language: what the child says and understands.

( ) Extremely Satisfied ( ) Satisfied

( ) Not Sure ( ) Dissatisfied

( ) Extremely Dissatisfied

E. Motor: crawling, walking, running, etc. Small and large muscle coordination.

( ) Extremely Satisfied ( ) Satisfied

( ) Not Sure ( ) Dissatisfied

( ) Extremely Dissatisfied

**SECTION C**

Please rate your Child Management Specialist (the intervention worker) on each of the following factors. Please note that the ratings will not be seen as a reflection on any one Child Management Specialist. Instead, the ratings will give us an idea of how effectively our staff are performing as a group across the province.

**Excellent** _____ **Good** _____ **Fair** _____

**Poor** _____ **Inadequate** _____

1. Ability in explaining your child's program to you.

   **Excellent** _____ **Good** _____ **Fair** _____

   **Poor** _____ **Inadequate** _____

2. Appears sensitive to your needs as child's parent.

   **Excellent** _____ **Good** _____ **Fair** _____

   **Poor** _____ **Inadequate** _____

3. Seems knowledgeable and skillful with regard to child management.

   **Excellent** _____ **Good** _____ **Fair** _____

   **Poor** _____ **Inadequate** _____

4. Has built a good relationship with your child.

   **Excellent** _____ **Good** _____ **Fair** _____

   **Poor** _____ **Inadequate** _____

5. Ability to deal with problems and/or questions that you want help with.

Excellent _____ Good _____ Fair _____

Poor _____ Inadequate _____

6. Welcomes your opinions and input into the child's overall program.

Excellent _____ Good _____ Fair _____

Poor _____ Inadequate _____

7. Uses or acts on your suggestions and input.

Excellent _____ Good _____ Fair _____

Poor _____ Inadequate _____

8. Attitude towards you during visits.

Excellent _____ Good _____ Fair _____

Poor _____ Inadequate _____

Comments: _____

_____

_____

_____ _____

_____ _____

SECTION D

1. The following are some things parents might gain from a service such as the Direct Home Services Program. How much knowledge do you feel you have gained about each of the following? (Please check one response for each statement)

**( ) Now an Expert ( ) Gained a Lot**

**( ) Gained Some ( ) Gained a Little**

**( ) Gained Nothing**

a. Assessment and evaluation of your child.

**( ) Now an Expert ( ) Gained a Lot**

**( ) Gained Some ( ) Gained a Little**

**( ) Gained Nothing**

b. Knowledge of your child's abilities and needs.

**( ) Now an Expert ( ) Gained a Lot**

**( ) Gained Some ( ) Gained a Little**

**( ) Gained Nothing**

c. Behaviour management techniques.

( ) Now an Expert ( ) Gained a Lot

( ) Gained Some ( ) Gained a Little

( ) Gained Nothing

d. Skills for coping with child's problem.

( ) Now an Expert ( ) Gained a Lot

( ) Gained Some ( ) Gained a Little

( ) Gained Nothing

e. Recording of your child's progress at home.

( ) Now an Expert ( ) Gained a Lot

( ) Gained Some ( ) Gained a Little

( ) Gained Nothing

f. Appropriate selection of toys and books for your child.

( ) Now an Expert ( ) Gained a Lot

( ) Gained Some ( ) Gained a Little

( ) Gained Nothing

g. Knowledge of child development:
Social development.

( ) Now an Expert ( ) Gained a Lot

( ) Gained Some ( ) Gained a Little

( ) Gained Nothing

Self-help skill

( ) Now an Expert ( ) Gained a Lot

( ) Gained Some ( ) Gained a Little

( ) Gained Nothing

Academic skill development

( ) Now an Expert ( ) Gained a Lot

( ) Gained Some ( ) Gained a Little

( ) Gained Nothing

Language development

( ) Now an Expert ( ) Gained a Lot

( ) Gained Some ( ) Gained a Little

( ) Gained Nothing

Motor development

( ) Now an Expert ( ) Gained a Lot

( ) Gained Some ( ) Gained a Little

( ) Gained Nothing

h. Options for pre-school placement

( ) **Now an Expert** ( ) **Gained a Lot**

( ) **Gained Some** ( ) **Gained a Little**

( ) **Gained Nothing**

i. Options for school placement

( ) **Now an Expert** ( ) **Gained a Lot**

( ) **Gained Some** ( ) **Gained a Little**

( ) **Gained Nothing**

j. Parental rights

( ) **Now an Expert** ( ) **Gained a Lot**

( ) **Gained Some** ( ) **Gained a Little**

( ) **Gained Nothing**

k. Principles of social role valorization and integration.

( ) **Now an Expert** ( ) **Gained a Lot**

( ) **Gained Some** ( ) **Gained a Little**

( ) **Gained Nothing**

l. Availability of other community resources to support your child's needs.

( ) Now an Expert ( ) Gained a Lot

( ) Gained Some ( ) Gained a Little

( ) Gained Nothing

2. Are there any other topics not included in question 1 above that you feel should have been explained by the Child Management Specialist?

( ) Yes ( ) No

If yes, please specify:

_____

_____

_____

_____

_____

**SECTION E**

1. Have you ever participated in a parent training course?

( ) Yes Please specify:

_____

_____

( ) No

2. Would you be interested in participating in a parent training course offered by the Direct Home Services Program in your area?

( ) Yes ( ) No

3. Would you recommend the Direct Home Services Program to other parents with similar needs?

( ) Yes ( ) No

4. Finally, please rate the service to show how satisfied you are with the program as a whole.

( ) Extremely Satisfied ( ) Satisfied

( ) Not Sure ( ) Dissatisfied

( ) Extremely Dissatisfied

5. Please add any comments or suggestions you would like to make: