

A STUDY OF THE EFFECTS OF THE STOTT FLYING  
START LEARNING-TO-LEARN PROGRAM ON  
SELECTED MEASURES OF SCHOOL READINESS  
WITH PRE-KINDERGARTEN BOYS

CENTRE FOR NEWFOUNDLAND STUDIES

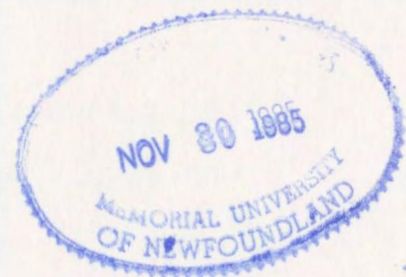
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PRE-KINDERGARTEN BOYS

by



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# ABSTRACT

It was the purpose of this study to examine the effect of the Flying Start Learning-to-Learn program on the readiness of pre-kindergarten children. Differences in developmental standing were determined in four groups of children randomly assigned according to Solomon's design. Two groups were taught the Flying Start Learning-to-Learn program prior to the start of the regular kindergarten curriculum. Measures on five dependent variables were taken and were analysed using Anova and Ancova. The results are discussed and interpreted.

#### ACKNOWLEDGEMENTS

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## TABLE OF CONTENTS

	Page
ABSTRACT .....	ii
ACKNOWLEDGEMENTS .....	iii
LIST OF TABLES .....	vi
LIST OF FIGURES .....	vii
Chapter	
I INTRODUCTION .....	1
Purpose of Study .....	1
Significance of Study .....	2
Importance of Early Experience .....	2
Developmental Concepts .....	3
School Readiness .....	5
Early Childhood Programs .....	6
Learning Styles .....	9
Research Question .....	11
II RELATED RESEARCH .....	12
Importance of Early Experience .....	12
Nature-Nurture Interaction .....	13
Stage Theories of Development .....	14
Role of Parents .....	16
Socioeconomic Status .....	17
School Readiness .....	19
Faulty Learning Styles .....	20
Teaching Appropriate Learning Styles .....	26
Early Childhood Programs .....	28
Evaluation of Stott .....	36
Dependent Measures .....	38
III METHODOLOGY .....	42
Background and Description .....	42
Sample and Sampling Procedures .....	44
Collection of Data .....	45
Instrumentation .....	46
Boehm Test of Basic Concepts .....	48
Bureau Auditory Comprehension Test .....	49
Full-Range Picture Vocabulary Test .....	50
Porteus Maze Test .....	50
Attentional Activity .....	51
Description of Programs .....	52
Scheduling of Program .....	54
Research Design and Statistical Procedures .....	55



## CHAPTER

Page

IV	RESULTS .....	59
	Analysis of Variance .....	59
	Analysis of Covariance .....	60
	Full Range Picture Vocabulary Test .....	62
	N of Sample .....	66
	Alternative Assessment .....	67
	Program Period .....	68
	Experimenter Role .....	69
	Summary .....	70
V	CONCLUSIONS .....	71
	General Discussion .....	71
	Assessment of Young Children .....	72
	Group Size .....	73
	Parental Involvement .....	74
	Type of Program .....	75
	When to Intervene .....	79
	Summary .....	81
	BIBLIOGRAPHY .....	83
	APPENDICES .....	92

## LIST OF TABLES

Table		Page
IV.1	Means and Standard Deviations of Treatment and Control Groups on Five Dependent Measures .....	58
IV.2	Results of Analysis of Variance with Five Dependent Measures .....	59
IV.3	Results of Analysis of Covariance (Post-test by Treatment with Pre-test) on Five Dependent Measures .....	61
IV.4	Relationship Between Dependent Measures as Defined by Pearson Correlation .....	64

## LIST OF FIGURES

Figure	Page
III.1 Experimental Conditions .....	45
III.2 Schedule of Program .....	45
III.3 Research Design .....	55

## CHAPTER I

### INTRODUCTION

#### Purpose of Study

The purpose of this experimental study was to determine the effect of the Stott Flying Start Learning-to-Learn program (Stott, 1971) on selected measures of cognitive and perceptual skills of young children considered as appropriate pre-requisites to formal schooling. The dependent variables were assessed by measures of basic concepts, auditory-comprehension, receptive vocabulary, visual-perception, and attentional skills.

Specifically, the study was designed to examine the following research questions:

1. Will children involved in the five-week preschool Flying Start Learning-to-Learn program demonstrate significant increase in concept development as measured by the Boehm Test of Basic Concepts?
2. Will the children involved in the five-week preschool Flying Start Learning-to-Learn program demonstrate significant increase in auditory-comprehension skills as measured by the Bureau Auditory Comprehension Test?
3. Will the children involved in five-week preschool Flying Start Learning-to-Learn program demonstrate



2. significant increase in visual-perceptual coordination and planning as measured by the Porteus Maze Test?

4. Will the children involved in the five-week pre-school Flying Start Learning-to-Learn program demonstrate significant increase in hearing vocabulary as measured by the Full-Range Picture Vocabulary Test?

5. Will the children involved in the five-week pre-school Flying Start Learning-to-Learn program demonstrate significant increase in attentional skills as measured by an improvised memory activity?

### Significance of Study

#### Importance of Early Experience

Providing for children the opportunity to experience a wide variety of relevant activities and situations during the early years of life, will foster desirable growth in all areas of development--cognitive, motor, social, and emotional. The importance of early stimulating experience in optimizing human development is an assertion supported widely by prominent theorists (Danoff, Breitbart, & Barr, 1977; Hunt, 1964; Kagan, 1969; Krantz & Scarth, 1979; Larrick, 1976; Levi, 1967; Piaget, 1956; Starkey, 1981; Van Doorminck, Caldwell, Wright & Frankenburg, 1981; Weber, 1973).

Some theorists have attempted to define several of the specific factors in influencing development in the young.

3

The natural curiosity of young children in the sizes, shapes, and colors of objects, and the learning patterns derived from the exploration and manipulation of the physical environment are examples of those significant factors (Everett, Affleck, & Howard, 1976; White, 1977).

If the importance of such experience is underestimated, then deprivation of these experiences will occur and, as a consequence, impairment of the child's development will result. Deprivation of those experiences which normally foster progression through various developmental stages is seen as significantly detrimental to the child's development. Specific delays in language development and in development of reasoning (Bereiter & Engleman, 1966) and additional specific deficits in ability to discriminate auditorally and visually have been identified (Scottish Education Department, 1971).

#### Developmental Concepts

Several areas of particular relevance to the discussion of early childhood development are briefly presented here. They are the nature-nurture interaction, the stage theories of development, the role of the parents, and socioeconomic status.

With regard to the nature-nurture interaction, there is acceptance of the viewpoint that an interaction is evident in early years, between the child's genetically determined developmental trends and the effects of the

environment. Such an interaction has significance for the child's ability to benefit from environmental stimulation and leads to the development of useful skills (Gibson, 1980).

Consideration of the rate at which children acquire new developmental skills led to the development of the stage theories of development. It is generally accepted that the provision of stimulating and motivating experiences fosters the growth of the child through various developmental stages which are evident in children. While the sequence of stage progression remains consistent, the rate of progression through these stages may be influenced by environmental conditions.

Not the least prominent factor in the child's environment, is the parents. Environmental conditions can facilitate the development of adequately motivated children whose activities promote greater levels of learning (Danoff, Brietbart, & Barr, 1977). The influence of adults, especially parents, on the developmental progress of a child has been stated by Graham (1975) and Kagan (1962). Both emphasize the ability of parents to stimulate or motivate young children.

There is an additional factor considered significant. It is presented by various authors that a relationship is clearly evident between the development of intellectual ability and the child's environmental stimulation as reflected by socioeconomic status. Such a position defines a terminal condition in which very limited developmental

change can be expected. Such a position also dictates that not all children of age five years are prepared to enter a formal school setting and to benefit from their involvement there.

### School Readiness

It is generally accepted that an optimal level of developmental readiness exists for children about to enter school. Such readiness and subsequent academic performance is influenced by factors including stimulation through play, language stimulation, physical environment, pride affection and warmth, stimulation of academic behavior, modelling and encouragement of social maturity, variety of stimulation, and physical punishment. These factors are derived from validation studies of the Home Inventory (Bradley & Caldwell, 1981).

Environmental and developmental assessment at two years is effective in predicting developmental functioning (Siegal, 1981) and therefore readiness for school at Kindergarten age. Smolensky (1977) presented a list of those qualities reflecting school readiness. These included ability to play with other children, to separate from mother, to speak distinctly, to maintain sufficient energy levels, to draw and color, to look at books, to play games, to print name, and to repeat digits and sentences. It is further suggested that the more such things the child can do, then the more optimal the level of developmental readiness.



It is obvious that children do not start school with equal preparedness for what is required of them. Bloom (1965) has identified that children are different in their responsiveness to learning experiences. He outlines the various aspects of perceptual and linguistic development, and distinguishes the variations evident in children starting school. It is the level of the child's ability to organize perceptions according to linguistic skills that Bloom suggests determines a child's readiness for school.

#### Early Childhood Programs

A wide variety of early childhood programs have been designed and advocated for use with children during the pre-school years. Many such programs have as their primary goal the creation of a positive social environment intended to foster growth and development. Some efforts have been directed toward interventions designed explicitly to remediate specific developmental deficits for children believed to be growing up in an environment which has failed to provide appropriate nurturing experiences. Also, program design has ranged from those with a somewhat formal structure with well-defined instructional objectives to those of a less formal structure with more broadly based intentions (Bereiter & Engelman, 1966; Jamison & Dansky, 1979; Wickstrom, 1977).

The goal of such compensatory education programs, as outlined by Bereiter and Engelman (1966), is to convert the general goals of improving abilities into a series of specific

7

concepts and operations. Language abilities, for example, may be divided into a series of concepts and language operations which may be taught to the child.

While other advocates share the view that less formal, less structured program design will also enrich the child's experiences, Bereiter and Engelman (1966) note that pre-school programs must have instructional objectives and methods that are defined very clearly so that the effectiveness of the individual activities can be evaluated. The activities forming such curricula focus directly on the objectives they outline. They seek to bring the concepts to be learned to the forefront, and ensure that the child has exposure, practise, and correction.

Montessori. Montessori's (1964) programming provided numerous activities in very structured and orderly settings. Cognitive development was considered by Montessori to be enhanced by largely nonverbal, sensory and manipulative experiences.

Head Start. Other compensatory education programs, such as Head Start, attempted to remediate defined delays in development of language skills and reasoning ability. The basic assumption is that delays may be compensated for by providing appropriate activity which will foster the reduction of deficit skills. The differential achievement and the rate of adjustment of young children to formal

schooling may be explained, in part at least, by the differences in the requisite cognitive, perceptual, and social skills developed prior to school entry (Hunt, 1964).

Flying Start. Stott (1971) developed a number of programmed learning packages consisting of various learning games. The Flying Start Learning-to-Learn program was designed to affect the performance of children who had not learned to attend, who lacked the confidence to tackle learning tasks, or were so impulsive that they did not give themselves time to think. The program requires the children to manipulate materials and objects, and then provides encouragement and reinforcement of the verbalization of such activity.

The Stott programs are presented for general educational use in remedial and preventive curriculum. They provide, first, relatively easy tasks, which when accomplished gives the child a further expectation of success. The program then proposes to train the child in a technique of doing the tasks. Each successive task is only slightly more difficult than the preceding one. Thus the child never becomes discouraged.

Studies supporting the use of the Stott program for the development of deficit learning skills and remediation of inappropriate learning styles have not been extensive. Evidence in support of the theory presented by Stott is limited, with most of the information available gathered by

Stott himself. It suggests improvements related to impulsivity and distractibility (Stott, 1978).

The Stott program attempts to influence such things as a child's attention, motivation, task approach, and directionality. Stott describes the learning and problem-solving aspects of his program and those three related elements which he sees as being of primary importance: the focusing of attention, the processing of information, and the motivation to attempt the task. Language activities and reinforcement are associated with perceptual and manipulatory tasks presented through the program.

It was considered important to determine if such functions as understanding various concepts, understanding directions, increased vocabulary, planning skills, and attention are affected by the prescribed program.

### Learning Styles

The disadvantages evident among children starting school cannot be explained solely in terms of environmental deficit related to lower socioeconomic status as previously discussed. Rather the deficits may be present as faulty learning styles. That is, the child may not have learned appropriate methods of approaching the problems presented in the school setting. Such deficits may be evident in children from any socioeconomic background, as the deficit is not related solely to lack of experience. It should be noted, however, that lack of opportunity to experience beneficial



activity would perhaps serve to exacerbate the situation which results in faulty learning styles being exhibited.

If deficits are explained primarily in terms related to inappropriate learning styles, then more effective learning styles can be introduced to the child. The Stott (1971) program was developed with such a goal in mind.

Bloom (1965) notes that appropriate learning styles include being motivated to find pleasure in learning, to attend to others, to engage purposive action, and to work for distant rewards and goals. Such an orientation is supportive of the position presented by Stott (1971). Stott has identified children exhibiting at least three characteristics which he describes as faulty learning styles.

Firstly, Stott notes the role of the child's motivational level as influenced by the child's self-concept. The greater the self-confidence, the more likely will the child be to interact beneficially with others and with the various learning materials presented. Secondly, he describes that children may approach a task without the skills to observe the important aspects of the situation, without an understanding of directionality, and without the ability to understand the relationship of one characteristic or object to another. Thirdly, the child may demonstrate impulsive behavior and lack the ability to plan ahead or consider the consequences of his actions.

Stott (1971) explained that children may lack skills which are appropriate for school starting. It is believed

that children can be taught these skills and will exhibit greater competence in all areas. Such a position emphasizes the ways in which children approach learning tasks and situations, rather than the child's level of intellectual ability.

#### Research Question

The present study, then, was designed to assess the potential effectiveness of the Stott Flying Start program with a group of pre-kindergarten children. Specifically, the study posed the following problem:

Will a group of preschool children demonstrate significant gains, from a five-week pre-kindergarten program using the Stott Flying Start Learning-to-Learn Program, in basic concept development, auditory comprehension skills, vocabulary organization, visual-perceptual skills, and attentional skills as measured by:

1. The Boehm Test of Basic Concepts
2. The Bureau Auditory Comprehension Test
3. The Full Range Picture Vocabulary Test
4. The Porteus Maze Test
5. Attentional Activity

## CHAPTER II

### RELATED RESEARCH

#### Importance of Early Experience

The importance of experience during the early years of life in providing a foundation for future learning has been widely accepted by child development theorists (Danoff, Breitbart, & Barr, 1977; Larrick, 1976; Piaget, 1956; Weber, 1973). They emphasize that the early years of life are a formative period with significant implications for later development.

There is considerable empirical literature relevant to the assumptions of these theorists that early childhood experiences are crucial antecedents to the growth and acquisition of subsequent skills and competencies across all domains of human functioning: affective, physical, perceptual, and cognitive. The relationship between the abilities which a child develops and the exposure to appropriate stimulation during the early years is direct. The greater the stimulation, the more optimal the development.

Even so, some of these same theorists believe that skills appropriate to a developmental stage (e.g., Piaget's conservation of volume acquired during the Concrete Operations stage) cannot be prematurely developed. That is, some would predict that such skills cannot be developed until a

readiness for such development exists. Environmental studies such as those related to concept formation have confirmed such predictions. Piaget (Reese & Lipsitt, 1973) indicated that attainment of concepts such as conservation and classification have critical periods of development. However, Piaget, whose stage theory is perhaps most renowned, has also presented that concept formation could be accelerated through learning, using appropriate activity, provided there was a developmental readiness. Success on the tasks associated with concept formation was seen to be related in part to the child's level of development at the commencement of training. The child's success at any stage is a function of experience while in that stage and a function of prior experience which may have accelerated the rate with which he reached that stage. Rate of stage progression is then seen as a function of experience during each stage, a function of early environmental stimulation.

#### Nature-Nurture Interaction

It appears that the early years are important because experiences during this period determine to a great extent the later development and functioning of the child. Such a view of human development suggests that it arises from the relationship between the forces of nature and the environment, which produces change in the quality of an individual's behavior, and which is influenced by the individual's own

behavior. It should follow that the effects of such an interaction must have its greatest impact during the more rapid periods of development; that is, during the first five years of life (Regan, 1976). The Scottish Education Department (1971) notes that children make comparatively more progress in physical and intellectual functioning during the first few years of life than at any other time. It is necessary to acknowledge the importance of the kind of nurture, beginning at birth, which broadens and supports the development of the fully functioning person (Weber, 1973).

#### Stage Theories of Development

A brief review of selected stage theories of development, considering various domains, may serve to reinforce the notion of the effect of early and continuing experience on the development of the child.

Virtually all the developmental theorists postulate that children progress through discernible stages of growth and development generally proceeding from the less complex to the more sophisticated levels of competency (Bruner, 1969; Kagan & Moss, 1962; Piaget, 1956).

Piaget's developmental theory of intelligence notes the effects on development produced by variances in background, ability, and experience (Reese & Lipsett, 1973). According to Piaget, while the stages are the same in order of succession, for each individual, the rate of progression is

affected greatly by environmental factors, including what may be called the index of stimulation. That is, environments may vary with regard to their beneficial effect on development.

Kohlberg's theory of development of moral reasoning is similar to Piaget's theory of development in its presentation of growth through stages. The basis for his theory appears to be the way the child perceives and integrates the environment (Mussen, Conger & Kagan, 1969). Thus, at Kohlberg's preconventional moral reasoning level, external and physical events or objects are at the source of decisions about moral behavior.

Both theories reflect the importance of environmental factors on development. It could be concluded from Piaget's theory, that the exposure which a child has to many wide and varied stimulating experiences would facilitate the expression of increased skills. The increased skills would be evident in motor, verbal, and social performance. In Kohlberg's theory, it is the quality and quantity of external and physical events and objects that fosters the development of appropriate moral reasoning, reflected in the child's behavior.

While it is apparent that unanimity exists regarding such stage progression, it is also widely believed that environmental influences and experiences, although not altering the sequence of these stages, can have a profound impact on the rate of development. Such experiences may

also have significant implications for the degree to which a child might master the specific developmental tasks at particular developmental levels.

### Role of Parents

Kagan (1962) has expressed the idea that parents are not always aware of their role in affecting their child's motivation, the child's expectancy of success, and the child's cognitive abilities. He notes that parents of young infants may not have an adequate perception of how the child develops and may not feel confident that they can influence that child in a positive or beneficial manner. Parents may not understand their unique and significant opportunity to assist in the development of emotional, physical, and language characteristics (Graham, 1975).

Krantz and Scarth (1979) have suggested that in most instances adults may influence an increase in task persistence by proximity, verbal reinforcement, and prompting procedures. Few parents would be aware of the role that these specific orientations would play. Verbal reinforcement, for example, would be demonstrated by a parent who is vocally responsive to the child and imitates the child's vocalizations.

When parents provide a stimulating environment to influence early development, the effects are very much a function of the parent/child relationship (Beck, 1973). A relationship in which both the child and the parent are

accepting of the other provides a situation in which constructive and beneficial activity can be presented to enhance the child's development. Even while the parents may not understand the significance of the relationship, the influence remains. The parents have the first opportunity to influence the child's development and adequately prepare him for schooling. That influence is based in those perceptual and linguistic experiences provided by the parents (Rutter, 1979). These experiences are predictors of verbal and problem-solving abilities (Van Doorninck, Caldwell, Wright, & Frankenburg, 1981), with verbal abilities being primarily affected through memory of content (Price, Hess, & Dickson, 1981).

#### Socioeconomic Status

It is apparent that the experience provided in the family is or may be one of the key factors in learning and in the developmental progress of the child. One theorist has suggested that children who are labelled as disadvantaged tend to come from homes in which there is a lack of positive parental control; emotional consistency is reduced; verbal example is limited, and parental behavior is immature (Gordon, 1968).

Graham (1965) notes that the intellectual and emotional development of a child is influenced by the parents in the home. His rather pessimistic outlook is that even the most advanced compensatory program or the most culturally enriching



\*program cannot negate or reverse the negative influences of a parent on the child.

This opinion states that well formulated remedial experience does not foster significant and desirable development, and the lack of stimulating experiences during crucial developmental periods due to environmental deficits is assumed to have a very detrimental effect. Bereiter and Engelman (1966) noted that children from lower socioeconomic groups showed a deficit in abilities related to intellectual functioning as compared to middle-class children. The relationship being presented here is all too clear. It seems to be suggested that these children from lower socioeconomic class experience difficulties through lack of learning related to limited intellectual ability which is presumed to correlate with socioeconomic status. They have further described specific delays in language development (vocabulary size, sentence length, and use of grammatical structure) and deficits in the development of reasoning ability and logic. These delays were thought to be reflections of the child's social disadvantage, apparently based on the assumption that all aspects of growth are inter-related. For example, numerous other authors have stated that if any aspect of development is omitted or neglected, all others are affected (Brazelton, 1977; Jordon & Streets, 1973; White, 1977). The child's feelings about self and others, self-concept, and emotional composition, all affect how and what is learned both inside and outside

the formal school setting.

The presumed deficits related to lower socioeconomic status is perhaps clearly presented by Mussen, Conger, and Kagan (1969), who observed:

the culturally disadvantaged student is likely to be poorly prepared to enter and progress in the traditional school setting. Largely as a result of developmental influences in the family and his overall social milieu, he is likely to be handicapped in approaching academic tasks requiring a variety of basic cognitive abilities. (p. 565)

The deficit is seen as one of intellectual ability.

It appears that children may enter school with a qualitatively different preparation for the demands of the learning process and the behavioral requirements of the classroom. The Scottish Education Department (1971) stated that children may demonstrate limited visual and auditory discrimination ability, may demonstrate lack of concentration and organizational skills, and may be unable to express themselves verbally.

#### School Readiness

According to the position just outlined, children from lower socioeconomic environments may not benefit from formal schooling at the age when children normally start school.

Ilg and Ames (1965) stated:

What we really need to know in determining readiness for school entrance is a child's developmental level.

We need to know at what age he is behaving, as a total organism. This is not a measure of his level of physical maturity, though physical maturity or immaturity can provide supporting evidence. (p. 17)

They further state their agreement

with current school-entrance practice in that it assumes a five-year-old level of behavior to be necessary before a child can effectively carry out the work expected of a Kindergartener in most schools; a six-year-old level of behavior necessary before a child can do first grade work. (p. 18)

Unfortunately, it frequently occurs that children enter school unprepared and unable to attempt or exhibit the behavior expected of them. One way out of this dilemma is to somehow ensure that when a child enters Kindergarten he is equipped to proceed and interact in a manner which is beneficial to his development. This can be approached by involving children in an early assessment program which predicts probable developmental functioning at five years, which makes allowance for individual differences and deficits, which helps bring each child to an optimal level for success in the school setting, and which teaches the child appropriate learning styles. The possession of such appropriate styles will benefit the child in all future activity.

#### Faulty Learning Styles

While delays or deficits may be related in some instances to lower socioeconomic status, additional

particular disadvantage appears evident across all levels of socioeconomic status. Therefore any child may develop ineffective approaches to learning situations. Such deficits may serve to impede or handicap the full development of their learning potential. Verbal stimulation and direct teaching may be seen as important factors in supplying normally adequate experiences in fostering appropriate development. However, it cannot be assumed that if these experiences are employed or provided in whatever socioeconomic circumstances, that no such deficits in effective learning styles will be evident. As Smith (1968) says, it may be true that children disadvantaged socioeconomically may not have had "the opportunity to learn through the simple acts of communication with other people, through the sharing of knowledge, or through the following of example" (p. 10). It may also be true that children who have shared these experiences may also exhibit deficits which acknowledge no socioeconomic boundaries. Such deficits are seen as faulty learning styles. Such a position is supported by Frost (1975) who indicates that while socioeconomic status is a significant factor, it may not always result in stimulus-deprivation or handicapping conditions.

Rather than refer to deficit as a function of intellectual potential, Bereiter and Engelman (1966) consider it in terms of possession of appropriate learning styles. While it may be agreed that some children do experience difficulties related to an inability to learn, this inability

to learn may not be totally based in limited intellectual ability. Rather, it may be significantly affected by poor or inappropriate learning styles. Such a position is similar to that expressed by the proponents of compensatory education (Hunt, 1964).

It is also evident that the benefit of teaching specific learning skills to the child is acknowledged by proponents of theories relating deficit to socioeconomic status. Bereiter and Engelman (1966) suggested that socioeconomically disadvantaged children must acquire appropriate prerequisite skills or more effective learning styles at an accelerated rate. If this is not achieved, then the child who is initially disadvantaged, may be destined to progressively fall behind his chronological peers in a process referred to as "cumulative deficit" (p. 5). This appears a reasonable argument, but such faster progress will not occur unless the child is given an opportunity to learn and demonstrate appropriate learning styles.

Thus, presenting the deficit as one based on inappropriate or ineffective learning styles, and despite Graham's (1965) pessimistic prognosis, the case for providing experiences that will compensate for such deficits is one that has been presented by many (Chisholm, 1968). This evidence is the basis for suggesting that the effects, on a child's school performance, of his faulty learning styles, may be counteracted by providing enrichment or training in those skills which have apparently developed insufficiently.

The specific learning skills to which they refer and in which the child may be deficit have been described by Mussen et al. (1969). They note that children may tend to function slower, exhibit shorter orientation to time, and show reduced ability to attend or concentrate on sustained academic tasks. It may be considered that while assessment of such skills may reflect a direct relationship with socio-economic classification, the presentation of developmentally relevant remedial activities may assist in providing an accurate and more meaningful theory. Such a theory would define the cognitive potential existing within populations regardless of their financial or social conditions. Thus, as Gordon and Wilkerson (1966) suggest, compensatory education programs should be based on "learning experiences designed to compensate for or circumvent certain identifiable or alleged deficiencies in function" (p. 24).

Such a viewpoint may lead us to conclude that it is not accurate to automatically associate learning difficulties with cultural disadvantage or low intellectual ability. A child from a disadvantaged environment may not exhibit a reduction in cognitive or learning ability as a function of his disadvantaged environment. Any specific deficits that may appear might be related to inappropriate or inadequate learning style. The possession of such learning styles or approaches appears a function of learning. That is, appropriate approaches to assigned tasks, especially those encountered in the formal school setting, may not have been

learned. These appropriate approaches to assigned tasks may be lacking in the experience of all children whether they come from an environment that is described as socioeconomically disadvantaged or otherwise.

The particular deficit which may be defined as an ineffective strategy in various learning situations, has been more clearly outlined by Stott (1971). He describes a number of faulty learning approaches exhibited by children. These are not all relevant to our present study but they do define more clearly how Stott's orientation to various problems has developed. These faulty learning styles are:

1. The Unforthcoming Child - This approach is exhibited by children who lack confidence in themselves, and who are convinced from the start that the task is too difficult and that therefore they could not succeed. Such children lead others to think they are dull and they are therefore no longer pressured to achieve.

2. The Inconsequential Child - This approach is exemplified by the child who rushes into everything, guesses, and never plans ahead. This child is impulsive and inattentive, and acts without taking time to consider the consequences.

3. The Hostile Child - This child is motivated by frustration in personal attachments. Such a child may have been deprived of "reliable family attachments" (Stott, 1966).

Such hostility may be transferred to other situations in which it may be demonstrated as uncooperative moods, sullenness, defiance, aggressive acts, and association with other anti-social children.

4. The Depressed Child - This child demonstrates lack of interest and lack of energy. Such a child may be described as dejected, apathetic, and lifeless. This child refuses to meet the challenges of life and rejects any show of personal effectiveness and sociability.

5. The Withdrawn Child - This child rejects social contact and relationships. This rejection may be demonstrated to varying degrees, and be so severe that the child is described as autistic.

6. The Independent Child - This child is characterized by a lack of desire to please adults and an indifference to adult attachments. The child appears unconcerned about securing response from adults; will not respond to questions in school, will not work unless watched or compelled, and never volunteers.

7. The Attention-Seeking Child - This child is over-eager to greet the teacher, will find insignificant excuses to make contact with the teacher, will tell tales or lies, or will find some other method of maintaining a secure attachment.



8. The Easily Led Child - The desire for acceptance from other children is the basic characteristic of this classification. An insecure child will seek to reduce anxiety over acceptance by behavior designed to enhance relationships with other children.

9. The Distractible Child - This child is characterized by disorganization. This child may demonstrate excellent skills of observation and perception, but does not attend to anything for any significant period of time. They tend to function at a concrete level of cognitive functioning but lack ability to think abstractly.

Many of the preceding may appear more as orientations of personal functioning than as deficits of a cognitive or perceptual nature which are more the focus of this study. However, it must be stated that Stott focuses more on the individual as a total being, with deficits and difficulties in various areas. It is out of this holistic attitude that the specific approaches to cognitive and perceptual skill development have grown.

#### Teaching Appropriate Learning Styles

The orientation of Stott defines that children experience deficits related to school readiness if they exhibit faulty learning styles which are not conducive to achieve-

ment in the formal school setting. Such a viewpoint is obviously more hopeful than one which suggests that intellectual performance is determined by socioeconomic status. Considering the theory presented by Stott (1971), the argument may be stated that these faulty learning behaviors are what define the specific deficits described in children. That is, the deficit is really one related to how the child approaches new learning tasks and situations. Therefore, children from lower socioeconomic backgrounds may not be disadvantaged solely because of that fact. Rather, all children regardless of environmental circumstances, could potentially show deficits in skills defined as appropriate for school starting. These deficits may exist because these children have learned faulty styles, or have failed to acquire styles which are conducive to learning.

At this point it may be suggested that the child who has acquired adequate and appropriate learning styles also exhibits excellent ability to learn. A child who has these styles has the skills defined as necessary for starting school. Jordon and Streets (1973) have referred to a child's ability to learn and to practise appropriate learning styles as learning competence. It is learning competence which Stott attempts to improve. It is presumed that psychomotor competence, perceptual competence, cognitive competence, affective competence, and volitional (self-motivational) competence are worthy of expansion. With regard to the volitional component, Brazelton (1977) notes that

attention to compensatory or interventive programs may produce a positive learning style which may improve the poor self-image, resulting in a more positive one. A negative self-image may have been established by age three or four, by which time some children will have learned to expect a lack of success with many tasks.

### Early Childhood Programs

Wickstrom (1977) has described how, with regard to motor skill development, the experience at one level either affects or is affected by what is done to promote development at other levels. Such a position has been verified by Jamison and Dansky (1979) who suggested that early acquisition of a skill in any developmental stage may be a prerequisite for or a mediator of a later acquisition. It is reasonable to assume that such a premise is relevant for all areas of development and appears basic to various programs.

Historically, a number of programs have been developed for the purpose of providing children with experiences designed to promote optimum skill development. These include such programs as the Montessori Method, the Head Start Program, and Stott's Programmed Learning Activities.

The Montessori Classroom. Montessori (1964) developed a program to increase cognitive development through structured sensory and cognitive activities in structured, orderly

environments. The program emphasized motor and sensory training and the development of cognitive and social skills. The activities designed by Montessori consisted primarily of nonverbal types of sensory and manipulative experiences including practical eye exercises, early sensorial exercises, and use of special equipment. They were established to ensure that proper learning methods were presented during periods from birth to age six, during which the child appeared particularly sensitive to learning.

Montessori described the child's natural quest for knowledge, an unfulfilled desire to learn. In the program she developed, children were given the opportunity to experience the pleasure of learning through the orderly and appropriate use of materials, as demonstrated by the teacher.

Head Start. This was perhaps the most prominent of all enrichment programs. It was aimed at increasing cognitive development in children experiencing limited learning opportunity during their early years. The programs, designed to prepare children for school entrance, were developed individually according to the needs defined by each community. Levin (1967) was involved in the application of the program in the southern United States. The particular program was designed to stress language skills, reading, and number concepts. The goal was to familiarize parents with those desirable philosophies and programs of preschool education widely accepted in middle class societies. The

curriculum, focusing on the development of language and conceptual skills, provided activities designed to foster the development of social skills, self-confidence, and independent functioning.

The program was not without its critics. While the program placed emphasis on skill development and attempted to influence the levels of intellectual ability through environmental manipulations, in the view of Whimbey and Whimbey (1975) such manipulation seemed largely to be carried out on a limited scope, without apparent recognition that the total environment, including the home environment and parental attitude, had to change. The critics of Head Start also presented as ludicrous the apparent assumption that any and all types of stimulation are effective in alleviating deficiencies.

Although these critics questioned whether the effects produced by this program were significant and long term, the findings of longitudinal studies have suggested that children who had attended Head Start exhibited significantly greater skills and mastery of concepts such as colors, letters and size than those not attending Head Start (Isaac & Michael, 1971).

Stott's Programmed Learning. Stott (1964) believes that the distinctive advantage of programmed learning package is that the learning sequence can be adjusted to the child's needs. The child's learning capacity will dictate the level in the program at which the child will

function. Based upon this premise, Stott developed a number of learning games which he has organized into kits.

1. Programmed Reading Kit: This is described as a series of games and exercises which starts at the beginning of phonic understanding.

2. Writing and Spelling Kit: This kit provides a graded series of activities designed to teach the child how to create sentences and learn to spell. The learning sequence begins with very simple, short sentences, extends next to descriptions of what people are doing, and then beyond this to the child's creating of more, complex sentences.

3. The Flying Start Learning-about-Number Kit: This kit is designed for four-to-six year old children, and for older children who have difficulty in grasping the ideas of counting, quantity, and addition.

4. The Flying Start Extension Kit: This kit first trains awareness of left and right, and secondly encourages the child to organize observations in an orderly manner.

5. The Flying Start Learning-to-Learn Kit: This kit provided the principle treatment activity for this current study. It was designed for four-to-six year-old children, and those of any age who had not learned to attend, who lacked the confidence to tackle learning tasks, or were so impulsive that they did not give themselves time to think.

Thus, this kit is specifically designed to assist children described by Stott as Inconsequential or Unforthcoming.

This kit begins with very simple activities such as joining the halves of a picture presented. It progresses through a series of activities designed to teach more appropriate learning styles.

A child's reaction to these activities and the feelings generated concerning himself (self-concept) are significant factors in the use of this program. The use of such activity is seen as important to the developing self, so that each child seeks to achieve self-actualization (Weber, 1973). Bereiter and Engelman (1966) also recognize that the child's self-concept, perception of others, and reactions to the environment all affect learning. The interaction of these factors is significant.

Also significant are additional interactive effects noted by Nelson (1976) who described how early experience, specifically language activities, are related to perceptual functioning in the preschool years. Interaction of perceptual activity with the verbal counterpart leads to the development of a concept which corresponds to and represents cognitively that experience. Manipulatory experiences are seen as important with younger children. Thus, they are a significant part of the Stott programs which require the children to manipulate materials and objects and encourage and reinforce verbalization of such activity.

These activities are further presented in an effort to

teach more appropriate learning skills. The presentation of such activities through the Stott program is supported to enhance the development of more appropriate learning styles so that children can improve their task approach strategies and develop skills facilitating more efficient functioning in the learning situation and more positive learning styles. Good learning styles would be reinforced by the Flying Start program, supporting the idea that the ways in which a child uses intellectual and perceptual powers may be as important as his absolute or innate potential.

Stott encourages general educational use of his instructional program of preventive and remedial activities which are designed to teach learning approaches or styles which foster greater use of abilities. Bereiter and Engelman (1966) have noted that the main concern in evaluating children should be with what children should be able to do if they are to succeed in school. That is, because children are often admitted to school according to age criteria, when they have not attained an adequate growth stage or acquired the pre-requisite learning skills, it appears important that these children be provided with a curriculum which ensures readiness to engage in regular school activity. By providing appropriate activities children can overcome deficiencies in cognitive abilities. But readiness also involves possessing abilities which will allow the child to approach tasks in a productive and beneficial manner. Such activities are clearly outlined by Stott in his presentation of his various



learning programs.. With specific reference in the current situation to the Flying Start Learning-to-Learn Kit, the purposes of the activities are described below (Stott, 1971):

- to train children to look at and understand simple pictures,
- to let the child see that there are tasks that he can do if he will summon the courage to try,
- to teach the child that he will get on much better if he looks at the pieces first before trying to fit them together (p. 9),
- to match letters, teaching children to look properly at the letters (p. 11),
- so the child can learn that he can succeed and is reinforced for his initiatives,
- to develop the concept of direction or "way round" which is so important for the decipherment of sound and number symbols (p. 12),
- to help the child control impulsivity,
- to help the child gain a feeling of confidence and independence (p. 14),
- to foster more attention and reflectivity, and seeing the logic of what is happening in the pictures (p. 15),
- to condition the child to withhold making a choice until the correct procedure of comparisons and checks have been made,
- to train in directionality, left-right discrimination.

The described goals of the Stott activities are established to give the child in the learning situation intrinsic feelings of effectiveness and competence. Thus, the rewards are built into the activity itself and external reinforcement serves only to add to this reinforcement.

According to Stott these implicit rewards shape the development of learning skills as the child observes the results of his or her own responses. Stott states that the delights of recognition and discrimination experienced by children is one source of motivation which produces effectiveness. The reinforcement this affords extends the child's knowledge of the world and stimulates mental development.

The Learning-to-Learn program, the first phase of the Flying Start Kit (Stott, 1971), proposes to teach a child to examine a task closely. The program starts with very easy tasks, thus giving the child an expectation of success. It then proposes to train the child in a technique of doing the tasks, and it grades these tasks according to small steps. That is, the program presents successive stages with each successive stage being slightly more difficult than the preceding one. Thus the intent is that the child not become discouraged. The program further proposes to show the impulsive child that guessing does not result in significant achievement, but using perceptual and mental abilities efficiently will result in recognizable progress.

While Stott speaks in terms of his program being structured, this does not for him mean the presence of a regimented schedule stating which activities are to be assigned and when. Rather, it outlines that certain specific materials are provided with specific goals in mind for the child to achieve. Therefore, for example, free-play is restricted but not prohibited. Rather, it is allowed within

the limits of the materials provided and the instructions given. The child works at his or her own pace, but towards specific goals and with specific materials provided.

This approach appears similar to White's (1971) cognitive focus of his social interaction model. Using a specific curriculum, an instructional games approach, the process White outlines focuses on two dimensions: language acquisition and concept formation. Stott capitalizes on the instructional-games approach but adds a component of internal and external reinforcement (White, 1973). The child is assisted and encouraged in activities, especially when the child proceeds in the direction seen as appropriate by the teacher or experimenter.

#### Evaluation of Stott

In 1978, Stott indicated that he could never be satisfied with an education system which permitted children to remain in conditions of learning failure. Stott's goal, as reflected in much of his writing, has been to help individuals make good use of the capabilities that they possess. As such, he perceived such functioning as a product of experience, the development of such experience into concepts, and the use of such concepts in activities utilizing cognitive skills.

While mental growth is always possible in Stott's orientation, such growth can be lessened by the existence

of either too much or too little energizing motivation. If too little exists, a situation Stott referred to as unforthcomingness, then developmental retardation may occur. Too much may cause behaviour problems and related learning difficulties. Stott describes methods designed to improve the child's learning skills.

Stott (1978) reports the results of three experiments which measured the extent to which gains were made in learning skills using the Flying Start (a programmed kit designed to help children learn to learn). Two of these were inconclusive and suggested only possibilities of improvement (eg., reduced time required to complete post-testing). The third study, as with the other two, supported Stott's orientation, presenting significant improvement in the group administered the Flying Start Program. Improvements were specifically noted in response time, frequency of eye-scanning movements, looking and checking.

The study cited above used the Guide to the Child's Learning Skills as one of the pre- and post-measuring devices. This guide is a teacher-based instrument for screening and follow-up. It was noted that significant reductions were shown in impulsivity, distractibility, evasion, and loss of concentration.

Such evidence supporting Stott's theory and positively evaluating his programs appears sparse. However, at the other extreme there is no evidence to suggest that his theory

and his programs are invalid and/or unreliable. It should be noted that subsequent use of this program, has received positive response from parents and children.

An additional point which should be made is that Stott's objectives are rather precise. Unfortunately, he is less specific where directions for applying the program activities are concerned. Thus, the same program in various situations may be applied inconsistently, thus leading to differing results.

#### Dependent Measures

The Flying Start program involves a variety of game-like activities as described earlier. These activities are presented with specific goals in mind. They were designed to produce specific effects. In order to decide how these effects might be best measured, the activities were examined to determine the possible constructs that may be described.

Stott (1978) describes the activities in detail. The goal he describes is to give the child "feelings of effectiveness and competence" (p. 162). It might be of benefit to quote Stott directly and extensively. Stott describes that:

The Flying Start differs from other early-education materials in two further respects. The first is that the pieces that have to be fitted together to form a picture consist of uniform shapes with straight lines at their joining edges, and not of irregular shapes as in traditional jigsaws. The purpose of this is to force the child to exercise visual perception in deciding whether a piece is correctly placed. That is

to say, he has to notice whether the piece added is consistent with the rest of the picture. As long as it is possible to use the piece's shape as a criterion, it is tempting to work by a motor trial-and-error. This applies particularly to impulsive children who have never "learned to use their eyes" and to the retarded, who are content with slow and ineffective methods of work. With these children the provision of an irregular shape as a guide to correctness reinforces an unprogressive learning strategy.

Many children show unmistakable pleasure upon perceiving that the piece added makes sense with the rest of the picture (the horse gets legs or the fisherman gets a fish on his rod). It will be recalled that the achievement of recognition and discrimination was mentioned above as one of the sources of effectiveness-motivation. Eleanor Gibson (1969) has drawn attention to a similar motivation: "the need to detect what goes on in the world around us is a strong motive in its own right... we are set to discriminate things." The endless delights of recognition and discrimination are essential to the major appeals of the visual arts and of music. These pleasures are experienced by children from infancy. The reinforcement they afford extends their knowledge of the world and stimulates their mental development. Nevertheless, in some children this quest for a refinement and enlargement of their experience is inhibited, either by environmental deprivation or by the handicaps of their own temperament. One of the main training objectives of the Flying Start is to reinstate this powerful intelligence-forming motivation.

The second feature distinguishing the Flying Start from other early-education materials is that color is used only as a sequence-guide to the teacher. The reason for this is that the sensuous appeal of color has such primacy in the mechanisms of recognition that it interferes with the growth of the kinds of discrimination skills that are educationally most valuable. The symbols used in writing and computation are in monochrome. Moreover, a child with low effectiveness-needs may remain content with the satisfaction of a very elemental discrimination between the primary colors and will not advance to the more useful monochrome discrimination unless forced to do so by the nature of the task.

(p. 47).

The specific constructs that might be considered significant may be determined by looking at the program activities in greater detail. The Puzzles were designed to teach a

child to look at, to understand, and to manipulate simple pictures. The Mail Boxes were designed to teach the child to match letters and to develop a concept of directionality. The Merry-go-Rounds helps the child control impulsivity and pay attention to detail. The What's Happening activity requires a greater degree of attention and reflection. The Animal Puzzles were designed to teach the child that a systematic approach to a task can be effective. The matchers create a need to attend to detail, to make comparisons and checks, and to delay making choices immediately. During these activities it is presented by Stott that verbal response to the child is reinforcing of activity and also describes for the child what is actually being done.

Thus, it was anticipated that manipulation of various objects, such as puzzles for example, and the combining of these objects and the interaction of their parts require the focusing of attention, the discrimination of parts and their position in relation to the other parts. Such activity might require children to consider the results of their actions, to plan ahead, that is, to fit one piece exactly right before another piece is attempted. The activities would all require some direction being given to the child by the teacher and would involve the teacher's reinforcement of the child's efforts through verbalization of what the child has done (example: "That's very good. You have put that piece over the first piece.").

The constructs that may be considered appropriate to measure then may be:

1. the child's knowledge of concepts related to manipulation of the program material,
2. the child's ability to comprehend information presented through the auditory mode,
3. the child's acquisition of verbal knowledge, such as concepts and information,
4. the child's ability to delay responding until the alternatives have been explored, and
5. the child's ability to attend to various details and hold these details in his memory.

The outcomes which might be obtained could be assumed to reflect concept development, auditory comprehension, verbal knowledge, planning skills, and memory ability.



## CHAPTER III

### METHODOLOGY

#### Background and Description

During the early weeks of the 1976-77 school year, Dr. Marie O'Neill, Memorial University of Newfoundland, involved children of St. Patrick's Hall/Boys Primary, St. John's, in the Flying Start Learning-to-Learn program developed by D. H. Stott (1971, 1974, 1978) of the University of Guelph. These children were tested prior to the program application and tested again following completion of the program. Dr. O'Neill obtained measures of concept development, analysis of which led to the conclusion that the children made gains in this area during the course of the program. That is, higher post-test scores were obtained by these children participating in the Stott program, presented in conjunction with the regular Kindergarten curriculum, as compared with the scores of those children receiving only the regular Kindergarten curriculum.

These findings, however, lack reliability because the situation was not one in which rigorous experimental controls were applied. While there was a lack of systematic research methodology in the project reported above, it was subsequently thought that this same Flying Start Learning-to-Learn program, if applied prior to the start of the school

year, might produce similar improvements in the test scores of those preschool children registered for the 1977-78 Kindergarten program at St. Patrick's School. It was decided that the program, to be most beneficial, should be administered toward the end of the summer, before the start of formal schooling. This was designed also so that the period between the end of the Stott program and the start of the Kindergarten program would be minimal, thus allowing little time for deterioration of the new learning or for interference from other sources.

Limitations in the scope of this study derive primarily from the experimenter's role in various critical aspects of the study. Specifically, because of the restricted time frame within which the study could be completed, the experimenter was involved in pretesting children of the program and control groups, and in administering the program. The hiring of a colleague to carry out post-testing on all the children at the end of the study was made possible through the cooperation of Memorial University of Newfoundland.

An additional limitation derives from the fact that all subjects in the study were male and of approximately the same age. Such a restriction may limit the generalizability of the results.

### Sample and Sampling Procedures

St. Patrick's Hall Primary School, operated by the St. John's Roman Catholic School Board, St. John's, Newfoundland, is an all-boys school. Therefore, all children participating in the study were males who were between ages four to six years. The school population appears representative of the socioeconomic distribution of Metropolitan St. John's, a city of approximately 120,000 people.

Approval had been received from the Roman Catholic School Board (see Appendix A) to involve the fifty-six pre-school children registered for the 1977-78 school year at St. Patrick's School in the study. Parental permission to test their children and involve some of these children in the program was acquired.

These children were randomly assigned to four groups. Randomization was achieved by assigning numbers (1 - 56) to each child and then using a computer-generated list of random numbers to place the children in one of the four groups.

The four groups were arranged according to Solomon's Design, a Treatment/Control research design with pre- and post-test measures on the dependent variables (Campbell & Stanley, 1963). Group I was pre-tested prior to program application, and then post-tested. Group II was pre-tested, and after a period of time, was post tested. Group III was not pre-tested, received program application and was post-tested. Group IV was post-tested only. The following

illustrates the experimental conditions:

Figure I

	Pre-test	Program	Post-test
Group 1	0	X	0
2	0		0
3		X	0
4			0

Collection of Data

Pre-testing of Groups I and II occurred between July 5, 1977 and July 8, 1977. Post-testing of all groups occurred between August 9, 1977 and August 16, 1977. The following chart may serve to clarify the schedule:

Figure II

<u>Pre-testing</u>	<u>Program</u>	<u>Post-testing</u>
July 5-8	July 11 - August 12	August 9-16

The overlap between the end of the program administration and the start of post-testing was made possible by the schedule of program administration. Some of the children completed their ten sessions earlier than others, thus allowing post-testing to commence before all the children had completed the program.

#### Instrumentation

The assessment instruments used should reflect the level of skills possessed by the children, especially those skills assumed to be affected by the Stott program. The tests used were designed to determine changes in various skills which were anticipated to be influenced by the program and related to desirable school progress. They were designed to assess the child's understanding of concepts, auditory and verbal comprehension, ability to plan ahead, and ability to concentrate for adequate periods of time on the tasks presented.

The dependent variables in this study were five measures of the anticipated outcomes of the program used. Five assessment instruments or procedures were applied in an effort to clearly determine the effects of the Stott program. The specific skills which Stott suggests are influenced by his program may be measured by the instruments used:

It was decided to assess for gains in concept develop-

ment. A test of those basic concepts, considered appropriate for starting school, was anticipated to be expedient in defining development of concept formation. The Boehm Test of Basic Concepts was chosen.

In addition, because the comprehension of auditory direction is such a large part of the school's expectations of the child, and because the Stott program involves an element of direction giving, an assessment instrument with the ability to determine a child's comprehension ability in the auditory mode was needed. Such an instrument is the Bureau Auditory Comprehension Test.

Through the application of the program, it was considered that the children would demonstrate an improvement in language skills. These improvements were anticipated primarily in the child's ability to label those pictures presented during the program activities. Such improvements were considered amenable to assessment using the Full-Range Picture Vocabulary Test.

The ability of children to plan ahead and to learn through repetition of related or similar activity may be skills fostered by the Stott program. The child's ability to look ahead at what piece of the object pictured is required next, and his ability to remember this on future occasions as a function of repeated action, are similar to those skills measured by the Porteus Maze Test.

The child's ability to hold in his memory a specific idea related to resolution of the task at hand is also a

relevant aspect of the Stott program. The concentration skills produced by program activities was measured using an activity described in later pages (Appendix B - Attentional Activity).

These assessment devices are relatively easy to administer, are able to retain a child's interest and attention for longer periods because of their attractive format, and can provide information that is relevant to determining the success of the applied program.

#### Boehm Test of Basic Concepts

The Boehm Test of Basic Concepts (Boehm, 1966) is described by the authors as suitable for screening and teaching, and not designed for predictive or administrative purposes. The standardization sample for Form A were children from sixteen cities across the United States, enrolled in Kindergarten, First Grade, and Second Grade. Assessment was carried out on classroom groups from schools with a fairly wide range of socioeconomic background.

The author notes that the test consists of 50 items assessing the child's understanding of space (location, direction, orientation, dimensions); time and quality (number); plus a few miscellaneous concepts selected on the basis of their contributions to the internal consistency and validity of the test. It is also stated by the author that the concepts selected are those important for understanding and following instructions, those occurring

frequently in curriculum materials, and those having little or no attention given to their instruction.

McCandless (1972) notes that this instrument was designed to assess knowledge of "frequently used basic concepts widely, but sometimes mistakenly, assumed to be familiar to children at their time of entry into Kindergarten or first grade" (p. 335). It was suggested by McCandless that Boehm sampled widely in reasonably representative school systems. McCandless also felt that face validity was so convincing that no other evidence with regard to validity was necessary and no other reliability or validity information is available.

The Boehm Test of Basic Concepts is described as an easy and enjoyable experience. The test items are arranged and presented in an interesting and attractive format. The arrangement also lends itself to easy administration with this age group.

#### Bureau Auditory Comprehension Test

The Bureau Auditory Comprehension Test was designed to assess comprehension of spoken language structures in children from age 24 - 84 months. The materials are large and clearly presented as black pictures on a white background.

This test takes no longer than twelve minutes to administer and does not require the child to speak. Thus, language comprehension can be assessed in a child who is



unable or unwilling to speak, or whose speech is unclear.

Standardization was carried out with 406 girls and 362 boys from Kindergartens, health centers, and public schools in selected areas of New South Wales. No validity studies are available for this test.

#### Full-Range Picture Vocabulary Test

The Full-Range Picture Vocabulary Test (Ammons & Ammons, 1949) was designed to give a

rapid estimate of verbal comprehensions. It consists of a number of plates (cards) each with four separate cartoon-like drawings on it. The children are asked to indicate by word or gesture which of the four pictures best illustrates the meaning of the given word.

Cruickshank (1969) reports "thorough and meaningful standardization procedure" (p. 342) and satisfactory validity as a test of verbal comprehension. Reliability is reported to be adequate (Altus, 1969).

Both Altus (1969) and Cruickshank (1969) note the advantages of this test instrument. They cite the speed of administration, the interesting cartoon-like format, and the ease of administration.

#### Porteus Maze Test

The Porteus Maze Test (1947) is described as a performance test of intelligence, requiring planning capacity, foresight, and the ability to learn from experience. Docher

(1972) notes the skills ~~required~~ to perform this test: recognition of the final goal and the intermediary landmarks, short-term memory for the preferred course, and the ability to carry out the plan.

The abilities to concentrate and to plan ahead are skills that the Stott program aims to influence. Stott seeks to reduce the impulsivity of children and increase their recognition of the next desirable step in completing the task. Thus, this test is appropriate for use in assessing the effect of the Stott program.

Horn (1972) notes that the norms and the information on reliability are not of a quality sufficient to justify using the test in individual diagnosis. It is, however, recommended for research purposes.

#### Attentional Activity

This specific activity was taken from Thinking is Child's Play (Sharp, 1969). It was adopted to permit further observation of the child in the test situation. Of specific interest was the children's ability to attend to or concentrate on the activity which is described in detail in the Appendix. The task provided the children with an opportunity to attend to, recognize, and remember order. Such a task required a degree of concentration which was reflected by the number of correct responses given. The activity assessed primarily short-term memory skills as the child was required to remember only the colors of the spool

on each end of the table.

#### Description of Programs

Stott (1978) outlined how the Flying Start materials are perceived by children as games. The materials are graduated and have alternate methods of use so that they can be used for the remediation of faulty learning styles, irrespective of the child's age. Learning and problem-solving components of the program contain three elements: the focusing of attention, the processing of the information received, and the willingness of the child to attempt the task. In working through the program, the child receives training especially in the component that is demonstrated by that individual child to be the weakest.

Stott (1971) has recorded a number of principles forming the basis for the development of the Flying Start program.

1. He recognizes that a child's temperament will influence the child's approach to tasks.
2. The presence of faulty learning styles does not mean that more effective learning habits may be developed.
3. The program activities will help the child use effective learning styles.
4. The child is motivated by success experienced in the various program tasks.
5. These activities are graduated so that each child will not have to attempt tasks which are too complex for him.

6. The program is presented in a game-like fashion so that the child will continue to use the material and therefore learn from this activity.

The materials constituting the Learning-to-Learn Kit are described below:

1. Picture Puzzles - These are very simple pictures cut into 2 and 4 straight-edged pieces.
2. Merry-go-rounds - These are puzzles consisting of 8 pieces which form a circle when fitted together.
3. Mail Boxes - These are nine small cardboard boxes open at the top and back. The child is required to place the letter in the appropriate mail box which has the same letter printed on front.
4. Animal Puzzles - These are pictures of animals cut into six, eight, or ten straight-edged pieces.
5. What's Happening - This activity involves the putting together of 4 or 5 parts of a scene in which something is happening.
6. The Matchers - There are 15 Matchers sets, each consisting of a double series of six cards containing the same six variants of a picture.

Scheduling of Program

The following is an outline of the schedule that was followed in providing the activities which constitute the program:

- Day 1: 2 piece puzzle (2 each)  
Pink merry-go-round  
Pink mail boxes (2)
- Day 2: 2 and 4 piece puzzles  
Pink mail boxes  
Pink and yellow merry-go-rounds
- Day 3: 4 piece puzzles  
First 6 piece puzzles  
Yellow merry-go-rounds  
White What's Happening (2 or 3)
- Day 4: Yellow Mail Boxes  
Pink, Yellow and Blue merry-go-rounds  
6 piece puzzles
- Day 5: Yellow and white What's Happening  
6 and 8 piece puzzles
- Day 6: Yellow and pink mail boxes  
Blue and green merry-go-rounds  
Requests
- Day 7: Blue mail boxes  
Matchers  
8 piece puzzles
- Day 8: Matchers  
Merry-go-rounds (1)  
Mail boxes  
6 and 8 piece puzzles
- Day 9: Matchers  
All mail boxes
- Day 10: Unscheduled Activity

### Research Design and Statistical Procedures

This study utilizes a true experimental design, named the Solomon Four-group Design. Campbell and Stanley (1963) note that with an experimental and a control group having a pre-test and with an experimental and a control group lacking the pre-test, "both the main effects of testing and the interaction of testing and treatment are determinable". Such a design greatly increases the strength of inferences drawn from the study.

Two of the four randomized groups were pre-tested, all four were post-tested. Of the two treatment groups, one was tested prior to the treatment, then was post-tested; the second group was tested only after the treatment. Of the two non-treatment groups, one was pre-tested and post-tested; the second group was post-tested only. The following diagram may clarify the description of the groups:

Figure III  
Research Design

Treatment		Control	
Group I	Group IV	Group III	Group II
Pre-tested	-	Pre-tested	-
Post-tested	Post-tested	Post-tested	Post-tested

The Solomon design was used to clearly distinguish program effects from any contaminating contributions made for example by pre-testing. Campbell and Stanley state that if the pre-test is considered a second independent variable, then the experiment can be considered to be a simple two-by-two situation for which analysis of variance can be used. From the column means, one estimates the main effect of treatment; from row means, the main effect of pre-testing; and from the cell means, the interaction of pre-testing with the treatment.

If it is determined that the main and/or interactive effects of pre-testing are non-significant then, according to Campbell and Stanley (1963), analysis of covariance can be performed with pre-test scores being considered the covariate.

The Statistical Package for the Social Sciences was the computer program to be used in all analysis.

## CHAPTER IV

### RESULTS

This chapter will review the results of analysis carried out on the data obtained from the dependent measures taken. Post hoc examination of these results does not suggest the need for analysis beyond that outlined below.

A review of Table I reflects consistency between the means of pre-test scores and the means of the post-test scores. A comparison of these means and standard deviations, as listed in the table, shows elevation of all post-test scores for the pre-tested groups over post-test scores for the groups not pre-tested. This elevation is consistent on all five dependent measures.

These elevations are modest and required further analysis to determine whether they are significant.

#### Analysis of Variance

Analysis of variance was computed on the accumulated data. The results of this analysis are presented in Table II. It indicates that no significant effects are evident in any of the experimental situations examined by this analysis. None of the variances calculated reached the .05 level of significance and it was concluded that any variation observed could be due to chance.



Table I

Means and Standard Deviations of Treatment and Control Groups on Five Dependent Measures

Measure	Control								Treatment							
	Pre-test				No Pre-test				Pre-test				No Pre-test			
	Pre-test Scores		Post-test Scores		Pre-test Scores		Post-test Scores		Pre-test Scores		Post-test Scores		Pre-test Scores		Post-test Scores	
	X	SD	X	SD	X	SD	X	SD	X	SD	X	SD	X	SD	X	SD
Boehm Test of Basic Concepts	41.50	5.26	29.25	9.03	-	-	27.10	5.84	35.25	6.04	29.50	7.23	-	-	26.50	6.86
Bureau Auditory Comprehension Test	21.75	1.89	24.25	0.96	-	-	21.50	4.91	25.13	7.12	22.25	2.19	-	-	21.50	3.70
Full-Range Picture Vocabulary Test	25.75	2.63	25.25	2.75	-	-	23.30	2.79	22.88	4.19	25.38	1.85	-	-	22.00	5.12
Porteus Maze Test	5.25	0.96	5.50	0.58	-	-	4.70	0.82	5.63	0.52	5.38	1.06	-	-	5.00	0.82
Attentional Activity	2.00	1.41	3.25	0.50	-	-	3.00	0.67	2.88	0.84	2.88	1.13	-	-	2.75	1.26

Table II

## Results of Analyses of Variance with Five Dependent Measures

Measure	Source of Variation	Mean Square	F	Level of Significance
Boehm Test of Basic Concepts	Main Effects	20.363	0.423	0.660
	Pre-test	36.583	0.760	0.393
	Treatment	0.169	0.004	0.953
	Interaction	0.997	0.021	0.887
Bureau Auditory Comprehension Test	Main Effects	8.813	0.660	0.527
	Pre-test	16.897	1.265	0.273
	Treatment	5.517	0.413	0.527
	Interaction	5.517	0.413	0.527
Full-Range Picture Vocabulary Test	Main Effects	20.131	2.063	0.151
	Pre-test	39.111	4.007	0.058
	Treatment	1.904	0.195	0.663
	Interaction	2.801	0.287	0.598
Porteus Maze Test	Main Effects	1.262	1.636	0.218
	Pre-test	1.904	2.468	0.130
	Treatment	0.042	0.055	0.817
	Interaction	0.249	0.323	0.576
Attentional Activity	Main Effects	0.285	0.341	0.715
	Pre-test	0.194	0.232	0.635
	Treatment	0.539	0.645	0.430
	Interaction	0.022	0.026	0.874

While analysis of variance reflects no pre-testing or treatment of main effects, the main effects of pre-testing does approach significance on one dependent measure--the Full Range Picture Vocabulary Test. This suggests that those children who were pre-tested tended to perform better on the post measures than those who were not tested before the program. The implications of their finding will be discussed in a later section.

#### Analysis of Covariance

Campbell and Stanley (1963) indicate that if the main and/or interactive effects of pre-testing are non-significant (which they must be in this present situation as no effects in the expected direction are evident), an analysis of covariance should be performed with pre-test scores being considered the covariate. Analysis of covariance, when applied, is a more rigorous statistical procedure which reduces the possibility of Type II error, which is the probability of failing to recognize the existence of a difference when such a difference exists.

The results of such analysis, presented in Table III, indicate that none of the F values have obtained a probability factor suggestive of significance ( $p = .05$ ). Controlling for the effects of pre-testing, the main effects are not significant. However, on three dependent measures, the main effects variation does approach significance. The three

Table III

Results of Analysis of Covariance (Post-test by Treatment with Pre-test) on  
Five Dependent Measures

Measure	Source of Variation	Mean Square	F	Level of Significance
Boehm Test of Basic Concepts	Covariates	304.820	13.512	0.005
	Pre-test	304.820	13.512	0.005
	Main Effects	103.061	4.568	0.061
	Treatment	103.061	4.568	0.061
Bureau Auditory Comprehension Test	Covariates	0.730	0.200	0.666
	Pre-test	0.730	0.200	0.666
	Main Effects	13.287	3.635	0.089
	Treatment	13.287	3.635	0.089
Full-Range Picture Vocabulary Test	Covariates	29.296	22.164	0.001
	Pre-test	29.296	22.164	0.001
	Main Effects	5.474	4.141	0.072 *
	Treatment	5.474	4.141	0.072
Porteus Maze Test	Covariates	4.050	8.576	0.017
	Pre-test	4.050	8.576	0.017
	Main Effects	0.617	1.306	0.283
	Treatment	0.617	1.306	0.283
Attentional Activity	Covariates	0.000	0.000	1.000
	Pre-test	0.000	0.000	1.000
	Main Effects	0.445	0.420	0.533
	Treatment	0.445	0.420	0.533

dependent measures are the Boehm Test of Basic Concepts, the Bureau Auditory Comprehension Test, and the Full-Range Picture Vocabulary Test. The main effects variation while substantive is not significant, but it does suggest that in further studies these measures should be reexamined.

It was concluded that the effects of the Stott Flying Start Learning-to-Learn program on the development of appropriate learning skills, as reflected by the statistical analysis of the data, are not shown to be significant. Statistical analysis indicates that the program, as applied at this particular time in the lives of these children, for that particular period, did not produce significant change in their performance as measured by the assessment instruments described.

#### Full Range Picture Vocabulary Test

As indicated above Table II reflects that there is one F score which approached significance. The F score of the Pre-test variation on the Full-Range Picture Vocabulary Test approaches a .05 level of significance ( $p = .058$ ). In Table III, the F score of variation due to the main effect for that same test again approached a .05 level of significance ( $p = .072$ ). Also in Table III, the F score of variation for the Boehm Test of Basic Concepts and the Bureau of Auditory Comprehension Test approached a .05 level of significance (.061 and .089 respectively).

Such a situation as described above may suggest that these particular tests show greater response to the pre-test condition. This sensitivity may be important when assessment instruments are considered in future experimentation. These three tests may be particularly responsive because (1) their content is similar in nature to the activities encouraged and reinforced by the Stott program, (2) they may correlate very highly with each other and are therefore measuring similar knowledge and/or (3) children of this particular age (4-5 years) may be more susceptible to verbal learning, and therefore instruments measuring these aspects of verbal learning would be most relevant and most likely to represent that change has occurred.

Firstly, in consideration of the content of these three tests, it may be presented that the language aspects of the Stott program may have served to reinforce the particular skills which are measured by these tests. These tests may therefore be seen as more congruent with the program or treatment activities, and may have acted as a direct teaching tool as well as an assessment instrument. That is, there appears to be some learning transfer or practise effect occurring from the pre-test to the post-test situation.

Secondly, in consideration of the correlation between the Boehm Test of Basic Concepts, the Bureau Auditory Comprehension Test, and the Full Range Picture Vocabulary Test, Table IV gives the Pearson correlation coefficients

Table IV

Relationship Between Dependent Measures as Defined by Pearson Correlation

Measures	Boehm Test of Basic Concept	Bureau Auditory Comprehension Test	Full-Range Picture Vocabulary Test	Porteus Maze Test	Memory Activity
Boehm Test of Basic Concepts	1.000 0.0	0.3583 0.036	0.5265 0.003	0.6081 0.000	0.6584 0.000
Bureau Auditory Comprehension Test	0.3583 0.036	1.000 0.0	0.3076 0.063	0.3237 0.053	0.1567 0.222
Full-Range Picture Vocabulary Test	0.5265 0.003	0.3076 0.063	1.000 0.0	0.4330 0.014	0.5879 0.001
Porteus Maze Test	0.6081 0.000	0.3237 0.053	0.4330 0.014	1.000 0.0	0.4164 0.017
Attentional Activity	0.6584 0.000	0.1567 0.222	0.5879 0.001	0.4164 0.017	1.000 0.0

for all the test instruments in this study.

The correlation between these three instruments appears substantive. It is suggested that these tests are not significantly uncorrelated. One would therefore expect that, while these tests are measures which are independent of the role or content of the other measures (the assumption under which all measures were chosen), they do appear to be measuring knowledge or skill areas which are in some ways similar.

Thirdly, if children at this particular age are very susceptible to verbal learning, then involvement in this program (with verbalizations being made by the experimenter and with the child's verbalizations being reinforced) could result in increase in language skills, particularly those measured by instruments requiring verbal knowledge but limited or no verbal response. The presence of critical periods during which a child appears more adept at acquiring language has been presented by Munsinger (1975). There is evidence to suggest that children who become deaf before age six years experience a serious impairment in their ability to learn grammatical rules. Prior to four years, deafness will cause a child to lose speech ability completely, without special training. Such evidence suggests that the children in this current study may be exhibiting that particular sensitivity to language acquisition that is demonstrated to at least age six.

In future studies, if these assessment instruments are



used, the specific measures taken by these tests should be considered and the possibility of determining an interaction effect studied. Also, in further studies, it must be recognized that these instruments and others used were not designed specifically for use with the Flying Start or any other such program. It would be desirable to obtain or develop instruments based on the particular program and taking more direct measures of the skills thought to be influenced by that program. It would also be desirable to use alternate forms of all tests.

#### N of Sample

Beyond the above, and in reference to all measures used in this experiment, is a relationship expressed by Feldt (1973) between the N of cases and the dependent measures. Feldt suggested that without sufficient numbers in experiments, significant differences may not be detected. It might be concluded therefore that the results of this present experiment could have more closely approached an acceptable level of significance if the number of children in each group had been greater. The sample of convenience in this instance was total available group of pre-kindergarten children at the school.

### Alternative Assessment

It is recognized that assessment results at this age have limited reliability. However, it must be considered whether the types of measures taken may have affected the significance of the results. While it was considered desirable to assess improvements in such specific skills as ability to plan ahead, to recognize pictures, to concentrate, and so on, as described earlier, it is evident that such skills were not measured directly. Rather, they were expected to be reflected in the performance of the children on the selected measures described earlier.

The debate over the use of intelligence testing and achievement testing has raged since their inception. In this current study, intelligence testing was not carried out. While the author agrees with the notion that intelligence and intelligent quotients can be positively affected by experience, the primary concern here was to produce changes in the specific skills that later might be used in test situations in which intelligence quotients were being assessed.

While Shertzer and Linden (1979) have cited achievement tests which measure such basic skills as reading, language, math, and vocabulary, in this experiment we have used the broadest meaning of the term achievement testing. It was attempted to measure changes in the child's level of performance, a reflection of the skills he had acquired.

This was carried out by comparing performance on tests administered prior to and following the program. Increases in scores on these achievement tests were considered to be reflections of an increase in those skills which the program might foster.

It would be possibly more accurate, and therefore perhaps the results might have been significant, if assessment devices which measured the specific skills being fostered could have been applied. For example, if ability to concentrate was one of the skills being fostered, and if concentration were to be defined as the length of time the child would look at a specific page or picture, then concentration could be measured directly by recording the amount of time that the child attends to the page or picture.

Thus, rather than applying testing which at best indirectly measures the changes considered desirable, it would have been more accurate to measure such changes by more direct measure.

Two additional factors are the length of the program and the role of the experimenter in the present research project.

#### Program Period

The children in this study were involved in the intensive program at approximately five years of age. They had five years of experience, both positive and negative.

3 2

They had established their task approach behavior and their concept of themselves as learners.

In this light, an intervention program at this time and covering a relatively short period of five weeks may not be expected to produce significant results. The children may not be amenable to change, considering the above. At best, such a program just prior to commencement of school might only affect the child's perception of what school offers. That is, it may only serve to influence the child's expectations of schooling, in a positive direction.

#### Experimenter Role

Considering the role of the experimenter in the application of the program, the situation present when the experimental program was planned and delivered required that the experimenter be involved in pre-testing and in application of the program. While statistically the results do not suggest the presence of any significant bias, it would be more desirable in future experiments to eliminate this potential source of complication. Thus, it would be desirable for other personnel to be involved in all aspects of the experimental activity, including assessment and application of the treatment condition.

An additional factor, related to the role of the author in the application of the program, was the experimenter's lack of experience with the program and Stott's

theory. Such inexperience may be important in terms of carrying out the specific program activities and also, perhaps more importantly, in responding to the children and affecting, according to Stott's theory, their approaches to these tasks. This point is perhaps especially relevant as it relates to one specific concern over the application of the Stott program. It was observed earlier that directions given for applying the program were limited and therefore subject to interpretation by this author and by any other individual using the program.

#### Summary

This chapter has reviewed the results of data analysis. It has been demonstrated that in this current experimental situation, no statistically significant results were identified.

The next chapter will entertain explanations of the meaning of these results and will suggest how subsequent studies might further test research questions examined in this study.

## CHAPTER V

### CONCLUSIONS

This study was undertaken to examine the effects of the Stott Flying Start Learning-to-Learn program on selected dependent measures with pre-kindergarten children of St. Patrick's Hall Boys Primary, St. John's, Newfoundland.

The analysis and interpretation are presented in the previous chapters. It was concluded that no significant effects were determined to result from the experimental situation described. Because of this, no specific recommendations or conclusions can be presented concerning the benefits which might accrue from application of this particular program in educational-type settings. This present study therefore does not provide information which would either support or oppose the use of the Stott activities within any formal programs established to meet the learning needs of younger children.

### General Discussion

There is, however, opportunity for general discussion related primarily to the experimental conditions present in this current study and described in earlier chapters. Included in discussion here are general approaches to assessment or evaluation of young children, the size of the

treatment and control groups, parental and support programs, the type of program offering most benefit, and the timing and period of the program application.

### Assessment of Young Children

As discussed in the previous chapter the type of assessment instrument used may determine to a great extent whether the benefits which any program might produce, can be assessed accurately and confirmed to be significant. When it is required to assess young children, several options must be considered.

Assessment is normally carried out to measure differences between individuals or between the reactions of the same individual on different occasions. In the present study it was attempted to assess a child's ability to profit from the specific program. Traditionally, such measurement may be of either intellectual functioning or achievement.

Achievement tests may be designed to measure the effects of a specific program. As such, the focus in such tests is on what the person can do at the time of assessment. With children, testing may be used to determine the influence of remedial teaching programs, to describe the child's present level so that instruction can be adapted for the child, and to determine the efficacy of the instruction.

Unfortunately, most measures are often taken indirectly. That is, many assessment devices do not measure specifically

the skill being taught, but rather how well a child performs on a task which requires the child to use the specific skill.

While achievement tests are billed as such, in fact, they are not direct measures of knowledge, skill, or accomplishment. They are rather specific reflections of the child's ability to apply knowledge and skills.

For the most part, norm-referenced tests are used in the evaluation of young children. Perhaps the most important aspect of such tests is their ability to assess changes in the ways in which children react to their environments. Unfortunately, they do not supply information concerning why these responses are affected, and what specifically the child has learned or how. A child may perform better on a given test, but such performance remains only a reflection of the undefined intermediary learning processes.

#### Group Size

We have previously suggested that small sample size can have a nullifying effect on the statistical significance of experimental results. It is suggested by Anderson (1978) that the size of N affects the level of confidence which we have in the results of statistical manipulation as, the greater N the lower the confidence level we need apply. Tate (1965) agreed with such a position. He notes no exception to the rule that small sample size results in the acquisition of information that is usually low in



reliability as the degree of freedom, reflecting the number of independent values contributing to the estimate, are relatively low. Feldt (1973) further reinforces this concept by presenting that unless sample size is adequate, the beneficial effects of some programs may not be recognized and accurately defined.

### Parental Involvement

The involvement of parents in the most meaningful interaction with children during the early formative years of the child's life, appears as natural as parenthood itself. However, the role of parents in formal programs and informal interaction with their children seems neither clearly understood or widely supported.

Jones (1971) described the influence of factors in the home environment on verbal abilities of boys aged 10-12 years. It was concluded that mothers of boys having greater verbal abilities showed higher levels of interaction than did mothers of boys exhibiting lesser verbal abilities. The mothers of highly verbal boys appeared to encourage their children to interact verbally to enhance cognitive functioning.

Such evidence presents an additional factor which may have significance for future research and future programs, as suggested by various theorists, including Gordon and Wilkerson (1966). They encourage the greater involvement of

parents in the provision of appropriate programs and activities for their children.

Brofenbrenner (1977) has outlined a number of objectives which a program should emphasize when applied during the first three years of life. He supported the application of a parent intervention program which stressed the following components:

- frequent home visits during which sustained patterns of parent child interaction are encouraged,
- the application by the parent of similar activities between visits by the developmental teacher,
- the extension of such activities to include all family members,
- the provision of information and demonstration in parents groups which emphasize mutual support and a common purpose.

To follow these three years, Brofenbrenner has presented the desirability of developing a cognitively-oriented pre-school curriculum. He stresses, however, that the parent intervention program must be maintained so that the effects of additional program are enhanced and sustained.

#### Type of Program

Concern has been expressed over admission of young children to traditional school programs. This concern is seen as reasonable because tradition school programs seem to assume equivalent levels of skill development and may

not therefore be appropriate for each individual young child. The primary concern relates to the emphasis that regular school programming places on the learning of academic knowledge which may be beyond the scope of the developmental capabilities of some younger children.

What alternative program or learning situation provides an appropriate environment for the younger child? It appears generally accepted that environments which provide learning experiences geared to the child's developmental potential and which are meaningful to the child are more appropriate and beneficial. The situation may provide the child with an opportunity to express himself verbally, to talk rather than listen. Or, it may encourage him to express his sense of autonomy through his activities, (Highberger & Teets, 1974).

Activities should best be geared to the child's interest, but capable of expanding these interests. Such may be accomplished through application of structured activity. There is evidence to suggest the effectiveness of structured programs, such as that presented by Stott (1971), in producing significant change in measured intelligence and psycholinguistic skills of three-year-old children (Karnes et al., 1968). The beneficial effects of structured activities and materials is further presented by Everett et al. (1976) who state that a child will show significant increase in learning skills through manipulation of various carefully selected materials.

Further, Rosenthal and Kellogg (1973) note that, with retarded people, observational techniques may be useful in imparting certain kinds of abstract skills. Such demonstration is determined to permit the learner to witness the necessary relationships between presentation of material and desirable reaction. If such techniques are beneficial in work with retarded people, their utility might be recognized in working with young children.

When the question arises concerning what specific types of activities might best be provided through a structured program, the opinions of several authors can be presented. The Scottish Education Department (1971) suggested that an infant will explore the taste, shape, and texture of things in his environment. A variety of materials presented to the child and activities involving the child will provide this opportunity. Such materials and experiences may be presented as part of the child's routine, for example, at bath time or meal time, or may be supplied at other times.

The two-to-three year old child interacts with his environment through one or more sensory organs. He will create and imagine many things and will acquire more precise language. Providing the child with activities which permit and reinforce such developmental activity is recommended.

Nash (1976) describes how the dimensions of time, space, people, and things contribute to a child's learning. Activities appropriate for young children emphasize contact

with people, the utilization of space for a purpose, the presence of exciting and appropriate things, and the acknowledgement of time as it affects the activities.

Ryan and Moffitt (1974) have outlined a study in which measures of language development were made. The language development of children was determined to be related in large measure to the language exhibited by teachers. Thus, activities enhancing use of expansive language through teacher example would be beneficial.

Stott (1971) focuses on the learning process and the teaching of skills which will ensure that a child will be able to approach new problems with beneficial results. Approaches to problem-solving, concept formation, and observational skills are some of those skills presented by Stott's program.

Jordon & Streets (1973) have suggested areas in which a child's potential may be demonstrated. In the psychomotor area activities involving locomotion, contact, manipulation, etc. are described as expanding potential. In perceptual areas, activities involving visual, auditory, olfactory, gustatory, touch, and vestibular senses are stressed. Cognitive potential develops as children displace, take apart, connect, combine and reassemble objects.

The specific types of activities suggested in the above review include:

- those providing opportunity to explore taste, shape, texture, etc.,

- those providing opportunity for being creative, for using imagination, and for using language,
- those providing opportunity for contact with other people, for using space for various specific purposes, and for recognizing the relationship of time,
- those providing opportunity to imitate effective and expansive language,
- those providing opportunity to apply concepts, observational skills, and problem solving approaches,
- those providing opportunity for motor activities and the use of senses.

These general categories of activities in combination, with specific goals in mind, and as part of an organized and structured program, are seen to be effective in enhancing a child's readiness for schooling.

#### When To Intervene

Review of the specific experimental situation presented in the preceding chapters leads also to the development of these points. Preschool programming should continue until the commencement of regular school programs, and be applied for longer time periods by being commenced earlier in the lives of the children.

Review of the experimental situation suggests that the time between the end of the experimental program and the start of the regular school program may have been too great. Such a gap interferes with the continuity of formal experience and may have allowed the children to engage in other new-learning activity which might interfere with any benefits

derived from the experimental program. Thus, in future instances it may be preferable to conclude such programs just prior to the commencement of regular schooling, or to continue them right into the regular school program. This arrangement could perhaps have ensured a greater continuity in experience for the child so that beneficial program effects might be supported by the continuing activity of the regular school program.

Further, it is concluded that greater benefit to young children may result if such programming as described here is applied during the earlier years of the children's lives, the period referred to as the preschool years. The need to establish for children developmentally facilitating environments as early in life as possible is discussed above. It has been presented that children respond to their environment. The younger the child the more susceptible to change influenced by the environment, within the limits presented by the stage theorists. Larrick (1976) indicates that Kindergarten children responded more favorably to a language expansion program than did primary-grade children.

Such findings support recommendation that beneficial experiences be defined more clearly and applied earlier. Therefore, the Stott program and other programs should be presented as part of a comprehensive approach to early childhood education. Such programs should be presented at earlier ages and extend for longer, more intensive periods.

When considering the effects of such programs,

Bronfenbrenner (1977) has suggested that two years was regarded as the minimum time required before the long-term effects of programs can be accurately assessed. Considering that a child may start school at age five, it will follow that programs should commence by the time the child is three years old, so that potential influence will be as great as possible.

#### Summary

This experimental study was designed to determine whether beneficial effects of using the Stott Flying Start Learning-to-Learn Program with preschool children could be determined. Using Solomon's design as described earlier and with appropriate and extensive statistical procedures applied, it could not be concluded that the Flying Start Learning-to-Learn Program produced significant or beneficial change in the children treated.

The results obtained from the design and administration of this experiment were determined not to be statistically significant. Reflecting on these results, various recommendations were derived. The following are presented:

1. that, in further studies of the efficacy of Stott's programs, there be developed more direct and precise measures which are more compatible with stated outcomes, and for which alternate forms may be developed,



2. that, in further studies of the efficacy of Stott's programs and others, that where possible larger and younger groups be involved,

3. that, in further studies of the efficacy of Stott's programs and others, and considering the significant influence of parents, as discussed earlier, parents be involved as a major component,

4. that programs developed for presentation to young children prior to formal school attendance include the numerous and comprehensive aspects as outlined earlier in this chapter,

5. that programs developed for presentation prior to formal school attendance be applied as early as possible, and continue through the child's commencement of Kindergarten,

6. that the application of such programs be considered part of longitudinal studies which provide more accurate information concerning any long-term effects of such programming.

It is felt that the above considerations, if applied extensively and consistently, would produce and reflect significant knowledge concerning improvements in the development of young children.

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APPENDICES

Appendix A

Letter in Reply From School Board

Roman Catholic School Board for St. John's

94

BELVEDERE  
BONAVENTURE AVENUE  
ST. JOHN'S, NEWFOUNDLAND  
A1C3Z4

1977 07 07

Mr. Wayne Rideout  
Site 10, Box 13, RR2  
Paradise  
Newfoundland  
AOA 2EO

Dear Mr. Rideout,

Further to our telephone conversation earlier I am writing to confirm that your research proposal has been approved.

I understand from Mr. Clancy in our Maintenance Department that one of the maintenance men in the St. Patrick's Hall complex will be on duty all summer. Therefore the building will be open and when Mr. English goes on holiday you can make arrangements with some other member of the staff. However, you will be responsible for the routine care and safety of the building, for example, closing windows, keeping the classroom tidy, supervising the children in and around the building etc.

Best of luck in your proposed study. Please feel free to call me if I can be of any further assistance.

Yours truly,

for Geraldine Roe  
Assistant Superintendent  
Curriculum/Instruction

cc: Mr. T. Clancy  
Mrs. A. Wakeham

GR/gfp

Appendix B  
Attention Activity

## Game Seven

**Purpose:** To provide experience in recognizing order.

**Materials:** Three spools of thread in three distinctive colors, such as red, white, and green (or, if you prefer, three empty spools covered with the same tape you used to make the colored cards).

The cardboard tube from the center of a roll of paper towels. A piece of string about a yard long.

Run the string through one of the spools, sliding the spool along until it is about in the middle of the string. Loop the string over and through the spool again, as shown in the diagram, so that it won't slip.

Do the same with the other two spools, spacing them about 14 inches on each side of the center spool. Pull one end of the string through the cardboard tube far enough to bring the front spool up to but not inside the tube.

"Watch while I pull the spools inside the tube."

Be sure your child has a good look at the spools as they go in. Stop when the spools are hidden from sight.

"If I keep on pulling, which spool do you think will come out first?"

"Pull the string and see." Let him pull until the first one appears, to see if he is right, but no farther.

Take the other end of the string and pull until the spools are hidden inside the tube again.

"Now which spool do you think will come out first if you pull this end of the string?"

"Pull it out and see."

Repeat with the spools in a different order.

**Comments:** Keep your hands over the ends of the tube when you ask the questions. The first thing most

children will do is to look inside and try to see what's coming.

There is a more difficult version of this game (using the same materials) on page 128.

