LAKEHEAD UNIVERSITY

AN INVESTIGATION OF THE RELATIONSHIP BETWEEN THE OCCURRENCE OF LEARNING DISABILITIES IN CHILDREN AND THE CHILD REARING BEHAVIORS OF THEIR MOTHERS: AN EXPLORATORY STUDY

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ABSTRACT

The present study investigated the relationship between the occurrence of children's learning disabilities and the nature of the child rearing behaviors exhibited by their mothers. Seventy mothers and their children served as Ss, the experimental group consisting of 35 mothers of learning disabled children and the control group consisting of 35 mothers of children having no learning problems.

Three questionnaires, including the Mother Form of the Parental Attitude Research Instrument (PARI), the Learning Opportunities Survey (LOS), and the Family Background Information Form, were administered to each mother in both groups. Separate factor analyses of the Mother Form of the PARI and of the LOS yielded seven factors which were descriptive of the child rearing practices and attitudes exhibited by the mothers of the learning disabled children during the first six years of their children's lives. These factors were: PARI factor 1, (authoritarian-control), PARI factor 2 (democratic attitude), PARI factor 3 (hostility-rejection), LOS factor A (language stimulation), LOS factor B (sincerity of interaction), LOS factor C (perceptual-motor stimulation), and LOS factor D (establishing a routine).

A comparison of factor scores calculated for both the experimental group mothers and the control group mothers on each of the extracted factors revealed the following differences in child rearing behaviors:

1. Control group mothers were found to be significantly more democratic as well as more hostile and rejecting in their child rearing attitudes than experimental group mothers.

2. Experimental group mothers were found to be significantly more authoritarian and controlling in their child rearing attitudes than control group mothers.

3. Control group mothers were shown to have provided their children with significantly more perceptual-motor stimulation and to have established more of a routine and more structure in their children's lives than experimental group mothers.

These differences in child rearing behaviors served as a basis for a discussion of some of the possible causes of children's learning disabilities, and also suggested certain guidelines that could be followed in establishing programmes of primary prevention and remediation for learning disorders.

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INTRODUCTION

Physically handicapped, perceptually impaired, mentally retarded, and minimal brain damage are some of the more popular labels that have been used to describe children who experience problems in learning. Although in the past these various categorizations have generally been well accepted as providing an adequate description of such children, in recent years both their accuracy and utility as diagnostic terms have been seriously questioned. The reason for this mounting skepticism no doubt lies in the advances that have been made in the last 30 odd years in discovering the specific nature of the deficits involved in the learning problems of many children. Workers in psychology, education, and medicine have gradually become aware that there are children who are not physically handicapped, perceptually impaired, or mentally retarded, but who nevertheless encounter a great deal of difficulty in learning to speak, read, write, and in other academic areas.

With the discovery of this knowledge, the need has arisen to find a more meaningful designation for these children. Such a designation must not only distinguish between children who can see and hear normally and those who can not, but must also differentiate those with an incapacity to learn from those, who despite integrity of mental, motor, and sensory functioning, can not learn normally (Johnson and Myklebust, 1967, p. 4). During this past decade the concept "learning disabled" has emerged as one of the more widely used classifications which attempts to satisfy

these criteria.

Michal-Smith and Morgenstern (1965, p. 172) have defined a learning disability as a significant difference between a child's actual achievement level and his functioning capacity based on his mental abilities. In addition, Johnson and Myklebust (1967, p. 19) point out that an IQ of 90, which has been designated as the lower limit of average intelligence by Wechsler (1949), has typically been taken as the lowest level of intellectual functioning to be included in the learning disability group. Kirk and Kirk (1971, p. 7) have elaborated still further on the subject by noting that children with learning disabilities tend in many instances to have correlated behavior disorders of hyperactivity, lack of attention, and general maladaptive behavior. In summary, perhaps one of the best available descriptive statements about what is meant by a learning disability can be found in the following definition given by Kirk and Bateman (1962, p. 73).

> A learning disability refers to a retardation, disorder, or delayed development in one or more of the processes of speech, language, reading, writing, arithmetic, or other school subjects resulting from a psychological handicap caused by a possible cerebral dysfunction and/or emotional or behavioral disturbances.

Discovering that a child is having trouble with certain of his school subjects because of a learning disability is usually not a difficult task to achieve. A number of psychological tests

are available that are designed to quickly and accurately uncover specific areas of weakness in the learning process. What does pose a problem is determining the etiology of the learning disability. In a discussion of the probable causes of learning disabilities Myers and Hammill (1969, p. 8) have stated that such disorders may be viewed as symptoms of suboptimal neurological functioning or inadequate programming of essentially normal brain tissue. The neurological malfunction may be the result of biochemical irregularities, brain insult (injuries or damages), or it may be inherited. The inadequate neural programming can result from deficits in a child's environmental experiences which inhibit the development of percepts underlying one or more basic skills. As noted above, besides emphasizing the importance of possible neurological malfunction, Kirk and Bateman (1962) have also stressed that a learning disability may result from emotional disturbances in children.

With regard to the possibility that cerebral dysfunction may be the cause, it should be pointed out that precise relationships between the degree and site of brain damage and observed learning difficulties have never been clearly established. Positive neurological findings appear in children who have no learning disabilities, while at the same time negative neurological findings have been obtained for children who obviously are experiencing problems in learning (Johnson and Myklebust, 1967, p. 23).

The suggestion that a learning disability might also be caused by environmental circumstances or emotional disturbances also raises some important questions. To begin, one might ask what is the origin of the emotional disturbance? On the one hand, there seems to be little doubt that a child's emotional problems would be closely tied in with the specific nature of the environment to which he is exposed. At the same time, there is also the possibility that the emotional disturbance might be associated with cerebral dysfunction, assuming the dysfunction can be located. And to complicate matters still further, one might inquire if it is the emotional disturbance that is the cause of the learning disability or if it is the learning disability that causes the emotional problem?

One of the major reasons why these various complications have been encountered in the attempts made to discover the etiology of learning disabilities, seems to be that many investigators working in the field have persisted in trying to cite a single cause for children's learning problems. In the one instance it has been maintained that brain damage is the sole cause, while at the other extreme the position held has been that environmental factors are at the root of the child's learning difficulties. Somewhere between the two, and probably involved to a certain extent in both, is the possibility of emotional disturbance. The whole area of learning disabilities appears to have become overweighted

by this futile effort to discover a one-to-one relationship between etiology and symptomatology. There seems to be a need for researchers in the field to recognize once and for all that such a relationship probably does not exist, and in light of this realization, to modify their research aims accordingly.

In the present research an effort was made to investigate some of the possible factors associated with the occurrence of children's learning disabilities by taking a more cautious approach to the problem than has sometimes been taken in the past. Rather than attempting to find a single cause of learning disabilities, the position taken was that there is no single cause, but instead a number of "contributing factors" each of which has the potential to impede learning, and does so depending on the extent to which it is operating in the particular situation.

That is to say, although brain damage may seem to be at the root of a child's learning difficulties, the very fact that he is brain-damaged affects the way in which he relates to people and objects in his environment, and the way in which stimuli from his environment impinge on him. In other words, his brain damage may be the primary factor contributing to the emergence of his learning disability, but a secondary and closely related factor might also be that he is no longer provided with opportunities to take advantage of the learning experiences that his environment has to offer. His friends may not want to play with him because

he behaves "differently", and his parents may show little interest in him simply because he is brain-damaged and therefore presumably unable to benefit from instruction. Sarason (1964, p. 54) has noted this interaction effect and views brain damage as "but another characteristic of the organism which affects and is affected by the environment."

The particular contributing factor examined in the present study was the influence that specific aspects of a child's early home environment have on his ability to learn. The decision to focus on the possible contribution made by this factor to the emergence of a learning disability , was reached on the basis of the impression gained from a review of research that has been done on the effects of early experience on cognitive development, both in animals and in humans.

The first major section of the literature review that will now be presented will be devoted to an examination of studies in which the influence of different kinds of early experience on the cognitive development of animals has been investigated. The particular research findings which belong to this area of study can best be described in two separate sub-sections that will be introduced shortly. In the second major section of this literature review an attempt will be made to summarize the results of those studies in which the effect of various forms of early experience on the cognitive development of humans has been examined. For

discussion purposes, the experiments in this research area can also be separated into two sub-sections which will be clearly delineated at their points of introduction into the review.

By way of a preview to the major theme that will be developed in this review, it can be briefly noted at this point that insofar as the results of the animal studies and human studies to be discussed provide strong supporting evidence for the view that early experience plays a crucial role in influencing the cognitive development of organisms; the underlying assumption throughout the following sections will be that environmental factors might also be intimately involved in the difficulties in learning encountered by many learning disabled children. The precise nature of this involvement will be elaborated on as the present review unfolds.

REVIEW OF RELEVANT LITERATURE

Effects of Early Experience on Cognitive Development: Animal Studies

Confronted with the traditional belief in the concept of fixed intelligence and the hypothesis that early experience is unimportant because nothing useful can be learned until an organism matures sufficiently, researchers who first began to suggest that early experience can affect cognitive development encountered considerable

difficulty in gaining support for their position. Hebb's (1949) investigations into the neurophysiology of intellectual growth no doubt helped to pave the way for a theoretical orientation in line with their claims. Hebb (1949) believed that experience is essential for the establishment of neural connections and for the formation of what he termed "cell assemblies." He viewed these neural assemblies as relatively fixed functioning units whose sequencing and phasing in the associative cortex can only be formed by receptor inputs having their origin in perceptual experience. Taking into account the work of Hebb (1949), and research conducted by Rose and Woolsey (1949) and Pribram (1960) into the function of hypothesized "intrinsic" and "extrinsic" portions of the brain, Hunt (1964, p. 42) concluded that the role of early experience is to "program" the intrinsic portions of the cerebrum so that they can later function effectively in learning and problem-solving.

Findings obtained in animal studies investigating the relationship between the type of early experience an organism is exposed to and its subsequent ability to learn lend substantial support to the theoretical position outlined above. Two broad categories of research can be delineated in this field. The first category includes studies concerned with the effect on learning of such specific forms of stimulation as handling, electric shock, heat, and cold. Research comprising the second category has typically

involved creating an "enriched" or "restricted" environment for an organism in an attempt to alter its problem-solving behavior.

In the sub-section that immediately follows consideration will be given to a review of some of the major experiments involving specific forms of stimulation. Studies in which the more general, non-specific types of environmental enrichment and restriction have been utilized will be examined in a subsequent sub-section. A summary of the findings cited in these two sub-sections, and their important implications especially with regard to an explanation of the etiology of children's learning disabilities, will be presented by way of a conclusion to this investigation of relevant animal research.

Influence of Specific Forms of Stimulation on Cognitive Development in Animals

In a comprehensive review of the relevant literature, Denenberg (1966) reports that the major focus of the majority of animal studies involving such independent variables as electric shock, handling, heat, and cold, has been the relationship between these various forms of stimulation and the emotional behavior of Ss. The number of studies in which the influence of specific stimulation on cognitive development has also been investigated is considerably less, and the research conducted in this regard seems to have primarily been concerned with the effects of handling and electric shock on performance. Levin, Chevalier, and Korchin (1956), for example, found that rats who had

been handled only or both handled and shocked from one day of age until they were 20 days old were superior in learning a conditioned avoidance task to animals who had neither been handled nor shocked during the same period of development. Denenberg (1962) has also shown that even shocking animals once on the second day of life will decrease the number of trials they require to learn an avoidance response, as compared with Ss left unmolested in the maternal nest.

In a further study of infant handling, Levine (1956) investigated the hypothesis that manipulation during the period prior to weaning has a much more profound effect on subsequent behavior than does handling later in life. One group of rats was handled for two minutes daily from birth through the 20th day of age and thereafter not handled until testing. A second group received handling from the 50th through the 70th day of age and a third group was not handled at all until the time of testing. Testing of all Ss at 71 days of age in a conditioned avoidance learning situation revealed that animals in the third group were significantly inferior in their ability to learn the task as compared to Ss in the first group who had been handled in infancy. Rats in the second, late-handled group obtained scores consistently between the other two groups. Also, it was found that Ss handled in infancy showed greater emotional stability than animals in the other two groups.

Denenberg and Karas (1960) obtained results which led them to speculate that the emotional stability observed by Levine (1956) in his early-handled group of rats may have contributed to the superior learning ability of these animals. On the basis of their finding that rats who received 10 days of infantile handling were significantly better learners than Ss who received 20 days of handling or non-handled controls, Denenberg and Karas (1960) concluded that 10 days of handling reduced emotional reactivity to a level which facilitated learning, while 20 days of handling resulted in an organism so lacking in emotional reactivity that performance was impaired.

Influence of Nonspecific Forms of Stimulation on Cognitive Development in Animals

In addition to studies of the type discussed above, research on the effects of stimulation of a more general, non-specific nature has also been carried out in investigations of environmental enrichment and restriction. Hebb (1949), Forgays and Forgays (1952), Bingham and Griffiths (1952), Hymovitch (1952), and Forgus (1955) have all conducted experiments of the same basic design in which it was shown that rats brought up in an enriched environment of other young rats, mazes, ramps, exercise wheels, and swings were brighter on a number of problem-solving tasks than rats reared in ordinary, bare laboratory cages. Clarke, Heron, Fetherstonhaugh, Forgays, and Hebb (1951) and Thompson and Heron (1954) have also

carried out studies utilizing much the same design, but in which Scottish terriers served as Ss. Clarke et al. (1951) not only found that their free environment animals raised in the laboratory and in a private home were superior in problem-solving to restricted cage-reared animals, but also that the caged-reared Ss tended to be more withdrawn and to compete less for food than the free environment animals. Using restricted and free environment groups as well, Thompson and Heron (1954) did not detect any tempermental differences, but did note that the restricted Ss were inferior to the free environment Ss in various tests of learning ability, and that the restricted animals tended to be very hyperactive and temporarily impaired in certain areas of sensory motor coordination.

In another experiment conducted by Melzack and Scott (1957) dogs reared in confined quarters so that they did not have the opportunity to explore their environment were perfectly healthy, but in some respects appeared to be intellectually dull and very non-responsive. They were so insentive to pain that they did not respond to a pin prick or to having their tails stepped on. Furthermore, they investigated a lighted match by putting their noses into the flame many times over without learning the avoidance response to this noxious stimulus that would be expected from a normal dog.

The non-responsiveness exhibited by these dogs to pain was

also observed by Nissen, Chow, and Semmes (1951) in the behavior of a chimpanzee reared under very different conditions of restriction. These investigators put large cylinders or "cuffs" over the chimpanzee's forearms and lower legs. The cuffs were loose enough to allow joint movements but deprived the animal of the tactual exploration of his own body and surroundings. When the cuffs were removed at the age of 30 months (corresponding roughly to the age of a three- or four-year-old child) it was observed that the chimpanzee showed no signs of disturbance when pricked with a pin and that he frequently made innacurate movements, with apparent need for exploration, before locating the spot on his body where he had been pinched by E. In addition, in a task in which he was required to learn to turn his head to the right to receive food when his right hand was touched and to the left when his left hand was touched, he was still experiencing difficulty in turning his head in the correct direction after 2000 trials, whereas a control animal mastered the task in 200 trials.

Using kittens as Ss, Held and Hein (1963) have also investigated the effects of limiting an animal's opportunity to actively explore its environment. In their study each member of a pair of kittens was exposed to the same amount of visual stimulation, but one of the kittens was always allowed to move more or less normally in the

surrounding environment while his gross movements were being transmitted via a system of pulleys to the other kitten who consistently received only passive environmental exposure as a result of being restrained in an open box. Eight pairs of kittens were subjected to this treatment. Subsequent testing revealed that the performance of the "passive" kittens was inferior to that of the "active" kittens in tests of visually guided claw placement, discrimination on a visual cliff, and development of a blink response. These differences in performance were interpreted by the authors as suggesting that the development of normal space and pattern perception in the young organism requires active movement on the part of the perceiver.

In a more recent study of animal learning Denenberg, Woodcock, and Rosenberg (1968) investigated the long term effects of preweaning and postweaning free environment experience on rats' problem-solving behavior. Between birth and 21 days of age (preweaning) 38 Ss were raised either in barren maternity cages or in free environment boxes containing such "toys" as ramps, tin cans, and wooden blocks. At 21 to 50 days of age (postweaning) half of the animals in each of these two groups were put into barren laboratory cages, while the other half of each group were transferred to additional free environment boxes. This procedure resulted in some Ss receiving no free

environment experience at all, others receiving free environment experience only before weaning, and still others receiving free environment experience both prior to and after weaning. All Ss were tested on a problem-solving task when approximately one year old.

The results indicated that free environment experience either before or after weaning acted to reduce errors in the problem-solving task. Ss who had benefited from free environment experience both before and after weaning obtained a smaller error score than the group which had received free environment experience only before weaning, while the performance of this latter group was in turn markedly superior to that of the group which had received no free experience at all. Since all Ss were tested after one-third to one-half of their total life span had elapsed, the authors concluded that both preweaning and postweaning enrichment have a long-term effect on problem-solving behavior.

To add to the credability of the behavioral evidence obtained in studies investigating the effects of early experience on cognitive development, research conducted by Krech, Rosenzweig, and Bennett (1962) and Bennett, Diamond, Krech, and Rosenzweig (1964) has revealed that these observed effects on learning are also accompanied by internal changes in brain anatomy, physiology, and biochemistry. Rats given enriched experience developed, in comparison to restricted animals and normally-treated animals, superior learning ability on a variety

of tasks. This superiority in learning was observed along with neurochemical changes known to facilitate learning and a greater weight and thickness of cortical tissue in brain regions specific to the type of sensory stimulation provided in the enriched environment.

Summary of Findings of Relevant Animal Research

Perhaps the major problem remaining to be delt with in the animal studies which have been conducted, is determining what particular aspects of the stimulation that is provided or withheld affects the learning ability of an organism. Terms such as "handling" as well as "enrichment" and "restriction" have characteristically been very loosely defined, and often change in meaning from one study to the next. The age at which an organism is exposed to a certain type of stimulation also appears to be another important variable. Age as a factor would seem to deserve close consideration not only because the extent to which an organism is able to benefit from stimulation depends on its developmental level, but also because the experience the organism has had up to that point likewise has a bearing on the advantage it is able to derive, in the way of learning, from the stimulation made available.

After reviewing all the major animal studies in which the influence of early experience on cognitive development has been investigated, Thompson and Grusec (1970, p. 599) concluded that the type of early stimulation an animal is exposed to can have at least two main effects.

The one effect, which has already been hinted at above, relates to the adequacy of intellectual preparation that an animal, because of prior rearing conditions, can bring to some criterion task. The other effect is concerned with the emotional state in which the animal approaches the task, when it is suddenly imposed on him after he has become used to functioning at a certain optimal level as a result of having been reared over a long period of time in a particular type of environment.

Before leaving this review of relevant animal research, it is interesting to note that Godfrey and Kephart (1969, p. 6) have arrived at a position concerning the relationship between the preschool learning experiences of the learning disabled child and the more formal learning which takes place once he enters school, that is very similar to the conclusion reached by Thompson and Grusec (1970) concerning the implications that early experience can have for animal learning. Godfrey and Kephart (1969) point out that many learning disabled children begin school with an incomplete set of early learning experiences in part because they have enountered environmental situations in which inadequate opportunities for learning have been offered. And, insofar as preschool learning in the early years of a child's life should culminate in a substantial number of so-called "readiness skills", the acquisition of which is a precondition for the more structured forms of instruction in the school setting, children who are lacking in these prerequisite skills experience great difficulty at

both the emotional and cognitive levels in mastering the learning tasks which the school presents.

Effects of Early Experience on Cognitive Development: Human Studies

The findings of the animal studies discussed above suggest that both the provision of particular forms of extra stimulation and the restriction of stimulation can affect an organism's ability to learn. An attempt will now be made in this second major section to demonstrate how different types of rearing conditions that young children are exposed to might also influence their cognitive development.

The research which has been conducted in this area will be examined in two separate sub-sections. In the first sub-section a review will be presented of studies concerned with the effect on children's learning of naturally occurring instances of severe environmental restriction in the home and in institutions. In a second sub-section consideration will be given to the influence that particular maternal child rearing practices and attitudes might have on (a) the development of specific kinds of cognitive abilities in children and on (b) their achievement motivation and measured academic achievement. Each sub-section will be followed by a summary of certain implications suggested by the findings of the studies cited, especially with regard to an explanation of the etiology of children's learning disabilities.

Influence of Naturally Occurring Instances of Severe Restriction in the Home and in Institutions on Cognitive Development in Children

In one noteworthy case of extreme environmental restriction in the home (Davis, 1939) a five-year-old girl was discovered in a small, out-of-the-way room where she had been confined since babyhood because she had been born illegitimately and was a disgrace to the family. During the five year period she had spent most of her days in a crib or tied in a chair. Furthermore, her mother had never taken the time to train, supervise, or caress her. Upon discovery she was completely immobile and could not talk. And, even after having been removed form these highly restrictive conditions for two years she still had not learned to talk, although she had mastered walking.

In another case reported by Hill and Robinson (1930) a young boy was discovered, who at six years of age was only learning to walk and could not talk at all. He had been born healthy, but when he was circumsized at six months it was felt his hands should be tied in order to prevent him from touching the injured part until it healed. After the healing took place his hands were freed. Unfortunately, soon after he developed a form of aczema and scratched his body and face so badly that his feet as well as his hands had to be fastened to his bed throughout most of the day and night. And this practice of fastening the child's extremeties was still being carried on every night when the authors first met the boy at age six years.

After being given complete freedom of movement for two years since the time of this meeting, the child could walk but had reached only the echoing stage of talking.

In addition to these case studies involving very severe forms of restriction in the home, numerous investigations have also been conducted to determine the effects of institutionalization on cognitive development. Among the earliest studies reported in the literature is an investigation carried out by Williams and McFarland (1937). Using the Smith-Williams vocabulary test, these investigators compared the vocabulary scores of a group of children living in their own homes with the scores of 64 orphanage children, and found that the orphanage group scored considerably lower. This difference in scores could not be accounted for on the basis of socio-economic level or IQ. Using no comparison group, Lowrey (1940) studied 28 cases from a children's institution and also found evidence of language retardation in 70% of the institution children.

In a more extensive study Goldfarb (1943) compared the adjustment of two groups each consisting of 40 children. One group had lived in an institution from the first few months of their lives until the age of three, at which time they had been placed in foster homes. This institutional environment was characterized by almost a total lack of social and sensory stimulation. In addition, since the children were cared for by a number of different attendants, they were deprived of any opportunity for intense and continuous contact with a specific

adult. The other group of Ss included children who had been placed in foster homes before age one.

The study revealed that in comparison to the foster home group, the institution children were inferior in their ability to conceptualize, poorer in school achievement, considerably more hyperactive, and retarded in speech development. Goldfarb (1943) cited lack of mothering during the first three years of life as the major reason for the emotional and learning problems of these children.

Following this initial study, Goldfarb (1945) undertook another investigation involving institution children and foster children, in which he provided a much more detailed description of the specific difficulties in learning encountered by Ss in the institution group.

Compared to foster home children, the institution children had an unusually defective level of conceptualization, and also experienced difficulty in organizing a variety of stimuli meaningfully and abstracting relationships from them. The particular kinds of tasks which posed a problem for the institution children included learning songs, rhymes and stories, grasping number concepts, and all learning based on insight or the sizing up of a situation. Understanding time and space concepts was also beyond them, with the result that they had no regard for time and space limitations. Furthermore, they responded only to the details of their environment rather than to the environment as a whole and their overall behavior was marked by a tendency to be either very hyperactive or extremely passive, depending on the particular child.

Spitz (1945) further pursued the study of the effects of early experience on cognitive development. Unlike Goldfarb (1943; 1945), Spitz (1945) avoided the use of a foster home group and instead selected both his groups from institutional settings. One group consisted of infants from a nursery which took responsibility for the care of the children of delinquent girls. A second group was comprised of infants from a foundling home for children whose mothers could not support them. Occupants of the foundling home had few toys and could see little of the world around them because sheets were regularly hung over the foot and side railings of the beds in which they were confined for most of the day. The only interaction the infants had with other people was at feeding time when nurses hurriedly attended to their needs. In contrast to this type of care, the children in the nursery never went without toys, could see all that was going on around them from their cribs, and were fed and cared for by their own mothers or by full-time mother substitutes.

Spitz (1945) compared the Developmental Quotient scores (Hetzer and Wolf, 1928) of these two infant groups during the first year of life and found a major reduction in score between the first and last third of the first year for foundling home infants, whereas comparable scores for the nursery infants did not show such a decrease. The foundling home infants' scores for Body Mastery also showed a significant reduction over the year in comparison to scores for infants

in the nursery group.

In a follow-up conducted one year later by Spitz (1946) marked developmental differences between the two groups still persisted even though conditions in the foundling home had improved. The foundling home children were found to be retarded in toilet training, physical development, the ability to dress and feed themselves, and in speech. Spitz (1946) concluded that the conditions under which these children had lived during the first year of life had resulted in irreversible effects and maintained that the children were retarded in development because their perceptual world was lacking in the human contact provided by a mother or mother substitute.

A comparison made by Brodbeck and Irwin (1946) between the type and frequency of phonemes uttered by a group of orphanage children and those heard among a group of children living in their own homes also revealed statistically significant differences in speech development. In the estimation of the authors of this study the home-reared children, who scored higher on all type and frequency measures, had apparently benefited from the stimulation and the affectional relationships of normal family environments. In research involving a comparison of two-minute samples of oral reading obtained from institution and non-institution children, Moore (1947) also found the institution group to be markedly inferior in all measures of language and attributed the differences between the two groups to environmental influences.

Data obtained in a foundling home in Beirut, Lebanon by Dennis and Najarian (1957) has also revealed differences in the developmental status of institution children and children reared in a home environment. During the first two months of life the foundling home infants were taken out of their cribs only for their daily baths and for a change of clothes. Except when being bathed and dressed, the infants' arms and legs were enclosed in tight wrappings. The sides of their cribs were covered by sheets at all times to protect against drafts, and at feeding time each infant received nourishment in his crib from a bottle propped up by a pillow. Between four and six months the infants were given their first opportunity to interact with one another in groups of three to four in small playpens. From ages one to three interaction in play groups was continued until, at age four, the children were placed in kindergarten. A comparison was made between the developmental levels of these foundling home children and children reared by their parents in private homes in Lebanon and also in the United States. The performance measures used in the comparisons included the Goodenough Draw-a-man Test, the Knox Cube Test, the Cattell Infant Scale, and the Porteus Maze Test.

The performance scores obtained revealed no significant differences between the two groups on tests at age two months. The authors attributed this finding to the possibility that maturation alone may be responsible for growth up to this point, and not experience. At all ages beyond

three months the foundling home children scored lower than the home-reared group, although a significant difference in scores was found only for infants in the three to twelve month age range. Comparisons of performance scores of the two groups at four, five, and six years of age revealed that the foundling home children had scored 10% lower than the American home-reared children, a difference which was not statistically significant.

An analysis of the test items whose placement was between three and twelve months revealed that practically all of them required manual skills and the ability to adjust to visually presented objects. In light of this finding, Dennis and Narjarian (1957) concluded that the failure of three- to twelve-month-old institution infants to achieve higher scores on these items was due to the fact that the foundling home environment did not provide the infants with adequate learning opportunities to practice visual-manual coordination in either a sitting position or a lying position. Also, in their conclusion the authors expressed the belief that significant differences in ability would have almost certainly been found between the two groups at the four, five, and six year levels if tests of language and verbal abilities had been administered in addition to the performance scales.

Subsequent to conducting the above research, Dennis (1963) investigated the relationship between early experience and motor development still further in a study involving a comparison of children

from three separate institutions. Living conditions in two of the institutions were for the most part the same. The children were kept in their cribs at all times, except when being bathed. They were never propped up in bed and were left to achieve a sitting position on their own. No specialized training in child care was given to the attendants and the children did not have access to toys or play equipment of any kind. In contrast, children in the third institution were propped up in their cribs several times during the day, were placed in a playpen daily after they reached four months of age, and were provided with many different kinds of toys to play with. In addition, the attendants in this institution were coached in methods of child care and the behavioral development of the children was emphasized. The measures employed to compare the motor development of children in the three institutions included a child's ability to sit alone, creep or scoot, stand by holding, walk by holding, and walk alone. Children having any sensory or motor defects or children who were ill or who had recently been ill were not included as Ss.

The results showed that children in the third institution were superior to children from the first and second institutions in all motor tasks. Fewer than half the children between one year and one year and nine months of age in the first institution could sit alone and none could walk alone. Further, only eight percent of the children between two years and two years and nine months in the first institution were able to walk alone while only 15% of the children between three years and three years and nine months

of age in the second institution could walk by themselves.

On the other hand, nearly every child between two years and two years and nine months of age from the third institution was able to walk unaided. It was also found that of the 67 children in the first and second institutions who engaged in creeping or scooting, only 10 actually crept while the remainder progressed exclusively by scooting. This form of locomotion took place in the sitting position, the body being propelled forward by pushing with the arms aided by propulsion from the legs. No scooting whatsoever was observed in the third institution where all the younger children had at the very least learned to creep.

In interpreting these findings, Dennis (1963) ruled out malnutrition as a possible cause of the retarded motor development observed in the children from the first two institutions. These children did not appear to be slow in motor development because of motor weakness. Instead, their retardation seemed to be due to the restriction of specific kinds of learning opportunities partly because of a paucity of handling and, in particular, as a result of the failure of the attendants to place the children in the sitting position and the prone position. The lack of experience in these positions appeared to have retarded the children in regard to sitting alone and also in regard to the onset of locomotion.

Summary of Findings on the Effects of Severe Forms of Environmental Restriction on Cognitive Development in Children

The restrictiveness and lack of stimulation endured by the

young children in the institution studies and in the two case studies which have been reviewed in this sub-section of course represents an extreme form of the type of upbringing that might be experienced by most home-reared children who develop learning problems. Nevertheless, this research is still highly instructive because it strongly suggests how such factors as the way in which a young child's needs and wants are satisfied, the materials by which he is stimulated, and the attitudes displayed toward child rearing, particularly by his mother or a mother substitute, might play a crucial role in helping him to learn during his preschool years. And, insofar as the results of the studies which have been cited point to deficits in learning that seem to be associated with infrequent exposure to certain types of stimulation and the absence of a stable mother-child relationship, it may be that the learning disabled child is confronted with conditions of a similar nature which are at least in part responsible for the presence of his learning problems.

Influence of Particular Maternal Child Rearing Practices and Attitudes on Cognitive Development in Children

Besides the type of research discussed above, in which the effects of extreme forms of environmental restriction on learning have been investigated, numerous studies have also reported a close correspondence between the cognitive development of

children and the child rearing practices of their mothers as well as their mothers' attitudes toward child rearing. In this sub-section a review of the major research findings reported on this topic will be accomplished through an examination of two basic types of studies. The first group (group a) that will be reviewed consists of investigations which attempt to relate particular maternal child rearing practices and attitudes to specific measures of the child's learning ability such as the extent of his language development, his performance on various motor tasks, and/or his proficiency in tasks involving abstract thinking, problem-solving, and concept formation. The second group (group b) to be considered includes research concerned with the relationship between both the "need for achievement" and the "measured academic achievement" of children, and the rearing practices and attitudes of their mothers.

(a) Influence of maternal child rearing practices and attitudes on the development of specific learning abilities in children. Several investigators have found an association between travel and related events which would appear to broaden a child's experiences, and resulting advances in the child's language development. After comparing the vocabularies of his own children, who had a broad environment with extensive travel, and those of children from slum areas, Drever (1915-1916) discovered that the "expansion"

of his children's environment had tended to increase the number of nouns they used relative to other parts of speech. In contrast, the speech of the slum children who lived in a relatively unchanging environment seemed to show an increase in the other parts of speech relative to nouns. Similar findings were obtained by Bean (1932) who observed that periods involving the widening of a child's experiences through travel were accompanied by rapid increases in vocabulary, while sentence building predominated between travel periods.

A more recent study conducted by Henderson (1963) also suggested that widening a child's environment may affect his cognitive development. Henderson (1963) compared the environmental backgrounds of two groups of Mexican-American six-year-olds to determine whether differences existed between the environments of children who showed promise of successful school performance and the environments of children for whom poor performance was indicated. An analysis of the interview data collected showed that families of the predicted high-success subjects travelled more, and thereby presented more learning experiences to their children. And, although both groups professed to be interested in the education of their children, the families of the predicted low-success Ss were more concerned with meeting the daily needs of the family.

Levy (1933) found that an overprotective mother-child relationship was conducive to the use of adult language in children and to relative excellence in subjects requiring language skills. An investigation carried out by Beckey (1942) in which he compared the family backgrounds of 50 children who were delayed in the onset of speech and 50 children who talked at the normal age yielded results in contradiction to those obtained by Levy (1933). Factors found to be significantly related to delayed speech included isolation of the child, severe frights, and overprotection in the form of habitual anticipation of the child's wants by the mother.

In a later study, Missildine (1946) investigated 30 children having disabilities in reading and discovered that 20 came from homes where the mothers were overly hostile or of a coercive, perfectionist nature, while only two of the children appeared to be overprotected. He also found contrasting affective disturbances in his Ss. Some children seemed to be "restless, indifferent, and happy-go-lucky" whereas others could be described as "crushed, unhappy, and inadequate."

McCarthy (1954) also noted that the language difficulties she treated in 50 children seemed to be accompanied by two markedly different behavior syndromes. The children could be divided into two groups depending on whether they were submissive or

aggressive in nature. In searching for the origin of the language disorders and these behavioral disturbances, McCarthy (1954) found that children who were aggressive and slow in language development came from families in which they were exposed to harsh disciplinary methods, rejection from their parents, and unfavourable comparisons with siblings. On the other hand, submissive children having language problems were severely overprotected by their parents.

The effect of particular aspects of the home environment on nursery school behavior was the subject of investigation in a study by Baldwin (1949). Nursery school behavior ratings for 55 children between the ages of 36 months and 60 months were paired with behavior ratings for their parents obtained from the Fels Parent Behavior Rating Scales. On the basis of the parent behavior ratings the parents were classified as either "high" or "low" on warmth, democracy, and indulgence. Democracy and indulgence proved to be the two most important variables. Children from indulgent homes exhibited physical apprehension, poor skill in muscle activities, and a lack of ingenuity. Children from democratic homes were rated high on activities demanding intellectual curiosity, originality, and constructiveness. The tendency of democratic parents to encourage free exploration and experimentation in their children and the finding that children of the democratic parents in this study

had been exposed to more nursery school experiences outside the home than the children from the other kinds of homes, seemed to be at least two factors accounting for the superiority of the democratic home children.

In an investigation conducted by Stewart (1950) 30 children ranging in age from eight years to twelve years were divided into two distinct groups. One group consisted of inferior readers while the second group was comprised of children superior in reading ability. Care was taken to ensure that the Ss in the two groups were matched as closely as possible in age, intelligence, grade level, and socio-economic status. Compared to parents of superior readers, who were somewhat strict and rejecting in relationships with their children, Stewart (1950) found that the parents of many of the inferior readers were capricious, overprotective, and indulgent.

An interesting study reported by Milner (1951) involved an examination of the relationship between reading readiness of grade one children and patterns of mother-child interaction. The first-grade children were classed as "high" or "low" scorers on the Haggerty Reading Examination and the Language Factors subtest of the California Test of Mental Maturity. Each child's responses to questions about his home environment was the approach used to uncover pertinent aspects of parental influence and a cross-section of socio-economic levels was represented in the selection

of Ss.

A comparison of the patterns of family life of "high scorers" and "low scorers" revealed that the mothers of "high scorers" had breakfast with their children, and engaged in general two-way conversation with them at breakfast and before school as well as at supper. In contrast, mothers of "low scorers" did not eat breakfast with their children, seldom talked to them during breakfast or before they started school, nor did they have any two-way conversation with their children while eating supper. In addition, it was found that children scoring high in reading readiness showed significantly more responses to such parental behavior-related items as expressed appreciation for the time the mother spent taking them places and reading to them, possession of several or a great many storybooks, and the fact that parents regularly read to them. All these different aspects of maternal child rearing practices and habits of family life varied with socio-economic status.

Perhaps one of the most interesting viewpoints investigated in the 1940's and 1950's was the notion that parents reinforce vocalization and language development in their children. Miller and Dollard (1941) appear to have been two of the earliest exponents of a learning theory approach to language development. These two investigators believed that as a young infant is rewarded by his parents for making more and more responses to words as cues, he gradually learns to make the response of uttering words.

In reaching for some object he finds that if his physical gesture is accompanied by a sound, it is more likely to be rewarded. Eventually, the more effortful parts of the gesture disappear and the verbal response, which is least effortful and most consistently rewarded, persists (Miller and Dollard, 1941, p. 81).

The relationship between parental reinforcement and the development of language in children was investigated further by Mowrer (1950), who had the insight to incorporate findings he obtained from studying the vocalizations of talking birds into a theory of language development in human infants. After observing that a bird which is lonely, frightened , or hungry comforts itself by making noises that have previously been associated with pleasant sensations; Mowrer (1950) reached the conclusion that the cooing and other gentle noises made by a mother when caring for her human infant could function so as to also create in this infant a predisposition to react with emotional satisfaction first to the vocalizations of others, including those of his mother, and later to his own vocalizations.

In other words, since the sound of the mother's voice has often been accompanied by acts of comfort, the child when alone and uncomfortable likewise derives a certain degree of comfort from hearing his own voice. The infant is, in effect, rewarded for his own babbling, and because he finds these vocalizations personally comforting he makes them for his own benefit without consideration

for the effects they might produce on others. Mowrer (1950) viewed these initial, self-rewarding babblings of the infant to be the first stage in language development. The second stage commences when the infant begins to use the sounds he has learned on this autistic basis, in his interactions with people about him (Mowrer, 1950, p. 699).

Empirical support for the view that parents can reinforce language development in their children has been provided in a study conducted by Rheingold, Gewirtz, and Ross (1959), who attempted to condition vocalizations in 21 three-month-old infants. Two Es were involved in the study, one of whom worked with 11 of the children, the other with the remaining 10. The same experimental procedure was employed by both Es. During the first two days of the experiment, which were designated as Baseline days, E simply leaned over the infants with an expressionless face. For the next two days, the Conditioning stage, E reinforced infant vocalizations by simultaneously smiling, clucking, and touching the Ss' abdomens. During the last two days of the experiment, which were set aside as the Extinction period, E returned to the Baseline treatment. A record was kept of the number of vocalizations the infants made under each of these three treatment conditions.

The results showed no significant differences between the number of vocalizations made by the infants in the presence of one

E as opposed to the other E. On the other hand, statistically significant changes were found in the vocalization output of all the infants involved in the study from one treatment condition to the next. Conditioning apparently raised the rate of vocalizing above the Baseline level, while Extinction lowered it until it approached the Baseline level. The authors concluded by noting that mothers might be able to increase or decrease the vocal output of their children by the responses they make when the children vocalize.

Further evidence of the important role mothers might play in influencing the vocalizations of their children has also been provided by Irwin (1960). He had working-class mothers read stories to their infants for 20 minutes a day from the time the infants were 13 months until they were 30 months of age. These children showed significant increases in produced speech sounds.

The relationship between a child's mastery of certain motor tasks and the child rearing behaviors employed by his mother was investigated by Williams and Scott (1953). One hundred and four Negro infants ranging in age from four to eighteen months were tested on the gross motor items of the Gesell Developmental Schedules. In addition, interviews covering 15 separate classes of child care behaviors were conducted with the mothers of these infants.

Differences in motor development were found to be related to methods of child care, with infants of mothers whose child rearing behaviors were characterized by permissiveness, flexibility, and lack of restriction scoring significantly higher on the Gesell Developmental Schedules than infants from rigid, rejecting environments. The most significant finding obtained in regard to motor development was that children who are left to develop at their own rate in the motor area do so more quickly than those who are "pushed" by their parents into mastering such motor functions as sitting, standing, and walking.

In an experiment concerned with verbal learning, Kent and Davis (1957) obtained results which suggested that a demanding discipline in the home contributes to the development of superior verbal abilities in children. This finding was not supported by Coleman, Bornston, and Fox (1958) who offered evidence of the inhibiting effect of maternal dominance in relation to the learning behavior of the male child. Their findings indicated that the family background of a boy with a reading disability includes a domineering mother, while the father in the family appears to be a weak and indecisive figure. In contradiction to the results obtained by Coleman et al. (1958), Bing (1963), like Kent and Davis (1957), also discovered that a close relationship with a demanding, domineering mother facilitated the development of high verbal abilities, and in addition

reported that a casual relationship seemed to enhance the development of non-verbal abilities.

Slightly later studies serve only to add to the confusion regarding the effect of different maternal child rearing behaviors on language development. Baer and Ragosta (1966) published results which suggest that the greater a S's verbal ability the less loving the mother. Both Heilbrun and Orr (1965) and Marge (1965) found ignoring or rejecting child rearing patterns to be related to poor language development and to inferior conceptual ability. With regard to this latter finding concerning the child's ability to conceptualize, Heilbrun, Orr, and Harrell (1966) have also reported results which indicated that Ss who described their mothers' child rearing behaviors as more controlling and less nurturant (rejecting pattern) were significantly inferior in a concept-formation task than Ss who described their mothers as less controlling and more nurturant (accepting pattern).

A very intriguing line of research concerning the notions of "cognitive styles" in children and the "teaching styles" of their mothers has been the subject of investigation in a number of studies, including an experiment carried out by Hess and Shipman (1965). These researchers have argued for the hypothesis that the child's style of response to problem-solving situations can be associated with the mother's ability to utilize verbal

concepts in her interaction with him.

One hundred and sixty-three Negro mothers and their four-year-old children served as Ss. The mothers were interviewed twice in their homes and each mother was also observed in an interaction session with her child. In this session the mother was taught three simple tasks and then asked to teach these tasks to her child. One of the tasks involved sorting a number of plastic toys by colour and by function, a second required grouping eight blocks by two characteristics simultaneously, and in a third task mother and child had to work together in order to copy five designs on an Etch-a-Sketch toy.

Careful observations made during the interaction sessions revealed large differences in the ability of the mothers to teach and the children to learn. Whereas some mothers provided their children with explicit information about the nature of the sorting task, clearly explained to the child what was expected of him, and offered support and help of various kinds; other mothers defined the task poorly and did not offer ideas or information to assist the child in solving the problem. The ease with which the mothers were able to coordinate their own behavior and that of their child's on the Etch-a-Sketch design also showed a certain amount of variation, and the patterns and quality of language used by the mothers frequently differed as well. Speech consisting of an elaborated verbal code was characterized by a large verbal output and the use of more abstract

words and subordinate and coordinate clauses. In contrast, the features of a restricted verbal code included a much smaller number of abstract noun and verbal types, fewer clauses and phrases, and a smaller output of words.

Assessments of the extent to which the children had learned the concepts taught by their mothers revealed that the ability of each child to correctly perform the tasks and to verbalize the principles on which his performance was based, clearly depended on the teaching style and skills of his mother. In particular, the results seemed to reflect the relatively undeveloped verbal and conceptual ability of children from homes with a restricted range of verbal and conceptual content.

The type of language code a mother uses in interacting with her child also appears to have an important bearing on the extent to which the child is able to learn from the reinforcements his mother employs in rewarding and punishing his behaviors. In this regard, Fantini and Weinstein (1968, p. 114) have pointed out that an elaborate-code mother is likely to use more verbal than physical reinforcements in which she gives her child a fairly complete explanation of her reasons for rewarding or punishing him. As a result, the child acquires a highly articulated conceptualization of his behavior which helps him to better understand why he is being treated in a particular manner and how he should behave in the future. On the other hand, the restricted-code mother, who

tends to use more physical than verbal reinforcements, frequently does not provide her child with an explanation of his behavior which led to the treatment he is receiving. And, in the absence of such an explanation the child is left to learn by trial and error.

The influence of maternal teaching styles on the ability of children to learn has been investigated still further, particularly as the mother's teaching strategy relates to her child's motivation for learning. After examining the teaching styles of 60 mothers Jackson, Hess, and Shipman (1965) concluded that the style most conducive to helping a child learn is one in which his mother involves him in both talk and participation. She does not simply act as an information source for the child, solving all his problems and telling him whatever he wants to know, but also makes a point of asking him questions about the task at hand. According to the authors, this is the most fruitful approach because it provides the mother with valuable feedback information to use in deciding on the next step in her instruction of the child, and also because it helps the child to develop an inductive style of learning wherein he is motivated to reason through problems and search for answers on his own.

In studies such as the ones cited above, the precise nature of the relationship between maternal teaching strategies and the learning ability of children has sometimes been complicated by the finding that the particular instructional approach a mother

employs appears to depend in part on her socio-economic level. Hess and Shipman (1965), Jackson, Hess, and Shipman (1965), and Fantini and Weinstein (1968) have all noted the influence of this variable, but of the three it would appear that Fantini and Weinstein (1968) provide the clearest explanation of its significance. These authors (1968, p. 120) point out that while some maternal teaching strategies tend to be more associated with socio-economic levels than others, the adequacy of maternal teaching can not be defined solely according to traditional socio-economic criteria. Mothers experiencing economic difficulties are not, as a result, mothers who have restricted language codes and punitive communication styles. Similarly, mothers having university degrees do not necessarily maintain a close communicative relationship with their children in which they employ a favourable combination of inductive-deductive teaching strategies.

Significant findings concerning the cognitive development of young children and the nature of the interaction they might have with their mothers have not only been uncovered in studies investigating maternal teaching styles, but also in research in which a conscious effort has been made to control some segment of a child's early experience in order to observe the effects on learning. Typical of this so-called "intervention" research White (1971) is a study conducted by Schaefer (1969) in which

eight college-educated woman were trained to tutor 20 low-income Negro infants in their homes. Over a 21 month period the tutors averaged just under four, one-hour-a-day private sessions a week with each infant. Tutoring was begun when the infants were 14 months of age and terminated at 36 months. The emphasis throughout was on verbal stimulation using books, toys, and anything available to maintain the infant's interest. Compared to a group of control infants who received no special stimulation over the 21 month period, infants in this tutored group showed significant gains on measures of linguistic and perceptual development.

In a somewhat similar study, Gordon (1969) trained low-income women to tutor mothers of infants who it was expected would have ordinarily developed very poorly. The tutoring, which stressed parent involvement, included a series of "learning games" for mothers to play with their infants beginning in the first months of life and continuing throughout infancy. General ideas about the virtue of extensive exposures to words as labels and as cues to physical differences among objects were the basis for some games. In other games, certain items from standard infant tests were utilized as well as any other ideas (e.g., the pat-a-cake game) that provided the means whereby mothers could become more sensitive to infant development and would be encouraged to devote considerable time to training and enjoying

their infants.

Encouraging findings resulting from this form of varied stimulation were revealed in scores obtained by the infants on the Griffith's Infant Scale, especially for females. Performances of the Ss on this scale indicated a six point overall gain for girls and a non-significant one-and-a-half point gain for boys, with subscores in the areas of hearing and speech and eye-hand activity showing the most substantial improvement.

Perhaps some of the most interesting findings that have emerged in recent years concerning the influence of maternal child rearing behaviors on children's learning ability are those uncovered by a group of researchers working on the Harvard Pre-School Project. This investigation was started in 1965 under the direction of psychologist Burton L. White and some of the results obtained from the study have recently been given extensive coverage in an article written for the December, 1971 issue of Life magazine by Maya Pines.

The children initially examined by the investigators were normal three- to six-year-olds. Ss were assigned to either an "A" group or a "C" group depending on the degree to which they possessed certain intellectual and social skills. A children were better able to anticipate consequences, plan and carry out projects, and to understand more complex sentences than C children. Furthermore, A group children always knew how to get the attention

of adults for information or help as they needed it, while the more inept C group children generally remained unnoticed or else disrupted the whole classroom.

Children below three years of age were included in the study only after the researchers were unable to find the point at which the three- to six-year-old A and C children began to differ in competence. Through the use of measures of cognitive and social skills that were appropriate for the 40 younger children examined, it was eventually discovered that clear-cut differences between A and C children seemed to emerge in the period from 10 to 18 months of age. And the factors accounting for these observed changes during this critical eight month span appeared to have their origin in the nature of the relationship between mother and child.

It was discovered that mothers of A children spent very little time interacting with their children on a continuous basis during this period. They were frequently too busy with other activities and some even held part-time jobs. However, with regard to two very important roles the performance of A mothers was found to be markedly superior to that of C mothers. A mothers were more effective (a) indirectly, as organizers, designers, and rulers of the child's physical environment and (b) directly, as consultants to their children "on the fly". In performing the first role A mothers provided a rich variety

of toys and household objects for their children to play with and allowed them to roam freely throughout the living area. On the other hand, C mothers seemed to restrict the child's instinct to explore by being overprotective of the child and his possessions, and by ruling a large number of places in the home out of bounds. On the basis of their findings the researchers even went so far as to point out that the use of playpens, highchairs, or gates for long periods of time every day could possibly stunt a child's curiosity severely enough to impede his intellectual development by the age of 18 months.

Occasions on which an A mother performed her role as a consultant usually involved briefly interacting with her child in order to acquaint him with some novel experience or to assist him in understanding a problem he had encountered during the course of his wanderings about the home. Typically an A mother would talk to the child about the matter in question, stimulate his curiosity by giving him some related ideas to start him thinking, and unwittingly teach him an important skill, namely using adults as a resource. In most cases all these various forms of interaction took place in short 10- to 20-second episodes many times during the day. C mothers, in contrast, characteristically made themselves much less available, did not share their infant's excitement, talked much less to

their infant, and in general failed to provide adequate intellectual stimulation.

Recent findings on the relationship between various aspects of the home environments of children and their mental abilities have also been reported in a study conducted by Marjoribanks (1971). A factor analysis of various home environment forces, including the press for achievment as well as the press for activeness, intellectuality, independence, English, languages other than English, mother dominance, and father dominance, yielded two factors. The first factor was labeled the "learning environment of the home" factor while the second was referred to as the "parental dominance" factor. Only scores on the learning environment of the home factor showed a statistically significant relationship to scores on mental ability tests. In particular it was noted that the learning environment of the home factor accounted for 50.4% of the variance both in verbal ability and number ability and 16% of the variance in reasoning ability. For spatial ability the relationship was less definite with only 6.7% of the variance in scores being accounted for by the home environment factor.

To complete the analysis a comparison was made between the effectiveness of the learning environment of the home factor scores and other environmental measures, including social status indicators and family structure variables, as predictors of the

mental ability tests' scores. Learning environment of the home factor scores were found to be the better predictors. Learning environmental forces accounted for 25% of the variance in the verbal ability test scores, 34% of the variance in the number ability test scores, and 12% of the variance in reasoning ability after the variance due to the combination of social status characteristics (occupation and education of father, education of mother) and family structure variables (number of children, ordinal position, crowding ratio) had been allowed for.

The findings of the studies described in the present discussion seem to provide strong support for the position that in cases of mother-child interaction in which the child rearing behaviors of a mother are such that she seldom exposes her child to stimulating learning situations and gives him little encouragement to learn as well as a minimum of instruction; the result for the child may very well be that he develops specific types of disabilities in learning. In the review that follows further consideration will be given to the consequences that child rearing behaviors of this nature may have for the child's ability to learn, this time with regard to need for achievment and measured academic achievement in children.

(b) Influence of maternal child rearing practices and attitudes on need for achievement and measured academic achievement in children. In a study of the influence of maternal independence and dependence on academic achievement, Haggard (1957) found that a group of children who were "high" achievers in spelling and language tended to have very dependent relations with their parents. That a dependent relationship may foster "high" academic achievement has also been suggested by findings reported by Chance (1961). He found that statistically significant differences in academic achievement between "early" and "late" independence training groups of grade one children were in a direction suggesting that children whose mothers favour earlier demands for independence make poorer school progress, relative to their intelligence level, than children whose mothers favour later independence demands. Furthermore, these differences appeared to be more marked in girls than in boys and more marked in reading than in arithmetic. In contrast to the findings obtained by Chance (1961), research conducted by Crandall, Preston, and Rabson (1960) and Shaw (1964) has revealed that early independence in children is conducive to "high" academic achievement.

With regard to need for achievement, Winterbottom (1958) reported that boys with "high" need achievement had mothers who encouraged early independence and self-reliance. Support for this trend was provided by Sontag, Baker, and Nelson (1958) who found emotional dependence

on the mother by the preschool child to be related to lower need achievement.

Studies conducted by Crandall, Dewey, Katkovsky, and Preston (1964) and Katkovsky, Preston, and Crandall (1964a; 1964b) investigated the relationship between the academic achievement of children and the attitudes of their mothers concerning their own personal achievement. Results showed that mothers who set high standards for their daughter's intellectual achievement efforts, in contrast with mothers whose standards were less demanding, had daughters who were proficient on reading and arithmetic achievement tests. In these studies the mothers were also asked questions pertaining to parental nurturance, and comparisons made between "high" and "low" achieving children in light of the answers given by their mothers revealed that girls who were competent readers had both less affectionate and less nurturant mothers than did girls who demonstrated less proficiency in that academic area. Furthermore, girls who performed better on an arithmetic achievement test also had mothers who were relatively low on nurturance.

In addition to the findings concerning maternal nurturance, a study in which Drews and Teahan (1957) administerd the Parental Attitude Scale to mothers of academically "high" achieving and "low" achieving children revealed that mothers of "high" achievers had higher scores on both the Dominating and Ignoring scales, while no significant differences were noted between mothers

of "high" and "low" achievers on the Possessive scale. These results suggested to the authors that the "high" achiever has a mother who tends to be authoritarian in her treatment of him, and that he is a child who has a rigidly defined place within the home which he is expected to keep with docile acceptance.

The relationship between a child's academic achievement and the type of educational environment he is provided in the home has also been investigated by a number of researchers. Dave (1963) constructed an Index of Educational Environment covering such relations as the mother's intellectual expectations for her child, the opportunities she provided in the home for enlarging the child's vocabulary, the extent to which she created situations for the child to learn in the home, and the amount of assistance she gave him in learning situations related to school and non-school activities. The correlation of this overall index with an educational achievement score for the children composed of such areas as word knowledge, spelling, reading, and arithmetic computation, was found to be .80 .

In a more recent study by Hanson (1969) the impact of the home literary environment on reading test achievement was the subject of investigation. A questionnaire was constructed to measure four areas of the home literary environments of 48 grade four children. The areas covered were the availability of reading materials, the amount of reading done with the child

by the mother, the extent of guidance and encouragement given to the child in reading, and the nature of the parental model for reading. The results showed a significant relationship between the reading test achievement of the children and the type of home literary environment to which they had been exposed. Of particular significance was the finding that a stimulating home literary environment characterized by a strong parental model for reading, appeared to be instrumental in shaping positive attitudes toward reading in children and in encouraging them to engage in independent reading.

Results obtained by Napoli (1968) appear to lend support to certain of the findings reported by Hanson (1969). Napoli (1968) interviewed 20 "high" achieving and 20 "low" achieving readers in grade eight and their parents about conditions in the home which fostered reading. The homes of the "high" achieving readers were in general found to provide more reading materials and to place greater stress on education.

Summary of Findings on the Influence of Particular Maternal Child Rearing Practices and Attitudes on Cognitive Development in Children

Any attempt to arrive at definite conclusions concerning the effect of maternal child rearing practices and attitudes on cognitive development in children is greatly hampered by the lack of consistent research findings on this topic. A close

examination of the studies that have been reviewed suggests several reasons for this surfeit of contradictory evidence. Firstly, the source of information about specific child rearing practices and attitudes often varies from study to study. In some cases both parents act as respondents, in others only the mother, and still in others the child alone or the mother and child together.

Other factors which contribute to the inconsistency in findings from one study to the next include differences in the socio-economic level, education, ethnic background, and nationality of the respondents. Furthermore, the age, sex, and IQ of a child whose learning ability is being assessed as well as his status as an only child, or if such is not the case, the number of siblings he has and his age relative to the ages of his siblings, also may be important variables influencing the findings which are obtained. Finally, the manner in which an investigator defines both the specific aspects of child rearing he is examining and the particular types of cognitive abilities he is measuring in a child, would also seem to at least in part determine how closely his findings might approximate those of another investigator examining the relationship between similar variables.

Although, for the reasons cited above, it is difficult to locate consistent trends in the research findings that have been reviewed, it would appear that at least with regard to the importance of certain, specific forms of environmental stimulation,

some tentative conclusions can be presented in the way of a summary. Supporting evidence of an indirect nature attesting to the significant role played by environmental stimulation in cognitive development is forthcoming from those studies in which the provision of various kinds of extra stimulation or the restriction of stimulation seems to affect the ability of animal Ss to problem-solve (Hebb,1949; Forgays and Forgays, 1952; Bingham and Griffiths, 1952; Hymovitch, 1952; Forgus, 1955). More direct support can be found in research which has focused on the effects that different types of stimulus deprivation and subsequent exposure to enriched stimulation have on the learning abilities of institutional children (Goldfarb 1943; 1945; Spitz, 1945; Dennis and Najarian, 1957; Dennis, 1963). Finally, studies in which the specific types of child rearing practices employed by certain mothers have been investigated, have also revealed findings which suggest that the intellectual development of children may be influenced by the kinds of rearing practices their mothers employ and the nature of the environmental stimulation resulting from these practices (Milner, 1951; Irwin, 1960; Henderson, 1963; Hanson, 1969; Schaefer, 1969; White, 1971).

With regard to the studies concerned with maternal child rearing attitudes, there does not appear to be very close agreement among the findings reported as to the precise nature of the relationship that exists between any one particular type of attitude and intellectual

development in children. For example, although a certain amount of consistency is revealed in the finding that an attitude of overprotectiveness on the part of a mother seems to be associated with the emergence of children's language problems (Beckey, 1942; McCarthy, 1954 ; Baldwin, 1949; Stewart, 1950), contradictory results have also been reported (Levy, 1933). Similarly, whereas some studies indicate that children who experience problems in learning have mothers who exhibit an attitude of rejection toward them (McCarthy, 1954 ; Williams and Scott, 1953; Heilbrun and Orr, 1965), other research has revealed that it seems to be because a mother is less loving and more rejecting in her attitude that her child develops superior learning abilities (Baer and Ragosta, 1966). Evidence contrary to the finding that a demanding, authoritarian attitude, involving strict control of the child's life by the mother, results in learning problems in the child (Coleman, Bornston, and Fox, 1958; Heilbrun, Orr, and Harrell, 1966) can also be found in the present literature review (Stewart, 1950; Kent and Davis, 1957; Drews and Teahan, 1957).

In light of the above summary of the various relationships which have been found among different types of early experience and certain deficits in the intellectual development of children, a strong case would seem to exist for supposing that an explanation as to why many learning disabled children encounter difficulties in learning might also be discovered in an investigation of the

kinds of early experiences that they have been exposed to. In particular, the findings of these studies suggest that it may be the specific nature of the child rearing practices and attitudes exhibited by the mothers of learning disabled children that might in part be responsible for their children's learning difficulties.

Determining precisely what aspects of these maternal child rearing behaviors may be contributing to the occurrence of learning problems would seem to be an important step forward, not only in terms of finding ways to prevent children's learning disorders from ever occurring, but also from the viewpoint of planning more individualized remedial programs from a knowledge of the unique features of a particular child's background. Furthermore, when it is realized that a substantial portion of contemporary research on the etiology of learning disabilities tends to ignore the possible influence of environmental factors, and instead focuses mainly on brain damage as the cause, the necessity for an investigation of this nature is obvious.

OBJECTIVES OF THE PRESENT RESEARCH

To the extent that the research findings reviewed in this study were not found to be entirely consistent, but pointed to a number of environmental factors that might be involved in the emergence of children's learning disabilities, the focus of the present research

was exploratory in nature. In line with this orientation, the three objectives of the study were as follows:

(1) The first objective was to isolate a group of factors which are descriptive of the specific kinds of child rearing practices and attitudes exhibited by mothers of learning disabled children during the first six years of their children's lives.

(2) With reference to those factors which might involve the provision of environmental stimulation, a second objective was to determine if it is the frequency with which mothers of learning disabled children have provided certain types of stimulation during the first six years of their children's lives that may have contributed to the occurrence of learning disabilities in these children.

Specific attention was paid to the frequency with which stimulation had been provided, since it was assumed that all children had been exposed to a certain minimal amount of the stimulation represented by the factors, although some may have had more frequent exposures than others. With regard to the comparisons that were done in this study concerning the frequency with which children had been exposed to stimulation, it should be noted that the above mentioned assumption suggested the use of one-tailed directional tests.

(3) With reference to those factors which might represent certain child rearing attitudes, a third objective was to determine if it is the extent to which mothers of learning disabled children have exhibited particular attitudes during the first six years of their children's lives that may have contributed to the occurrence of learning disabilities in these children.

Once again, the emphasis was on the extent to which the mothers exhibited the attitudes represented by the factors since it was assumed that all mothers had demonstrated a particular attitude to some degree, the difference between mothers being that some can be said to have possessed a certain attitude to a greater extent than others. For comparative purposes, this assumption also suggested the use of one- tailed directional tests.

METHOD

Subjects

The Ss were 70 mothers and 70 children, one child belonging to each mother. At the time the research was conducted all Ss were residents of Thunder Bay, Ontario. The children were selected from grades one through eight in both the Lakehead Separate Schools and the Lakehead Public Schools in Thunder Bay. In this selection an effort was made to ensure that a cross-section of the schools, as well as a cross-section of the grade range investigated, were represented. Half the mothers were assigned to an experimental group, the other half to a control group. Which of these two groups a mother became a S in depended on whether or not her child had a learning disability. Children of the 35 mothers assigned to the experimental group were learning disabled, while children of the 35 mothers assigned to the control group had no learning disabilities.

In line with the definitions of a learning disability which have already been presented, namely those of Michal-Smith and Morgenstern (1965) and Kirk and Bateman (1962), as well as the statement made by Johnson and Myklebust (1967) concerning the lowest level of intelligence typically included in the learning disability group, the procedure employed to determine if a learning disability was present in the case of each child was as follows. For a child to be considered as learning disabled two

conditions had to be satisfied.

(1) He had to obtain a Full Scale IQ of at least 90 or above on a standard test of intelligence. The tests used for assessment included the Wechsler Intelligence Scale for Children (WISC), the Stanford-Binet Intelligence Scale (Form L-M), and the Lorge-Thorndike Intelligence Tests.

(2) His scores on one or more of the three sub-tests of Reading, Spelling, and Arithmetic on the Wide Range Achievement Test (WRAT) had to indicate a significant difference between his actual achievement level and the level at which one would expect him to be performing for his mental age.*

A problem that had to be dealt with concerning the latter of these two conditions involved defining what a significant difference between present achievement and expected performance actually entailed. In this regard, Myers and Hammill (1969) have stressed that marked underachievement in school-related activities must be present. Bateman (1965, p. 223) has also offered an answer to this problem by pointing out that in the first three or four years of school, one year to a year-and-a-half below expectancy would indicate the presence of a learning disability, while in the upper grades two years is a more appropriate guide.

In accordance with the distinguishing characteristic of "marked" underachievement delineated by Myers and Hammill (1969) and in attempt to closely follow the guidelines set down by Bateman (1965), discrepancies between expected performance and actual achievement on any one of the WRAT sub-tests were

* The Mean Age-Grade Table for Ontario Schools, published by the Department of Education of the Province of Ontario (Form A.C.7), was used to determine the grade level that a child would be expected to be achieving at on the basis of his Mental Age.

Table 1

Criterion Measures Differentiating Between Non-Learning Disabled Children (Control Group) and Learning Disabled Children (Experimental Group) for Each School Grade Range

School Grade Ranges	Control Group					Experimental Group				
	N	$\bar{x}$IQ	SD	$\bar{x}$D	SD	N	$\bar{x}$IQ	SD	$\bar{x}$D	SD
1 - 3	24	110.17	13.34	.58	1.94	25	120.48	13.71	16.52	5.71
4 - 5	6	121.33	7.32	1.33	2.21	5	104.40	6.68	20.80	2.71
6 - 8	5	117.00	18.89	5.00	3.63	5	101.60	6.89	32.40	11.64

Note. -- $\bar{x}$IQ is Mean Intelligence Quotient.

$\bar{x}$D is Mean Discrepancy in Achievement expressed in terms of the number of months a child was achieving below his expected grade level.

considered to be significant if they reached certain predetermined values which had been decided upon for children at particular grade levels. For children in grades one to three a discrepancy of one school year or more (i.e., 10 months or more) was viewed as significant, and hence indicative of a learning disability; while a discrepancy of at least one-and-a-half school years (i.e., 15 months or more) was regarded as significant for fourth and fifth grade children, and a discrepancy of two school years or more (i.e., 20 months or more) for children in grades six to eight.

Adherence to this method of diagnosis resulted in the selection of 35 learning disabled children and 35 non-learning disabled children. All children diagnosed as having learning disabilities satisfied the two conditions outlined above. And, while all non-learning disabled children satisfied the first condition by obtaining IQ's of at least 90, they did not show the specified discrepancies in achievement required by the second condition for the respective grade levels. A summary of the criterion measures that were used to determine whether a child was learning disabled or non-learning disabled is presented in Table 1.

Instruments

Three questionnaires were used in the study. One questionnaire, the Mother Form of the Parental Attitude Research Instrument (PARI), was concerned with a mother's attitudes toward child rearing. A second questionnaire, the Learning Opportunities Survey (LOS), provided

an indication of the specific child rearing practices employed by a mother, particularly as revealed by the kinds of environmental stimulation and learning opportunties she made available to her child.

The Mother Form of the PARI (see Appendix A) was developed by Schaefer and Bell (1958) as a measure of the child rearing attitudes of the mother in the family. Its construction is based on the hypothesis that measures of the components of the mother's personality which are relevant to her role as a mother will permit prediction of the mother's behavior with her child and the future personality adjustment of the child. The Mother Form consists of 23 scales of five items each (see Appendix B), making a total of 115 items. In accordance with the Likert (1932) method Ss mark Strongly Agree, Mildly Agree, Mildly Disagree, or Strongly Disagree to each item of the individual scales.

Schaefer and Bell (1958) have reported a mean internal consistency reliability of .63, with a range of .34 to .77, for the 23 five-item scales of the Mother Form and a mean test-retest reliability of .61 with a range of .18 to .79 . Zuckerman and Oltean (1959) investigated the construct validity of the Mother Form by correlating it with a number of other test instruments including the California F Scale and the Edwards Personal Preference Schedule (EPPS). They found that the Mother Form factor of authoritarian control correlated significantly ($r=.61$, $p>.01$)

with the F Scale, which is a measure of authoritarian social attitudes, when the two instruments were administered to a group of student nurses. In addition, they reported significant correlations between various attitudes associated with the Mother Form factor of hostility-rejection and several EPPS variables. A significant relationship ($r=.44$, $p \leq .05$) was found between the hostility-rejection attitude of "irritability" and the EPPS variable "aggression" and between "seclusion of the mother" on the PARI Mother Form and "affiliation" on the EPPS ($r=-.56$, $p > .01$) as well as between the Mother Form attitude of "rejection of the home-making role" and the EPPS variable "nurturance" ($r=-.56$, $p \geq .01$). All 115 items of the Mother Form of the PARI were administered to the Ss in the parent research in their original form (Schaefer and Bell, 1958).

The LOS (see Appendix C) was developed by the author of this research as a measure of the specific learning opportunities that were made available to a child from the time of his birth until he reached six years of age. The content for the survey items was suggested by a review of the literature concerned with maternal child rearing practices, and a rationale for the majority of the items included in the instrument can be found in the reading material that has been researched. References that proved to be particularly enlightening included Gesell (1940), Gesell and Ilg (1949), Mussen, Conger, and Kagan (1963), Baldwin

(1967), and Stone and Church (1968).

In completing the LOS items a S was not required to express an attitude, but simply to recall facts about the upbringing of her child. These facts would seem to have the characteristic of being fairly stable over time. A S indicated her choice of answer by marking Never, Seldom, Frequently, or Always to each of the items.

The items were grouped into seven age-categories. These groupings were made in part because many of the items were concerned with specific developments that may or may not have taken place during certain specified periods of a child's first six years of life, and also because it was felt that the age range defining each category would serve as a cue that would help to refresh a S's memory about what transpired during a particular stage of her child's upbringing.

In its original form, the LOS consisted of a total of 96 items. However, a careful examination of the ratings given by the mothers of learning disabled children indicated that the meaning of certain items was not being correctly understood. It was therefore decided that an effort should be made to eliminate items that were unclear. A method suggested by Kuder and Richardson (1937) was used for this purpose and resulted in the elimination of 40 of the original 96 items. Only the remaining 56 items were used in the analysis.

In completing both the LOS and the PARI it was important that a S rated each item as that item applied to the particular child in her family whose degree of learning ability was used as a criterion for determining whether the S belonged to the experimental group or to the control group. To ensure that the ratings for the LOS were made only about the upbringing of the designated child, the child's name was entered in a space included in the instructions accompanying this survey. To ensure that the PARI items were rated in the same manner, each mother was also instructed to respond to this questionnaire with the designated child in mind, and specifically with regard to her attitudes toward rearing this child during the first six years of his life.

In addition to the LOS and the PARI, a Family Background Information Form was constructed to obtain information about the background of a mother and the backgrounds of other members in her family including her husband and her children. The socio-economic status categories described by Pineo and Porter (1967) for Canadians, were used to determine the socio-economic status of each family. The eight categories these authors list were reduced to three major categories. These major categories were (1) Professional (including professionals, semi-professionals, proprietors, managers, and officials), (2) Skilled (including skilled and semi-skilled persons), and (3) Unskilled (including

unskilled workers as well as sales and clerical personnel). A complete description of the content of all the questions comprising the Family Background Information Form can be found in Appendix D.

Procedure of Questionnaire Administration

Both the LOS and the PARI were administered to each of the 35 mothers of learning disabled children to obtain information about the specific nature of the child rearing practices and attitudes they exposed their children to. In order to determine if there were any differences between the child rearing behaviors of these mothers and those exhibited by mothers of children having no learning disabilities, the LOS and the PARI were also administered to each of the 35 mothers of non-learning disabled children; the ultimate purpose of this comparison being to discover what particular aspects of the child rearing methods of the learning disabled group mothers might have contributed to the occurrence of their children's learning problems. All mothers in both groups completed the Family Background Information Form.

Prior to receiving these various questionnaires, each mother was mailed a personal letter introducing the author and describing the nature of the research. This letter is reproduced in Appendix E.

Subsequent to receiving this initial correspondence, each mother was telephoned to determine if she wished to take part in the research. Those mothers who agreed to be Ss were mailed the questionnaires and were asked to complete them as soon as possible by following the instructions accompanying each instrument. All Ss completed the questionnaires in their own homes without the author being present and returned them by mail to the Lakehead Separate School Board offices or to the author's home. This method of questionnaire administration resulted in a return rate of approximately 85%. Only one mother refused to complete the questionnaire.

RESULTS

For the purpose of analysis, the ratings on the LOS and the PARI were assigned values from one to four. The direction of these assigned values was such that a response of "Never" on the LOS received a value of one and a response of "Always" a value of four. On the PARI the values ranged from a one for the response "Strongly Agree" to a four for the response "Strongly Disagree".

In line with the procedure employed by Schaefer and Bell (1958), values for the PARI were assigned to the ratings given for each question of each scale in such a way that a high score on a scale indicated possession of the kind of attitude implied by the scale name. A high score on an item of the LOS was

regarded as indicating that the type of exposure a child had received to a particular child rearing practice was "favourable", this term implying that the nature of the exposure was felt to be conducive to the development of normal learning patterns in the child. This method of assigning values to the ratings given for the various LOS and PARI items compensated for the fact that each instrument contains both positively and negatively worded items. Furthermore, it also meant that mothers who scored "high" on any one of the PARI factors tended to be more in agreement with the expression of the attitude represented by the name of the factor, while mothers who scored "low" tended to be less in agreement. Similarly, mothers who scored "high" on any one of the LOS factors tended to engage in the child rearing practice represented by the name of the factor, more frequently than did mothers who scored "low" on the factor.

The analysis that was done on the ratings obtained for the LOS and PARI items consisted of two main parts. In the first part, which will be described immediately below, factors descriptive of the child rearing practices and attitudes exhibited by the mothers of learning disabled children only were obtained by the method of factor analysis. In the second part, which will be described shortly, scores were calculated for the mothers of the learning disabled children and the mothers of the non-learning disabled children on each of the extracted factors. Comparisons were then made between the factor scores obtained by the two groups of mothers to determine the ways in which their child rearing behaviors differed.

The Factor Analyses

Two separate principal components factor analyses with Varimax rotations (Harmon, 1967) were carried out. One analysis was done on the scores obtained by the mothers of the learning disabled children on each of the 23 scales of the PARI. Twenty-three separate scale scores were calculated for each mother, each score consisting of the sum of the five ratings that a mother gave for the five items comprising the particular scale. This method, which involved factor analysing the PARI scale scores rather than the mothers' individual ratings on each of the PARI items, was consistent with the technique employed in previous factor analyses of this instrument (Zuckerman, Ribback, Monashkin, and Norton, 1958; Schaefer, 1961).

A second principal components analysis was done on the ratings given by the mothers of the learning disabled children to each of the LOS items. In this instance, the analysis was conducted at the level of the mothers' ratings for each item, since this instrument does not consist of scales.

Cattell's (1966) Scree Test was the criterion used to determine the number of factors to be rotated in the case of both the PARI factor analysis and the LOS factor analysis. Three PARI factors and four LOS factors were rotated. The three factors extracted from the PARI were similar to those obtained by Zuckerman, Ribback, Monashkin, and Norton (1958) and Schaefer (1961). The rotated factor matrices for the PARI and LOS factors are shown in Appendices F and G, respectively.

An examination of the content of the scales loading on the

rotated factors obtained from the PARI indicated that only those scales loading .5 and higher should be interpreted for the factors to be psychologically meaningful. The same procedure was followed in interpreting the items loading on the LOS factors. A listing of the scales loading .5 and higher on each of the PARI factors can be found in Appendix H. Appendix I consists of a listing of items loading .5 and higher on each of the LOS factors. Interpretations of the PARI and LOS factors are presented below.

Interpretation of PARI Factors

PARI Factor 1 (authoritarian-control)

The scales loading on this factor reflect the attitude that the mother should dominate the family and control all family activities. In this position she demands complete obedience, dependency, and loyalty from her child. He should recognize only the authority of his mother and is expected to meet her demands for achievement and not to waste his time on foolish activities. Furthermore, the mother should make it her business to know her child's innermost thoughts and to suppress any sexual or aggressive tendencies he might exhibit. Since, in performing these various duties, a mother makes many personal sacrifices and gives so much of herself, her child should feel totally indebted to her and conform without hesitation to the rules of conduct she enforces.

PARI Factor 2 (democratic attitude)

The scales loading on this factor reflect acceptance by the mother of a close relationship between her and her child which still permits the child freedom to choose his own interests and to express his opinions about family affairs and rules of conduct affecting him. By taking part in activities with her child and sharing his interests she encourages him to seek her advice when he wants it and gains his trust. There seems to be no logical relationship between the scale Marital Conflict and the other scales loading on this factor, except perhaps that by having a democratic attitude toward child rearing a mother's opinion might conflict with that of her husband's regarding the proper way to bring up a child.

PARI Factor 3 (hostility-rejection)

This factor consists of scales which reflect the unhappiness of the mother at being shut up in a house and her dissatisfaction with the duties of caring for the home and her child. She is irritable because her child gets on her nerves and is also convinced that marriage generally consists of a great deal of quarreling and fighting between husband and wife.

Interpretation of LOS Factors

LOS Factor A (language stimulation)

The majority of the items loading on this factor are concerned with the degree to which a mother provides language stimulation to her child. The child receives this type of stimulation whenever he is read to by his mother, told stories by her, or given the opportunity to listen to songs, rhymes, and jingles. Besides being exposed to these various forms of auditory stimulation, the child is also stimulated visually whenever his mother shows him pictures in the books that she reads to him. Two other aspects of language stimulation which are suggested by the items loading on this factor include the extent to which the child hears languages other than English spoken in the home and also the amount of freedom his mother gives him in experimenting with his own emerging language skills.

LOS Factor B (sincerity of interaction)

The items comprising this factor are mainly concerned with the sincerity of the mother in interacting with her child. Most of the items have a negative connotation. For example, one theme which is stressed is that a mother may give her child toys to play with and/or keep him up late at night not because she enjoys being with him and sharing his interests,

but for the sole purpose of not being bothered by him and having him out of her way. The suggestion that she may not wish to interact with her child except perhaps for very brief periods of play that are mostly of a superficial nature, also deals with the question of the sincerity of her intentions. Furthermore, it is implied that the few occasions on which the child does come into close contact with his mother may involve situations in which he is scolded by her and reprimanded for his bad behaviors.

LOS Factor C (perceptual-motor stimulation)

The distinguishing feature of this factor is the provision of perceptual-motor stimulation to a child by his mother. The child receives visual, auditory, tactile, kinesthetic, gustatory, and olfactory stimulation by being provided with toy objects to manipulate and explore. Occasions on which a child receives this type of stimulation constitute learning situations for him in which his play activities help him to gain an awareness of the meaningful relationships that exist among objects. The development of such skills as laterality and directionality is presumed to be dependent on the provision of stimulation of this nature.

LOS Factor D (establishing a routine)

The child rearing practice suggested by the content of

the items loading on this factor involves helping a child to establish a certain amount of routine in his daily activities. Whether the child's mother makes him go to bed at a regular time every night, makes him responsible for doing a number of chores about the house, or encourages him to take pride in his ability to dress and wash himself and brush his own teeth; the net effect is the creation of a schedule that helps to make the child's life more predictable for him. Because he knows what to expect from day to day he feels more confident and sure of himself in attempting various learning tasks that are presented to him.

Comparisons of the Mothers' Factor Scores

The first step in determining what aspects of the child rearing behaviors exhibited by the mothers of the learning disabled children might have contributed to the emergence of their children's learning problems, involved obtaining scores for these mothers as well as the mothers of the non-learning disabled children on the PARI and LOS factors. An unweighted summation of the mothers' ratings for the items loading .5 and higher on each of the factors was the method employed to derive factor scores. The scores obtained by the two groups of mothers on each factor were then compared

Table 2

Comparison of Factor Scores Obtained by Mothers of Non-Learning Disabled Children (Control Group) and Mothers of Learning Disabled Children (Experimental Group) on Each of the PARI and LOS Factors

(one-tailed t-tests for independent samples)

Factors	Control Group (N=35)		Experimental Group (N=35)		t
	$\bar{x}$	SD	$\bar{x}$	SD	
PARI Factor 1 (authoritarian-control)	209.26	46.69	232.94	35.37	2.36**
PARI Factor 2 (democratic attitude)	35.57	5.10	32.83	6.16	2.00**
PARI Factor 3 (hostility-rejection)	36.29	6.61	32.11	6.62	2.61***
LOS Factor A (language stimulation)	38.23	3.04	38.00	6.00	0.20
LOS Factor B (sincerity of interaction)	13.43	1.34	12.86	2.42	1.20
LOS Factor C (perceptual-motor stimulation)	23.54	3.38	22.06	3.59	1.75*
LOS Factor D (establishing a routine)	43.60	2.22	42.09	4.68	1.70*

* $p < .05$
** $p < .02$
*** $p < .01$

using one-tailed t-tests for independent samples (Edwards, 1968).

In comparison to mothers of learning disabled children, mothers of non-learning disabled children scored significantly higher on PARI factor 2 (democratic attitude), $p < .02$, PARI factor 3 (hostility-rejection), $p < .01$, LOS factor C (perceptual-motor stimulation), $p < .05$, and on LOS factor D (establishing a routine), $p < .05$. In addition, the scores obtained by mothers of non-learning disabled children on LOS factor A (language stimulation) and LOS factor B (sincerity of interaction) also exceeded those obtained by mothers of learning disabled children, but the differences were not statistically significant. The only factor for which the scores obtained by the mothers of learning disabled children were significantly higher than the scores obtained by the mothers of non-learning disabled children, was PARI factor 1 (authoritarian-control), $p < .02$. The results of these various comparisons are presented in Table 2.

In summary, the direction of these differences suggested that mothers of non-learning disabled children were significantly more democratic as well as significantly more hostile and rejecting in their attitudes toward their children, than were mothers of learning disabled children. In addition, through their child rearing practices, mothers of non-learning disabled children provided their children with significantly more perceptual-

Table 3

Correlations Among Factor Scores Obtained by Mothers of Learning Disabled Children on each of the LOS and PARI Factors

	A	B	C	D	1	2	3
A							
B	.286						
C	.319	.186					
D	.518*	-.001	.269				
1	.186	.218	.316	.068			
2	-.256	-.004	-.055	-.431*	.045		
3	.118	.487*	.045	-.219	-.023	.498*	

Code. -- LOS Factor A (language stimulation)
LOS Factor B (sincerity of interaction)
LOS Factor C (perceptual-motor stimulation)
LOS Factor D (establishing a routine)

PARI Factor 1 (authoritarian-control)
PARI Factor 2 (democratic attitude)
PARI Factor 3 (hostility-rejection)

*$p < .01$.

motor stimulation and established more of a routine in their children's lives, than did mothers of learning disabled children. Finally, mothers of learning disabled children were shown to be significantly more authoritarian and controlling in their attitudes toward their children, than were mothers of non-learning disabled children. The demonstration of all these various child rearing practices and attitudes was specifically with regard to the first six years of the children's lives before they entered school.

Besides the above comparisons, correlations were also done among the scores obtained by the mothers of learning disabled children on the PARI and LOS factors (see Table 3). Among the PARI factors the only significant correlation found was a positive relationship between PARI factor 2 (democratic attitude) and PARI factor 3 (hostility-rejection), $p < .01$. The single significant correlation revealed among the LOS factors was a positive relationship between LOS factor A (language stimulation) and LOS factor D (establishing a routine), $p < .01$. When the mothers' scores on the LOS factors were correlated with their scores on the PARI factors, two significant correlations were found. LOS factor B (sincerity of interaction) and PARI factor 3 (hostility-rejection) were positively related ($p < .01$), while the relationship between LOS factor D (establishing a routine)

Table 4

Comparisons Between the Non-Learning Disabled Group (Control) and the Learning Disabled Group (Experimental) on Items of Background Information

(two-tailed t-tests for independent samples)

Item	Control Group			Experimental Group			t
	N	$\bar{x}$	SD	N	$\bar{x}$	SD	
Age of Mother	35	34.60	5.79	35	37.34	6.60	1.82
Age of Father	35	39.37	7.56	34	40.21	6.62	.48
Age of Designated Child	35	8.17	2.17	35	8.43	2.69	.44
Age Difference Between Designated Child and Mother (in years)	35	26.43	5.68	35	28.77	5.78	1.69
Age Difference Between Designated Child and Father (in years)	35	31.14	7.73	34	31.62	5.65	.30
Age Difference Between Designated Child and Next Youngest Sibling (in years)	28	4.25	1.86	19	3.06	2.15	1.98
Age Difference Between Designated Child and Next Oldest Sibling (in years)	21	3.33	2.61	26	3.04	2.74	.36
Birth Order of Designated Child	35	2.51	1.99	35	2.60	1.36	.22
Number of Children in Family	35	3.47	1.93	35	3.45	1.32	.05
Number of Male Siblings of Designated Child	35	1.43	1.05	35	1.14	1.05	1.14
Number of Female Siblings Designated Child	35	1.26	1.27	35	1.34	1.12	.28
Number of Years of Schooling of Mother	35	10.14	2.92	35	11.26	3.04	1.55
Number of Years of Schooling of Father	35	9.51	3.89	34	10.97	3.12	1.69
Number of Years Mother Worked Outside the Home	14	4.21	1.47	14	3.07	1.62	1.88

Note. -- One father in the Experimental Group was deceased.
None of the t values reported in this table reached significance (p=.05)

Comparisons Between the Non-Learning Disabled Group (Control) and the Learning Disabled Group (Experimental) on Items of Background Information

(Chi-Square Tests with Yate's Correction)

Item	Control Group N's		Experimental Group N's		X^2
Sex of Designated Child	Males	17	Males	23	
	Females	18	Females	12	1.46
Sex of Designated Child's Next Youngest Sibling	Males	15	Males	10	
	Females	13	Females	9	.06
Sex of Designated Child's Next Oldest Sibling	Males	12	Males	11	
	Females	9	Females	15	.52
Mother's Country of Birth	Canadians	27	Canadians	30	
	Non-Canadians	8	Non-Canadians	5	.38
Socio-Economic Status of Designated Child's Family	Professional	13	Professional	12	
	Skilled	13	Skilled	17	
	Unskilled	9	Unskilled	6	.57
Main Provider of Daily Care for Designated Child	Mother	25	Mother	28	
	Babysitter	7	Babysitter	4	
	Other (father, grandparents, day care, or nursery)	3	Other (father, grandparents, day care, or nursery)	3	.61
Birth Status of Designated Child	Own	34	Own	31	
	Adopted	1	Adopted	4	.86
Father Away for Extended Period of Time (3 mos. or more)	Away	4	Away	9	
	Not Away	31	Not Away	26	1.51

Note -- Information obtained on the following additional background variables either (a) yielded no differences whatsoever or (b) resulted in N's that were too small to permit comparisons. Variables -- mother's occupation; separation of mother and designated child; year of longest separation of mother and designated child; designated child ever confined to bed for an extended period of time (i.e., 3 months or more); year in which designated child confined to bed the longest; whether or not designated child's father is still living; whether or not designated child's father resides with the family; age of designated child during period of longest separation from father.

None of the X^2 values reported in this table reached significance (p=.05)

and PARI factor 2 (democratic attitude) was negative ($p < .01$).

Comparisons between the two groups of mothers and children on the various items of background information obtained from the Family Background Information Form are summarized in two separate tables. Table 4 presents these results which were obtained from comparisons involving the use of two-tailed t-tests for independent samples (Edwards, 1968). Chi-square tests with Yate's correction (Edwards, 1968) were used to make the comparison which yeilded the results reported in Table 5. No significant differences were found between the two groups in any of the background variables investigated.

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DISCUSSION

Findings Relating to Maternal Child Rearing Attitudes

The finding that mothers of non-learning disabled children tended to be significantly more hostile and rejecting in their child rearing attitudes than mothers of learning disabled children, is somewhat puzzling. There appears to be no consistent trend in the results that have been obtained by other researchers which might help to explain this relationship. On an intuitive basis it would seem that a child who is exposed to a mother who frequently exhibits negative attitudes about her position in the home and about her marriage, would develop emotional problems and related learning difficulties simply as a result of this exposure. However, a second and more obvious conclusion that this finding suggests is that an attitude of hostility-rejection may not be exhibited to any significant degree by mothers of learning disabled childen, simply because these mothers are generally satisfied with their role in the home.

That this latter conclusion may indeed be closer to the truth is indicated in results reported by Goldberg (1972) in a study of the backgrounds of children with learning disabilities. In 63% of the cases he examined the parents were found to have "good" marriages, which suggests that dissatisfaction on the

part of a mother with her married life and related conditions in the home may not be associated with the emergence of children's learning disorders.

Support for the finding that the mothers of learning disabled children exhibited a stronger attitude of authoritarian-control than the mothers of non-learning disabled children, can be found in a study reported by Shaw and Dutton (1962). Using the factors derived from the PARI by Zuckerman, Ribback, Monashkin, and Norton (1958), these investigators discovered that mothers of underachievers scored significantly higher on the authoritarian-control factor than did mothers of achievers. The findings of the present research seem to be consistent with these results reported by Shaw and Dutton (1962) insofar as all the children diagnosed as learning disabled in the present study received this diagnosis depending on the degree to which they were also underachieving, and the significant difference between the scores obtained by the mothers of learning disabled and non-learning disabled children was in the same direction as the difference found by Shaw and Dutton (1962) for their mothers of underachieving and achieving children.

Other research findings which provide varying degrees of support for the above mentioned results include those of Beckey (1942), McCarthy (1954), Stewart (1950), Sontag, Baker, and Nelson (1958), and Heilbrun, Orr, and Harrell (1966). To the extent that an

attitude of authoritarian-control on the part of a mother could involve a tendency for her to be overprotective, over indulgent, very strict, and desirous of a dependent relationship from her child; these investigators have reported close associations between the presence of child rearing behaviors of this nature and the occurrence of various types of learning problems in children.

With regard to the attitude of authoritarian-control, it is concluded that mothers of learning disabled children are significantly more dominant, overprotective, and in need of the respect and dependency of their children than are mothers of non-learning disabled children, at least during the first six years of their children's lives. The presence of such an attitude no doubt has the effect of greatly reducing the occasions on which a learning disabled child has the opportunity to learn by his own initiative, simply because his mother so completely controls every aspect of his life.

The finding that the scores of the mothers of non-learning disabled children significantly exceeded those of the mothers of learning disabled children on PARI factor 2 (democratic attitude) is also in line with results that have been reported by a number of other investigators. Williams and Scott (1953), for example, found permissiveness and flexible

maternal child rearing behaviors to be related to superior motor coordination in children (see p.37). Also, Baldwin (1949) found that children of democratic parents scored higher on activities demanding originality and constructiveness (see p. 32).

On the basis of the findings uncovered by these researchers and the results obtained in the present study, there seems to be a strong suggestion that by being democratic in her attitude toward her child a mother probably provides him with a variety of opportunities to learn and gives him the freedom to explore and to satisfy his curiosity. To the extent that mothers of non-learning disabled children were found to be more democratic in their attitude than mothers of learning disabled children, it may be that the tendency for mothers of learning disabled children to be somewhat rigid and inflexible in their attitudes has contributed to the occurrence of their children's learning problems by restricting their learning opportunities and/or stifling their motivation to learn.

Findings Relating to Maternal Child Rearing Practices

The results obtained in the present research which indicate that in comparison to mothers of learning disabled children, mothers of children having no learning problems provided their children with significantly more frequent exposure to the various kinds of perceptual-motor stimulation represented by factor C of the LOS,

seem to be particularly revealing in light of the position taken by Kephart (1960), Delacato (1963), Barsch (1965), and other researchers working in the field of learning disabilities that it is often a lack of environmental stimulation of this nature which is at the root of many children's disabilities in learning. Kephart (1960) and Godfrey and Kephart (1969) believe, for example, that a considerable number of learning disabled children have not mastered certain basic underlying perceptual-motor skills that are necessary for adequate performance in the types of learning tasks that are presented in the school. And these authors point to the absence of essential forms of environmental stimulation and learning opportunities as one of the major reasons why these important skills have often not been established.

In line with the argument presented by Kephart (1960) and Godfrey and Kephart (1969), Barsch (1965) also cites a lack of adequate environmental stimulation and experiences as a cause of the retarded development of important perceptual-motor patterns in learning disabled children, especially from the viewpoint that it is the opportunity to move in space and explore his environment through all his senses that is essential for learning to proceed normally in a child. Finally, Delacato (1963) has likewise emphasized the important role that specific kinds of interactions with the environment can play in the

setting down of various perceptual-motor patterns which in turn help to establish the neurological organization that he believes must be present for normal learning to take place.

In the case of the theoretical position adopted by each of these investigators, then, a major underlying theme is that the basis of many forms of learning can be found in the perceptual-motor development of the child. And for the development of the child's perceptual-motor abilities to proceed normally it is important that he be exposed to the kinds of stimulation and experiences in his environment that make his life space meaningful for him. Since, during the first six years of their lives, the non-learning disabled children in the present research were exposed significantly more frequently to the kinds of perceptual-motor stimulation represented by LOS factor C than were the children having learning disabilities, it may very well be that this lack of exposure experienced by the learning disabled children contributed to the emergence of many of their learning problems just as Godfrey and Kephart (1969), Barsch (1965), Delacato (1963), and Kephart (1960) might predict.

The results obtained in this study which indicate that the child rearing practices of mothers of non-learning disabled children were significantly more characterized by an attempt to establish a routine in their children's lives than were

the rearing practices of mothers of learning disabled children, also seem to be particularly noteworthy especially when it is considered that general distractibility and not being able to establish a routine in their daily activities is a problem faced by many learning disabled children. A number of workers in the field of learning disorders have recognized the difficulty that learning disabled children encounter in ordering the events in their lives, and the remedial techniques they have devised for treating these children attempt to deal directly with this problem.

Strauss and Lehtinen (1947), for example, have emphasized that as many extraneous sights and sounds as possible should be eliminated from the learning disabled child's environment so that he is better able to concentrate on the task at hand without distraction. Besides also pointing to the need for a reduction of unessential stimuli, Cruickshank (1961) has in addition stressed the importance of establishing a highly structured daily program for these children. According to Cruickshank (1961), such a program should introduce into the classroom learning situation a rigid order of sequential procedures in work organization, which increases the child's sense of responsibility for order and cleanliness.

Inasmuch in the present study it was found that mothers of non-learning disabled children more frequently engaged in child

rearing practices which established routine in their children's lives, it may be that during the early years of a child's development, his mother plays a crucial role in helping to structure his environment in a meaningful way in order for him to learn normally. And, in the case of the learning disabled child, it might be at least in part because his mother has not performed this function for him adequately, that he is unable to learn.

The absence of statistically significant differences between the scores obtained by the two groups of mothers on the remaining LOS factors does not appear to be consistent with a number of research findings reported in the literature. With regard to LOS factor A (language stimulation), for example, numerous studies have shown that children who are read to a great deal throughout their preschool years are later more advanced in reading and in related language areas than are children who do not receive sufficient exposure to this specific type of early stimulation (Milner, 1951; Irwin, 1960; Dave, 1963; Napoli, 1968; Schaefer, 1969; Hanson, 1969). This general finding suggests that a notable difference might have been found between the mothers' scores on this factor, with mothers of non-learning disabled children scoring significantly higher than mothers of learning disabled children. Similarly, with regard to LOS factor B (sincerity of interaction), it seems reasonable to also expect that children with learning problems would have mothers who do

not tend to be as sincere in their interaction with their children as the mothers of non-learning disabled children.

One conclusion that could be reached on the basis of the above mentioned non-significant findings might be that maternal child rearing practices which involve providing language stimulation to a child or being sincere in one's interaction with him in the sense of taking a genuine interest in his activities, bear no relationship to the occurrence of learning disabilities in children. However, if close attention is paid to other research findings which suggest that these kinds of rearing practices may indeed have an influence on the ability of children to learn, it would appear that such a conclusion may be somewhat premature. Instead, there may be other reasons that can be cited to explain why, in the present study, significant relationships were not found with regard to these two factors.

Firstly, the possibility exists that for the items comprising LOS factor B (sincerity of interaction), some mothers who were in fact very insincere in their interactions with their children, may have attempted to cover up what they felt was a "negative" child rearing practice by responding in a favourable direction to the items loading on this factor. By the same token, a desire to appear in a favourable light may have also distorted the ratings given by some mothers to the items comprising LOS factor A (language stimulation).

A second confounding influence which might also have been operating to eliminate any potentially significant differences with regard to LOS factor A (language stimulation) and LOS factor B (sincerity of interaction), as well as to make the significant differences found in the comparisons involving the other factors less significant than might be expected, is the insensitivity of the four-point rating scales used in both the LOS and the PARI.

Comparisons Involving Background Information

The differences found between the child rearing behaviours of the two groups of mothers do not seem to be related to any difference that might have existed between such background variables as the socio-economic status of the children's families, the educational levels of the two groups of mothers, the mothers' ages, or their nationalities. Furthermore, whether a child was learning disabled or non-learning disabled was not found to be related to such factors as his birth order, to the number of siblings he had and their sexes, nor to the possibility that he night have been separated from his mother and/or father for an extended period of time during the first six years of his life.

That no significant differences were found between the two groups on any of the background variables investigated, would seem to have some important implications for the differences in child rearing behaviors which are revealed. Firstly, with regard to the finding that mothers of learning disabled children scored significantly higher on PARI factor 1 (authoritarian-control), Becker and Krug (1965) have pointed to a strong tendency for mothers who are more highly educated to score

lower on this factor. Hence, in the present research, if the mothers of non-learning disabled children who obtained lower scores on this factor were also found to be significantly more educated than the mothers of learning disabled children, the difference in scores obtained on PARI factor 1 (authoritarian-control) by the two groups of mothers might have simply been attributed to the fact that the mothers of non-learning disabled children were more highly educated and not to the possibility that there was a real difference in the child rearing attitudes of the two groups. Since no significant difference was found between the educational levels of mothers of learning disabled and non-learning disabled children, it would seem that the difference in the scores obtained by these two groups on PARI factor 1 (authoritarian-control) probably reflects a true difference in their expression of an attitude of authoritarian-control.

The second important implication that should be noted with regard to the backgrounds of the two groups relates to the finding that no significant differences were found between the nationalities of the mothers nor between the socio-economic statuses of their families. The majority of the mothers were Canadian born and the occupations of the fathers indicated that most families in both groups were probably middle class or lower middle class.

In the research concerned with the etiology of children's learning disabilities, socio-economic status and nationality have either directly or with reference to cultural deprivation and

economic or social disadvantage frequently been excluded as causes of the disabilities in learning experienced by many children. Numerous researchers working in the field of learning disabilities prefer this distinction between culturally deprived children and economically and/or socially disadvantaged children on the one hand, and learning disabled children on the other hand, if only for the reason that it facilitates the differential diagnosis of the various learning problems that children present. Since no significant differences in nationality or socio-economic status were found between the two groups in the present study, with the majority of mothers being Canadian born and most families being middle class or lower middle class, there seems to be a strong case for concluding that the learning disabled children which have been referred to are not culturally deprived or socially and/or economically disadvantaged children; but instead children who have encountered difficulties in learning at least in part because of certain types of child rearing behaviors they have been exposed to by their mothers.

Correlations Among Factor Scores

A final topic that remains to be dealt with in this section of the discussion concerns the relationships that were found to exist among the factors describing the child rearing behaviors of the mothers of learning disabled children. It will be recalled (see Table 3) that the intercorrelations that were done among the factor

scores obtained by these mothers on each of the four LOS factors revealed only one significant relationship. A positive correlation was found between LOS factor **A** (language stimulation) and LOS factor D(establishing a routine), $p < .01$. To the extent that reading to a child, asking him questions about the content of what he is read, and generally encouraging him to concentrate on what he hears might to a certain degree involve priming his attention processes and training him to attend to spoken words without becoming distracted, the significant positive relationship found between these two factors does not seem to be unreasonable.

The only significant intercorrelation revealed among the PARI factors suggests that there is a positive relationship between holding a democratic child rearing attitude and an attitude of hostility-rejection ($p < .01$). On the one hand, it might be argued that these two attitudes could indeed be related since a mother who expresses a democratic attitude toward child rearing might at the same time hold a hostile and rejecting attitude with regard to her role in the home and her marriage. However, it should also be noted that the PARI scale, Marital Conflict is found in both these factors and the fact that they each contain this same scale no doubt contributes to the positive correlation between them.

The intercorrelations that were found among the four LOS factors and three PARI factors when the factor scores across the two questionnaires were correlated, suggest that the child rearing

practices and attitudes exhibited by the mothers of learning disabled children are in general not very strongly related. Only two significant intercorrelations emerged. The positive relationship ($p < .01$) between scores on LOS factor B (sincerity of interaction) and PARI factor 3 (hostility-rejection) seems to be very predictable since a mother who tends to be insincere in her interactions with her child could also be expected to have a rejecting attitude toward her role as a homemaker. This attitude might include feelings of rejection and hostility about her child.

The significant negative correlation ($p < .01$) found between LOS factor D (establishing a routine) and PARI factor 2 (democratic attitude) also seems to be justified insofar as establishing a routine in a child's life does not appear to be entirely consistent with the attitude that he should be given the freedom to do as he pleases, although a favourable balance might be struck between the expression of this attitude and the employment of this practice.

Integration of the Present Research Findings With Established Theory in the Field of Learning Disabilities

Introduction

While the preceding section of this discussion was devoted to a broad examination of the present research findings, in this section an attempt will be made to describe a specific application of these findings. In light of the results that have been obtained,

an argument will now be developed concerning certain aspects of the processes of cognitive growth in children and the factors involved in that growth. More precisely, the purpose of this argument will be to suggest how factor C (perceptual-motor stimulation) of the LOS might be incorporated into a theory of language development in children described as recently as 1967 by Johnson and Myklebust with reference to children's learning disabilties.

Since it has frequently been noted that language problems are often characteristic of learning disabled children, it was felt that an attempt to cast new light on existing theory in this field would perhaps be most valuable, both in terms of providing new theoretical insights and suggesting better remedial methods, if the attempted integration was centred on the area of cognitive development which constitutes one of the greatest sources of difficulty for children with learning disabilities. Support for this rationale, which amounts to attacking the problem at its source, is forthcoming from the observation made by McCarthy and McCarthy (1969, p. 54) that improvements in language function can lead to improvements in intellectual function and/or academic achievement, areas in which children with learning disabilities need assisstance. Furthermore, McGrady (1968) has also pointed out that language is a prerequisite to conceptual behavior and problem-solving, and

that language deficits can result in profound effects on all aspects of learning.

The Theory of Language Development in Its Present Form

In 1965 Myklebust presented a model of his theory for the acquisition of language. As depicted in Figure 1 (see Appendix J) this language model consists of five developmentally related levels of language processes. At the first level, which is labeled Inner Language, words acquire meaning through their association with related experiences. Next, at the level referred to as Auditory Receptive Language, the child begins to comprehend words that are spoken to him by others. Once the child is capable of comprehending spoken words, he begins to use these words in his own speech at the level of Auditory Expressive Language. Subsequently, at the Visual Receptive Language level, the child's comprehension of printed words makes it possible for him to read and reading, in turn, is followed by the expression of printed words in writing at the level of Visual Expressive Language.

In total, then, this model does not simply depict language as the "power of speech"; but as a much more dynamic behavior consisting of (1) an inner thought process, (2) comprehension of the spoken word, (3) oral expression, (4) comprehension of the written word, and (5) written expression (McGrady, 1968, p. 200).

The relationship between these various levels of inferred language process is presumed to be a developmental hierarchy in which the processes emerge in a sequential manner. The adequate development of the later processes such as reading and writing assumes the earlier formation of the expressive language and oral comprehension processes at lower levels. Furthermore, after a language process has emerged it continues to develop as the child grows, regardless of the fact that other more advanced levels of language might appear after it. In other words, an early language process does not disappear as soon as a slightly later one begins to emerge. Instead, as the child grows older the development of all language processes occurs simultaneously, and the child becomes capable of dealing with relationships that are far more complex and abstract than the simpler ones he attended to when he was younger (Myklebust, 1965).

It is apparent from the above discussion that the concepts of inner language, receptive language, and expressive language form the basis of the language model which has been described. A more complete understanding of this model can be achieved through further clarification of these three constructs.

Inner language, which begins at approximately eight months of age, is defined by Johnson and Myklebust (1967) as language which in its earliest stages involves a simple rudimentary association between a word and concrete experiences such as

when an infant associates the words "good baby", for example, with feeding and general feelings of well being. In this situation the pleasant experiences that the infant is exposed to are associated and assimilated by him internally with the spoken words that accompany these experiences. Through this process of inner thought or inner language that the infant engages in words become symbolic for him of the experiences which occur at the same time those words are being spoken.

In effect, as the words begin to represent given units of experience, they gradually take on meaning for the infant in terms of that experience. And, according to Johnson and Myklebust (1967), it is not until an infant has been exposed to spoken language and gone through the process of associating words with experiences for a certain period of time (approximately eight months), that the words begin to have meaning for him.

Receptive language, which emerges between eight and thirteen months, has been described by Johnson and Myklebust (1967) as the ability to initially comprehend the spoken word, and slightly later in development, the written word. Both forms of comprehension are involved since, as depicted in the model, receptive language is both auditory and visual.

It should be noted at this point that receptive language is different from inner language to the extent that, as already stated, at the inner language level the child simply acquires

meanings for certain words by associating the words with the experiences that occur in conjunction with them. On the other hand, at the level of receptive language, instead of merely acquiring "word meanings" he comprehends the words that are spoken to him in the sense of properly discriminating them, grouping them, recognizing their sequence, inflection, and so on in order to understand what he hears. The relationship between inner and receptive language is of course that words first must be meaningful before they can be comprehended. No amount of attending to the sequence, grouping, inflection, and intonation of verbal symbols will lead to understanding if the symbols themselves have no meaning.

Expressive language, as defined by Johnson and Myklebust (1967), is that language which appears when the child has acquired meaningful units of experience and when comprehension has been established. It is the symbol system the child uses to communicate his ideas to someone other than himself. Like receptive language, expressive language can be both auditory and visual, since the child can express both what he hears and what he sees. The first signs of expressive language emerge in the child from the age of 13 months on.

In presenting the above model of language development, Johnson and Myklebust (1967) stress that three basic integrities must be intact for language acquisition to occur. The term

psychological integrity implies that for learning to proceed normally emotional-psychic processes must be intact. The important role that emotional integrity plays in adequate language learning is most dramatically illustrated in cases in which children have completely failed to learn how to speak because of extreme forms of emotional disturbance, as is evidenced in such mental illnesses as childhood autism and childhood schizophrenia. Integrity of the peripheral nervous system is also regarded by Johnson and Myklebust (1967) to be essential for normal learning insofar as sensory impairment in the form of deafness or blindness can greatly impede language development. The third prerequisite for normal learning referred to by Johnson and Myklebust (1967) is intactness of the central nervous system. According to this final requirement, the brain must be free of any dysfunction that might cause the disruption of normal learning processes.

Incorporation of LOS Factor C (Perceptual-Motor Stimulation) Into the Model of Language Acquisition

In light of the above discussion of the major constructs underlying the theory expounded by Johnson and Myklebust (1967), an attempt will now be made to incorporate the findings of the present research into the model of language development outlined by these two investigators. To begin, it should

be re-emphasized that for normal language acquisition to occur Johnson and Myklebust (1967) stress that only the intactness of the central nervous system and the peripheral nervous system is necessary, as well as psychological integrity. On the basis of the findings revealed by the present research, it is now proposed that in addition to the necessity for these three integrities, a fourth requirement must also be met. As represented by LOS factor C (perceptual-motor stimulation), which was shown in this investigation to be provided significantly more frequently by mothers of children who are learning normally than by mothers of children having disabilities in learning, this fourth requirement is defined as "an adequate opportunity to learn."

In spite of the fact that they stress the importance of only the three basic integrities described above, the thinking of Johnson and Myklebust (1967) appears to be at least in part consistent with this viewpoint which is now being proposed. These authors (1967, p. 1) note,

> Children learn normally only when certain basic integrities are present and when proper opportunities for learning are provided. A disadvantaged child, a child deprived of opportunity, will be deficient in various kinds of learning despite even excellent potentialities. Hence, when appraising deficiencies it is essential that opportunity be considered and evaluated. However, in this discussion our primary concern is the integrities that must be present for learning to occur normally when opportunities are optimum or at least average.

On the basis of these comments, then, it would seem that Johnson and Myklebust (1967) do indeed acknowledge the importance of adequate opportunities for learning, as is also evidenced by the inclusion of Experience as the foundation of their model of language acquisition (see Appendix J), but that they have chosen to de-emphasize this factor in their theory of language development by holding it constant. The implication that their choice of emphasis, in this regard, has for the viewpoint being expressed in this discussion, would appear to be that the suggested incorporation of LOS factor C (perceptual-motor stimulation) into the framework of their model in no way alters the existing structure of the developmental hierarchy they have postulated, but instead serves to expand certain aspects of this structure which have thus far apparently not been investigated in any detail. Having defined the direction of this discussion in this manner, what remains to be done is to describe the specific point at which LOS factor C (perceptual-motor stimulation) might be introduced into the model in order to contribute to a better understanding of the processes by which language is learned.

As has already been pointed out, the first aspect of language to emerge is inner language, the process in which words acquire meaning through their association with concrete experiences. The kinds of experiences that facilitate the acquisition of word

meanings would appear to change as the young child develops. Initially, during the very earliest stages of learning, the experiences the infant is exposed to might typically include situations in which he is being fed, bathed, and changed. At times such as these he would associate words that are spoken to him by his mother, such as "good baby" or his name, with the pleasure and comfort he experiences from being fed and changed, for example. In addition, some words that he associates with certain experiences also probably take on negative connotations if these experiences have proven to be unpleasant for him.

Out of this very early period in the child's life when he is for the most part only a passive recipient of the stimulation he experiences, a new stage apparently emerges in which the child reaches a level of physical maturation that makes it possible for him to begin to actively explore his environment. Now the young child's own interactions with his environment and his coming into contact with and exploring of objects in that environment can become an important vehicle for acquiring meanings for objects, object names, and words in general. In effect, the child is now capable of manipulating objects and his manipulative activities can provide him with a much richer and far more intense range of cues for acquiring word meanings than when he experienced his environment only passively.

And, it is precisely at this point in the child's development that the type of stimulation comprising LOS factor C (perceptual-motor stimulation) in the present study, would seem to play a crucial role in determining how complete an inner language he acquires. For although the child's exploratory and manipulative activities can become an important vehicle by which he finds meaning in his environment, and can provide him with more intense exposure to environmental cues than he had ever experienced previously; whether the child does actually develop an inner language process that allows him to make meaningful associations would appear to be greatly dependent on the provision of the kinds of environmental stimulation defined by LOS factor C (perceptual-motor stimulation).

That it is in fact the type of stimulation characterizing LOS factor C (perceptual-motor stimulation) which is vital to the development of inner language, would seem to be readily apparent particularly in light of the interpretation which has already been given of this factor. In this regard, it will be recalled that the content of the majority of the items loading highly on LOS factor C (perceptual-motor stimulation) contain an element of play. However, although the activity of play is strongly indicated, it is not to be regarded as the defining quality of this factor. Instead, the major theme that seems to be suggested is the provision of various kinds

of toy objects that are needed for play to take place. And, it is in the nature of this relationship of providing objects for play that the relevance of LOS factor C (perceptual-motor stimulation) to the argument just presented, becomes obvious. This seems to be the case, since the objects which are provided are a source of tactile, kinesthetic, auditory, visual, gustatory, and olfactory stimulation; and play includes the manipulative and exploratory activities of reaching, touching, grasping, handling, pushing, and pulling through which the child receives these different forms of stimulation that help to make his environment more meaningful for him.

Supporting Evidence for the Proposed Incorporation of LOS Factor C (Perceptual-Motor Stimulation) Into the Model

With regard to supporting evidence for the relationship discussed above, Myers and Hammill (1969) and Barry (1960; 1961) are at least three investigators who have pointed to the use of toys and other such play objects as an important source of stimulation for helping a child to familiarize himself meaningfully with his environment. In discussing the remedial techniques employed by Barry (1960; 1961) for teaching children with language disorders, Myers and Hammill (1969, p. 187) note that "inner language is developed by manipulation of and play with objects representing items in the child's daily experience until he can make relationships in a meaningful way." Similarly,

in the interpretation that Myers and Hammill (1969) themselves offer of the development of the inner language process, the important role played by stimulating toy objects and related play activities also seems to be stressed. According to these authors (1969, p. 169), inner language "initially is characterized by the formation of simple concepts which may be evidenced in the child's play activities, such as his demonstrating knowledge of simple relationships between objects. At a later stage of development, the child can understand more complex relationships and plays with toys in a meaningful fashion, for example, appropriately arranging furniture in a doll house."

The viewpoint expressed in this discussion, concerning the importance of environmental stimulation for the development of inner language, also seems to share some common elements with a suggestion made by Sinclair-de-Zwart (1969) on the topic of how language acquisition might be understood within the context of Piaget's stages of intellectual growth. Sinclair-de-Zwart (1969) is of the opinion that the coordination of sensorimotor schemes, which are actively built up during the first 18 months of life, is a necessary condition for language acquisition to become possible. She believes that the way in which sensorimotor schemes become transformed into operations determines the manner in which the language structures

are acquired.

Sinclair-de-Zwart (1969) does not take this position without support from her own research. In fact, it was her finding (Sinclair-de-Zwart, 1967) that a linguistic structuring parallels the structuring of the different levels of concrete operations, the establishment of these operations being dependent on the adequate development of sensorimotor abilities in an earlier growth period, which led her to speculate that the coordination of sensorimotor schemes is also probably involved in language acquisition. Furthermore, Sinclair-de-Zwart (1969, p. 319) also points out that Piaget himself recognizes that a relationship exists between sensorimotor development and language acquisition to the extent that he views language as part of a large complex of processes that go on during the second year of life, which includes the sensorimotor period. Language does not appear simply from early prelinguistic vocalizations, but partakes of the entire cognitive development during this crucial period.

The implication that Sinclair-de-Zwart's (1969) conclusions concerning language acquisition have for the argument presented in this discussion, becomes clearly apparent when it is noted that White and Castle (1964) and White and Held (1964) have demonstrated that specific kinds of contact with the environment influence the development of accurate sensorimotor abilities in the infant. In other words, if Sinclair-de-Zwart's (1969) claim that

language acquisition depends on the integrity of certain sensorimotor abilities can be accepted, and this suggestion is considered in the light of the findings of White and others that the development of sensorimotor abilities is in turn influenced by the provision of specific forms of stimulation; it would seem that support also can be found within the framework of Piaget's theory of intellectual development for the viewpoint taken in this discussion, namely that environmental stimulation plays a crucial role in affecting early language acquisition.

Specific environmental parameters that appear to be important in this regard, and which closely resemble the kinds of perceptual-motor stimulation comprising LOS factor C (perceptual-motor stimulation), include the suspension of special stabiles of brightly contrasting colours over infants' cribs, substituting multi-coloured sheets for standard white ones, and the mounting of pacifiers on crib rails against a distinctive red and white background. All these forms of environmental enrichment resulted in the precocious development of visually-directed reaching in human infants (White and Held, 1964). In addition, White and Castle (1964) have shown that extra handling leads to increased visual attentiveness in human infants, a variable of fundamental significance for early sensorimotor development.

Without undermining the important implications that Sinclair-de-Zwart's (1969) comments on language acquisition have for the argument developed herein, in terms of providing support for this argument, it should finally be mentioned that it is felt the findings of the present research are also highly supportive of the position which has been adopted. In this regard, it is interesting to speculate that the children in this study who experience learning difficulties in such language related areas as reading and spelling do so not only because they have not received enough of the kinds of perceptual-motor stimulation represented by LOS factor C, but more precisely because they have not received enough of this type of stimulation in order to develop an adequate inner language. And, as a result, an incomplete inner language is now at the root of many of their learning problems.

Significance of the Present Research Findings for Programs of Primary Prevention and Remediation in the Field of Learning Disabilities

Bateman (1964) has noted that two general approaches toward understanding learning disabilities can be found in the literature. Those who look at learning disabilities from an etiological viewpoint attempt to identify the source or cause of observed learning problems. Those who adopt the second approach, which is

more educational in nature, are mainly concerned with analysing, describing, and modifying observed difficulties in learning regardless of underlying causes. A common argument put forth by individuals who have taken this latter orientation, is that it is of little value to look for causes of learning disabilities since determining the cause does little to help the child overcome his problems in learning. This point of view has apparently gained popularity because in many instances the cause of a learning disability is assumed to be brain damage; and it is reasoned that since the damage itself can not be corrected, the focus of treatment should be on ameliorating the symptoms.

In light of the findings of the present research it is proposed that this second approach, in which the etiology of learning disabilities is for the most part ignored, is in need of careful re-evaluation, especially since it would appear that certain environmental factors may contribute to the occurrence of children's learning disorders and an awareness of these factors might be of considerable value in planning programs of primary prevention and remediation for children. Although the form that these programs might take will not be described in detail here, the results of this study suggest that the maternal child rearing attitude of authoritarian-control and the expression of a democratic attitude on the part of a mother, as well as the frequency with which she exposes her child to certain forms of

stimulation, might be several important factors that would deserve close consideration.

In the way of primary prevention, mothers of very young preschool children could be encouraged to attend programs in which they would be instructed about the kinds of environmental stimulation, mother-child interaction, and maternal child rearing attitudes that seem to be conducive to the development of normal learning patterns in a child. On the basis of investigations of the relationships between maternal child rearing behaviors and learning disabilities in children that they have conducted, Hellmuth (1968) and White (1971) are at least two investigators who have advocated such a program of primary prvention in which emphasis would be placed on the education of the mother.

At the level of remediation for children already having learning disabilities, an attempt could be made to determine what kinds of environmental stimulation, mother-child interaction, and maternal child rearing behaviors a child had been exposed to during his preschool years. Several features of his mother's child rearing behaviors might be discovered that originally contributed to the occurrence of the child's learning disabilities, and that may still be perpetuating the child's difficulties in learning at the present time if the mother's child rearing methods have not changed appreciably. An individualized program

could be set up in which the mother could be made aware of the changes that it would be necessary for her to make on the home front in her relationships with her child, in order to help him overcome his learning problems. Furthermore, knowledge of specific learning opportunities that the child had been prevented from taking full advantage of in the past, could be used to devise a program of remediation in the special classroom or clinic suited particularly to his needs.

Implications for Future Research

Within the area of research that concerns itself with the discovery of environmental factors that might be contributing to the occurrence of children's learning disabilities, the present study has revealed several aspects of maternal child rearing behaviors that may have an important influence on a child's ability to learn. The most pressing need for the future would appear to be the replication and expansion of these research findings.

Future studies which are conducted along the same lines as the present one might be improved in a number of ways. Firstly, since the present research has suggested that the types of child rearing practices represented by LOS factor C (perceptual-motor stimulation) and LOS factor D (establishing a routine), as well as the child rearing attitudes represented by PARI factor 1

(authoritarian-control) and PARI factor 2 (democratic attitude) may be important variables that deserve further consideration; in future studies an attempt could be made to examine the relationship between these various factors and the occurrence of learning disabilities in much more detail.

It may be discovered, for example, that exposure to a maternal democratic attitude or to an attitude of authoritarian-control affects the development of a child's learning abilities more at one age than at another age, and also that the severity with which a particular attitude is expressed by a mother may be related to the severity of her child's learning problems and/or to the specific types of learning difficulties he experiences. Similarly, the provision of perceptual-motor stimulation and establishing a routine in a child's life may be shown to be age-specific, and a failure to carry out each of these child rearing practices adequately might also be found to be associated with the emergence of specific kinds of learning disabilities.

In any future questionnaire research that is done, either to expand the present findings or to replicate them, it would seem imperative that a more sensitive rating scale be used. There seems to be little doubt that the four-point scale employed in this study was not sensitive enough to reveal the full extent of actual differences between certain child rearing behaviors. In future research these differences might be more strongly established if respondents are given a greater choice of ratings to choose from.

If, in future studies, the questionnaire referred to as the LOS in the present research is to be used, an effort should be made to determine the validity and reliability of this instrument, and to make improvements in those areas in which it is found to be deficient. Also, rather than using only retrospective questionnaire techniques, it would seem that in future research an attempt should be made to replicate the present findings by employing other means of data collection. Longitudinal studies could be conducted in which information about the nature of maternal child rearing behaviors would be obtained contemporaneously during the specific periods of a child's life in which the investigator is interested. In addition, mothers of learning disabled children could be interviewed about different aspects of their child rearing behaviors, or observed while interacting with their children in various potential learning situations.

Some other improvements that are suggested by the present study for any future research that might be done on this topic, include finding ways to control for the presence of brain damage and the possible influence of heredity in the learning disabled children who are selected as Ss. Furthermore, in the present research only the child rearing behaviors of the mother have been focused on because it is assumed that she is

the individual who is most intimately involved in the upbringing of the child. In future studies it may prove highly worthwhile to also examine the child rearing behaviors of fathers of learning disabled children, and to investigate the nature of the relationships that these children have with their siblings and any other persons that may live in their homes.

A final recommendation for future research that should be mentioned, has been suggested by the work of Stott (1962a; 1962b). Instead of focusing exclusively on the type of mothering a child was exposed to only during the postnatal period of development, as was done in the present study, Stott (1962a; 1962b) also investigated the role that certain environmental factors might play during the prenatal period in affecting the intellectual growth of a child. He found that in many cases of low intellectual functioning in which abnormal mothering could be cited as the cause, the possibility also frequently existed that exposure of the mothers to stress and illness during their pregnancies, as well as complications during their deliveries, might be important contributing factors responsible for the occurrence of low levels of mental development in their children. This finding led Stott (1962b) to hypothesize that a combination of both prenatal and postnatal environmental factors, and not just postnatal abnormal mothering, probably accounts for the poor mental development of many children.

Although it appears that almost all the children Stott (1962a; 1962b) refers to were mentally subnormal, and not of at least average intelligence as were the learning disabled children in the present research, it would seem that his findings nevertheless point to the need for an expansion of the results obtained in the present study. In particular, it may be found that those postnatal environmental factors which this study has suggested may contribute to the emergence of learning disabilities, might have such an effect only if a child's mother has been exposed to certain kinds of environmental influences during the prenatal period. The exposure of the mother to these infleunces at this time may ultimately have the effect of making her child more vulnerable to various types of postnatal environmental factors, such as abnormal mothering (Stott, 1962a; 1962b).

SUMMARY AND CONCLUSIONS

In this exploratory study seven factors were isolated which are descriptive of the child rearing behaviors employed by mothers of learning disabled children. Of these various factors, it would appear that at least four may be related to the occurrence of learning disorders in children.

Mothers of learning disabled children were found to score significantly higher than mothers of non-learning disabled

children on factor 1 (authoritarian-control) of the PARI, while on PARI factor 2 (democratic attitude) the scores obtained by mothers of non-learning disabled children significantly exceeded those obtained by mothers of children having learning problems. With regard to child rearing practices, mothers of non-learning disabled children also scored significantly higher than mothers of learning disabled children on both LOS factor C (perceptual-motor stimulation) and LOS factor D (establishing a routine). A fifth difference between the child rearing behaviors of the two groups was also revealed, with mothers of non-learning disabled children obtaining significantly higher scores than mothers of learning disabled children on PARI factor 3 (hostility-rejection).

It is concluded that the direction of the significant differences between the mothers' scores on PARI factors 1 (authoritarian-control) and 2 (democratic attitude) and on LOS factors C (perceptual-motor stimulation) and D (establishing a routine), point to four possible aspects of maternal child rearing behaviors that may play a crucial role in contributing to the emergence of learning disabilities in children. The direction of the significant differences between the mothers' scores on PARI factor 3 (hostility-rejection) does not appear to warrant the conclusion that this maternal child rearing attitude is involved in the occurrence of children's learning difficulties.

With regard to the above conclusion, it is realized that the findings of this research are not indicative of a direct causal relationship between the presence of certain child rearing behaviors in mothers and the emergence of learning disabilities in their children. In fact, it might be argued that instead of being the cause of the learning disabilities, the child rearing practices and attitudes exhibited by the mothers simply represent their reaction to learning disorders that were already present in their children for other reasons.

In contradiction to this argument, it should be pointed out that the mothers in this study were asked to respond to questions about the nature of their child rearing practices and attitudes during the first six years of their children's lives. Assuming that they actually did respond only with this specific period in mind, it would seem that the child rearing behaviors they described were ones that they exhibited before they were ever aware that their children had learning disabilities, since in most instances it is not until a child has become enrolled in school that his learning disorders are discovered and diagnosed as such. If this was the situation with most mothers in this study, it is proposed that since the child rearing behaviors they exhibited preceded the knowledge of their children's learning disabilities, these maternal child rearing practices and attitudes were probably not a reaction to

the presence of learning problems in the children. Instead, it is suggested that a strong case exists for presuming that their child rearing behaviors were a cause of the learning disabilities that emerged in the children.

And, if this argument is not felt to be entirely convincing, since it rests on the assumption that the mothers did in fact give an indication of their child rearing behaviors only for the period before their children entered school; it can be further stated that whether or not a mother's child rearing behaviors are a cause of her child's learning disabilities or a reaction to them, is probably a matter of little consequence. This would appear to be so, since it seems that in either case a good possibility exists that the child's ability to learn might be adversely affected. If the maternal child rearing behaviors are a cause of the learning disabilities the negative effect that they have had on learning is obvious. If, on the other hand, the child rearing behaviors are a reaction to the presence of learning disabilities in a child, they might also have a negative effect on learning to the extent that, as a result of being exposed to certain child rearing behaviors, the severity of the child's learning problems may be intensified and such exposure might also perpetuate his difficulties in learning.

On the basis of the above explanation, it is proposed that whether as a cause or as a reaction, the child rearing behaviors

exhibited by the mothers of learning disabled children in the present study have probably made a significant contribution to the occurrence of learning problems in their children.

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APPENDICES

Appendix A

PARENTAL ATTITUDE RESEARCH INSTRUMENT (PARI)

MOTHER FORM

Read each of the statements below and then rate them as follows:

Strongly Agree	Mildly Agree	Mildly Disagree	Strongly Disagree
SA	MA	MD	SD

For each statement, indicate your personal opinion by putting the two letters corresponding to the rating you prefer in the space accompanying that statement. There are no right or wrong answers so answer according to your opinion. It is very important to the study that all questions be answered. Where appropriate, please answer each question with regard to your attitude toward rearing your child _____ during the first six years of his (her) life.

1. Children should be allowed to disagree with their parents if they feel their own ideas are better. _____

2. A good mother should shelter her child from life's little difficulties. _____

3. The home is the only thing that matters to a good mother. _____

4. Some children are just so bad they must be taught to fear adults for their own good. _____

5. Children should realize how much parents have to give up for them. _____

6. You must always keep tight hold of baby during his bath for in a careless moment he might slip. _____

Strongly Agree	Mildly Agree	Mildly Disagree	Strongly Disagree
SA	MA	MD	SD

7. People who think they can get along in marriage without arguements just don't know the facts. _____

8. A child will be grateful later on for strict training. _____

9. Children will get on any woman's nerves if she has to be with them all day. _____

10. It's best for the child if he never gets started wondering whether his mother's views are right. _____

11. More parents should teach their children to have unquestioning loyalty to them. _____

12. A child should be taught to avoid fighting no matter what happens. _____

13. One of the worst things about taking care of a home is a woman feels that she can't get out. _____

14. Parents should adjust to the children some rather than always expecting the children to adjust to the parents. _____

15. There are so many things a child has to learn in life there is no excuse for him sitting around with time on his hands. _____

16. If you let children talk about their troubles they end up complaining even more. _____

17. Mothers would do their job better with the children if fathers were more kind. _____

Strongly Agree	Mildly Agree	Mildly Disagree	Strongly Disagree
SA	MA	MD	SD

18. A young child should be protected from hearing about sex. _____

19. If a mother doesn't go ahead and make rules for the home the children and husband will get into troubles they don't need to. _____

20. A mother should make it her business to know everything her children are thinking. _____

21. Children would be happier and better behaved if parents would show an interest in their affairs. _____

22. Most children are toilet trained by 15 months of age. _____

23. There is nothing worse for a young mother than being alone while going through her first experiences with a baby. _____

24. Children should be encouraged to tell their parents about it whenever they feel family rules are unreasonable. _____

25. A mother should do her best to avoid any disappointment for her child. _____

26. The women who want lots of parties seldom make good mothers. _____

27. It is frequently necessary to drive the mischief out of a child before he will behave. _____

28. A mother must expect to give up her own happiness for that of her child. _____

Strongly Agree	Mildly Agree	Mildly Disagree	Strongly Disagree
SA	MA	MD	SD

29. All young mothers are afraid of their awkwardness in handling the baby. _____

30. Sometimes it's necessary for a wife to tell off her husband in order to get her rights. _____

31. Strict discipline develops a fine strong character. _____

32. Mothers very often feel that they can't stand their children a moment longer. _____

33. A parent should never be made to look wrong in a child's eyes. _____

34. The child should be taught to revere his parents above all other grown-ups. _____

35. A child should be taught to always come to his parents or teachers rather than fight when he is in trouble. _____

36. Having to be with the children all the time gives a woman the feeling her wings have been clipped. _____

37. Parents must earn the respect of their children by the way they act. _____

38. Children who don't try hard for success will feel they have missed out on things later on. _____

39. Parents who start a child talking about his worries don't realize that sometimes it's better to just leave well enough alone. _____

Strongly Agree	Mildly Agree	Mildly Disagree	Strongly Disagree
SA	MA	MD	SD

40. Husbands could do their part if they were less selfish. _____

41. It is very important that young boys and girls not be allowed to see each other completely undressed. _____

42. Children and husbands do better when the mother is strong enough to settle most of the problems. _____

43. A child should never keep a secret from his parents. _____

44. Laughing at children's jokes and telling children jokes makes things go more smoothly. _____

45. The sooner a child learns to walk the better he's trained. _____

46. It isn't fair that a woman has to bear just about all the burden of raising children by herself. _____

47. A child has a right to his own point of view and ought to be allowed to express it. _____

48. A child should be protected from jobs which might be too tiring or hard for him. _____

49. A woman has to choose between having a well run home and hobnobbing around with neighbors and friends. _____

50. A wise parent will teach a child early just who is boss. _____

51. Few woman get the gratitude they deserve for all they have done for their children. _____

Strongly Agree	Mildly Agree	Mildly Disagree	Strongly Disagree
SA	MA	MD	SD

52. Mothers never stop blaming themselves if their babies are injured in accidents. _____

53. No matter how well a married couple love one another, there are always differences which cause irritation and lead to arguments. _____

54. Children who are held to firm rules grow up to be the best adults. _____

55. It's a rare mother who can be sweet and even tempered with her children all day. _____

56. Children should never learn things outside the home which make them doubt their parents ideas. _____

57. A child soon learns that there is no greater wisdom than that of his parents. _____

58. There is no good excuse for a child hitting another child. _____

59. Most young mothers are bothered more by the feeling of being shut up in the home than by anything else. _____

60. Children are too often asked to do all the compromising and adjustment and that is not fair. _____

61. Parents should teach their children that the way to get ahead is to keep busy and not waste time. _____

62. Children pester you with all their little upsets if you aren't careful from the first. _____

Strongly Agree	Mildly Agree	Mildly Disagree	Strongly Disagree
SA	MA	MD	SD

63. When a mother doesn't do a good job with children it's probably because the father doesn't do his part around the house. _____

64. Children who take part in sex play become sex criminals when they grow up. _____

65. A mother has to do the planning because she is the one who knows what's going on in the home. _____

66. An alert parent should try to learn all her child's thoughts. _____

67. Parents who are interested in learning about their children's parties, dates, and fun help them grow up right. _____

68. The earlier a child is weaned from its emotional ties to its parents the better it will handle its own problems. _____

69. A wise woman will do anything to avoid being by herself before and after a new baby. _____

70. A child's ideas should be seriously considered in making family decisions. _____

71. Parents should know better than to allow their children to be exposed to difficult situations. _____

72. Too many women forget that a mother's place is in the home. _____

73. Children need some of the natural meanness taken out of them. _____

Strongly Agree	Mildly Agree	Mildly Disagree	Strongly Disagree
SA	MA	MD	SD

74. Children should be more considerate of their mothers since their mothers suffer so much for them. _____

75. Most mothers are fearful that they may hurt their babies in handling them. _____

76. There are some things which just can't be settled by a mild discussion. _____

77. Most children should have more discipline than they get. _____

78. Raising children is a nerve-wracking job. _____

79. The child should not question the thinking of his parents. _____

80. Parents deserve the highest esteem and regard of their children. _____

81. Children should not be encouraged to box and wrestle, _____

82. One of the bad things about raising children is that you aren't free enough of the time to do just as you like. _____

83. As much as is reasonable a parent should try to treat a child as an equal. _____

84. A child who is "on the go" all the time will most likely be happy. _____

Strongly Agree	Mildly Agree	Mildly Disagree	Strongly Disagree
SA	MA	MD	SD

85. If a child has upset feelings it is best to leave him alone and not make it look serious. _____

86. If mothers could get their wishes they would most often ask that their husband be more understanding. _____

87. Sex is one of the greatest problems to be contended with in children. _____

88. The whole family does fine if the mother puts her shoulders to the wheel and takes charge of things. _____

89. A mother has a right to know everything going on in her child's life because her child is part of her. _____

90. If parents would have fun with their children, the children would be more apt to take their advice. _____

91. A mother should make an effort to get her child toilet trained at the earliest possible time. _____

92. Most women need more time than they are given to rest up in the home after going through childbirth. _____

93. When a child is in trouble he ought to know he won't be punished for talking about it with his parents. _____

94. Children should be kept away from all hard jobs which might be discouraging. _____

95. A good mother will find enough social life in the family. _____

Strongly Agree	Mildly Agree	Mildly Disagree	Strongly Disagree
SA	MA	MD	SD

96. It is sometimes necessary for the parents to break the child's will. _____

97. Mothers sacrifice almost all their own fun for their children. _____

98. A mother's greatest fear is that in a forgetful moment she might let something bad happen to the baby. _____

99. It's natural to have quarrels when two people who both have minds of their own get married. _____

100. Children are actually happier under strict training. _____

101. It's natural for a mother to "blow her top" when children are selfish and demanding. _____

102. There is nothing worse than letting a child hear criticisms of his mother. _____

103. Loyalty to parents comes before anything else. _____

104. Most parents prefer a quiet child to a "scrappy" one. _____

105. A young mother feels "held down" because there are lots of things she wants to do while she is young. _____

106. There is no reason parents should have their own way all the time any more than that children should have their own way all the time. _____

107. The sooner a child learns that a wasted minute is lost forever the better off he will be. _____

Strongly Agree	Mildly Agree	Mildly Disagree	Strongly Disagree
SA	MA	MD	SD

108. The trouble with giving attention to children's problems is they usually just make up a lot of stories to keep you interested. _____

109. Few men realize that a mother needs some fun in life too. _____

110. There is usually something wrong with a child who asks a lot of questions about sex. _____

111. A married woman knows that she will have to take the lead in family matters. _____

112. It is a mother's duty to make sure she knows her child's innermost thoughts. _____

113. When you do things together, children feel close to you and can talk easier. _____

114. A child should be weaned away from the bottle or breast as soon as possible. _____

115. Taking care of a small baby is something that no woman should be expected to do all by herself. _____

Appendix B

THE TWENTY-THREE PARI SCALES AND THE FIVE ITEMS COMPRISING EACH SCALE

SCALE NO. 1: Encouraging Verbalization

Item No. (1) Children should be allowed to disagree with their parents if they feel their own ideas are better.

(47) A child has a right to his own point of view and ought to be allowed to express it.

(70) A child's ideas should be seriously considered in making family decisions.

(24) Children should be encouraged to tell their parents about it whenever they feel family rules are unreasonable.

(93) When a child is in trouble he ought to know he won't be punished for talking about it with his parents.

SCALE NO. 2: Fostering Dependency

Item No. (71) Parents should know better than to allow their children to be exposed to difficult situations.

(25) A mother should do her best to avoid any disappointment for her child.

(2) A good mother should shelter her child from life's little difficulties.

(48) A child should be protected from jobs which might be too tiring or hard for him.

(94) Children should be kept away from all hard jobs which might be discouraging.

SCALE NO. 3: Seclusion of the Mother

Item No. (72) Too many women forget that a mother's place is in the home.

(49) A woman has to choose between having a well run home and hobnobbing around with neighbours and friends.

(95) A good mother will find enough social life in the family.

(26) The women who want lots of parties seldom make good mothers.

(3) The home is the only thing that matters to a good mother.

SCALE NO. 4: Breaking the Will

Item No. (96) It is sometimes necessary for the parents to break the child's will.

(27) It is frequently necessary to drive the mischief out of a child before he will behave.

(73) Children need some of the natural meanness taken out of them.

(50) A wise parent will teach a child early just who is boss.

(4) Some children are just so bad they must be taught to fear adults for their own good.

SCALE NO. 5: Martyrdom

Item No. (5) Children should realize how much parents have to give up for them.

(74) Children should be more considerate of their mothers since their mothers suffer so much for them.

(51) Few women get the gratitude they deserve for all they have done for their children.

(28) A mother must expect to give up her own happiness for that of her child.

(97) Mothers sacrifice almost all their own fun for their children.

SCALE NO. 6: Fear of Harming the Baby

Item No. (98) A mother's greatest fear is that in a forgetful moment she might let something bad happen to the baby.

(75) Most mothers are fearful that they may hurt their babies in handling them.

(29) All young mothers are afraid of their awkwardness in handling the baby.

(52) Mothers never stop blaming themselves if their babies are injured in accidents.

(6) You must always keep tight hold of baby during his bath for in a careless moment he might slip.

SCALE NO. 7: Marital Conflict

Item No. (99) It's natural to have quarrels when two people who both have minds of their own get married.

(30) Sometimes it's necessary for a wife to tell off her husband in order to get her rights.

(7) People who think they can get along in marriage without arguments just don't know the facts.

(53) No matter how well a married couple love one another, there are always differences which cause irritation and lead to arguments.

(76) There are some things which just can't be settled by a mild discussion.

SCALE NO. 8: Strictness

Item No. (31) Strict discipline develops a fine strong character.

(77) Most children should have more discipline than they get.

(8) A child will be grateful later on for strict training.

(100) Children are actually happier under strict training.

(54) Children who are held to firm rules grow up to be the best adults.

SCALE NO. 9: Irritability

Item No. (101) It's natural for a mother to "blow her top" when children are selfish and demanding.

(9) Children will get on any woman's nerves if she has to be with them all day.

(78) Raising children is a nerve-wracking job.

(32) Mothers very often feel that they can't stand their children a moment longer.

(55) It's a rare mother who can be sweet and even tempered with her children all day.

SCALE NO. 10: Excluding Outside Influences

Item No. (56) Children should never learn things outside the home which make them doubt their parents ideas.

(79) The child should not question the thinking of his parents.

(33) A parent should never be made to look wrong in a child's eyes.

(10) It's best for the child if he never gets started wondering whether his mother's views are right.

(102) There is nothing worse than letting a child hear criticisms of his mother.

SCALE NO. 11: Deification

Item No. (34) The child should be taught to revere his parents above all other grown-ups.

(80) Parents deserve the highest esteem and regard of their children.

(11) More parents should teach their children to have unquestioning loyalty to them.

(57) A child soon learns that there is no greater wisdom than that of his parents.

(103) Loyalty to parents comes before anything else.

SCALE NO. 12: Suppression of Aggression

Item No. (35) A child should be taught to always come to his parents or teachers rather than fight when he is in trouble.

(58) There is no good excuse for a child hitting another child.

(12) A child should be taught to avoid fighting no matter what happens.

(104) Most parents prefer a quiet child to a "scrappy" one.

(81) Children should not be encouraged to box or wrestle.

SCALE NO. 13: Rejection of the Homemaking Role

Item No. (36) Having to be with the children all the time gives a woman the feeling her wings have been clipped.

(13) One of the worst things about taking care of a home is a woman feels that she can't get out.

(105) A young mother feels "held down" because there are lots of things she wants to do while she is young.

(59) Most young mothers are bothered more by the feeling of being shut up in the home than by anything else.

(82) One of the bad things about raising children is that you aren't free enough of the time to do just as you like.

SCALE NO. 14: Equalitarianism

Item No.(106) There is no reason parents should have their own way all the time, any more than that children should have their own way all the time.

(60) Children are too often asked to do all the compromising and adjustment and that is not fair.

(37) Parents must earn the respect of their children by the way they act.

(83) As much as is reasonable a parent should try to treat a child as an equal.

(14) Parents should adjust to the children some rather than always expecting the children to adjust to the parents.

SCALE NO. 15: Approval of Activity

Item No.(107) The sooner a child learns that a wasted minute is lost forever the better off he will be.

(38) Children who don't try hard for success will feel they have missed out on things later on.

(84) A child who is "on the go" all the time will most likely be happy.

(61) Parents should teach their children that the way to get ahead is to keep busy and not waste time.

(15) There are so many things a child has to learn in life there is no excuse for him sitting around with time on his hands.

SCALE NO. 16: Avoidance of Communication

Item No.(108) The trouble with giving attention to children's problems is they usually just make up a lot of stories to keep you interested.

(16) If you let children talk about their troubles they end up complaining even more.

(39) Parents who start a child talking about his worries don't realize that sometimes it's better to just leave well enough alone.

SCALE NO. 16: Avoidance of Communication con't.

Item No. (85) If a child has upset feelings it is best to leave him alone and not make it look serious.

(62) Children pester you with all their little upsets if you aren't careful from the first.

SCALE NO. 17: Inconsiderateness of the Husband

Item No. (17) Mothers would do their job better with the children if fathers were more kind.

(86) If mothers could get their wishes they would most often ask that their husband be more understanding.

(109) Few men realize that a mother needs some fun in life too.

(40) Husbands could do their part if they were less selfish.

(63) When a mother doesn't do a good job with children it's probably because the father doesn't do his part around the house.

SCALE NO. 18: Suppression of Sex

Item No. (41) It is very important that young boys and girls not be allowed to see each other completely undressed.

(64) Children who take part in sex play become sex criminals when they grow up.

(110) There is usually something wrong with a child who asks a lot of questions about sex.

(18) A young child should be protected from hearing about sex.

(87) Sex is one of the greatest problems to be contended with in children.

SCALE NO. 19: Ascendancy of the Mother

Item No. (42) Children and husbands do better when the mother is strong enough to settle most of the problems.

(111) A married woman knows that she will have to take the lead in family matters.

(88) The whole family does fine if the mother puts her shoulders to the wheel and takes charge of things.

(19) If a mother doesn't go ahead and make rules for the home the children and husband will get into troubles they don't need to.

(65) A mother has to do the planning becuase she is the one who knows what's going on in the home.

SCALE NO. 20: Intrusiveness

Item No. (66) An alert parent should try to learn all her child's thoughts.

(20) A mother should make it her business to know everything her children are thinking.

(43) A child should never keep a secret from his parents.

(112) It is a mother's duty to make sure she knows her child's innermost thoughts.

(89) A mother has a right to know everything going on in her child's life because her child is part of her.

SCALE NO. 21: Comradeship and Sharing

Item No. (44) Laughing at children's jokes and telling children jokes makes things go more smoothly.

(90) If parents would have fun with their children, the children would be more apt to take their advice.

(113) When you do things together, children feel close to you and can talk easier.

SCALE NO. 21: Comradeship and Sharing con't.

Item No. (21) Children would be happier and better behaved if parents would show an interest in their affairs.

(67) Parents who are interested in hearing about their children's parties, dates, and fun help them grow up right.

SCALE NO. 22: Acceleration of Development

Item No. (114) A child should be weaned away from the bottle or breast as soon as possible.

(91) A mother should make an effort to get her child toilet trained at the earliest possible time.

(45) The sooner a child learns to walk the better he's trained.

(68) The earlier a child is weaned from its emotional ties to its parents the better it will handle its own problems.

(22) Most children are toilet trained by 15 months of age.

SCALE NO. 23: Dependency of the Mother

Item No. (115) Taking care of a small baby is something that no woman should be expected to do all by herself.

(92) Most women need more time than they are given to rest up in the home after going through childbirth.

(46) It isn't fair that a woman has to bear just about all the burden of raising children by herself.

(23) There is nothing worse for a young mother than being alone while going through her first experiences with a baby.

(69) A wise woman will do anything to avoid being by herself before and after a new baby.

Appendix C

LEARNING OPPORTUNUTIES SURVEY (LOS)

The statements in this questionnaire are concerned with specific developments that may or may not have taken place in the life of your child _____ from the time he (she) was born until he reached the age of six years. The statements have been grouped into seven age-categories. When filling out the questionnaire always make certain that you remember the precise age-category that you are working under and rate each statement as it applies to _____ for that particular category. For each age-category please read each of the statements carefully and then rate them as follows:

Never	Seldom	Frequently	Always
N	S	F	A

For each statement, simply put the letter corresponding to the rating you prefer in the space accompanying that statement. It is important to the study that every statement receives a rating and that the ratings be made as accurate as possible. Please make certain that the ratings you give are solely your own and that you do not discuss the statements with anyone else. There are no right or wrong answers.

When your child was between 0 and 6 months old

1. you took a few minutes several times each day to look at him in his bassinet. _____

2. he was warmly and snugly wrapped with blankets at all times. _____

3. you took the time to pick him up and hug him. _____

4. you made certain that he went to sleep on his stomach rather than on his side or on his back. _____

Never	Seldom	Frequently	Always
N	S	F	A

When your child was between 6 months and 1 year old

5. he had such toys as rubber ducks, toy boats, and so on to play with while having his bath. _____

6. he was given the opportunity to look at his reflection in a mirror. _____

7. the window of the room in which he slept was kept slightly open at night. _____

8. you helped him fall asleep when he was restless by staying with him and stroking his forehead, rocking him, and so on. _____

When your child was between 1 year and 2 years old

9. you took the time to read him nursery rhymes. _____

10. you spanked him whenever he soiled himself while being toilet trained. _____

11. you took the time to look at children's picture books with him. _____

12. he had balls, blocks, and other such toys to play with. _____

13. you allowed him to crawl freely throughout the house. _____

14. he had the opportunity to listen to songs, rhymes, and jingles. _____

Never	Seldom	Frequently	Always
N	S	F	A

15. he spent most of his day in a playpen. _____

When your child was between 2 years and 3 years old

16. he had at least 12 hours of sleep each night. _____

17. you allowed him to run freely throughout the house. _____

18. the language he heard spoken at home was a language other than English. _____

19. he had at least one nap a day. _____

20. he was asked to do little errands and to fetch and carry things about the house. _____

21. he got what he wanted even if he made a request for it by only grunting and gesturing, instead of talking. _____

22. he was given such toys as puzzles, pegboards, strings of beads, and a kitty-kar to play with. _____

23. you kept him up late at night hoping that he would sleep in longer the next morning. _____

24. you gave him scissors to cut with if he wanted them. _____

When your child was between 3 years and 4 years old

25. he had crayons and colouring books to play with. _____

	Never	Seldom	Frequently	Always
	N	S	F	A

26. you and his brothers and sisters (if any) imitated him whenever he spoke baby talk because it was so cute. _____

27. you played games with him in which he had to jump and run. _____

28. you kept him in a high chair while he was eating. _____

29. he had a tricycle to ride on. _____

30. your aim in giving him toys to play with was to keep him so busy that you would have more time to yourself without him bothering you. _____

31. you answered him when he asked you questions. _____

32. you told him to be quiet if he seemed to be "chanting" or talking louder than usual when he first got up in the morning. _____

33. you let him dress and undress himself. _____

When your child was between 4 years and 5 years old

34. he had building blocks and other such construction toys to play with. _____

35. you read books to him. _____

36. he was made to go to bed at a regular time every night. _____

Never	Seldom	Frequently	Always
N	S	F	A

37. you told him stories. _____

38. you took the time to teach him such things as the alphabet, how to count, and how to print his name. _____

39. you listened to him when he told stories that he had heard or made up on his own. _____

40. you let him do such things as tie his shoe laces, brush his teeth, and comb his hair on his own. _____

41. you and he played together with some of his toys. _____

When your child was between 5 years and 6 years old

42. he was allowed to dress up in his mother's and/or father's old clothes whenever he wanted to. _____

43. you allowed him to do such things as sweep the floor and dry the dishes if he wanted to. _____

44. you took the time to explain to him what was wrong about something bad he had done, whenever you punished him. _____

45. you found yourself scolding him for a number of bad behaviors when you started out to scold him for only one bad behavior. _____

46. you explained to him what it was about his behavior that was good whenever you praised him for behaving well. _____

	Never	Seldom	Frequently	Always
	N	S	F	A

47. you encouraged him to make things to play with out of nails and wood, pieces of paper, cardboard, and so on. _____

48. you asked him questions about the best way he might do a puzzle that he could not solve. _____

49. you allowed him to keep such pets as dogs, cats, hamsters, and so on. _____

50. you took him to the shopping plaza with you whenever you went shopping. _____

51. you took him with you whenever you went on a holiday. _____

52. he had such toys as a train set, a doll house, and/or a toy gas station to play with. _____

Appendix D

FAMILY BACKGROUND INFORMATION FORM

The following statements are concerned with information of a very general nature about you, your child, and the background of your family. Please indicate your answers by filling in the spaces that have been provided. All information that you give will be kept in strictest confidence.

1. The date of your birth is (Month) _____ (Day) _____ (Year)_____

2. The date of your child _____ birth is (Month)_____ (Day) ____ (Year)_____

3. Please indicate the sex of your child _____ in the space provided. Answer here _____.

4. If _____ has brothers and/or sisters indicate the sex and age of each in the spaces provided.

	Brothers and/or Sisters	
	Age	Sex
Child (1)	___	___
" (2)	___	___
" (3)	___	___
" (4)	___	___
" (5)	___	___
" (6)	___	___
" (7)	___	___
" (8)	___	___
" (9)	___	___
" (10)	___	___

5. In the space provided indicate the country of your birth._____.

6. In the space provided indicate your occupation. _____.

7. If you were employed outside the home during the first six years of _____ life, please indicate the number of years that you worked during this period. Answer in this space. _____.

8. You have a total of _____ years of schooling (in this total include number of years spent in university, if any)

9. Were you and your child _____ ever separated from one another for an extended period of time (i.e., three months or more) during the first six years of his (her) life? Please answer "yes" of "no". _____.

10. If your answer to question #9 was "yes", please indicate how old _____ was during the period that you were separated from him (her) the longest? Answer here _____.

11. Was your child _____ ever confined to bed for an extended period of time (i.e., three months or more) during the first six years of his (her) life because of illness or an accident? Please answer "yes" or "no". _____

12. If your answer to question #11 was "yes" please indicate how old _____ was during the period that he (she) was confined in bed the longest.

13. In the space provided please indicate who was the main provider of daily care for your child _____ during the first six years of his (her) life. If you were the main provider put a 1 in the space. If a babysitter was the main provider put a 2 in the space. If someone else was the main provider (i.e., father, grandparents, relatives, day care or nursery school) put a 3 in the space. _____

14. In the space provided please indicate whether your child _____ is your own or adopted. Answer here _____

15. Is _____ father still alive? Please answer "yes" or "no". _____.

16. If your answer to question #15 was "yes" please indicate whether or not the father resides with you and your family. Please answer "yes" or "no". _____

17. The date of the father's birth is (Month)_____,(Day)_____, (Year)_____.

18. The father has a total of _____ years of schooling (in this total include number of years spent in university, if any)

19. In the space provided please indicate the occupation of the father. Answer here _____. Please give a brief description of the father's occupation.

_____

_____

_____

_____

20. Was your child _____ and his(her) father ever separated from one another for an extended period of time (i.e., 3 months or more) during the first six years of the child's life. Please answer "yes" or "no". _____

21. If your answer to question #20 was "yes" please indicate how old _____ was during the period of longest separation from his (her) father. Answer here _____.

Appendix E

Dear Mrs.

Whether or not your child _____ is meeting with academic success in the early stages of his (her) school career is a subject of major interest to all persons concerned with his education. With the cooperation of school authorities, I am investigating the relationship between the ability of children to learn and the child rearing behaviors of their mothers. It is with the aim of enlisting the help of mothers whose children are presently enrolled in the Thunder Bay elementary schools, then, that this letter is being mailed to you.

To carry out my research, I have three questionnaires which can be completed by you to provide me with the information I require. On two of the questionnaires you will simply be asked to answer questions about the manner in which you brought up your child _____ during the first six years of his life. On the third questionnaire, you will simply be required to provide information of a very general nature about the background of your family. Complete instructions are included with each questionnaire and all information that you give will of course be kept in strictest confidence.

I will be contacting you shortly by telephone to answer any questions that you might have and to obtain your permission to deliver the three questionnaires to your home. When you have completed the questionnaires you may return them by mail either to the School Board offices or to my home. You will be provided with a self-addressed, stamped envelope for this purpose.

If you wish to contact me, I can be reached at 345-2121, extension 416, during the day, or at 345-1689 in the evening. I look forward to discussing my research with you in the near future.

Yours sincerely,

T. W. Humphries
MA Candidate
Department of Psychology
Lakehead University.

Appendix F

The Rotated Factor Matrix for the Three PARI Factors

ROTATED FACTOR MATRIX

	Factor 1	Factor 2	Factor 3
VARIABLE 1	-0.10109	0.79985	0.09275
VARIABLE 2	0.68166	-0.00321	-0.06356
VARIABLE 3	0.74944	0.06640	-0.19446
VARIABLE 4	0.75853	0.16645	-0.19674
VARIABLE 5	0.65546	-0.29768	0.00379
VARIABLE 6	0.53545	0.24618	0.49918
VARIABLE 7	0.04352	0.60703	0.53224
VARIABLE 8	0.42898	0.38195	-0.06435
VARIABLE 9	-0.30775	0.16890	0.66349
VARIABLE 10	0.73833	0.04644	0.17434
VARIABLE 11	0.69473	0.00833	0.11120
VARIABLE 12	0.70619	-0.30205	-0.24532
VARIABLE 13	0.03054	0.00170	0.89794
VARIABLE 14	-0.23267	0.52473	0.10987
VARIABLE 15	0.76999	0.31587	0.01135
VARIABLE 16	0.73434	-0.24355	0.06404
VARIABLE 17	0.68567	0.05445	0.47506
VARIABLE 18	0.80049	0.06744	-0.20560
VARIABLE 19	0.71435	0.12295	0.34862
VARIABLE 20	0.69312	-0.14854	-0.00724
VARIABLE 21	0.33411	0.74989	-0.00800
VARIABLE 22	0.81538	0.10984	-0.09185
VARIABLE 23	0.68877	-0.05223	0.28296

PERCENTAGE OF THE VARIANCE IN RESPONSE ACCOUNTED FOR BY EACH OF THE PARI FACTORS

FACTORS	%
PARI Factor 1 (authoritarian-control)	37.88
PARI Factor 2 (democratic attitude)	13.79
PARI Factor 3 (hostility-rejection)	7.72
Total	59.39

The Rotated Factor Matrix for the Four LOS Factors

ROTATED FACTOR MATRIX

	Factor A	Factor B	Factor C	Factor D
VARIABLE 1	0.37198	0.25273	0.12189	0.27387
VARIABLE 2	0.37146	-0.29588	0.00780	0.53876
VARIABLE 3	0.31881	0.32710	-0.03410	0.39185
VARIABLE 4	0.33413	0.12236	0.06043	0.40899
VARIABLE 5	0.33818	-0.05747	0.79257	-0.00649
VARIABLE 6	0.16518	0.00246	0.11388	0.41875
VARIABLE 7	0.66263	0.05424	0.02300	0.09834
VARIABLE 8	0.33834	0.20466	0.30741	0.14120
VARIABLE 9	0.68873	0.09247	0.43909	0.36712
VARIABLE 10	0.53978	0.22380	-0.20208	0.07880
VARIABLE 11	0.64360	0.07195	0.26033	0.40165
VARIABLE 12	0.04276	-0.01725	0.35875	0.75202
VARIABLE 13	0.39285	-0.10631	0.29217	0.47503
VARIABLE 14	0.61902	0.28685	0.22590	0.18242
VARIABLE 15	-0.27246	0.17574	0.19732	0.48862
VARIABLE 16	-0.01341	0.11226	0.07877	0.69831
VARIABLE 17	0.08575	0.29866	0.01582	0.67718
VARIABLE 18	0.53604	0.01019	-0.00006	0.09694
VARIABLE 19	0.23027	-0.19731	-0.01067	0.68124
VARIABLE 20	0.29146	-0.08532	-0.09508	0.54952
VARIABLE 21	0.32496	0.33614	-0.24913	0.43894
VARIABLE 22	-0.14301	0.11628	0.73314	-0.07115
VARIABLE 23	-0.01635	0.66658	0.03344	0.06897
VARIABLE 24	0.05949	0.09237	0.63657	-0.04474
VARIABLE 25	0.27049	0.17655	0.58337	0.08144
VARIABLE 26				

PERCENTAGE OF THE VARIANCE IN RESPONSE ACCOUNTED FOR BY EACH OF THE LOS FACTORS

FACTORS	%
LOS Factor A (language stimulation)	24.36
LOS Factor B (sincerity of interaction)	8.49
LOS Factor C (perceptual-motor stimulation)	7.74
LOS Factor D (establishing a routine)	5.59
Total	46.18

VARIABLE 27			
0.13206	0.35927	0.36592	-0.06455
VARIABLE 28			
0.26314	0.46699	0.00124	0.36320
VARIABLE 29			
-0.10465	-0.08456	0.43427	0.50277
VARIABLE 30			
0.01318	0.75191	0.14411	-0.02466
VARIABLE 31			
0.37060	0.32400	0.12722	0.64315
VARIABLE 32			
0.51853	0.40093	0.01015	0.03390
VARIABLE 33			
0.42081	-0.15532	-0.01978	0.63784
VARIABLE 34			
0.39454	-0.16583	0.54196	0.32831
VARIABLE 35			
0.67641	-0.03108	0.11371	0.35888
VARIABLE 36			
0.15252	0.25146	-0.22891	0.61233
VARIABLE 37			
0.63914	-0.32648	0.11549	0.31053
VARIABLE 38			
0.29219	-0.01922	0.49329	0.12034
VARIABLE 39			
0.25656	-0.24633	0.37640	0.43252
VARIABLE 40			
0.39007	-0.14096	0.07157	0.58382
VARIABLE 41			
0.53495	0.10368	0.04424	0.09252
VARIABLE 42			
0.06642	0.21379	0.43360	0.11246
VARIABLE 43			
-0.12682	-0.04890	0.27214	0.55772
VARIABLE 44			
0.59243	-0.19107	0.20127	0.33896
VARIABLE 45			
0.18180	0.60233	0.06434	0.05956
VARIABLE 46			
0.36760	0.22575	0.06131	0.31582
VARIABLE 47			
-0.01517	-0.03565	0.64375	0.20111
VARIABLE 48			
0.38577	0.25264	0.42668	-0.08344
VARIABLE 49			
0.44710	0.30515	-0.08330	-0.04336
VARIABLE 50			
0.49417	0.28200	0.17732	0.05308
VARIABLE 51			
0.54420	0.28158	0.25976	-0.07448
VARIABLE 52			
-0.18155	0.05471	0.61453	0.26253

Appendix H

A LISTING OF THE SCALES LOADING

ON EACH OF THE THREE PARI FACTORS

(all scale loadings $\geq$.5)

PARI Factor 1 (authoritarian-control)

SCALE NO.	SCALE LOADING	SCALE NAME
(22)	.815	Acceleration of Development
(18)	.801	Suppression of Sex
(15)	.770	Approval of Activity
(4)	.759	Breaking the Will
(3)	.749	Seclusion of the Mother
(10)	.738	Excluding Outside Influences
(16)	.734	Avoidance of Communication
(19)	.714	Ascendancy of the Mother
(12)	.706	Suppression of Aggression
(11)	.695	Deification
(20)	.693	Intrusiveness
(23)	.689	Dependency of the Mother
(17)	.686	Inconsideratness of the Husband
(2)	.682	Fostering Dependency
(5)	.655	Martyrdom
(6)	.535	Fear of Harming the Baby

PARI Factor 2 (democratic attitude)

SCALE NO.	SCALE LOADING	SCALE NAME
(1)	.800	Encouraging Verbalization
(21)	.750	Comradeship and Sharing
(7)	.607	Marital Conflict
(14)	.525	Equalitarianism

PARI Factor 3 (hostility-rejection)

SCALE NO.	SCALE LOADING	SCALE NAME
(13)	.898	Rejection of the Homemaking Role
(9)	.663	Irritability
(7)	.532	Marital Conflict

Appendix I

A LISTING OF THE ITEMS LOADING ON EACH OF THE FOUR LOS FACTORS

(all item loadings $\geq .5$)

LOS Factor A (language stimulation)

ITEM NO.	ITEM LOADING	ITEM CONTENT
(9)	.689	you took the time to read him nursery rhymes.
(35)	.676	you read books to him.
(7)	.663	the window of the room in which he slept was kept slightly open at night.
(11)	.644	you took the time to look at children's picture books with him.
(37)	.639	you told him stories.
(14)	.619	he had the opportunity to listen to songs, rhymes, and jingles.
(44)	.592	you took the time to explain to him what was wrong about something bad he had done, whenever you punished him.
(51)	.544	you took him with you whenever you went on a holiday.
(10)	.540	you spanked him whenever he soiled himself while being toilet trained.
(18)	.536	the language he heard spoken at home was a language other than English.

LOS Factor A (language stimulation) con't.

ITEM NO.	ITEM LOADING	ITEM CONTENT
(41)	.535	you and he played together with some of his toys.
(32)	.519	you told him to be quiet if he seemed to be "chanting" or talking louder than usual when he first got up in the morning.

LOS Factor B (sincerity of interaction)

ITEM NO.	ITEM LOADING	ITEM CONTENT
(30)	.752	your aim in giving him toys to play with was to keep him so busy that you would have more time to yourself without him bothering you.
(23)	.667	you kept him up late at night hoping that he would sleep in longer the next morning.
(26)	.623	you and his brothers and sisters (if any) imitated him whenever he spoke baby talk because it was so cute.
(45)	.602	you found yourself scolding him for a number of bad behaviors when you started out to scold him for only one bad behavior.

LOS Factor C (perceptual-motor stimulation)

ITEM NO.	ITEM LOADING	ITEM CONTENT
(5)	.793	he had such toys as rubber ducks, toy boats, and so on to play with while having his bath.

LOS Factor C (perceptual-motor stimulation) con't.

ITEM NO.	ITEM LOADING	ITEM CONTENT
(22)	.733	he was given such toys as puzzles, pegboards, strings of beads, and a kitty-kar to play with.
(47)	.644	you encouraged him to make things to play with out of nails and wood, pieces of paper, cardboard, and so on.
(24)	.637	you gave him scissors to cut with if he wanted them.
(52)	.615	he had such toys as a train set, a doll house, and/or a toy gas station to play with.
(25)	.583	he had crayons and colouring books to play with.
(34)	.542	he had building blocks and other such construction toys to play with.

LOS Factor D (establishing a routine)

ITEM NO.	ITEM LOADING	ITEM CONTENT
(12)	.752	he had balls, blocks, and other such toys to play with.
(16)	.698	he had at least 12 hours of sleep each night.
(19)	.681	he had at least one nap a day.
(17)	.677	you allowed him to run freely throughout the house.
(31)	.643	you answered him when he asked you questions.

LOS Factor D (establishing a routine) con't.

ITEM NO.	ITEM LOADING	ITEM CONTENT
(33)	.638	you let him dress and undress himself.
(36)	.612	he was made to go to bed at a regular time every night.
(40)	.584	you let him do such things as tie his shoe laces, brush his teeth, and comb his hair on his own.
(43)	.558	you allowed him to do such things as sweep the floor and dry the dishes if he wanted to.
(20)	.550	he was asked to do little errands and to fetch and carry things about the house.
(2)	.539	he was warmly and snuggly wrapped with blankets at all times.
(29)	.503	he had a tricycle to ride on.

Appendix J

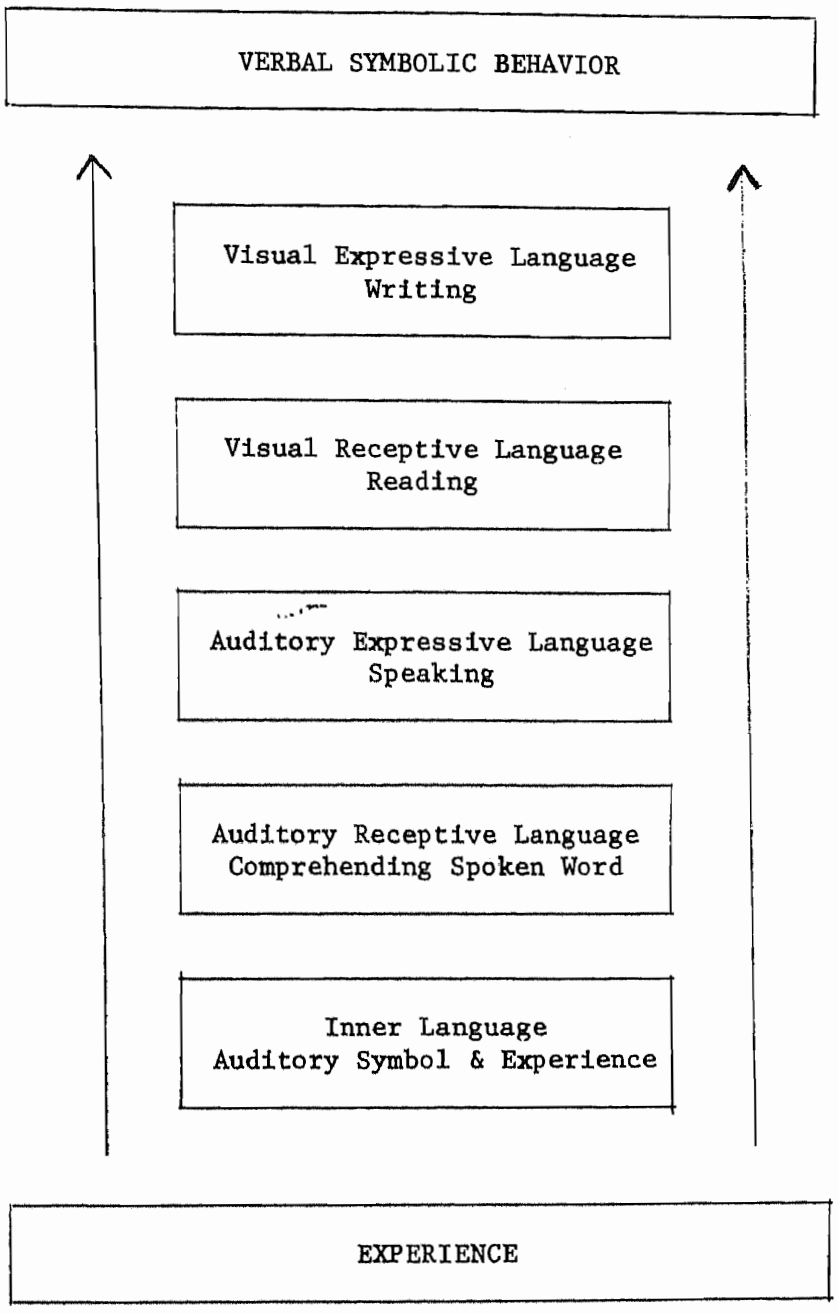

FIGURE 1. The Developmental Hierarchy of Man's Language System. From Myklebust, H., The Psychology of Deafness (2nd ed). New York: Grune & Stratton, 1965, p. 232.