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Hyperlexia: Description, Prognosis and Implications for Family Counseling

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Hyperlexia: Description, Prognosis, and Implications for Family Counseling

by

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VITA

The author, Sylvia Stuart, began her undergraduate work at Roosevelt University of Chicago and completed her undergraduate program of studies at Loyola University of Chicago with a major in Theater. In 1987 she decided to return to school. She earned a second undergraduate degree at Northeastern University where she majored in psychology. She was elected to membership in Psi Chi and Alpha Chi honor societies while attending Northeastern and graduated Summa Cum Laude in Psychology. Ms. Stuart served as a teaching assistant to the department head and co-taught Introductory Statistics and Introduction to Experimental Psychology. In addition, she worked as a crisis intervention counselor for an adolescent suicide hotline.

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CHAPTER I

INTRODUCTION

Purpose of the Study

Parents of children with special needs often face difficulties in obtaining diagnostic information that will guide them in planning for their children's education. Such parents may notice their children's difficulties or anomalous development when the children are very young, and may over a period of years obtain evaluations from numerous sources without developing a clear picture of the children's growth potential and/or ideal educational placement.

The overall purpose of this study is to explore the patterns of development in children who are hyperlexic, (i.e., who spontaneously develop reading at an early age in contrast to prevalently autistic-like behaviors). An effort is made to provide information that may be helpful in counseling parents and in aiding educators to maximize the potential of such children.

Procedures

The procedure to be followed here is the multiple case study approach, that is best used when relevant behaviors cannot be manipulated. The methods to be applied within this approach include a full variety of evidence, such as

documents, direct observations, and a series of systematic interviews. It is recognized that the case study does not provide a representative sample, nor does it lend itself to the enumeration and comparison of frequencies. Rather, it is an empirically based inquiry that is designed to yield a fine grained analysis of contemporary phenomena and leads to analytic generalization (Yin, 1984). In what is described below, two separate case studies of related phenomena will be compared in a cross-case analysis of implications. It is expected that the inferences derived may then be used to modify existing theories and methodologies.

Limitations of the Study

This study is not intended to address the wide spectrum of disorders that include autistic-like behaviors, but is limited to the examination of that group of individuals who have autistic-like behaviors combined with an early emergence of reading skills, a combination of symptoms which has only in recent years been identified as representing an identifiable syndrome (Kupperman, Bligh, and Barouski, 1990).

While the approach used in this study allows for an in-depth investigation of the individuals, only a limited segment of the life-cycle is being examined for those individuals. Studies will be cited that have shown consistency of outcome in related cases. Long-term follow up of the individuals described in the two case studies would be interesting but not possible given the limited focus of the study at hand. Also,

because this study employs a case study approach, quantification and statistical analysis is not possible. However, a large number of variables and conditions will be carefully examined and described using the case study approach (Isaac and Michael, 1981).

Plan of the Study

In what follows, an examination of current literature related to hyperlexia and a review of early cases of hyperlexia identification are presented. In an attempt to derive implications for educational planning and family counseling, a comparison of the developmental similarities and dissimilarities of two hyperlexic children is presented.

Parents of two children in Chicago Public School's special education programs agreed to allow the use of materials from their children's record files. The parents expressed an interest in the study, particularly with respect to educational planning and prognosis for their children. These parents were interviewed and were present while their children were being observed in class.

The materials collected for each child are presented in the form of a case study, examining variables, processes, and interactions that may be used to develop strategies for working with such children and their families. The two case studies were then compared. Implications for prognosis and educational planning were then derived, as well as implications for counseling.

CHAPTER II

HYPERLEXIA

Definition of Hyperlexia

Silberberg (1967) used the term "hyperlexia" to refer to children whose ability to recognize printed words was on a higher level than either their ability to comprehend the material read or their verbal functioning. More recent studies of the phenomenon include in the definition a syndrome of globally disordered language and social development (Pennington, Johnson, and Welsh, 1987). Early onset of language difficulties along with early and untutored emergence of reading skills are crucial determinants of the hyperlexic syndrome (Goldberg, 1987).

The incidence of hyperlexia has been estimated to be 6.6% of school-aged children with pervasive developmental disorders (Burd, Kerbeshian, and Fisher, 1985). This is the equivalent of a prevalence rate of 0.2 per 10,000 children (Burd and Kerbeshian, 1988). The sex ratio is approximately 10 males to 1 female (Goldberg, 1987).

As observed clinically, the hyperlexic child evidences the following characteristics:

1. Precocious and spontaneous emergence of reading skills, with the continuing development of advanced word

recognition skills (Healy, 1982).

2. Behavior similar to that of autism, but typically not as asocial nor as disturbed (Siegel, 1984). These behaviors include self-stimulatory behaviors, need for routine, ritualistic behaviors, tantrums, sensitivity to sensory input, general anxiety and specific unusual fears (Kupperman, et al., 1990).

3. Often, regression at age 18 to 24 months in linguistic and social development (Kupperman et al., 1990).

4. Disordered cognitive /linguistic behavior (Aram and Healy, (1988).

Another term for hyperlexia, proposed by Goldberg (1987), is 'hermetic reading', referring to the isolated or sealed off nature of the reading process from other cognitive functions.

Review of Previous Studies

While some of the early literature mentioned precocious reading in cognitively impaired individuals, Silberberg (1967) introduced the word hyperlexia to describe word recognition skills that may exist separate and apart from general verbal functioning. At that time Silberberg suggested that hyperlexia may be an extreme of a normally distributed trait that could be viewed as a physiological variant (Hallgren, 1950). In 1968 Silberberg and Silberberg observed cases of several children whose advanced talent in reading led teachers to expect higher level cognitive functions to be equally well developed, causing anxiety and stress for the students. This

study supported the hypothesis that in some regular education students reading skills may be discrepant from integrative thought processes. Neurological impairment is therefore not a necessary condition for unexpected precocity in reading single words (Welsh, Pennington, and Rogers, 1987). The Silberbergs (1968) proposed that the distribution of discrepancy scores between two normally distributed traits would also be distributed in a fairly normal fashion, so that a small percentage of children could be expected to read better than predicted based upon their intelligence quotient and grade placement. Snowling and Frith (1986) suggested that their study of hyperlexia supported the concept of a functional decoding system that can be set up in the absence of the usual links with the semantic or general knowledge systems, and Cossu and Marshall (1986) considered the cases they investigated to demonstrate that reading and writing functions have a highly modular organization. The results of a further study (Pennington, Johnson and Welsh, 1987) indicated comprehension level to be independent of single-word decoding skills in 'extreme' groups such as dyslexics and hyperlexics.

The follow-up examination of their original sample led the Silberbergs to suggest that for hyperlexic children reading is a skill which could be emphasized, since they are so efficient at it (Silberberg and Silberberg, 1971).

A study of 12 children with severe deficits in language

development accompanied by precocious reading (Mehegan and Dreifuss, 1972) began to delineate some consistent characteristics among hyperlexic children, (e.g., hyperactivity, selective attention, impairment of fine motor development, unexpectedly low incidence of right-handedness, unusual prosody of speech, and the compulsive nature of the preoccupation with reading). This driven nature of the reading behavior was further observed when 20 autistic boys with hyperlexic reading skills were followed in a study by Whitehouse and Harris in 1984. In this study the compulsive quality of the reading behavior subsided over time.

Thomas Bouchard (personal communication, 1991) observed in his twin studies that a 'love of reading' or 'drive to read' appeared to be highly correlated in intellectually normal twins, suggesting a biological predisposition toward this trait in a normal population.

Interestingly, one of the Mehegan and Dreifuss subjects several years later had improved on psychological testing and moved from the severely retarded to the normal range.

Huttenlocher and Huttenlocher (1973) conducted an experimental investigation into the capabilities of hyperlexic children that included tests of comprehension, memory, apraxia and agnosia, and mathematical ability. Comprehension was found to be similar for spoken and written material; simple commands could be followed but the children were often unable to follow a set of two or three commands. This limitation was

not related to a memory limitation but instead a limit on the amount of meaning that the children could extract from verbal material. Apraxic disorders were marked, manifested by inability to copy simple figures or to draw. All subjects had finger agnosia. Simple mathematical computations were performed but Piagetian tasks were not accomplished. I n reviewing case histories the authors noted that a preponderance of hyperlexic subjects were male, suggesting a sex-linked genetic defect in brain development. However, they also noted that a variety of developmental abnormalities and injuries can lead to the same clinical syndrome.

Elliott and Needleman's (1976) response to the Huttenlocher's article argued that the hyperlexic subject's equivalent response to both written and spoken language indicated a significant strength in comprehension of written language, discrepant from expected normative development; compared to other children of similar age the hyperlexic children did remarkably better than the normal control on written commands, and remarkably worse than the control on spoken commands. They proposed that the relevant ability that characterizes hyperlexic children is the ability to recognize a written word as a linguistic symbol. In contrast to the conclusions of Elliott and Needleman, Richman and Kitchell (1981) saw no evidence of a superior ability in interpreting a sign as a linguistic symbol for hyperlexic children.

When ten hyperlexic children were subjected to a battery

of tests of cognitive function (Richman and Kitchell, 1981), all of the associative-reasoning test scores were significantly lower than the memory scores. Results on the Hiskey association tests suggested a relative deficit in categorization and associative reasoning ability. Scores on auditory learning for non-meaningful verbal materials were found to be a significant strength; memory for meaningful verbal materials was found to be a significant weakness (normals use meaning to support memory of sentences, but hyperlexic subjects apparently do not). The authors suggested that hyperlexic children may represent a variant of a more traditional language disorder: impaired verbal associative ability.

When Goldberg and Rothermel tested eight hyperlexic children in 1984, they found that these subjects showed no semantic paralexias when reading, in contrast to normal controls. Semantic paralexias involve substituting a real word of similar meaning for the actual word, and would be related to a capability for deriving meaning while reading. Reading comprehension is not absent in hyperlexic children, but it is much less well-developed than single-word reading processes (Welsh, Pennington, and Rogers, 1987).

In 1982 Healy and Healy, Aram and Horwitz described a population of 12 hyperlexic children representing diverse socioeconomic groups. These children were seen individually for 8 to 10 hours of testing, parent interviews were

conducted, and records were examined. In all twelve subjects gross motor milestones had been normal, while patterned actions such as tying shoes, buttoning, and opening doors were uniformly delayed, a difficulty also noted by Goldberg (1987). Stereotypical movements were common, all had problems relating to peers, and all were language delayed.

Some of the children first evidenced word knowledge by spelling with blocks; most had watched Sesame Street on television (as had subjects in Goldberg's 1987 study), and children's books were present in all of the subject's homes (Healy, 1982). Decoding ability fell into two distinct subgroups: some subjects had extraordinary ability to decode familiar and unfamiliar words, while others' decoding was superior only in relation to their other cognitive and linguistic abilities. Many of the subjects were left-handed or ambidextrous, as were many of their fathers. On the paternal side 11 of the 12 families showed a pattern of reading disorders, although academic achievement by the fathers indicated intact intellectual function. In seven of the families siblings had some form of language-learning disorder (Healy, Aram and Horwitz, 1982). Similarly, one of two Italian hyperlexic girls studied by Cossu and Marshall (1986) had a sibling with a severe learning disorder and behavioral problems, and in 1988 Smith and Bryson described monozygotic twins concordant for autism and hyperlexia.

Also in 1982, Fontenelle and Alarcon observed eight

hyperlexic children and concluded that the accelerated reading observed in these children was interfering with more appropriate forms of reading and linguistic communication, although other studies had indicated that linguistic difficulties are inherent in the hyperlexic syndrome (Healy, 1982, and Mehegan and Dreifuss, 1972).

An investigation into the decoding processes utilized by hyperlexic children (Cobrinik, 1982), hypothesized that these subjects are not cognizant of words as conceptual, but only as ideographs, suggesting that hyperlexia is an extension of pattern recognition. The hyperlexic children were compared to a normal control group in their ability to identify words which had been degraded through the deletion of elements of individual letters. All of the children were primed by exposure to lists of words which contained the degraded words. In the control group mistakes were apparently based upon a part-analytic approach which the hyperlexic children did not utilize. Six of the hyperlexic children fell within the high performance category on this task, while only one of the controls did so. The author concluded that hyperlexic children may process words as visual configurations rather than as phonetic constructions.

Siegel, in 1984, did a systematic longitudinal observation of a hyperlexic child and concluded that the child was using visual and/or phonological information in reading, but not linguistic information.

Welsh, Pennington, and Rogers (1987) found that the balance found between the phonological and the visual routes for decoding is variable in different samples of hyperlexic children.

Intellectual Development of Hyperlexic Children

When twenty-one hyperlexic children were observed longitudinally (Graziani, Brodsky, Mason, and Zager, 1983), it was noted that pre-school impairment was not correlated with school-age performance, and that some children in the study were at least partially mainstreamed into regular classes between eight and fourteen years of age despite early deficits. However, children with below normal I.Q. scores after age 8 had a poor prognosis, and some subjects showed decreases in I.Q. scores.

In Goldberg and Rothermel's study (1984), age correlated positively with nearly all cognitive, achievement, and comprehension variables at or near significant levels when raw scores were used, indicating improvement over time. The majority of subjects did not progress beyond the fourth grade level in reading, a level at which inferential skills are normally developed. However, in a study involving the reading of sentences including homographs, hyperlexic children whose mental age was above seven years were able to disambiguate meanings by using sentence context (Snowling and Frith, 1986). For the low ability children in the study, only occasional isolated details were remembered, and preexisting knowledge,

if any, was apparently not accessed during reading.

Monozygotic twins concordant for autism and hyperlexia studied by Smith and Bryson (1988) showed a pattern of normal first year development, regression at approximately fourteen months of age, and improvement of autistic behaviors after mastery of reading.

In Mehegan and Dreifuss's 1972 study one subject who was initially in the severely retarded range on psychological testing was retested several years later and scored in the normal range.

Kerr (1984) observed a nineteen year old male with hyperlexia and reported that I.Q. had improved consistently during his development resulting in a normal range performance score, and reading comprehension had reached a 4.1 grade level. His inferential capabilities remained limited, and social adjustment was still immature at age nineteen.

A Related Developmental Disorder

When children with pervasive developmental disorders and hyperlexia were studied in North Dakota, (Burd, Fisher, Knowlton and Kerbeshian, 1985), marked improvement over time was observed after the acquisition of reading. At the time of their final evaluation all subjects had improved beyond the DSM-III criteria for autism or atypical PDD. While previous studies demonstrated variability in prognosis, those subject populations were heterogeneous; in the Burd et al. study the subjects met strict criteria for hyperlexia and PDD. Fisher,

Burd and Kerbeshian (1988) suggest that for these individuals the early reading skills may be the first skill to emerge in a predetermined sequence of cognitive growth, and that hyperlexia may simply be a marker for identifying children with a positive prognosis.

Possible Physiological Causes of Hyperlexia

The high incidence of cases of hyperlexia in males with a familial history of language disorders points to a strong possibility of a sex-linked genetic tendency to develop this disorder, although hyperlexia may also be associated with a variety of early brain insults.

The correlation of hyperlexic reading with autistic-like behaviors raises an interesting question of whether the two conditions share a common etiology. It has been noted that the concordance rate for autism is 23.5% in dizygotic twins and 95.7% in monozygotic twins (Burd and Kerbeshian, 1988), strongly suggesting a genetic predisposition for autism. However, recent studies using MRI techniques to image the brain have revealed anomalies in the gross anatomy of the brains of people with autism (Restak, 1988) which are not seen in the hyperlexic individual (Aram and Healy, 1988). The observable anomalies included diminished cerebellar size in the autistic person, although positron emission tomography of cerebellar function in autistic individuals did not reveal unusual metabolic rate (Heh, Smith, Wu, Hazlett, Russell, Asarnow, Tanguay, and Buchsbaum, 1988). The cerebellum, long

considered to be primarily a coordinating center for motoric activity, has been demonstrated by Dr. R. F. Thompson of the University of Southern California to be the site for the storage of stimulus-response memory traces (McCarthy, 1992); conscious short-term memory has been considered to be mediated by the hippocampal formation, with long term memory being stored in the surrounding cortex (Adler, 1991). The normal development of the cerebellum in children with hyperlexia may account for the decrease in autistic symptoms in these children when compared to autistic children who are not hyperlexic.

As the formation of the cerebellum has so far been observed to be normal in individuals with hyperlexia, it is necessary to investigate other areas of the brain for the origins of the symptoms shared in common with the autistic individual. Researcher Allan F. Mirsky has done research that indicates a correlation of attentional disorders and sleep disorders with a deep subcortical system that connects to the whole brain and is responsible for focus, vigilance, and flexibility (DeAngelis, 1989). MRI studies done by George Hynd found that in people with dyslexia and attentional disorders another area of the brain that has been implicated in hyperactivity, the right anterior cortex, is smaller than normal (Adler, 1989). This study also revealed that 90% of the subjects who were dyslexic had an abnormal, symmetrical pattern in the planum temporale, a language processing area

of the brain. It is therefore indicated by recent MRI studies that brain anomalies are correlated with difficulties in language processing and attention.

Mehegan and Dreifuss, (1972), included neurological examinations in their study of 12 children with hyperlexia and found symptomology consistent with neurologic anomalies, as well as specific diagnoses of agenesis of the corpus callosum in one subject and craniostenosis in another. Based upon these findings they concluded that hyperlexia appears to be the result of a specific disturbance in language development that is attributable to cortical dysfunction (Cohen, Campbell, and Gelardo, 1987).

Dichotic listening tests which measured electrical stimulation of the auditory and language processing pathways (EEG) indicated possible dysfunction involving the auditory association area and/or the incoming white matter tracts in individuals with hyperlexia (Cohen et al., 1987). Neurodevelopmental abnormalities were considered to be the cause, although acquired insult could also result in similar dysfunction.

Why hyperlexic symptoms should appear instead of dyslexia in children of fathers whose families have a history of dyslexia is not known. However, some studies have shown anomalies in the backgrounds of mothers of children with hyperlexia (Mehegan and Dreifuss, 1972), suggesting a possibility that the syndrome may appear when factors from

both parents combine. The mother mentioned in the Mehegan and Dreifuss study had a background which showed extensive consanguinity with albinism appearing 22 times in the maternal line. Another maternal factor, as noted by Burd and Kerbeshian (1985), is neurofibromatosis, a genetically caused disorder (Riccardi, 1987); brain lesions are associated with neurofibromatosis (Duffner, Cohen, Seidel, and Shucard, (1989). The child described in the Burd and Kerbeshian study had a maternal family history positive for neurofibromatosis, with the disorder appearing in the mother and in the child. In this present study one of the two cases presented will be that of a child whose mother has been diagnosed as positive for neurofibromatosis; this author has observed another mother of a hyperlexic child with multiple cafe' au lait spots, a possible indicator of neurofibromatosis (Riccardi, 1987).

The incidence of hyperlexic symptoms in children who have been diagnosed as positive for neurofibromatosis has not been established (Kirshner, J., personal communication, 1991). However, it has been noted that psychosis and mental retardation appear in children with NF at a rate much higher than chance (Gillberg and Forsell, 1984), and that infantile autism has been observed in children with other forms of phakomatoses (Lotter, 1974 and Wing, 1975). Numerous forms of NF are difficult to diagnose in early, mild and atypical forms (Varnhagen, Lewin, Das, Bowen, Ma, Klimek, 1988). For this reason the co-occurrence of NF with hyperlexia can easily

be underestimated. Further investigation in this area would be warranted.

Chapter III

CASE STUDY #1

Interview of Parent

At the time of this investigation, A. B., a six-year six-month old male hispanic child, was a student in a Chicago Public School developmental kindergarten (a class for children who appear to demonstrate delayed development). His mother, who was 36 years old at the time of his birth, reported that during gestation she had received injections twice a day to control a diabetic condition. She stated that she may have been exposed to German measles during the pregnancy and was advised to terminate the pregnancy, but decided against this course of action because of religious convictions. She has one other child, a 21 year old daughter who is married and lives with her husband in the basement apartment of the family home. A. B.'s father is currently unable to work due to an injury.

The mother reported that A. B. has memorized some bible verses, can recite the alphabet and some numerals, and remembers routes to familiar places. A. B.'s mother stated that he converses with her, but it was observed that she makes numerous inferences regarding his needs based upon his expression and gestures. She also stated that A. B.

communicates better in Spanish than in English; however, testing by a Spanish speaking psychologist revealed severe communication deficits in Spanish.

A. B.'s mother stated that she remembers that A. B. was a normal baby who said 'mom' and 'papa' at the right age. He began echolalia at an early age. He was referred for evaluation by a pediatrician because of speech delays after age three years. He is currently unable to dress himself, and is unable to perform any buttoning. His mother cuts his food for him. When riding his tricycle he prefers not to pedal but instead to push on the ground with his feet. The mother reported that A. B. is well-behaved when he is with her; however, at Sunday school he laughs and does not do the work. He won't share his toys and seeks comfort only from Mother.

Finally, it should be noted that the mother stated that she believes that her religious faith will eventually lead her to a cure for A. B., and sees his current reading skills as a miracle from God.

Observation of Child

A. B. was observed in a special education classroom in a Chicago Public School. He appeared as a normal, chubby six year old. The classroom was airy, and a sandbox and toys were available for the children's use. Two adult supervisors were present.

When the examiner entered the classroom the seven

children in the class were seated at a table eating breakfast. A. B. was observed to eat with reasonably appropriate skills for a child his age. During this time he smiled at his classmates several times, and engaged in an ongoing touching game with the child next to him.

When breakfast ended A. B. followed the apparent routine of disposing of his paper plate, then went with several other children to the sand box and engaged in play, taking turns filling a turning wheel. He was not observed to initiate any spontaneous speech. When his teacher handed him a children's book, he immediately began to read, accomplishing correct decoding with excellent articulation.

When his mother arrived, A. B. was informed that he and his mother would be accompanying the examiner to another room. He appeared unhappy to leave his friends, and demurred by shaking his head to communicate his preference not to go. However, when this did not elicit the desired response he followed along and was cooperative.

An attempt to formally evaluate A. B. using the Wechsler Preschool and Primary Scale of Intelligence - Revised (WPPSI-R) did not yield any scorable results. During the testing A. B. reached across the table, pointed to the paper form, and read the numbers of the questions that were being asked. On an object assembly task he was able to accomplish three simple puzzles. He was unable to accomplish reproduction of simple figures. On a block design task he accomplished two simple

arrangements using two blocks and one arrangement using three blocks. He described the colors correctly as "red, white, red". He also counted the blocks to five correctly with one on one correspondence. Sentence repetition was a strength; he was able to repeat sentences up to five words with no errors. During testing A. B. appeared to be very distractible to auditory stimuli.

Examination of Documented History

A review of A. B.'s records show that he began school in a full-day kindergarten with 30 other children. His teacher reported that he was unable to color inside the lines, that he was unable to put on his own coat or work zippers or buttons, and that he had a very short attention span. He was able to complete puzzles and recognize numerals 1-10 and the letters of the alphabet. He was unable to follow in a line of students, and was unable to verbally express his needs.

A speech-language evaluation was conducted at The Children's Memorial Hospital just after A. B.'s fifth birthday. Hearing was reported to be within normal limits bilaterally. Early motor milestones and speech and language developmental milestones were reported to have been accomplished at appropriate ages. The parents felt that A. B.'s strongest language was Spanish, and the evaluation was therefore conducted in Spanish. Comprehension was shown to be at a 2 year 3 month level and expressive language at a 2 year six month level. Developmental kindergarten was

recommended, with an emphasis to be given to language skills.

A psychological evaluation was conducted at Children's Memorial hospital. The results reflected an impression of moderate mental retardation, severe developmental language disorder, and moderate autism. A program for autistic children was recommended. Speech therapy was initiated at Children's Memorial Hospital.

Another psychological evaluation conducted privately when A. B. was five years old concluded that he was autistic-like but apparently not as emotionally disturbed as most autistic children. He related with the examiner and seemed to enjoy attention. It was noted that he did not have the blunt affect and the blank stare that are often part of the autistic syndrome. Language development was described as primitive for a child his age. On formal testing A. B. was unable to accomplish tasks presented to him. Odd mannerisms and behaviors were noted, similar to those seen in autistic syndrome. Reading was not reported to have been mentioned by the parent or observed by the examiner. A recommendation was made for special education placement.

Interestingly, an examination of Individual Education Plan's developed for A. B. address the development of self-help, social, and motor skills. The development of reading skills is not addressed, nor is the development of reading reported in his file.

Match to Hyperlexic Pattern

A. B.'s development reflects many features of hyperlexic syndrome: (1) early milestones were appropriate, with apparent regression and severe language delays; (2) patterned motor skills have still not developed, and social skills are delayed; and (3) fluent reading without comprehension emerged apparently spontaneously.

Chapter IV

CASE STUDY #2

Interview of Parent

C. D. is a black male who was nine-years and two-months old at the time of this study, and was attending a Chicago Public School special education program for children with autistic syndrome. The mother reported that she was 29 years old when he was born, and that the pregnancy was without complications. Both the mother and child have been diagnosed as positive for neurofibromatosis. The father was not a part of the family when the study was conducted.

The mother reported that C. D. sat at six months of age but did not walk until sixteen months of age. He reportedly had problems with balance, couldn't throw well, and couldn't catch. The mother stated that C. D. was delayed in language but that learning to read 'straightened out' his speaking. She stated that she felt that, prior to the development of reading, talking to C. D. was like talking to a wall, but that reading opened the doors to understanding. Fine motor development is still delayed; C. D. does not hold a pencil properly or use scissors well, and can't tie his shoes. He prints letters and numbers and is now learning to write cursive. Overall, the mother describes C. D. as an

affectionate child who has had problems with temper tantrums.

C. D. reportedly enjoyed watching Sesame Street on television as well as Wheel of Fortune and frequently repeats what he hears on TV. The first word he spoke was "B". The mother reported that C. D.'s memory was very good, and that he is very neat. Eye contact is variable. C. D. is very good at finding his way around and doesn't get lost.

C. D.'s mother often takes him to the zoo and to the park; she stated he does not socialize well with other children.

Finally, it should be noted that C. D.'s mother reported that C. D. dislikes loud noises and is easily distracted by auditory stimuli.

Observation of Child

C. D. was observed at a Chicago Public School where he participates in a program for children with autistic syndrome. The class size was small, and a teacher and aide were present. C. D.'s appearance was that of a normal, good looking nine year old. His grooming was good. C. D. sat at his desk when required to do so, working appropriately. Spontaneous speech was limited. When presented with reading material he read fluently with good articulation. When interviewed C. D. was somewhat distractible.

C. D.'s teacher stated that he had observed C. D. reading handwritten notes that were on the teacher's desk and decided that C. D. might have the capability to learn cursive writing.

C. D. has been progressing well with this skill. The teacher further noted that written notes aided comprehension for C. D., and that he now supplements all oral instructions with written instructions for C. D. with good results.

Examination of Documented History

An examination of the records shows that speech therapy was recommended for C. D. when he was three years old. When he was five years old he exhibited moderate to severe developmental delays. Language was found to be at the 2.5 year level. Autistic-like behavior at that time indicated the need for special education classes.

When evaluated at the age of eight years, C. D. had reached the fourth grade level in reading decoding, with comprehension at the third grade level. At this stage, C. D. was participating in group activities, and would participate in interactive games with a peer. Independent functioning had improved, with C. D. able to run errands and give simple oral directions. Speech and language continued to be delayed.

A psychological evaluation done at this time documented some perseveration and variable eye contact. Distractibility was noted, as was echolalia. Receptive language skills were at the 4 year, 5 month level, which is extremely deficient for his chronological age. Mental growth was occurring at an extremely slow rate, with verbal reasoning and comprehension difficult for him. Spelling was a personal strength, with achievement at the 8.4 grade level. Continuation in the

Autistic/Autistic-like program was recommended.

Match to Hyperlexic Pattern

C. D. evidenced similarities to many of the hyperlexic children who have been examined in previous studies. In particular, reading preceded and facilitated the development of speech. In addition, patterned fine motor skills remain delayed, and comprehension and verbal reasoning skills remain weak compared to memory skills.

Chapter V

COMPARISON OF CASES

Cross-Case Developmental Similarities

There are many similarities between the two children observed in the two case studies described above. Both had normal appearance for their age, both were able to remember routes easily, and both appeared to be affectionate with the mother even though other socialization was disturbed. Both children were successful at completing puzzles, but had difficulty with patterned fine motor tasks such as buttoning clothing. Language was severely delayed in both A.B. and C.D., with the level of speech and language development being at the 2 year level at chronological age 5. Memory skills developed early in both children while comprehension and verbal reasoning remained delayed. A. B. and C. D. both had poor attention spans except when engaged in preferred activities such as watching Sesame Street or Wheel of Fortune on television, and both developed reading skills quite by surprise in the absence of expectations that they would do so. Both youngsters were highly distractible to auditory stimuli, and both had been described as autistic-like when evaluated by psychologists, and both differed from the autistic syndrome in their level of relatedness.

Cross-Case Dissimilarities

In contrast to the early development of C. D., who first walked at the age of sixteen months, A. B. showed normal early milestones in the areas of sitting and walking. A. B., however, remained unable to dress himself at age 6 while C. D. had accomplished this task by that stage. While A. B. was considered to have no health problems, C. D. had been positively diagnosed as having neurofibromatosis. And finally, C. D., at the age of nine years, had begun to achieve comprehension of language.

Implications for Prognosis and Educational Planning

The observational record of the two children described is consistent with the results of previous studies that have yielded a positive pattern of continuing developmental and educational improvement in autistic-like children with advanced reading skills. C. D., at the age of nine years, was comprehending instructions when auditory instructions were augmented with written prompts. This is similar to a result obtained with a child studied by Kistner, Robbins, and Haskett in 1988. As suggested by Silberberg and Silberberg (1971), the efficient reading skills of these children provide an avenue for learning that should be utilized in educational planning for such children.

Comparison of Family Coping Styles

The mother of A. B. defined herself as a very religious person, governed by an optimistic expectation of divine

intervention on behalf of her son. Although indications are that A. B. will never reach the normal range of adult development, the emergence of reading skills has so far supported her belief. Apparently, she is able to accept whatever life holds given the comfort of her religion.

The mother of C. D. seems to be realistically aware of the extent of her son's deficits, but expressed an ability to enjoy him as a companion and to take satisfaction in his successes. She described herself as fairly socially isolated except for her relationship with C. D., and stated that she enjoyed taking him on outings.

Both mothers had evident strong affection for their children, and appeared to be dedicated to the development of their children's full potential. It is of special interest to note that the strong reading skills of these children were reported to be a source of pride and optimism for both mothers.

Implications for Counseling

Based on the results of existing studies, it is possible to inform parents that the accelerated reading skills they observe in their autistic-like children are a marker for improvement beyond that expected for autistic children who are non-readers (Fisher, Burd, and Kerbeshian, 1988). It is strongly recommended that parents be encouraged to utilize the reading mode when presenting their children with instructions or other information, thereby facilitating communication

between parent and child.

Another approach to communication for children with expressive language problems has been described by Biklen (1990). His work with facilitated communication utilized a Canon Communicator (a small electronic typing device with a dot matrix tape output). In studies involving young people with autistic behaviors, individuals previously unable to communicate were able to effectively focus their thoughts and overcome the limitations of speech dyspraxias when provided with keyboards and trained facilitators. While these individuals remained easily distractible and engaged in off task behaviors during typing sessions, many were able to demonstrate that higher level thinking skills are not impossible for young people with autism. The use of such communication devices should be investigated for children with hyperlexia.

Finally, the effect on the family of having a special needs child should be addressed. Kronenberger and Thompson (1990) found that while many stressors for the families of chronically ill children remain similar to those of other families, the ill child does not develop the same degree of independence as other children and the organization of the family therefore shifts. Parents may develop conflicts regarding the fairness of parenting arrangements (Milgram and Atzil, 1987), and stress may be evoked by the demands of dealing with a child who is unable to be responsive to

parental management (Fischer, 1990). Reports by parents (Rodrigue, Morgan, and Geffken, 1990) indicate that a small, well-organized support network is related to successful family adaptation.

Summary and Conclusions

The results of this study support the existence of the hyperlexia syndrome. The emergence of reading skills in children with autistic-like behaviors may be interpreted as an indicator for improvement in functioning during the children's development. Identification of an individual as having the characteristics of hyperlexia may facilitate the planning of educational intervention. Therefore, interviews and observations should be undertaken to determine whether children with pervasive developmental disorder may have hyperlexic characteristics.

Finally, to help those families who seek information regarding their child's prognosis, educational materials should be prepared that describe other families' experiences with children who have hyperlexic symptomatology. These materials should include both written articles summarizing the existing literature, and videotapes showing children of various ages as they function at home and in school. The videotapes could demonstrate family adjustments that successfully accommodate the affected child, educational interventions that have assisted in the child's development, and available resources and support services.

REFERENCES

Adler, T. (1989). Brain's language area is abnormal in disabled. The A.P.A. Monitor, 20(11), 7.

Adler, T. (1991). Role of hippocampal formation is recast. The A.P.A. Monitor, 22(2), 14.

Aram, D.M. and Healy, J.M. (1988). Hyperlexia: a review of extraordinary word recognition. In L. K. Obler and D. Fein (Eds.), The Exceptional Brain, (pp. 70-102). New York: The Guilford Press.

Biklen, D. (1990). Communication unbound: autism and praxis. Harvard Educational Review, 60,(3), 291-314.

Burd, L., Fisher, W., Knowlton, D., and Kerbeshian, J. (1985). Hyperlexia: a marker for improvement in children with pervasive developmental disorder? Journal of the American Academy of Child and Adolescent Psychiatry, 26(3),407-412.

Burd, L., and Kerbeshian, J. (1985). Hyperlexia and a variant of hypergraphia. Perceptual and Motor Skills, 60, 940-942.

Burd, L., and Kerbeshian, J. (1988). Familial pervasive developmental disorder, tourette disorder, and hyperlexia. Neuroscience and Biobehavioral Reviews, 12, 233-234.

Burd, L., Kerbeshian, J., and Fisher, W. (1985). Inquiry in to the incidence of hyperlexia in a statewide population of children with pervasive developmental disorder. Psychological Reports, 57, 236-238.

Cobrinik, L. (1982). The performance of hyperlexic children on an "incomplete words" task. Neuropsychologia, 20(5), 569-577.

Cohen, M., Campbell, R., and Gelardo, M. (1987). Hyperlexia: a variant of aphasia or dyslexia. Pediatric Neurology, 3(1), 22-28.

Cossu, G. and Marshall, J.C. (1986). Theoretical implications of the hyperlexia syndrome: two new italian cases. Cortex, 22, 579-589.

DeAngelis, T. (1989). Researcher focuses attention on attention. The A.P.A. Monitor, 20(12), 8.

Duffner, P. K., Cohen, M. E., Seidel, F. G., and Shucard, D. W. (1989). The significance of MRI abnormalities in children with neurofibromatosis. Neurology, 39, 373-378.

Elliott, D. E. and Needleman, R. M. (1976). The syndrome of hyperlexia. Brain and Language, 3, 339-349.

Fischer, M., (1990). Parenting stress and the child with attention deficit hyperactivity disorder. Journal of Clinical Child Psychology, 19, (4), 337-346.

Fisher, W., Burd, L., and Kerbeshian, J. (1988). Markers for improvement in children with pervasive

developmental disorders. Journal of Mental Deficiency Research, 32, 357-369.

Fontenelle, S. and Alarcon, M. (1982). Hyperlexia: precocious word recognition in developmentally delayed children. Perceptual and Motor Skills, 55, 247-252.

Gillberg, C. and Forsell, C. (1984). Childhood psychosis and neurofibromatosis - more than a coincidence? Journal of Autism and Developmental Disorders, 14(1), 1-8.

Goldberg, T.E. (1987). On hermetic reading abilities. Journal of Autism and Developmental Disorders, 17(1), 29-44.

Goldberg, T.E. and Rothermel, R.D. (1984). Hyperlexic children reading. Brain, 107, 759-785.

Graziani, L.J., Brodsky, K., Mason, J.C. and Zager, R.P. (1983). Variability in IQ scores and prognosis of children with hyperlexia. Journal of the American Academy of Child Psychiatry, 22(5), 441-443.

Hallgren, P., (1950). Specific dyslexia - a clinical and genetic study. Acta Psychiatrica et Neurologica, Supplement 65.

Healy, J. M. (1982). The enigma of hyperlexia. Reading Research Quarterly, 3, XVII/3, 319-338.

Healy, J.M., Aram, D.M., Horwitz, S.J. and Kessler, J.W. (1982). A study of hyperlexia. Brain and Language,

17, 1-23.

Heh, C.W.C., Smith, R., Wu, J., Hazlett, E., Russell, A., Asarnow, R., Tanguay, P., and Buchsbaum, M.S. (1989). Positron emission tomography of the cerebellum in autism. American Journal of Psychiatry, 146(2), 242-245.

Huttenlocher, P.R. and Huttenlocher, J. (1973). A study of children with hyperlexia. Neurology, 23, 1107-1116.

Isaac, S. and Michael, W.B. (1981). Handbook in Research and Evaluation (Second ed.). San Diego: Edits.

Kerr, M. (1984). Hyperlexia. Unpublished manuscript.

Kistner, J., Robbins, F., and Haskett, M. (1988). Assessment and skill remediation of hyperlexic children. Journal of Autism and Developmental Disorders, 18(2), 191-205.

Kronenberger, W.G. and Thompson, R.J.Jr.(1990). Dimensions of family functioning in families with chronically ill children: a higher order factor analysis of the family environment scale. Journal of Clinical Child Psychology, 19, (4), 380-388.

Kupperman, P., Bligh, S. and Barouski, K. (1990). Hyperlexia. Unpublished manuscript. Center for Speech and Language Disorders. Elmhurst, Il.

Kupperman, P., Bligh, S. and Barouski, K. (1990). Hyperlexia in young school age children. Unpublished

manuscript. Center for Speech and Language Disorders. Elmhurst, Il.

Kupperman, P., Bligh, S. and Barouski, K. (1990). The syndrome of hyperlexia vs. high functioning autism and asperger's syndrome. Unpublished manuscript. Center for Speech and Language Disorders. Elmhurst, Il.

Lotter, V. (1974). Factors related to outcome in autistic children. Journal of Autism and Childhood Schizophrenia. 4, 263-277.

McCarthy, K. (1992). Hunt for memory trace takes twenty years. The APA Monitor, 23(7), 18-19.

Mehegan, C.C. and Dreifuss, M.B. (1972). Hyperlexia: exceptional reading ability in brain-damaged children. Neurology, 22(11), 1105-1111.

Milgram, N.A. and Atzil, M. (1987). Consensus and conflict in parents of autistic children. Psychological Reports, 61, 557-558.

Pennington, B.F., Johnson, C., and Welsh, M.C. (1987). Unexpected reading precocity in a normal preschooler: implications for hyperlexia. Brain and Language, 30, 165-180.

Riccardi, V. M. (1987). Neurofibromatosis. Neurologic Clinics, 5(3), 337-349.

Richman, L.C. and Kitchell, M.M. (1981). Hyperlexia as a variant of developmental language disorder. Brain

and Language, 12, 203-212.

Rodrigue, J.R., Morgan, S.B., and Geffken, G. (1990). Families of autistic children: psychological functioning of mothers. Journal of Clinical Child Psychology, 19, (4), 371-379.

Siegel, L.S. (1984). A longitudinal study of a hyperlexic child: hyperlexia as a language disorder. Neuropsychologia, 22(5), 577-585.

Silberberg, N.E. (1967). Hyperlexia - specific word recognition skills in young children. Exceptional Children, 34, 41-42.

Silberberg, N.E. and Silberberg, M.C. (1968). Case histories in hyperlexia. Journal of School Psychology, 7(1), 3-7.

Silberberg, N.E. and Silberberg, M.C. (1971). Hyperlexia: the other end of the continuum. The Journal of Special Education, 5(3), 233-241.

Smith, I.M. and Bryson, S.E. (1988). Monozygotic twins concordant for autism and hyperlexia. Developmental Medicine and Child Neurology, 30(4), 527-531.

Snowling, M. and Frith, U. (1986). Comprehension in "hyperlexic" readers. Journal of Experimental Child Psychology, 42, 392-415.

Varnhagen, C.K., Lewin, S., Das, J.P., Bowen, P., Ma, K., Klimek, M. (1988). Neurofibromatosis and Psychological Processes. Developmental and

Behavioral Pediatrics. 9(5), 257-265.

Welsh, M.C., Pennington, B.F., and Rogers, S. (1987). Word recognition and comprehension skills in hyperlexic children. Brain and Language, 32, 76-96.

Whitehouse, D. and Harris, J.C. (1984). Hyperlexia in infantile autism. Journal of Autism and Developmental Disorders, 14(3), 281-289.

Wing, L. (1975). A study of language impairments in severely retarded children. In N. O'Connor (Ed.), Language, Cognitive Deficits and Retardation. London: Butterworths.

Yin, R. K. (1984). Case Study Research: Design and Methods. Beverly Hills: Sage.

APPENDIX A

APPENDIX A

TEST RESULTS FOR A. B.

Chronological Age: 6 years, 6 months

Wechsler Prescshool and Primary Scale of Intelligence -Revised (WPPSI-R)

Performance Scale : 45

Verbal Scale : 46

Full Scale : 41

Object Assembly, Scaled Score	= 1	Information	= 1
Geometric Design	= 1	Comprehension	= 1
Block Design	= 1	Arithmetic	= 1
Mazes	= 1	Vocabulary	= 1
Picture Completion	= 1	Similarities	= 1
		Sentences	= 3

APPENDIX B

APPENDIX B

TEST RESULTS FOR C. D.

Chronological Age: 8-9

Stanford-Binet Intelligence Scale, Form L-M revealed "an extremely slow rate of mental growth".

Academic Functioning

Peabody Individual Achievement Test

Mathematics	0.3 grade equivalent
Reading Recognition	4.1 grade equivalent
Reading Comprehension	4.1 grade equivalent
Spelling	8.4 grade equivalent

APPENDIX C

Questionnaire re the Syndrome of Hyperlexia

DATE_____

Most recent Diagnosis_____DATE_____

NAME:_____Gender ☐ M ☐ F

Birthdate:_____

Handedness: ☐ R ☐ L ☐ Ambidextrous

Siblings: Name_____Gender ☐M ☐F Birthdate_____

Name_____Gender ☐M ☐F Birthdate_____

Name_____Gender ☐M ☐F Birthdate_____

Name_____Gender ☐M ☐F Birthdate_____

Name_____Gender ☐M ☐F Birthdate_____

Name_____Gender ☐M ☐F Birthdate_____

Parents: FATHER_____Birthdate_____

Handedness: ☐ R ☐ L ☐ Ambidextrous

Occupation:_____

Address:_____

Phone: (_____)_____

Years of School: (circle) 8 9 10 11 12 13 14 15 16 17 18 19+

Primary Language:_____Second Language:_____

MOTHER_____Birthdate_____

Handedness: ☐ R ☐ L ☐ Ambidextrous

Occupation:_____

Address:_____

Phone: (_____)_____

Years of School: (circle) 8 9 10 11 12 13 14 15 16 17 18 19+

Primary Language:_____Second Language:_____

PREGNANCY HISTORY

	DATE	DURATION	RESULT
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____

During pregnancy with this child:

	TYPES	WEEKS OF OCCURRENCE
Illnesses		
Medications		
Bleeding		
Fertility Procedures		
Fertility Drugs		
Bed Rest		
Alcohol Use		
Drug Use		
Other Complications		

BIRTH HISTORY

Term: ☐ Full term ☐ Post-term _____weeks

☐ Premature _____ weeks early

Hours of Labor _____ Type of Delivery _____

Medications_____

Complications during birth_____

Birthweight:_____lbs._____oz.

APGAR Score_____

CHILD'S HEALTH HISTORY

	TYPE	DATE(S)
Apnea		
Jaundice		
Seizures		
Congenital Defects		
Neurological Symptoms		
Ear Infections		
Allergies		
Illnesses		
Accidents		
Hospitalizations		

MEDICAL TEST DATA:	DATE	RESULT
EEG		
MRI		
CT		
PET		
FRAGILE X		
OTHER GENETIC TESTS		
AMINO ACIDS		

FAMILY HISTORY:

Please list other family members, including extended family, who may have learning disabilities, autism, developmental disabilities, neurological disorders or psychiatric disorders.

DISORDER	RELATIONSHIP TO CHILD	MAT./PAT. SIDE

AGE OF ONSET 0-6mo	6mo	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-6	5-0	5-6	6-0	6-6	7-0	7-6	8
MOTOR DEVT.																
GROSS MOTOR																
Sitting																
Creeping																
Crawling																
Walking																
Skipping																
Trike Riding																
Bike Riding																
Swimming																
FINE MOTOR																
Pegs																
Puzzles																
Scribbling																
Coloring w/in lines																
Standard pencil grip																
Figure drawing																
Writing (manuscript)																
Writing (cursive)																

AGE OF ONSET 0-6mo	6mo	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-6	5-0	5-6	6-0	6-6	7-0	7-6	8
SELF HELP																
Independent Eating																
Independent Dressing																
Toilet training (age started to age accomplished)																
Bladder Training																
Bowel Training																
Night Time Training																
Comments																

AGE OF ONSET 0-6mo	6mo	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-6	5-0	5-6	6-0	6-6	7-0	7-6	8
SPEECH & LANGUAGE																
EXPRESSION																
First words																
Loss of words (from/to)																
Word combinations																
Echolalia (from/to)																
Immediate																
Delayed																
Pronoun reversals (f/t)																
Memorized dialogues																
Original utterances																
Asked questions																
Gave information																
Gave descriptions																
Told narrative (derivative)																
Told narrative (original)																
Articulation Problems (f/t)																
Unusual voice/intonation (f/t)																
Conversation with adults																
Conversation with other children																

AGE OF ONSET	0-6mo	6mo	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-6	5-0	5-6	6-0	6-6	7-0	7-6	8
SPEECH AND LANGUAGE																	
COMPREHENSION																	
Reponded to name																	
Fetched items																	
Followed 1 step directions																	
Followed 2 step directions																	
Answered *what, where, who*																	
Answered *how, why*																	
Understood a story																	
AGE _____	0-6mo	6mo	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-6	5-0	5-6	6-0	6-6	7-0	7-6	8
LANGUAGE TEST SCORES –Enter test score under the age at which the test was given																	
PLS																	
Verbal Ability																	
Comprehension																	
PPVT-R																	
Form M																	
Form L																	
Test of Problem Solving																	
Other Language Tests																	
AGE OF ONSET	0-6mo	6mo	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-6	5-0	5-6	6-0	6-6	7-0	7-6	8
READING/SPELLING/WRITING																	
Letter/Number Recognition																	
Logo Recognition																	
Word Recognition																	
Decoded Phonetically																	
Read any word presented																	
Read Sentences																	
Read Picture Books																	
Read Chapter Books																	
Followed Written Directions																	
Answered written *wh* questions																	
Spelled words with plastic letters																	
Wrote words																	
Wrote Sentences																	
Wrote Story (derivative)																	
Wrote story (original)																	
AGE _____	0-6mo	6mo	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-6	5-0	5-6	6-0	6-6	7-0	7-6	8
READING TEST SCORES																	
Woodcock																	
Letter Recognition																	
Word Recognition																	
Phonetic Decoding																	
Word Comprehension																	
Passage Comprehension																	
Other Reading Tests																	

AGE OF ONSET	0-6mo	6mo	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-6	5-0	5-6	6-0	6-6	7-0	7-6	8
COGNITIVE/INTELLECTUAL FUNCTIONING																	
Math:																	
Counting 1 to 1																	
Addition																	
Subtraction																	
Multiplication																	
Division																	
Color:																	
Matching																	
Recognition																	
Naming																	
Same/Different																	
More/Less																	
Bigger/Smaller																	
Evidence of Particular knowledge/talent:																	
Dinasaur names																	
Sports info																	
Music																	
Mechanical																	
Computer skills																	
Rote Memory																	
Other																	

AGE _____	0-6mo	6mo	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-6	5-0	5-6	6-0	6-6	7-0	7-6	8
TEST RESULTS – Enter test score under the age at which the test was given																	
I.Q.																	
WISC-R (total)																	
Verbal																	
Performance																	
Other																	
ITPA																	
Auditory Comprehension																	
Visual Comprehension																	
Auditory Association																	
Visual Association																	
Auditory Sequential Memory																	
Visual Sequential Memory																	

AGE _____	0-6mo	6mo	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-6	5-0	5-6	6-0	6-6	7-0	7-6	8
SOCIAL/BEHAVIORAL (from/to)																	
Tantrums																	
Insistence on routines																	
Difficulty with transitions																	
Obsessions/Fascinations																	
a) Wheel of Fortune																	
b) Videos/cartoons																	
Unusual Fears																	
Arm Flapping																	
Lack of eye contact																	
Self-stimulatory behavior																	
Difficulty with Transitions																	
Separation Anxiety																	
Staring at Lines																	
Symbolic Pretend Play																	
Parallel Play with other Children																	
Interactive Play with othe Children																	
Development of a Special Friendship																	

AGE _____	0-6mo	6mo	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-6	5-0	5-6	6-0	6-6	7-0	7-6	8
SENSORY/PERCEPTUAL																	
Tactile Defensiveness																	
Sensitivity to sound/noise																	
Attention Deficit Disorder																	
Hyperactivity																	
Other																	

AGE _____	0-6mo	6mo	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-6	5-0	5-6	6-0	6-6	7-0	7-6	8
SCHOOL (from/to)																	
Sought first consultation/evaluation (Which professional? _____)																	
Parent/Infant (0-3) Program																	
Special Education Preschool (Teacher: Student Ratio _____)																	
Regular Ed. Preschool (T:S Ratio _____)																	
Montessori School (T:S Ratio _____)																	
Developmental Kindergarten (T:S Ratio _____)																	
Regular Ed. Kindergarten (T.S. Ratio _____)																	
Special Education Program																	
Communication Disorders Class																	
Self-Contained L.D.																	
E.M.H.																	
B.D./E.D.																	
Other _____																	
Regular Education Program																	

AGE OF ONSET 0-6mo	6mo	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-6	5-0	5-6	6-0	6-6	7-0	7-6	8
THERAPY (From/to)																
Speech/Language Therapy																
Psychotherapy																
Occupational Therapy																
Physical Therapy																
Educational Therapy																
Other																

AGE OF ONSET 0-6mo	6mo	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-6	5-0	5-6	6-0	6-6	7-0	7-6	8
SCHOOL BEHAVIOR PROBLEMS (From/to)																
Attention to Task																
Staying in Seat																
Participating in Group																
Following Individual Directions																
Following Group Directions																
Working Independently																
Completing Assignments																
Interacting with Classmates																
Class Clown Behavior																
Inappropriate emotional outbursts (laughing, crying, yelling)																
Difficulty with transitions																

MISC.

Please note any food peculiarities or preferences and at what age they occurred:

Please note any sleep difficulties or unusual patterns and at what age they occurred:

Peculiar or unusual habits and at what age they occurred:

THESIS APPROVAL SHEET

The thesis submitted by Sylvia Stuart has been read and approved by the following committee:

Dr. Joy J. Rogers
Professor, Counseling and Educational Psychology
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The final copies have been examined by the director of the thesis committee and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the committee with reference to content and form.

The thesis is, therefore, accepted in partial fulfillment of the requirements for the degree of Master of Arts.

11/18/92
Date

Joy Rogers
Director's Signature