A SURVEY OF PEDIATRICIANS CONCERNING THEIR ATTITUDES AND PRACTICES IN REGARD TO CHILDREN WITH LEARNING AND BEHAVIOR PROBLEMS

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INTRODUCTION

Each year a number of children are identified as having learning and behavior problems. For instructional purposes, many of these children are categorized as learning disabled (LD) by the educational system. Lerner (1985) has reported that 4% of the total school-aged population are students in classrooms for the learning disabled.

Frequently it is argued that the most appropriate treatment of children with learning and behavior problems should involve a multidisciplinary approach (Boder, 1976; Denhoff, 1976). Hogan and Ryan (1976) recommend that one of the key members of the multidisciplinary team should be either a family physician or pediatrician (Levine, Brooks, and Shonkoff, 1980). Physicians play an important role in the identification and treatment of children with learning and behavior problems (Sommers, 1983; Lyon, 1980). Surprisingly, though, little research has been conducted that investigates the behaviors and attitudes of physicians when they deal with these children.

Only two surveys have been reported which focus on how pediatricians deal with the atypical child. Although only a small number of physicians responded in each study, both studies indicated a need on the part of physicians for a more sophisticated understanding of the dynamics of child

development as well as for more expertise in the assessment and management of atypical children (Shonkoff, Dworkin, Leviton, 1979). For more effective communication to occur among parents, educators, and physicians, more research is needed to learn about how pediatricians are dealing with their LD patients' school related problems.

To learn more about pediatricians and their beliefs and practices related to atypical children, a survey of pediatricians was conducted. (see Appendix G) The survey focused on the following areas of concern:

1) The pediatrician's definition of learning and behavior problems as it relates to the term learning disabilities .
2) The pediatrician's practices with respect to diagnosis of children with learning and behavior problems.
3) The pediatrician's practices with respect to treatment of children with learning and behavior problems.
4) The extent of the pediatrician's educational training in areas related to the diagnosis and treatment of learning and behavior problems.

The need to include each of these four areas will be briefly discussed.

Definition

The federal definition for the term learning disabilities is in common use. Conceptually, learning disabilities is, "a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental asphasia. The term does not include children have who learning problems which are primarily due to visual, hearing, or motor handicaps, of mental retardation, or emotional disturbance, or of environmental, cultural, or economic disadvantage" (Federal Register, 1977).

The federal definition further clarifies operationally that a student has a specific learning disability if, 1) the student does not achieve at the proper age and ability levels in one or more of several specific areas when provided with appropriate learning experiences, and 2) the student has a severe discrepancy between achievement and intellectual ability in one or more of the following areas: a) oral expression, b) listening comprehension, c) written expression, d) basic reading skill, e) reading comprehension, f) mathematics calculation, and g) mathematics reasoning (Federal Register, 1977).

Although the federal government has attempted to define learning disabilities clearly, there still exists a problem in

distinguishing students with learning disabilities from those with other school-related problems (Shonkoff, et al., 1979). The federal definition remains subject to interpretation; therefore, learning disabilities means different things to different people. For this reason, in this study a broader term was used. Children were described as having learning and behavior problems, which included the learning disabled as a subset.

The phrase learning and behavior problems was selected because it can be used to describe children who have one or more difficulties such as: 1) perceptual processing problems 2) difficulty in reading, 3) difficulty in writing or mathematics, 4) poor problem-solving ability, 5) achievement below potential, and/or 6) poor social skills.

For the purpose of this study, learning and behavior problems is a broad term used to describe children who have difficulty in school that is not the result of mental retardation, severe emotional problems, or vision or hearing loss that is not correctable. One purpose of this study was to learn what pediatricians' conceptions of learning and behavior problems, including LD, are. Suggested causes and characteristics were included on the survey for the pediatricians' consideration and not specific definitions of LD. In this way it was hoped that the survey content would not lead the physicians to a definition of LD that was not their own.

Diagnosis

Pediatricians are thought to play an important role in the diagnosis and treatment of children with learning and behavior problems (Levine, 1982; Levine et al., 1980). Despite this, few studies exist that examine the actual practices and beliefs of pediatricians whose patients are experiencing these difficulties. The present study attempted to accurately describe what the practices and beliefs of pediatricians are, when confronted by their patients who have school-related learning and behavior problems.

Several methods of diagnosis are discussed in the literature that have been recommended by physicians who treat their patients with learning and behavior problems (Aman, 1980). Methods for diagnosis of these problems include 1) cognitive developmental assessments; 2) examinations for fine-motor and gross-motor function; 3) educational assessments; 4) screening for vision and hearing problems; 5) examinations for soft neurological signs; 6) chromosomal testing; 7) allergy testing; 8) asking questions of the patients and/or parents concerning the child's home environment, discipline procedures, nutritional history; and 9) asking questions of the teachers (McGrady, 1971; Sleater, 1982; Sommers, 1983; Freeman, 1976). The extent to which pediatricians used these methods was surveyed.

Treatment

Some of the treatments discussed in the literature that have been prescribed by physicians for their patients who have learning and behavior problems are 1) tranquilizers, 2) antipsychotics, 3) stimulants, 4) antidepressants, 5) megavitamins, 6) elimination of foods with certain dyes/preservatives, 7) educational intervention, and 8) individual or family counseling (Crook, 1980; Aman, 1980; Mattes, 1983; Gadow, 1983; Adler, 1979). The literature indicates that some of these treatments are often recommended and others are almost never recommended. The survey sought to document which treatments pediatricians prefer for children with problems.

Educational Training

The task of finding a physician who is competent to deal with learning and behavior problems is difficult because specialized training programs are few (Levine, Clark, Shonkoff, 1979). This study attempts to explore the educational training/preparation of pediatricians in areas related to the diagnosis and treatment of children with learning and behavior problems. An effort was made to determine if physicians perceived a lack of instruction in their medical training program, in areas such as development or allergy testing, or if they perceived their instruction in these and other areas as having been adequate.

Organization of Dissertation

Chapter two discusses the current literature on pediatricians and their experience with children who have learning and behavior problems. The fact that it is important for physicians to identify the child with learning and behavior problems and intervene as early as possible is discussed, along with the notion that physicians should be familiar with treatments to remediate learning and behavior problems when they are diagnosed. The potential role of the pediatrician in the total remediation process for the child with learning and behavior problems, and trends in pediatric medical training programs are also addressed. Finally, the review documents the limitations of the current literature concerning physicians' attitudes and training in the area of learning or behavior problems.

Chapter three outlines the procedures and instrument used to survey the physicians. Two hundred and seventy-four pediatricians in Oklahoma were sent surveys. Chapter three also explains the limitations and assumptions of this particular study.

In chapter four, analysis of the data is discussed, and in chapter five, the results of the analysis are used to suggest their meaningfulness to physicians, parents, and educators who work with children with learning and behavior problems. A copy of the questionnaire is provided in Appendix G.

Problem Statement

The purpose of this study was to determine how pediatricians in Oklahoma define, diagnose, and treat their patients who have learning and behavior problems. In addition, the pediatrician's perceptions of the adequacy of their medical training for dealing with such children was examined. For the purpose of this study, learning and behavior problem is a broad term used to describe children who have difficulty in school that is not the result of mental retardation, severe emotional problems, or vision or hearing loss that is not correctable.

Research Questions

1) What is the percentage of children seen by pediatricians in Oklahoma who are reported by parents or teachers as having school-related learning and behavior problems?
2) What commonalities exist among pediatricians in Oklahoma in the conception of children with learning and behavior problems?
3) What diagnostic procedures do pediatricians in Oklahoma use for their patients who have learning and behavior problems?
4) What are the most common treatments recommended by pediatricians in Oklahoma for children with learning and behavior problems?

5) Do pediatricians in Oklahoma feel they have been adequately prepared to deal with their patients who have learning and behavior problems?

6) What causes and characteristics do pediatricians least associate with LD?

7) What causes and characteristics do pediatricians most associate with LD?

8) Are there differences among pediatricians in the number of diagnostic procedures, the number of treatments they use and perceived adequacy of training, depending upon the number of years they have practiced medicine?

9) Are there differences among pediatricians in the number of diagnostic procedures, the number of treatments they use and perceived adequacy of training, depending upon the size of the community in which they practice?

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

Most parents seek a pediatrician's advice only for preventative medical reasons or for a specific illness of their children. Some parents, though, seek the counsel of pediatricians because their child does not appear to be learning according to normal developmental patterns. The physician in this situation should ideally be knowledgeable concerning intervention, diagnois, and treatments that are effective with children who have problems learning. At a minimum, parents expect pediatricians to be capable of determining if a medical condition exists in their child and, if so, whether that condition is interfering with learning and related development (Sommers, 1983)

The importance of pediatric intervention, methods of diagnosis, and alternative treatments for children with learning and behavior problems are discussed in this chapter. Parents, educators, and pediatricians themselves have expressed opinions concerning the role of the pediatrician in the life of the child with learning problems. The current lack of adequate preparation of physicians in the area of learning difficulties

is discussed along with current curricular changes that are being incorporated into medical training programs.

In the discussion that follows, pertinent literature, including books and journal articles is reviewed. In addition, the author interviewed two practicing pediatricians, one teaching pediatrician, and one child psychiatrist as part of the development of the Pediatric Survey. Excerpts of transcriptions of these interviews appear in Appendixes A,B,C, and D.

Definition of a Learning Disability

The school achievement of many children often fails to meet adult expectations. The educational profession has chosen to call some children with school problems learning disabled, for purposes of delivery of educational services (Levine et al., 1980). Yet, the concept of learning disabilities lack clear definition. No widely accepted taxonomy or method of identification exists, and few therapies are backed up with sufficient data attesting to their effectiveness (Silver, 1975).

A number of authors have attempted to define learning disabilities. Gellis (1975) says the term learning disabilities is used to describe the child who has innate difficulty with specific aspects of learning, which is clearly not a problem of slow or delayed maturation. Richardson and Freeman (1975) describe learning disabled children as those with school difficulties that are not always specific nor clearly related

to neurological impairment. They say that such children are unable to achieve in basic school skills in a regular classroom with standard teaching techniques, yet they have normal intelligence and no organic problems. Birch (1970), in his book Brain Damage in Children, said the term learning disabilities covers three groups of children: "1) those with known brain injury who show clearcut neurological deficits; 2) those with problems outside of their control, such as severe environmental, social, and emotional difficulties which interfere with learning; and/or 3) those who are considered to exhibit a developmental or maturational lag, which may be accompanied by other signs of immaturity (e.g., soft signs and peculiar configuration of psychological test findings)." (p. 113)

Another version of the definition of learning disability indicates that the child has adequate mental abilities, sensory processes, and emotional stability, but specific deficits in perceptual, integrative or expressive processes which severely impair learning efficiency (Denhoff, 1974).

The definition of a learning disability currently used by the federal government is as follows:

> Children with specific learning disabilities exhibit a disorder in one or more of the basic processes involved in understanding or in using spoken or written language. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling or arithmetic. They include conditions which have been referred

> to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia, etc. They do not include learning problems which are due primarily to visual, hearing or motor handicaps, to mental retardation, emotional disturbance or to environmental disadvantage (Lerner, 1985 and Federal Register, 1977, p. 7).

The federal definition is the most frequently used definition, and is one of the most inclusive of those in the literature (Levine et al., 1980).

Defining terms is only an initial step in solving problems, as it only provides a means of discussing them (Senf, 1981). The present inability to agree on a definition for learning disabilities derives in part from its relative newness, but more so from the complexity of the problems in children to which it refers, and the variety of conceptual frameworks from which various professionals and parents view the term (Senf, 1981). "Neither the complexity of the conditions to which the term learning disability might be applied, nor the differences in the conceptual framework within which different individuals come to understand the term learning disabilities, can be clarified simply by proposing an arbitrary definition" (Senf, 1981, p. 4). The term means different things to different people. Much of the terminology used is nothing more than some educator's belief (McGrady, 1971). Despite this, the terminology that grows up around definitions serves as a common vehicle both

to extend awareness of the condition to others and to communicate more clearly about it (Senf, 1981).

The definition selected to refer to learning disabled children effects them in a number of ways. Ultimately, the label employed and the resulting treatment of the child has a profound impact on the child's educational future.

Current definitions seem to stress academic failure as a central characteristic of learning disability (Mercer, 1983) Pressures are great that are put on children with learning problems which result from weakness in central nervous system functioning involved in learning to read, write, and spell. These children may be told by teachers, parents, and physicians, "You could do better if you tried" (Keele, 1975, p. 42). For any child who is doing his best academically, this pressure is unfortunate. Some children can begin to learn to read and write at age three, but others need much more readiness training and special assistance in the early years of school (Machado, 1985). For the child who needs additional practice in readiness skills, early intervention and diagnosis is of great importance (Bigge, 1982).

Early Intervention

Some believe it is the responsibility of pediatricians to recognize their patients that may encounter school problems long before those patients enter school. Tarnapol (1981) says the earlier children with learning problems receive help, the better off they are. He believes that early intervention

efforts should be based on the desire to prevent learning problems from developing, or at the very least, to offset the negative consequences of continuous failure.

Findings from the Satz, Fried, and Ridegeair (1976) studies indicate that high risk children, those who could benefit most from early intervention, present a general developmental lag in perception, cognition (especially memory), and language which can be detected before a child enters kindergarten. Reports from longitudinal studies reveal that social development, as well as the status of perceptual, cognitive, and language skills, is an important indicator of later success in school (Mercer, 1983).

Results of studies of teacher observations have also indicated that children who later experience failure in school stand out in kindergarten. Records of children that have been referred for evaluation, because they are not learning to read, frequently include statements similar to these: has difficulty following directions, speech and language are immature, cannot participate in games that require coordinated movements, cannot hold a pencil properly, does not write his/her name, does not know birthdate, will not pay attention to directions, never finishes work, needs attention (Levine, 1981).

The term at risk has been used to refer to children who can expect to have difficulty learning in school (Levine et al., 1981). Decisions about at risk children in kindergarten will probably be most reliable and most useful if they are made on the basis of several sources (Tarnapol, 1981).

Information obtained from medical examinations, developmental and family histories (Lyon, 1980; Keele, 1975), classroom observations, samples of children's work, and teachers' ratings (Papazian, 1968) represent types of data that can be used to arrive at judgments about at risk children (Tarnapol, 1981). The value in this type of data is that it is both reliable and relatively easy and inexpensive to obtain (Tarnapol, 1981).

According to Denhoff (1972), a child may become at risk for a number of reasons: 1) low birth weight 2) bad or improper development 3) respiratory distress syndrome 4) high bilirubin level and/or 5) hemolytic syndrome. Denhoff (1972) and Wissinger (1966) are convinced that, when an at risk child is identified during infancy and provided with early appropriate stimulation and guidance, the likelihood of academic failure and emotional breakdown in the future is appreciably lessened. According to Denhoff (1972), pediatricians need to develop an at risk profile on their patients, which can be used to inform nursery or day care officials of these characteristics "without provoking anxiety or creating more labels." (p. 81)

Often learning disabled children are not spotted until after they enter and fail in school (Tarnapol, 1981). It is a fortunate child who is seen by his/her family physician or pediatrician and is diagnosed at an early age, so that intervention and prevention techniques can begin immediately (Freeman, 1976). Yet, it is not easy for the physician to deal with this problem, because the problem of a learning

disabled child may require tools which are not typically tools of the physician (Schmitt, 1975).

In an effort to learn if Oklahoma pediatricians are using diagnostic methods that could identify an at risk child, specific questionnaire items were developed. In addition, physicians were given the opportunity to respond to questionnaire items relating to whether they believed characteristics such as: immaturity of speech and language, social development, or academic difficulty are associated with the term learning disabilities.

Diagnosis of Learning Disabilities

The first responsibility of the physician is to provide an accurate diagnosis, if possible (Committee on Children with Disabilities, 1985). According to Sleater (1982) diagnosis means simply accumulating sufficient information about the patient to permit the physician to feel comfortable in making a decision about a potentially useful mode of therapy. Generally, the physician has had the formal training necessary to assess pathology and recommend treatment (Denhoff, 1972).

Much literature is available concerning the diagnosis of learning disabilities by physicians (Freeman, 1976). Denckla (1973) argues that, since the treatment of learning disabled children is largely educational and psychological, a physical examination, that attempts to relate the child's problems to underlying physical causes, is not necessary (Denckla, 1973).

With the opposite viewpoint, Freeman (1976) says that the physician's first priority should be to ascertain whether the child has physical disabilities which may be remedied, particularly disorders of vision and hearing. He also suggests that physicians concern themselves with physical ills such as thyroid disorders or metabolic disorders, both of which can impair intellectual and emotional performances.

Several levels at which physicians can evaluate meaningfully five or six year old children to determine if they have the skills necessary to perform in the first grade have been identified (Bax, 1976). First, physicians can include a series of observations as part of their standard office visit. If they suspect deviant function, whether pathological or school-related, they can refer the child for more intensive evaluations. Boder (1976) says a preliminary evaluation must include 1) a complete physical examination including body measurements, 2) functional skill assessment, and 3) a brief survey of visual and auditory perceptual skills (Denhoff & Tarnapol, 1971).

Children with a head size below the tenth percentile appear to have significantly more behavior and learning disorders than children who fall within the norms (Papazian, 1968). The functional skill assessment, when related to academic efficiency, includes an evaluation of integrated skills in a range of levels starting from gross motor to integrated language functions (Borowitz & Glascoe, 1986). The visual and auditory perceptual skills include assessment

in gross motor skills, fine patterned movements, sensory functions, sensory integration, and complex integration (Boder, 1976).

During an interview with Dr. Merl Simmons, an Edmond, Oklahoma pediatrician, he stated that pediatricians must be responsible for all factors that affect a child's development and progress. He personally gives a routine neurological exam to his patients he suspects might have a learning disability. The routine neurological exam includes methods for determining coordination, agility, strength, and balance. If after performing the routine neurological he determines the expanded neurological to be necessary, he then proceeds to give this more detailed examination.

Cantel and Carlson (1978) also list recommendations for the physician: "1) interviewing the parents, 2) evaluating the child psychologically, 3) examining the child physically and neurologically, 4) obtaining information from the school, and 5) performing a baseline bloodcount and urinalysis." (p. 49)

Keele (1975) makes the observation that the physician should be aware of the role of the central nervous system in learning to read, write, and spell. He says physicians have the first opportunity to check these functions prior to the child's school entrance, and that physicians can play an important role in the evaluation of central nervous system weaknesses and in alerting the school and parents to the child's special needs. Possible clues to central nervous system dysfunction can be obtained by asking questions of

parents or by acquiring records of the child's medical history (Keele, 1975; Denckla, 1973). Denckla (1973) specifies that the physician should develop an Index of Suspicion from the following clues, no one of which alone will lead to a diagnosis. Illness or difficulty of the mother during pregnancy, including spotting, bleeding, or toxemia, should be noted. Birth history, including prematurity, prolonged or precipitous labor or unusual delivery, or perinatal anoxia is of concern. The child's neonatal behavior, including sucking ability, sleeping patterns, and general activity compared to that of siblings should be considered. Developmental milestones in comparison to siblings, especially speech development and large and small motor coordination should be documented. Illness or accidents that could cause central nervous system insult or injury, such as infections or severe dehydration in infancy should be recorded. A group of symptoms associated with learning problems which make up the hyperkinetic syndrome (i.e. distractibility, short attention span, emotional liability, low frustration tolerance, poor impulse control, overreactivity to excitement, temper outbursts, and clumsiness) should be noted (Denckla, 1973).

Although the exact role of the physician is controversial, Sommers (1983) and Parmalee (1985) state that the physician is an important link in the diagnostic and evaluation process leading to a confirmation or ruling out of the child's suspected learning disability. As has been stated, the diagnostic procedures physicians use to help them in determining potential

learning problems are quite varied. The present study attempted to pinpoint the exact diagnostic procedures being used by Oklahoma pediatricians and their relevancy to children with learning problems.

Treatment Programs for the Learning Disabled

Ideally, as information is gathered after observing many children, patterns will emerge that suggest that certain types of intervention are or are not likely to be advantageous to certain types of children. While Wissinger (1966) said treatment for the learning disabled child is usually educational and remedial in nature and not medical, Abroms and Kodera (1978) said that learning disabilities typically are treated non-medically, but that they should be treated medically. Although only a small percentage of children with learning disabilities will be found to have readily identifiable and treatable medical disorders, it is extremely important to treat those disorders that are discovered (McGrady, 1971).

When the medical diagnosis is made, it must include a determination of the feasibility of medical intervention (McGrady, 1971). Therapeutic interventions that have been shown to alleviate the patient's problems, at least temporarily, have been identified. The physician may recommend specific medications, behavior modification, and/or child and parent modeling or counseling. Supportive programs in various combinations can often improve a child's

emotional status so he can be taught effectively (Denhoff, (1974).

Drug Treatment

Often the use of drugs is prescribed for children who have learning disabilities, because some believe that these drugs improve learning (Conners, 1972). Drug treatment, when needed can be a very important cog in the total program of rehabilitation for the child with specific learning problems.

Drugs produce different reactions in each individual. The administration of drugs, in some cases, can be regulated to increase the attention span of a child to help him/her focus on improving responsibility and effectiveness (Huessy, 1985). Some children with hyperkinetic syndrome show dramatic improvement on medication, particularly that which appears to enable them to screen out multiple stimuli and attend appropriately (Keele, 1975; Barley, 1977). In the experience of Huessy (1985), the first drug of choice for the child who has difficulty focusing or tuning in is Ritalin, with the dosage tailored to the requirements of the individual child. The drug should be continued as long as there is an obvious beneficial effect.

Actual clinical indications for the use of stimulant medication remain controversial. However, two specific symptoms appear to respond most dramatically to this therapy (Conners, 1972; Werry, 1970). The first symptom is poor

selective attention and concentration. With this common dysfunction, children seem to fatigue easily when trying to concentrate (Levine, 1981). They may demonstrate a short attention span, fidgeting, and distractibility or they may tend to focus on irrelevant stimuli in the environment.

Another symptom that seems to respond to stimulant medication is impulsivity. Impulsivity is commonly seen in combination with weaknesses of attention. Impulsive children may have difficulty with tasks that require reflection, advanced planning, and organization (Kagan, 1965). They may have behavior problems caused by their tendency to do things too quickly, without thinking in advance (Levine, 1982). Their academic work may suffer from their carelessness and their lack of a purposeful approach to tasks. Even their handwriting may reflect their impulsivity (Levine, 1982).

The effects of psychostimulant medication on impulsivity in children has been subject to empirical investigation because of its widespread use, cost efficiency, short-term effects of sustained attention, activity level, academic performance, and classroom behavior (Rapport, DuPaul, Stoner, Birmingham and Masse, 1985) Rapport, et al (1985) suggest that of greater concern is whether controlling impulsivity will actually produce improvements in skills needed to perform well in school such as reading recognition, serial learning, inductive reasoning, or intelligence.

Although stimulant medication is often beneficial for these children, the reasons for its effectiveness are unclear

Levine, 1982). Medication controls; it does not cure (Huessy, 1985). However, carefully directed and controlled use of psychostimulant medication can provide inner structure and symptom control that some children need (Howell, Huessy, Hassuk, 1985). Medications such as Dexadrine or Ritalin may be life preserving to children who have the tendency to react to situations without any forethought (Denhoff & Robinault, 1960). Although Ritalin has no direct effect on isolated academic skills such as reading, pharmaceutical management with newer compounds may have a direct positive effect on reading (Duane, 1985). One compound known as Piracetam has been reported to have a favorable effect on reading rate and spelling in dyslexic persons who are also receiving educational intervention (Westerman, 1982).

Vitamin Treatment

Another therapeutic treatment that physicians have recommended to learning disabled children is megavitamins. Since the 1950's, evidence has been accumulating that indicates biochemical conditions as the cause of a number of abnormal physical, socio-emotional, language, and learning states (Adler, 1979). Vitamins do facilitate metabolism, a biochemical process, and when they are not present in sufficient quantity in the body, metabolism is deranged (Adler, 1979), but whether or not the consumption of megavitamins actually prevents abnormal physical, emotional, language or learning states has as yet, not been proven.

Nevertheless, Cott (1971) reports that some hyperkinetic children have been helped by the use of large amounts of water soluble vitamins.

Diet Treatment

Diet therapy emerged as an alternative to medications, because of assumptions that food additives cause allergic reactions in children with hyperkinetic syndrome (Sommers, 1983). Clinical case reports have also substantiated that the significant reduction of food additives will decrease distractibility and lengthen attention span (Kinsbourne & Swanson, 1980). Allergic reaction can be determined by looking at the pattern of central nervous system responses. One common reaction has been called the allergic tension fatigue syndrome, which causes the hyperactive child to tire after eating certain foods. The most effective method of discovering what the child is allergic to is to impose a total fast from all foods, medicines, and beverages for 4 to 8 days. The foods can then be introduced in a way to be able to identify particular responses as being the result of sensitivity to one particular food (Hawley & Buckley, 1974). During the first two days of fasting, the person characteristically is irritable and has strong craving for foods to which he has allergy or addiction (Hawley & Buckley, 1974). The difficulty with this method is that most children could not go without food for this time period.

Since food allergy has been considered in hyperkinetic children, evaluation of sensitivity-to-food contaminants such as pesticides, fertilizers, or herbicides has also become part of the evaluation (Hawley & Buckley, 1974). The presence of aniline coal tar dyes in processed foods has been found to be causally related to behavior disturbance in a significant number of hyperkinetic children (Hawley & Buckley, 1974). A simple method of testing for sensitivity to these dyes can be used in the physician's office. Sublingual drops can be given and within 15-20 minutes of administration, the patient who is allergic will have a headache or some other somatic complaint (Hawley & Buckley, 1974; Lockey, 1973).

Crook (1980) studied 182 patients that complained of hyperactivity or who had similar symptoms. He did a comprehensive work-up on each patient, and they were tested for food allergies. A specific food was removed one at a time and symptoms were noted. Then that food was returned. He determined that food, food colors, dyes and additives cause hyperactivity, and he recorded which foods to avoid (Crook, 1980).

Powers (1974) has said that cerebral tissue is dependent upon glucose and that for any child to think efficiently, his brain must have the right food. Tintern (1955) showed that behavior and learning are influenced by blood sugar levels, and that properly fed children are more likely to feel well and to perform better (Powers, 1974). Although there is some evidence that certain foods, food colors, dyes, or additives affect

hyperactive children differently than non-hyperactive children, diet therapy is not used frequently by pediatricians to remediate learning or behavior problems. In direct contradiction to the studies cited above, more recent studies indicate that no relationship exists beatween diet and hyperactivity (Mattes, 1983).

Summary

A sensitive pediatrician will want his or her patient to be healthy in all areas: physical, emotional, social, and mental or intellectual. To insure health in these areas, pediatricians have recommended drug therapy, megavitamins, and diet modifications for their patients with learning and behavior problems. Little information is available on the extent of use of these therapies in Oklahoma.

Pediatric Role in Working With Learning Disabled Children

The role physicians play in society is implied rather than defined (Sommers, 1983). Their role varies from one patient to the next (Sommers, 1983), and everyone who attempts to define that role has an opinion about what it should include. Educational specialists, parents, and physicians themselves have discussed their perceptions of the physician's role in the community.

Involvement in Educational Concerns

Physicians are usually told by parents how their patient operates in school (Denhoff, 1974). For the learning disabled child, physicians will probably use some referral sources such as psychologists and/or educators to assist them in carrying out any educational changes they might recommend (Denhoff, (1974). Because physicians communicate with individuals representing the school, physicians must be able to understand the language school personnel use, such as school achievement and task analysis, (Papazian, 1968; Schmitt, 1975). Not only does the physician need to understand educational terminology, but more specifically, Carla Lyon (1980) said pediatricians should discuss with teachers the types of evaluations teachers do and reasons for the choice of techniques used with a particular child. She goes on to say that pediatricians should become familiar with various theories about learning disabilities and the goals of special education (Lyon, 1980).

A child's performance in school has a significant impact on his/her self-esteem and ultimate productivity and life quality (Levine, 1982). It could be to the physician's advantage to learn which teachers in a particular school are best suited and least suited to the special needs of children (Levine, 1982).

Levine (1982) suggests that ideally the physician and teacher should form an alliance, and that they should collaborate in the diagnostic process of children with whom they work,

as well as in management and follow-up. Physicians can have a role in insuring their patients an educational environment that will be both comfortable and challenging (Wissinger, 1966).

Role of Pediatricians As Perceived by Parents

Pediatricians are perceived by parents as having a number of roles in the community. Dembenski and Mauser (1977) conducted a survey in which 234 families responded. The objective was to solicit suggestions from parents concerning what they wanted to be told by physicians about their child with school problems. On the survey, these items were noted as being very important to parents: 1) they want the diagnosis as soon as possible, 2) they want to ask questions, 3) they want terminology used that they can understand, 4) they want to be referred to someone else if the doctor they have selected does not want to work with their child, 5) they want the doctor to be willing to talk to their child's teacher about his problems, 6) they want to be given material to read, 7) they want to be told about health problems the child may have, 8) they want the doctor to require that both parents discuss their child's problems with him/her, 9) they want opinions of how well their child can be expected to learn in school, 10) they want copies of reports, and 11) they want a hotline service for advice.

The pediatrician often is placed in the role of providing support to the parents of the child with learning disabilities (Keele, 1975). Pediatricians can meet this responsibility by helping to alleviate anxieties and possible guilt on the part of the parents. Additionally, they can assist parents in adopting a realistic approach to the management of their child and in furthering the confidence of the parents in the child's abilities.

Role of Pediatricians As Perceived by Others

Several authors have discussed attributes they believe characterize the role of pediatricians. Richardson (1975) and Freeman (1976) lists these roles as the physician's responsibility: 1) to get an adequate history and perform a physical examination; 2) to apply their expertise in noting the possibility of unrecognized sensory deficits and medical conditions as the cause or contributor to a learning difficulty; 3) to gain the child's, family's and school's confidence in their ability to work with the child and to make educational and other recommendations; 4) to find out family member's fears and attitudes about the problem; 5) to find out which profesisonals in their community are helpful, not depending upon paper qualifications; 6) to decide how extensive to make the assessment, whether or not to suggest that evaluations be performed by a neurologist and/or psychiatrist; 7) to recognize if management changes by the

parents are necessary, and to recommend them; and 8) to use psychopharmacologic agents with discretion, and only after an individual trial with the patient for whom it is being considered. Richardson (1975) and Freeman (1976) believe that physicians have to know their limits, the assets and liabilities of their colleagues, and the controversies in etiology, assessment, and management in order to be most helpful to their learning and behavior problems.

Eric Denhoff, (1974) has some different perspectives concerning the repertoire of skills the physician must have and the role they must play. He (Denhoff, 1974) says the physician must have "1) a keen knowledge of growth and neurodevelopment, both normal and abnormal, 2) an awareness of the psychological processes involved in learning and the educational processes in teaching, 3) political sensitivity to the rights of children to assure that appropriate legislation is being recommended, and if mandated, carried out, 4) a background of the psychosocial aspects of medicine, 5) a knowledge of psychopharmacology and/or 6) an ability to be tolerant to the problems of schools and the establishments that support them, and yet to insist on top level performance from them." (p. 229)

Denhoff (1974) continues his discussion by differentiating between roles and responsibilities. He says physicians' responsibilities should include "1) being the child's advocate, 2) identifying problems early, 3) providing high quality health care, 4) referral and interpersonal

coordination, 5) discrimination of the program and its interpretation to the family." (p. 230)

Frostig (1964) has stated that the physician's most effective role can be achieved if they 1) make themselves heard regarding the conditions of physical and mental health that are necessary for optimum learning, 2) can point out to parents any need the child has for special education (see also Graff, Scott, Stehbens, 1974), 3) are aware of their limitations as well as the scope of their ability to assist the educator, 4) act as a liaison among the teacher, family and community (see also Schmitt, 1975), 5) join their colleagues to collect information on their evaluation of schools, tutoring services, and educational clinics within the community, and 6) take advantage of the teachers' contact with the child to check on the appropriateness of any medication recommended.

Holman (1972) adds to the list by indicating that physicians should be prepared to work in school health programs, to participate in parent-teacher education, and to actually enter classrooms to interact with children and teachers. In addition Levine (1982) mentions that well-trained and motivated physicians can participate in various aspects of the assessment and management process. They can be members of the evaluation team that composes the child's individual educational program. Sommers (1983) believes responsibility goes beyond this to include a willingness to testify at due process hearings conducted regarding the child. In Oklahoma,

participation on the evaluation team is mandatory, when there are significant issues that require medical attention (Levine, 1982). Concerning medical management, Levine (1982) believes it is the responsibility of the pediatrician to help school personnel involved with the child to understand therapeutic and side effects of any pharmacological interventions they recommend.

Role of Pediatricians As Perceived by Physicians

The most comprehensive view of the role of the pediatrician is recorded in Levine's et al. (1980) book entitled A Pediatric Approach to Learning Disorders. They discuss these specific responsibilities as constituting a basic pediatric role:

1. Facilitation of independent evaluations; the independent evaluation can sometimes help in the mediation of potential conflicts, and this can usually be conducted in the physician's office.
2. Early screening and detection; routine screening of all children, with particular emphasis on those considered to be at risk, can be incorporated by the general pediatrician.
3. Continuity of care; continuous longitudinal care for families enables the pediatrician to acquire valuable information in helping to formulate the problems of a child who is not learning.

4. Providing a family perspective; the physician is privy to knowledge of other family members and the ways in which they interact with the child who is having difficulties. This kind of information can be helpful to the school and other professionals working with a student with learning problems.
5. Counseling and demystification; a pediatric role involves the opportunity to offer counseling, when parents request.
6. Community education; the physician can play a vital role in helping others to be aware of constitutional, neurological, and health related factors affecting some children with learning problems.
7. Scientific consumer advocacy; it is essential that the pediatrician serve as a scientific advisor to families helping them to discriminate between fact and fiction, between well established interventions and someone's expensive unresearched treatment.
8. Medical and developmental consultation; they have an important role as a resource regarding child development and health related issues.
9. Informed advocacy; a physician needs to be knowledgeable about issues, diagnostic techniques, and available resources.
10. School health; the pediatrician with a strong developmental orientation can serve as an on-site con-

sultant for children with learning and behavior problems.

11. Follow-up and monitoring; the physician should provide ongoing monitoring. Follow-up visits should be scheduled and therapeutic alternations recommended as needed.
12. Impact on public policy legislation; the pediatrician should remain informed and involved in the legislation at the local, state, and national levels.

Summary

There has been no single list composed that absolutely defines what the pediatrician's role is or should be in the total process of working with the learning disabled child. The consensus is only that the physician's responsibilities are multiple. The present study investigated what physicians in Oklahoma perceive their role to be with respect to the diagnostic and treatment methods they choose for their patients with learning and behavior problems, so that parents may have realistic expectations about the physician they choose.

Medical Preparation of Pediatricians

Recommended Changes for Medical Training Programs

The task of finding a physician who is competent to deal with learning disability problems is difficult (Denhoff, 1974).

The field is relatively new and controversial, and training programs are sparse (Denhoff, 1974). Papazian (1968), a practicing pediatrician, has said that psychologists have expressed to him that physicians are educationally behind in understanding the problems of learning disabled children.

Keele (1975), says pediatricians should be specialists not only in childhood disease but also in their knowledge of growth and development, as well as emotional and mental growth and development. Keele (1975) believes medical education has been deficient in training physicians in the area of childhood medicine and in applying this knowledge to assist the school system in the prevention of problems. He (Keele, 1975) has hypothesized that the only way for physicians to really understand the problems of learning disabled children is to introduce physicians to a foreign alphabet to help them face what learning disabled children face in school.

Lyon (1980) has discussed the need for the placement of medical students and pediatric residents in education and/or psychological settings in addition to their medical practice. Becker (1978) agrees that physicians need more training in child development, psychology, and education.

Dembenski and Mauser (1977) suggest the inclusion of specific skills on interacting with parents of learning disabled children as a part of the training programs of physicians. Denckla's, (1973) contention is that residency training should provide awareness to the physician of what is and what is not known about the field of learning disabilities.

Levine (1982) differentiates between types of pediatricians this way: 1) one who works full-time in developmental and behavioral pediatrics, usually employed by major hospitals or child development centers, and may be active in training programs, diagnostic centers, and research; 2) one who is basically involved in primary care, but has a special interest in child development and/or behavior problems and who may also be school consultants or physicians; and 3) one who is in general primary care practice, but has no special interest in school related problems. The third group is the largest. If each of these types of physicians does in fact exist, it would be important for parents to be aware with which type they and their child want to deal (Levine, 1982).

Programs That Have Been Incorporated Into Medical Training

Levine (1982) has made the comment that some pediatricians feel uncomfortable dealing with children who have school problems, because they feel they lack the educational terminology to communicate effectively. Others have expressed frustration in not having more input concerning their patients than the schools will let them (Levine, 1982). Improved education in the area of collaboration with school personnel should result in a larger proportion of physicians who can interact meaningful with schools on behalf of children who are failing (Levine, 1982).

Typically, pediatricians are trained as generalists, but over the last several years, the U.S. Department of Education's Office of Special Education has supported a number of programs designed to improve physician education in the area of handicapping conditions (Levine et al., 1980). For example, at the Children's Hospital Medical Center in Boston, minifellowships have been established through which physicians in private practice are invited to pursue a month of intensive training in developmental pediatrics (Levine et al., 1979). Seminars, case studies, supervised clinical experience, and visits to community facilities are aspects of this particular center's comprehensive curriculum.

A faculty development program in which future professors of developmental pediatrics receive training for several years has also been incorporated at the Children's Hospital Medical Center in Boston (Levine, 1980). The American Academy of Pediatrics has also sponsored a series of workshops on handicapped children for practicing pediatricians which speaks to the physician's involvement in Public Law 94-142 (Powers & Healy, 1982).

The Office of Special Education at the Ohio State University's Nisonger Center has supported a curriculum development project. There, specialists from all over the United States have collaborated to compile a one-month curriculum package for pediatric residents, which is being implemented and evaluated in many training centers (Guralnick, Richardson, & Heiser, 1982).

An area in which physicians are becoming more sophisticated is in evaluation of family dynamics and assessments of environmental factors involved in school failure. Guralnick and Richardson (1980) indicate that more in this area is being included in pediatric residency training.

Duane (1985) believes "training physicians to be alert and sensitive to educational problems should begin in undergraduate medical school." (p. 9) He refers to an informal survey that suggests that 80% of the United States medical schools do provide some introduction to the patient with academic underachievement. In Duane's (1985) opinion, the reason physicians seek new information is because of requests from their patients, and that one strong motivator to continue learning is the installation of medical education credits, which are required for maintenance of licensure. Physicians, it seems, seek information where there is a clinical demand, and in the area of educational underachievement, that demand is increasing. The American Academy of Pediatrics recognizes this and has included special sessions on disorders of educability and the physician's role, and some entire issues of medical journals are being devoted to learning problems (Duane, 1985). Duane (1985) believes that better educational opportunities for physicians, improved interdisciplinary clinical practice, and more clinically pertinent research characterizes the American Medical approach to learning disorders today.

Summary

There are some positive curricular changes occurring in academic preparation programs of physicians that specifically address the needs of young patients with school related problems. It seems that parents who seek the help of pediatricians for their children with learning and behavior problems ultimately decide what the pediatricians training should be, by making the choice of one physician over another based on his/her training and experience in this area. This study attempts to determine if pediatricians in Oklahoma feel they have been adequately prepared to deal with their patients who have learning and behavior problems.

Overall Summary of the Related Literature

In the present chapter, discussions have been presented of (a) the current definitions of learning disabilities, (b) the importance of intervening early, both educationally and medically, in the life of a child with learning and behavior problems, and (c) prevalent methods being used to diagnose and treat learning and behavior problems. The role the physician has in the life of the child with learning and behavior problems as perceived by educators, parents, and physicians themselves has also been addressed. The medical training programs, specifically curricular changes that have been made and and are continuing to be made is the final topic discussed.

The present study was an attempt to gather information concerning Oklahoma pediatricians and their concept of the term learning disabilities, their methods for diagnosing and treating learning problems, and their perception of the adequacy of their medical training in the area of learning and behavior problems.

CHAPTER III

METHOD

Subjects

The sample for this study was made up of physicians from the state of Oklahoma, who specialize in pediatrics. Most were doctors who are currently practicing in pediatrics, but some were doctors who have been pediatricians and are presently serving in an academic or administrative role in the area of pediatrics. The licensed pediatricians listed in the Oklahoma State Medical Association Directory for the years 1986-87 were selected as the sample. The total number of pediatricians listed was 274. All 274 were sent a questionnaire. The age and sex of the physicians, the size of the community in which they practiced, the number of years spent in medical practice, and the percentage of professional time devoted to specific categories were the demographics requested.

As explained in the beginning of chapter four, only sixty-seven respondents submitted surveys that could be used in the data analysis. Fifty-two were males and fourteen were females. One individual did not indicate gender.

To learn the size of community in which they practiced, physicians were given a choice of three categories (large city, small city, small town). For simplification in analyzing the

data, those physicians who selected small city or small town were grouped. Forty-seven physicians said they practiced in a large city (population of 300,000 and above), and twenty said they practiced in a small city (population of 10,000 to 100,000) or town (population up to 10,000).

Physicians were also asked to record the exact number of years they had practiced medicine, including residency training. The mean number of years computed was 19.4, with a range from 3 to 52, and a standard deviation of 22.5.

A question which asked the year the physician completed the first medical degree was included to determine consistency in this answer and the answer to the number of years spent in medical practice. The mean number of years was 19.4 with a standard deviation of 22.5.

The final question relating to demographic information concerned the percentage of professional time devoted to specific activities. Since the majority (46) said 100% of their time was spent in private practice, this information was not further analyzed. The remaining 21 physicians said part of their time was devoted to academics (4), administration (3), a subspecialty (5), public health care (3), patient care in an academic setting (1), or did not specify (5).

Instrument

An instrument entitled the Pediatric Survey, was developed expressly for this study. In this and subsequent chapters, the term survey and questionnaire are used interchangeably

to refer to this instrument. The questions were derived in large part from information obtained from interviews with four physicians who are involved in pediatrics in Oklahoma. Two of the individuals interviewed were practicing pediatricians; a third had 16 years experience as a pediatrician and was teaching in the University of Oklahoma Medical School at the time of the interview. The fourth physician was a child psychiatrist who frequently has children with learning problems referred to him. Highlights of these four physicians' comments are appendixed. Content analysis of the interviews indicated that four major areas were important to these physicians: 1) diagnosing children with learning and behavior problems, 2) treating children with learning and behavior problems, 3) medical preparation of pediatricians in working with learning or learning and behavior problem children, and 4) defining learning disabilities. Under each of these areas, specific questions were developed.

Before the survey was mailed, five professionals in higher education and two pediatricians examined its content, clarity, and composition. Comments of these individuals were incorporated into its final version. A copy of the final version of the survey can be found in Appendix G.

On questionnaire item 4, the third column should have read "inappropriate procedure" rather than "inappropriately trained". Due to this error, that portion of item 4 had to be eliminated from the analysis.

In order to identify weaknesses in the Pediatric Survey a pilot study was done. The questionnaire for the pilot was eight pages in length and was mailed to 102 general practitioners. Although a 70% response rate was targeted, only one questionnaire was completed and returned. Based on the lack of responses, it was determined that the questionnaire was too long. A new questionnaire was developed that totaled four pages, which centered on the primary areas of interest in this study.

Statistical Design

The research method used was descriptive in nature because the researcher was exploring the perceptions of Oklahoma pediatricians who treat children with learning and behavior problems in their practice. Descriptive studies allow the researcher to report the current status of the group being studied.

This study was also correlational in nature in that it allowed the researcher to determine if a relationship existed between each of two demographic variables (numbers of years in private practice and size of the community in which the physician practiced) and selected other variables related to medical treatments, diagnostic practices, and perceived adequacy of medical training.

The study assumed that the pediatrician to whom the questionnaire was mailed was, in fact, the same person who responded to it. Figure 1 outlines the administration and collection procedure for the questionnaire.

FIGURE 1. Mailing and Collection Procedure

Group	January 1987	Two Weeks Later	6 Days After Second Mailing
274 licensed pediatri-cians	First survey was mailed to all 274	Second survey was mailed to non-respondents	All Oklahoma City metropolitian area doctors were telephoned and encouraged to complete the survey if they had not done so

Procedure for Data Collection

All pediatricians in Oklahoma, whose names appeared in the Medical Association Directory for the year 1986-87 were mailed a questionnaire. The questionnaire was sent to the office address listed in this directory.

The surveys were mailed in January, 1987. Each survey was sent with cover letters (see Appendixes E, F) explaining nature of the study, a stamped, self-addressed envelope, and a self-addressed card requesting the physician's address, if he/she wished to receive a copy of the final results of the study. The letter encouraged participants to return the questionnaire within two weeks after receiving it. Two weeks after the first survey was mailed a second one was mailed to all physicians except known respondents. Six days after the second survey was sent, all Oklahoma City metropolitan area pediatricians (about 36.8% of the total sample) were telephoned and encouraged to complete the questionnaire if they

had not already done so. When responses were obtained, the data were analyzed.

Data Analysis

All analyses were performed using the SAS statistical package and the default options within (SAS Institute Inc., 1985).

Two-tailed tests were used with the correlations associated with research questions 8 and 9, since the direction of the expected coefficients was not clear in advance.

CHAPTER IV

RESULTS

Introduction

In January, 1987, 274 questionnaires were mailed to Oklahoma pediatricians. Of the 274 surveys mailed, 88 were returned. Although 88 were returned, the largest number that could be analyzed for any particular research question was 67. Seven surveys were returned indicating the physicians were no longer at the address to which they were mailed. Five retired pediatricians returned their surveys blank. Six physicians felt the survey was not applicable to their practice. Two physicians refused to complete the survey without giving their reasons and one was returned indicating the pediatrician had died.

Nine of the 67 usable questionnaires (approximately 25% of the total surveys that were mailed) were returned after the follow-up phone calls mentioned previously. All other responses were returned before the phone calls were made. Sample sizes for analyses of the items below differ due to the presence of missing data or uninterpretable data.

In the discussion of the results that follows, each research question will be covered in order.

Research Question 1

The first research question was as follows:

What is the percentage of children seen by pediatricians in Oklahoma, who are reported by parents or teachers, as having school-related learning and behavior problems?

Question 1 and 2 from the survey were used in answering this research question. As they appeared on the survey, these questions were:

1. Estimate how many school-aged children (5-18), including those with and without learning problems you see in a year (Count each child only once.).
2. Of the total listed in your answer to question 1, estimate the number of children who are reported to you by parents or teachers as having school-related learning problems as defined above.

Sixty-five physicians answered question 1. The mean estimate was 1264 with a standard deviation of 1442. The median estimate was 600 with estimates ranging from 0 to 7500.

Fifty-five physicians answered question 2 in an interpretable way. The mean estimate was 112 with a standard deviation of 159.47. The median estimate was 100 with estimates ranging from 0 to 750.

In order to answer the first research question, each physician's answer to question 2 was divided by his/her answer to question 1 and this quotient was multiplied by 100 to yield a percentage. The mean percentage reported was 18.31 with a

standard deviation of 20.9. The median was 12.5%, with answers ranging from 1 to 100%. In Figure 2, a frequency distribution of the percentages, for the 55 physicians that correctly responded to the question, is provided. The distribution is very skewed.

Research Question 2

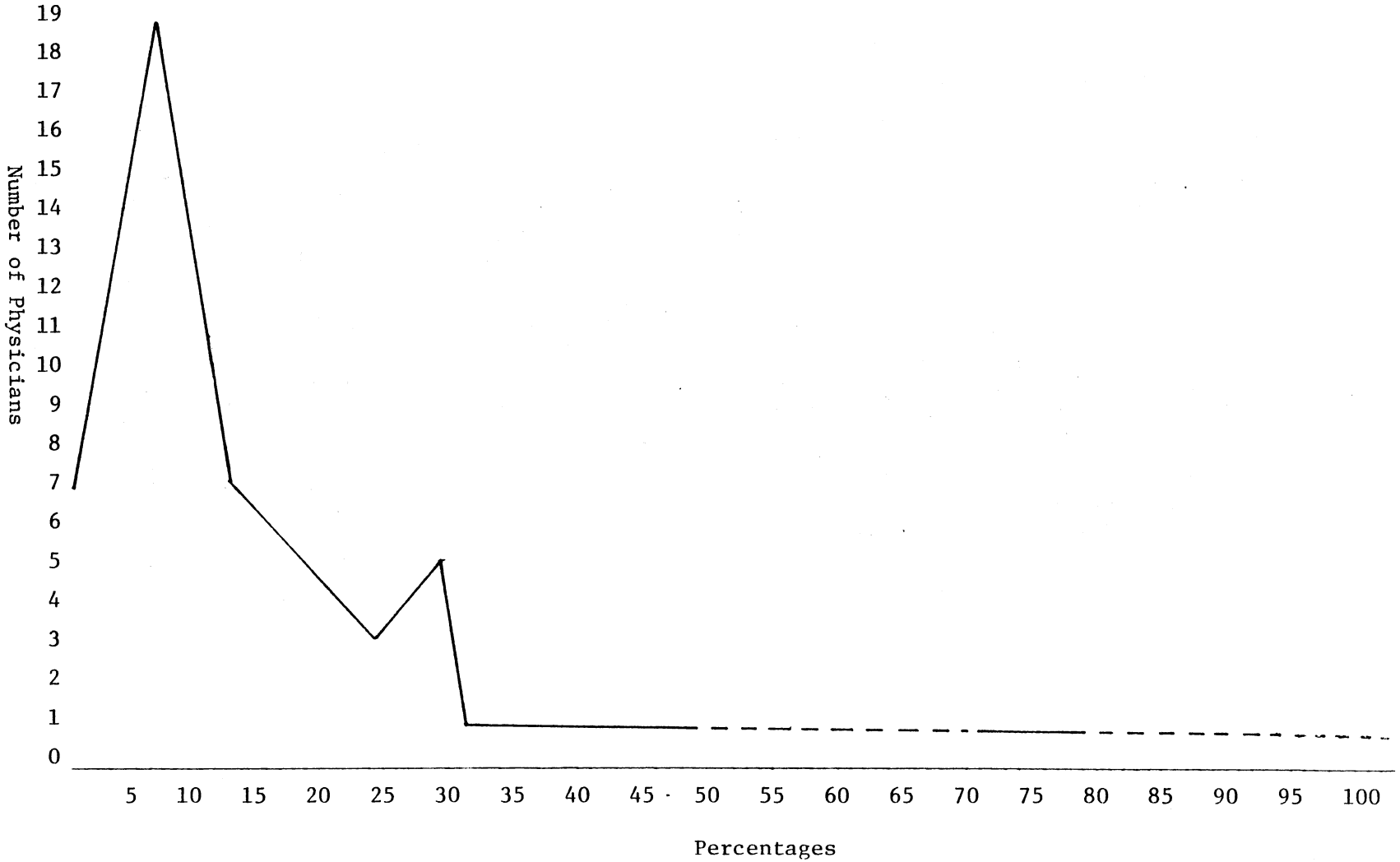
The second research question in this study was as follows:

What commonalities exist among pediatricians in Oklahoma in the conception of children with learning and behavior problems?

To answer this research question, questions 2 and 3 from the survey were used. Results for question 2 were presented previously.

In order to answer the second research question, physicians' answers to each of the items in question 3 were divided by their answers to question 2, and then this number was multiplied by 100. Question 3 reads: Of this smaller group of children listed in question 2 (i.e., those with learning problems), how many would you estimate have each of the following types of problems and/or characteristics (realizing that a given child may have more than one of the problems listed)? Leave blank any questions for which your answer is "don't know" (Items A through U are listed). Question 2 reads: Of the total listed in your answer to question 1, estimate the number of children who are reported to you by parents or

FIGURE 2. Distribution of Reported Percentages of Clients With Learning and Behavior Problems



teachers as having school-related learning problems as defined above. That is, for each item, a determination was made of the percentage of reported learning or behavior problem children in a caseload with each type of problem or characteristic, as perceived by the physicians. The item in question 3 can be divided into two categories: a) causes of learning and behavior problems, and b) behavioral characteristics of children with learning and behavior problems. In Tables 1 and 2, respectively, the results of the analyses for these two types of items are summarized. For each item in the two tables, the following statistics are provided: a) number of physicians with complete answers, b) number of physicians who left the item blank (indicating a "don't know" response), c) percentage, d) standard deviation, e) median percentage, and f) range (The lowest and highest number of patients reported by physicians that were perceived to have each type of problem.).

In Table 1, the causes which the physicians cited as most common among their patients with learning problems were history of inadequate nutrition and parent behaviors which interfere with the child's emotional well being and development, neurological dysfunction, and perinatal complications. The causes cited as least common were neurological abnormalities as indicated by physical or chemical testing and abnormal or deficient genetic structure.

In Table 2, the behavioral characteristics most common among physicians' patients with learning problems were more

TABLE 1

CAUSES CITED BY PHYSICIANS AS COMMON AMONG THEIR PATIENTS WITH LEARNING AND BEHAVIOR PROBLEMS

Item	Number With Complete Answers	Number Left Unanswered	Mean Percentage	Standard Deviation	Median Percentage	Range	
3a. delayed over-all maturation	44	8	30.15	60.51	19	0-300	
3b. uneven growth patterns	39	13	38.7	86.0	16.5	0-450	
3c. neurological abnormalities	50	2	13.5	23.7	9.5	0-100	-
3d. neurological dysfunction	49	3	34.4	71.0	22.5	0-450	+
3e. abnormal genetic structure	48	4	12.5	30.6	10	0-200	-
3f. perinatal complications	49	3	24.4	67.2	15	0-450	
3g. inadequate nutrition	39	13	20.9	44.3	30	0-200	+
3h. limited opportunities in home	45	7	28.5	64.2	18	0-400	
3i. limited opportunities in school	36	16	10.7	17.1	15	0- 66	
3j. parent behaviors	48	4	37.1	65.8	24.5	0-350	+
3k. allergies	39	13	22.9	43.9	16.5	0-200	

N = 52

+ Most common causes, based on median percentage

- Least common causes, based on median percentages

TABLE 2

CHARACTERISTICS CITED BY PHYSICIANS AS COMMON AMONG THEIR PATIENTS WITH LEARNING AND BEHAVIOR PROBLEMS

Item	Number With Complete Answers	Number Left Unanswered	Mean Percentage	Standard Deviation	Median Percentage	Range
31. perceptual processing problems	46	6	35.1	77.0	20	0-450
3m. problems with language	45	7	30.7	59.4	13.5	0-300 -
3n. problems learning to read	46	6	43.6	67.0	23.5	0-300
3o. problems learning to write	43	9	42.2	86.3	22	0-450
3p. problems learning math	40	12	46.5	97.5	20	0-450
3q. characteristics associated with ADD	52	0	54.2	86.3	27.5	0-450 +
3r. academic achievement below potential	47	5	53.6	81.8	35	0-450 +
3s. poor problem-solving skills	43	9	43.8	67.5	25	0-300
3t. poor social skills	45	7	49.3	88.0	27.5	0-450 +

N = 52

+ Most common characteristics, based on median percentages

- Least common characteristics, based on median percentages

than one of the characteristics associated with attention deficit disorder, academic achievement below that expected based on potential, and poor social skills. The characteristic least common among physicians' patients with learning problems was problems of interpretation or expression of spoken language.

Research Question 3

The third research question was as follows:

What diagnostic procedures do pediatricians in Oklahoma use for their patients who have learning and behavior problems?

Data pertinent to this question are provided in survey question 4 which reads (It is important to establish the extent to which various procedures are used by pediatricians in the diagnosis and treatment of children with learning problems. In the first column below, check each diagnostic procedure or treatment [either that you administer or that you have performed by referral] which you use in the over-all management of children with learning problems. In the second column [regardless of whether or not you actually use it], check if you were adequately trained in medical school or subsequent formal medical education to administer this procedure or treatment. In the third column, check if you consider the procedure inappropriate for use or referral by physicians treating children with learning problems [Items A through Q are listed.]). A total of nine diagnostic procedures were listed in question 4, and physicians were asked to place a

check mark next to each procedure that they used. Table 3 provides a listing of the total number and percentage of physicians reporting the use of each procedure. The four most frequently reported diagnostic procedures were 1) developmental assessments, 2) neurological assessments, 3) sensory screening, and 4) identification of birth difficulties that could result in problems for children. The least frequently reported procedure was allergy testing.

Research Question 4

The fourth research question was as follows:

What are the most common treatments recommended by pediatricians for children with learning and behavior problems?

Data pertinent to this question are provided in survey question 4 (Appendix G). A total of seven treatments were listed in question 4, and physicians were asked to place a check mark next to each treatment they used. Table 4 provides a listing of the total number and percentage of physicians reporting the use of each treatment. The two most frequently reported treatments were stimulants and educational intervention. Megavitamins and modification of diet were reported least frequently as treatment alternatives.

Research Question 5

The fifth research question was as follows:

TABLE 3

DIAGNOSTIC PROCEDURES PHYSICIANS USE

Item	Number Reporting They Use	Percentage
4a. developmental assessments	52	88 +
4b. perceptual-motor testing	39	66
4c. neurological assessments	55	93 +
4d. sensory screening	51	86 +
4e. genetic testing	38	64
4f. birth difficulties	51	86 +
4g. nutritional testing	30	51
4i. allergy testing	24	41 -
4j. diagnosing academic problems	47	80
N = 59		

+ The greatest percentage of physicians reported using these procedures

- A smaller percentage of physicians reported using

TABLE 4

TREATMENTS PHYSICIANS USE FOR THEIR PATIENTS WITH LEARNING AND BEHAVIOR PROBLEMS

Item	Number Reporting They Use	Percentage
4h. help to parents	46	78
4k. psychotropics	23	39
4l. stimulants	39	66 +
4m. megavitamins	5	8 -
4n. elimination of foods	20	34
4o. other modification of diet	6	10 -
4p. educational intervention	35	58 +
N = 59		

+ The greatest percentage of physicians reported using these treatments

- A smaller percentage of physicians reported using

Do pediatricians in Oklahoma feel they have been adequately prepared to deal with their patients who have learning and behavior problems?

Data relevant to this question are provided in survey question 4 (see Appendix G). A total of 16 treatments and diagnostic procedures were listed for physicians to indicate by placing a check mark next to each, if they felt adequately trained to use each. Table 5 provides a listing of the total number and percentage of physicians reporting that they felt adequately trained in the use of each treatment or procedure. Physicians reported that they felt most adequately trained in giving neurological assessments and in identifying birth difficulties. They also reported feeling adequately prepared in the use of sensory screening, in identifying birth difficulties, and in the use of stimulants. Physicians reported feeling least adequately prepared in diet modification and megavitamins.

Research Question 6

The sixth research question was as follows:

What causes and characteristics do pediatricians least associate with learning disabilities?

Data relevant to this question are provided on the survey in Part II, questions 1 which reads (Place an M beside the two causes you most associate with your own concept of the term "learning disabilities", and L beside the two you least associate with your concept of the term "learning disabilities".)

TABLE 5

PHYSICIANS' PERCEPTIONS OF THE ADEQUACY OF THEIR MEDICAL TRAINING FOR EACH OF 16 DIAGNOSTIC PROCEDURES AND TREATMENTS

Item	Number Who Reported They Felt Adequately Trained	Percentage
4a. developmental assessments	41	69 +
4b. perceputal-motor testing	22	37
4c. neurological assessments	50	85 +
4d. sensory screening	42	71 +
4e. genetic testing	19	32
4f. birth difficulties	51	86 +
4g. nutritional testing	25	42
4h. help to parents	23	39
4i. allergy testing	16	27
4j. diagnosing academic problems	16	27
4k. psychotropics	25	42
41. stimulants	39	66 +
4m. megavitamins	10	17 -
4n. elimination of foods	18	30

Table (continued)

Item	Number Who Reported They Felt Adequately Trained	Percentage
4o. other modification of diet	8	14 -
4p. educational intervention	12	20
N = 59		

+ The greatest percentage of physicians reported feeling adequately trained

- The smallest percentage of physicians reported feeling adequately trained

and question 2 which reads (Place an M beside the two characteristics you most associate with your own concept of the term "learning disabilities", and an L beside the two you least associate with your own concept of the term "learning disabilities".). A total of 11 causes and 9 characteristics are listed.

The total L's (least) and M's (most) for Tables 6,7,8, and 9 differ because some physicians marked less L's and M's than was requested. There were other physicians who marked one or two extra answers on questionnaire items 21A-L and 22A-J. Those physicians who put L's and M's on every item were eliminated (n=8).

In order to include eight respondents who marked more items than they were instructed to, a process for eliminating responses was used. Then those questionnaires were included in the analysis for research questions 6 and 7. The methodology for eliminating responses was as follows:

a) The survey response sheets were numbered from 1 to 8.

b) A Hewlett-Packard 15C programmable calculator with random number generator was used to generate the following two lists. The first is a list of random integers with values from 1 to 3. The second is a list of random integers with values from 1 to 4.

(1) 1-3 List: 2,1,1,1,3,2,2,3,2,3,

(2) 1-4 List: 4,1,1,1,3,2,4,2,1,1

c) Since the number one response sheet had three L's

and the first random integer on the 1-3 list was 2, the second L on that sheet was eliminated.

d) Since the number two response sheet had three L's also and the second random integer on the 1-3 list was 1, the first L on that sheet was eliminated.

e) Similarly, the number three response sheet had three M's and the third random integer on the 1-2 list was 1, so the first M was eliminated.

f) This pattern was used until the seventh sheet. On it there was the first response with four letters (M in this case) so the first integer on the 1-4 list (4) was used to eliminate the fourth M. Then the next integer on the 1-4 list (1) was used to eliminate the first M.

g) Also on the seventh sheet, there was a response with three M's. Since the seventh integer in the 1-3 list was a two, the second M was eliminated.

h) Since the eighth sheet contained a response with four M's the 1-4 list was used. The third integer on this list (the first two having been used above) was 1 so that the first M on this sheet was eliminated. The fourth integer was also 1 so the fifth integer was used. Since the fifth integer on the 1-4 list was 3, the third M was eliminated.

Table 6 lists the number and percentage of physicians that placed an L in front of each cause. Table 7 lists the number and percentage of physicians that placed an L in

TABLE 6

NUMBER OF PHYSICIANS WHO ANSWERED "LEAST" ON EACH OF 14 CAUSES

Question	Number Answering Least
21a. delayed over-all maturation	12
21b. uneven growth patterns	4
21c. neurological abnormalities	9
21d. neurological dysfunction	1
21e. abnormal genetic structure	7
21f. perinatal complications	0
21g. inadequate nutrition	13
21h. limited opportunities in home	9
21i. limited opportunities in school	16
21j. parent behaviors	2
21k. allergies	35 +
21l. other causes	3
Total L's = 111	

Total Number of Physicians = 56

Note: One physician responded with only one L

+ The greatest number of physicians reported as the cause

TABLE 7

NUMBER OF PHYSICIANS WHO ANSWERED "LEAST" ON
EACH OF 10 CHARACTERISTICS

Question	Number Answering Least
22a. perceptual processing problems	5
22b. problems with language	9
22c. problems learning to read	0
22d. problems learning to write	5
22e. problems learning math	6
22f. characteristics associated with ADD	7
22g. academic achievement below potential	8
22h. poor problem-solving skills	12
22i. poor social skills	37 +
22j. other	7
Total L's = 96	

Total Number of Physicians = 51 Note: Six physicians responded with only one L

+ The greatest number of physicians reported as the characteristic

front of each characteristic. The cause reported as least associated with learning disabilities was allergies. Poor social skills was reported as the characteristic least associated with learning disabilities.

Research Question 7

The seventh research question was as follows:

What causes and characteristics do pediatricians most associate with learning disabilities?

Data relevant to this question are provided on the survey in Part II, questions 1 and 2. A total of 11 causes (question 1) and 9 characteristics (question 2) are listed. Physicians were instructed to place an M in front of those causes and characteristics they felt were most associated with their concept of learning disabilities.

Table 8 lists the number and percentage of physicians that placed an M in front of each cause. Neurological dysfunction, uneven growth patterns or developmental levels, and perinatal complications were reported as the causes most associated with learning disabilities.

Table 9 lists the number and percentage of physicians that placed an M in front of each characteristic. The characteristics associated with learning disabilities that were most frequently reported were perceptual processing problems, academic achievement below that expected on the basis of potential, and more than one of the characteristics associated with attention deficit disorder.

TABLE 8

NUMBER OF PHYSICIANS WHO ANSWERED "MOST" ON EACH OF 12 CAUSES

Question	Number Answering Most
21a. delayed over-all maturation	8
21b. uneven growth patterns	24 +
21c. neurological abnormalities	9
21d. neurological dysfunction	18 +
21e. abnormal genetic structure	5
21f. perinatal complications	16 +
21g. inadequate nutrition	1
21h. limited opportunities in home	9
21i. limited opportunities in school	1
21j. parent behaviors	11
21k. allergies	1
211. other	3
Total M's = 106	

Total Number of Physicians = 54 Note: Two physicians responded with only one M

+ The greatest number of physicians reported these causes as most responsible for learning disabilities

TABLE 9

NUMBER OF PHYSICIANS WHO ANSWERED "MOST" ON EACH OF 10 CHARACTERISTICS

Question	Number Answering Most
22a. perceptual processing problems	34 +
22b. problems with language	14
22c. problems learning to read	11
22d. problems learning to write	4
22e. problems learning math	2
22f. characteristics associated with ADD	19 +
22g. academic achievement below potential	26 +
22h. poor problem-solving skills	3
22i. poor social skills	1
22j. other	1
Total M's = 115	

Total Number of Physicians = 59 Note: Three physicians responded with only one M

+ The greatest number of physicians reported these characteristics as most typical of learning disabled children

Research Questions 8 and 9

The eighth research question was as follows:

Are there differences among pediatricians in their number of diagnostic procedures, number of treatments they use, and perceived adequacy of training, depending upon the number of years they have practiced medicine.

The ninth research question was as follows:

Are there differences among pediatricians in their number of diagnostic procedures, number of treatments they prescribe, and their perceived adequacy of training, depending upon the size of community in which they practice?

Two-tailed tests were used with each of the above correlations, because no direction for the coefficients was predicted. Since there were no significant differences between the groups (physicians with less than 15 years experience versus physicians with 16 or more years experience), at the .01 significance level, the null hypothesis was not rejected. Additionally, there were no significant differences between the groups, small size community physicians versus large community physicians, so the null hypothesis was not rejected.

Summary

Chapter four presented the nine research questions of interest in this chapter. Information pertinent to each question, and how it was analyzed was also reported.

CHAPTER V

IMPLICATIONS, RECOMMENDATIONS, AND OBSERVATIONS

Introduction

An overview of the study is presented in chapter five. The statistical findings and the implications drawn from those findings are discussed. Recommendations for further research are also suggested.

Summary of the Study

There were three major purposes of the study. One purpose of this study was to learn more about Oklahoma pediatricians' attitudes and practices concerning their patients with learning and behavior problems. A second purpose was to determine if Oklahoma pediatricians' perceptions of their own patients with learning or behavior problems differed from their concept of children with learning disabilities. A third purpose was to make comparisons within this group of pediatricians by using the demographic variables, community size and number of years spent in practice.

The subjects were all pediatricians in Oklahoma, whose names appeared in the 1986-87 Medical Association Directory. Of the 274 pediatricians that were mailed a questionnaire, 88 persons replied. Of those 88, only 67 of their questionnaires could be partially or totally analyzed.

The Pediatric Survey, developed expressly for the purpose of this study, was the only instrument used for data collection. This study was descriptive and exploratory and provides a basis for gathering more information through data on larger samples.

Implications of the Statistical Findings

Proportion of Clients With Learning and Behavior Problems

The first research question was as follows:

What is the percentage of children seen by pediatricians in Oklahoma, who are reported by parents or teachers, as having school related learning and behavior problems?

When the median percentage was calculated (percentage of the physicians' total clientele with problems), the figure was 12.5 percent. This percentage is slightly larger than the percentage of children currently being served in the schools, possibly because the children seen by physicians make up a clinical population and not a school population. The child count report for Oklahoma, published by the State Department of Education, for December, 1987, records a figure of approximately 5%. Also, the pediatrician may be aware of problems within their patients, that would not necessarily warrant placement in a special class, educationally. Although 12.5 percent is a reasonable estimate, it may be somewhat elevated, due to

the fact that several (5) physicians reported learning and behavior problems to be of special interest or a subspecialty.

Perceptions About Patients With Learning and Behavior Problems

The second research question was as follows:

What commonalities exist among pediatricians in Oklahoma in the conception of children with learning and behavior problems?

Causes. When the median percentages were calculated for each of 20 possible causes for problems within the physician's own client population (those with learning and behavior problems), three causes ranked above the rest. Physicians estimated that 30% of their patients' problems were due (at least in part) to a history of inadequate nutrition. A cause for 24% of their patients with learning problems was reported to be parent behaviors which interfere with the child's emotional well being and development. Twenty-two percent of their patient's problems were estimated to be due to neurological dysfunction as indicated by physical examination (mild incoordination, soft neurological signs). (Refer to questionnaire item 3, A through U.) The first two causes are reflective of the child population within Oklahoma. The Oklahoma Census (1980) estimates the number of children in poverty (18 and under) to be 16% of the total child population. Also, the number of confirmed child abuse/neglect cases in Oklahoma for the 1987 fiscal year was 9.3 per every 1,000 children.

This figure is consistent with that reported by other states, but is not a true representation of the number of children that are abused and/or neglected, because this number does not include those cases that are reported but are not brought to the attention of the courts, nor does it include unreported cases. Approximately forty-five percent of the total handicapped population in Oklahoma is being served in learning disability classrooms, and part of the reason may be due to the level of poverty among Oklahoma's children, as well as the mistreatment or lack of care of many children (Oklahoma Department of Human Services Annual Report, June, 1987).

When median percentages were calculated, the cause cited as least common among physicians' clients with learning problems was neurological abnormalities as indicated by physical or chemical testing (e.g. electroencephalograms, CAT scans). Physicians reported neurological abnormalities to be the cause for the problems of only 9% of their patients. Lerner (1985) defines a neurological abnormality as an unusual pattern of activity that is sometimes characteristic of children with learning disabilities. An abnormal or deficient genetic structure was considered to be the cause for approximately 10% of the problems of their patients.

Characteristics. Physicians reported three characteristics as being most typical of their patients with learning and behavior problems: 1) academic achievement substantially below that expected on the basis of intellectual potential,

2) poor social skills (difficulty interacting appropriately with age peers and adults), and 3) more than one of the characteristics associated with attention deficit disorder (hyperactivity, attention problems, impulsivity, distractibility, etc.). Physicians reported underachievement as a characteristics of 35% of their patients with learning and behavior problems. This result is understandable, in that a child would be expected to have trouble in school if he/she had trouble learning or behaving. They reported poor social skills and attention deficit disorder to each be characteristics of 28% of their patients with school learning problems.

Teacher observations have included poor social skills to be characteristic of children who have problems in school (Tarnapol, 1981). In fact, social skill deficits have been characterized as a direct cause of some children's problems in school (Birch, 1970; Mercer, Algozzine, and Trifiletti, (1979). Since social ineptness was considered to be a common problem among physicians' own patients, further research needs to be done to learn if physicians have any training in diagnosing and recommending treatment for social skill deficits, and whether or not they are involved in teaching their patients social skills, and if they believe the teaching of these skills to be their responsibility.

A third characteristic which was considered to be common was attention deficit disorder. When Dr. Lawrence Block was interviewed (see Appendix D), in order to obtain pertinent information concerning the development of the Pediatric

Survey, he stated that the terms attention deficit disorders and hyperactivity are overused terms to describe the children by parents and teachers. When physicians responded by reporting attention deficit disorders, as characteristic of their patients, they may have reflected on how often they hear the term used and misused by parents and teachers.

Physicians reported problems with interpretation or expression of spoken language to be characteristic of only 14% of their patients with school learning problems. In the view of the present author, this is likely to be an underestimate of the actual porportion of children with language problems (e.g. see Lerner, 1985). This may be due to the physician's lack of knowledge concerning the specific nature of language problems.

Diagnosing Patients With Learning and Behavior Problems

The third research question was as follows:

What diagnostic procedures do pediatricians in Oklahoma use for their patients who have learning problems?

All of the nine procedures that were listed on the questionnaire were reported by at least 41% of the physicians to be used or referred. Those procedures most frequently reported (with at least 80% saying they used it or referred it out) were: 1) neurological assessment (93% said they used this procedure), 2) developmental assessments (88% used this procedure), 3) sensory screening (vision and hearing) (86%

reported using it), 4) perinatal information--identification of birth difficulties that could result in school problems for children (86% reported use), and 5) screening for or diagnosing academic problems (e.g., in reading or math) (80% reported use). Apparently a wide variety of accepted procedures are used by the physicians.

Allergy testing was reported to be used by 41% of the physicians. Although this procedure was reported to be used less often than any other procedure, it is surprising that it is used as often as it is, since allergies were not considered to be a problem among the physicians' patients.

Treating Patients With Learning and Behavior Problems

The fourth research question was as follows:

What are common treatments recommended by pediatricians for children with learning and behavior problems?

There was greater variation in the treatments physicians reported to use than in the diagnostic procedures they reported to use. Seventy-eight percent of the physicians said they personally provided or recommended emotional and physchological help to the parents of children with learning and behavior problems or referred families to others who provided such services. Sixty-six percent of the physicians said they used stimulants and 58% said they used or referred clients to those who provided educational intervention (e.g. tutoring).

Certain stimulant drugs have been proven to increase attention span (Huessy, 1985), help children screen out multiple stimuli (Keele, 1975; Barley, 1977), and provide an inner organizational ability in some children (Kagan, 1965; Levine, 1982; Howell, Huessy, Hassuk, 1985). It is interesting though, that only 27% of the physicians reported that they felt adequately trained in the use of stimulants. There is much that is unknown about drugs and their effect on behavior.

Thirty-nine percent of the physicians reported using psychotropics (tranquilizers, antipsychotics, and antidepressants) to treat their patients with school learning problems. As was discussed earlier in the literature, medication can be a valuable alternative treatment in helping children to mesh with society. The prevalence of the use of these drugs was greater than the reported use of stimulants.

Fifty-eight percent of the physicians reported that they were involved in the educational process of their patients. It was interesting to learn though, that 20% of the respondents felt adequately trained to provide tutoring themselves or to supply other educational means for their patients with learning or behavior problems. Additional research needs to be conducted to verify whether physicians are trained to be tutors, and if they are actually involved in providing this service to their clients.

Only 9% of the physicians said they used megavitamins and 10% said they treated patients with learning problems through the use of diet modification. These figures were not surprising,

considering the fact that only one source has reported the use of large amounts of vitamins as being helpful in controlling the behavior associated with hyperkinetic children (Cott, 1971). The original premise for the use of diet treatments was for children whose learning and behavior problems were believed to be related to allergies (Sommers, 1983; Kinsbourne and Swanson, 1980). Whether or not diet changes actually help to change behavior and increase learning continues to remain controversial.

In addition, 34% said they eliminated foods with certain dyes or preservatives, although only 10% admitted recommending other diet modification. More research needs to be conducted to learn why this inconsistency in reported treatments exists.

Perceived Adequacy of Medical Training

The fifth research question was as follows:

Do pediatricians in Oklahoma feel they have been adequately prepared to deal with their patients who have learning or behavior problems?

The physicians in the present study for the most part reported feeling adequately trained in performing neurological assessments (85% felt adequate), in identifying birth difficulties that could result in school problems for children (86% felt adequate). Another 70% and 71%, respectively, felt adequately trained in developmental assessments and sensory screening. These responses correlated exactly with the procedures physicians said they most often used.

It is interesting to note that although 80% of the physicians reported they either used or referred out a procedure for screening or diagnosing academic problems; only 27% reported feeling adequately trained in this area. Further research needs to be done to validate whether or not physicians are using this procedure, and if they are in fact being trained to use it. It may be that screening and diagnosing were perceived as very different sorts of activities by the physicians, with screening being seen as an appropriate activity for the physician and diagnosing being left to other professionals.

Only 14% of the physicians reported feeling adequately trained in the modification of diet for their patients and 17% reported feeling adequately prepared in the use of megavitamins. The fact that physicians did not report feeling adequately prepared in these two areas may be the reason they did not report using diet modification or megavitamins as treatments.

Causes and Characteristics Least Associated With Learning and Behavior Problems

The sixth research question was as follows:

What causes and characteristics do pediatricians least associate with learning disabilities?

Fifty-six physicians answered the questionnaire item asking them to select the causes they least associated with their concept of the term learning disabilities. Of those

56, 35 selected allergies. As was discussed in the literature review, at one time allergies were largely seen as causing learning problems for some children in their ability to concentrate and attend. Diet modification, or the elimination of foods or preservatives, was recommended. From the physicians' responses on the Pediatric Survey, it seems they have not eliminatd allergies as a possible cause altogether, but do have some reservation about stating allergies as a cause for learning disabilities. The cause with the second greatest number of least responses was limited learning opportunities in school, with only 16 responses.

The characteristic least associated with the term learning disabilities was poor social skills. Thirty-seven of 51 physicians selected this characteristic. The next greatest number for any characteristic was 12.

It was interesting to note that the physicians felt poor social skills were a characteristic of their own patients with school problems and yet, social skills were not considered to be characteristic of children with learning disabilities. This is an important finding, because it suggests one of specific ways in which physicians may subjectively distinguish between the terms learning and behavior problems and learning disabilities.

Causes and Characteristics Most Associated With Learning Disabilities

The seventh research question was as follows:

What causes and characteristics do pediatricians most associate with learning disabilities. Of 54 physicians who responded to this question, 24 reported uneven growth patterns or developmental levels to be a cause associated with learning disabilities. Eighteen physicians reported neurological dysfunction as indicated by a physical exam to be a cause associated most with learning disabilities and 16 felt that prenatal, natal, or post-natal complications were causes for learning disabilities. As has been reported in the literature, each of these causes have been associated with learning problems of children. Lerner (1985) discusses each of these in detail.

Of 59 physicians who responded to this question, 34 reported perceptual processing problems to be characteristic of children with learning disabilities. One aspect of the federal government's definition for a specific learning disability includes perceptual problems.

Twenty-six physicians selected academic underachievement to be a frequent characteristic they most associated with learning disabilities. A portion of the federal government's operational definition, which the state uses to place learning disabled children educationally, states that a student must have a severe discrepancy between their achievement and their intellectual ability in one or more areas. For this reason, academic failure has been emphasized in a number of the current definitions (Mercer, Algozzine, and Trifiletti, 1979).

Nineteen physicians reported more than one of the characteristics associated with attention deficit disorder to be typical of learning disabled children.

Differences in Physicians' Attitudes and Practices Based on Their Number of Years in Practice and On Their Community Size

The eighth research question was as follows:

Are there differences among pediatricians in their number of diagnostic procedures, number of treatments and perceived adequacy of their training, depending upon the number of years they have been in practice?

The ninth research question was as follows:

Are there differences among pediatricians in their number of diagnostic procedures, number of treatments they prescribe, and their perceived adequacy of training, depending upon the size of the community in which they practice?

When t-test were performed between all variables and analyzed, there were no correlations that were statistically significant. Some relationships between variables were expected. The reason no statistically significant differences were found may have been due to the fact that 1) the sample size was too small, or 2) the sample was not representative of the total population of pediatricians, or 3) possibly community size or number of years in practice were not good indicators of differences between physicians.

Discussion

In general, there was no one cause that physicians believed was responsible for the learning problems of their patients. Neither did physicians pinpoint one or two primary causes for learning disabilities in children. The only cause that overlapped and was considered to be causative for the problems in both groups was neurological dysfunction, as is indicated by a physical exam. Birch (1970) also indicates that learning disabled children show clearcut neurological deficits, and the federal definition of learning disabilities includes minimal brain dysfunction as part of its meaning.

A history of inadequate nutrition and parent behaviors which interfered with the child's emotional well-being and development were considered to be common causes among the learning and behavior problem patients, although neither of these were frequently listed as causes of learning disabilities. In addition to neurological dysfunction, uneven growth patterns or developmental levels were seen as the greatest cause for learning disabilities. It is a general observation, though, that uneven growth patterns could be due to poor parenting practices, including poor nutrition, as well as practices which contribute negatively to emotional growth and development.

Perinatal complications were also reported somewhat as a cause in both groups (of their own patients and of learning disabilities). Since it seems that pediatricians are

trained to be more physically oriented in their diagnosis of problems, it was expected that they would report perinatal causes as the reasons for learning difficulties in children.

When physicians reported the most common characteristics of their patients with learning and behavior problems, and then those most typical of learning disabled individuals, the most discriminating characteristic was poor social skills. Although, poor social skills was seen as common among children with learning and behavior problems, only one physician checked it as being a characteristic highly associated with learning disabilities.

Although further study is needed to clarify the physicians' concept of learning disabilities, the typical learning disabled client, as characterized by the physicians in the present study is one who 1) shows an uneven pattern of growth and development, neurological dysfunction, and perinatal complications; 2) has perceptual processing problems, is underachieving, and shows characteristics associated with attention deficit disorder.

The patient, perceived to have learning and behavior problems by the physicians who responded to the survey, can be described as one who 1) shows neurological dysfunction, had perinatal complications, has a history of poor nutrition, has parents that are lacking in their ability to rear emotionally and psychologically healthy children; and 2) has more than one of the characteristics associated with attention

deficit disorder, is an underachiever academically, and has poor social skills.

The four most frequently used diagnostic procedures correlated exactly with the procedures physicians reported to feel most adequately prepared to use. They were developmental assessments, neurological assessments, sensory screening (vision and hearing), and identification of birth difficulties that could result in school problems for children. They reported to use allergy testing least frequently.

Concerning treatments, pediatricians reported using stimulants and educational intervention most often. They reported using megavitamins and diet modification least frequently.

My conclusions can only be applied to the particular physicians that answered my survey. It is logical to assume that the sample is representative of, at least, all Oklahoma pediatricians and possibly many pediatricians in other states, but this information cannot be certain. Those who responded may have done so because they felt a large proportion of their patients had problems (12.5% was reported), or because they are more aware/interested in the questions raised by the Pediatric Survey.

Recommendations

1. Physicians reported inadequate nutrition and poor parenting practices to be major contributing causes

for the problems among their own patients. From a policy perspective, physicians need to communicate to parents concerning the importance of their behavior and the proper nutrition of their children for good physical and mental health to occur. Further research is needed to determine if physicians perceive the communication of these parental responsibilities and/or the monitoring of them to be their job.

2. Physicians reported educational intervention as an important treatment for children with learning and behavior problems. They also felt quite involved in that educational process, but did not consider themselves to be adequately trained in this area. It seems the most efficient position for the physician would be to serve as a support person outside of the school, and an advocate of the child. One additional role of the physician could be to serve on interdisciplinary teams that place children educationally. This position would better enable him/her to make referrals into the classrooms of teachers he/she recognizes as being more skillful in working with children, who have learning and behavior problems, although practically speaking, few physicians could afford the time this would require.

3. Very few physicians reported feeling adequately trained in the use of nutritional testing, although poor nutrition was considered to be a great problem among their own clients. More coursework in nutritional testing could be beneficial for pediatricians. Also, it would be interesting to learn what Oklahoma pediatricians are currently using to detect nutritional problems.
4. It would be important to conduct a similar study outside of Oklahoma, to learn if other pediatricians agree with Oklahoma pediatricians in their perceptions, diagnoses, and treatment of their patients with school learning problems and those they consider to be learning disabled.
5. Additional research to learn whether or not parents of children with school learning problem feel their pediatricians are adequately managing their children's learning or behavior problems would also provide valuable information.

Observations

1. There appeared to be no differences in the preparedness of small city and large city physicians to deal with their patients who have learning and behavior problems. This information may help to increase the confidence of children and parents who are seeking a pediatrician to help them deal with these problems.

2. After the data had been collected and analyzed, it was discovered that social skills training had been overlooked as a possible choice for physicians to state whether they had any knowledge of this area, and whether they used it as a treatment in working with their patients.
3. Another limitation of this particular study concerns child psychotherapy. Physicians were given the opportunity to report if poor parenting practices were responsible for the learning problems of their patients. They were also asked to report whether they provided emotional or psychological support to the parents of children with learning or behavior problems. They were not given the opportunity to state whether or not they were involved in or recommended child psychotherapy, or if they had had any training in this technique. Additional research would be helpful to discover the answers to these questions.

Summary

Chapter five summarized the implications of the study and the researchers recommendations and observations based on the statistical findings. This chapter also provides some foundation for future additional research.

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APPENDIX A

DR. MERL SIMMONS' COMMENTS TRANSCRIBED FROM TAPED INTERVIEW

1. I use a detailed neurological exam to look for minimal brain damage or attention deficit disorders. My neurological exam is basically a screening test that includes: (1) ways to determine coordination, (2) agility, (3) strength, and (4) balance. I have also given an expanded neurological on occasion.
2. My definition of a learning disabled child is one who is normal on the neurological exam, but is not performing at their expected potential.
3. To treat learning or behavior problems, medication may be helpful in controlling behavior in school, but I would be very skeptical about using it.
4. There is no proof that megavitamins have ever helped.
5. In the area of learning and behavior problems, my medical training was very limited.
6. The pediatrician should be responsible for all of a child's development, physical, emotional, et cetera.

APPENDIX B

DR. STEWART BEASLEY'S COMMENTS TRANSCRIBED FROM TAPED INTERVIEW

1. Pediatricians are symptomatic. They try to rule out physical causality. They are not programmed to look at neurology-brain workings.
2. At six or seven, certain psychological things occur that help a kid to operate in school. Some kids are delayed.
3. I don't think pediatricians can diagnose learning disabilities.
4. Pediatricians give a lot of stimulant medication. Their practice lends itself to this.
5. Pediatricians don't take a wholistic approach to the child.

APPENDIX C

DR. EDWARD SHISSLER'S COMMENTS TRANSCRIBED FROM TAPED INTERVIEW

1. Learning disabilities is a medical problem, because the physician deals with all of the child's problems.
2. School problems come to the physicians attention by concerned parents.
3. The operational definition of LD is that one area of ability is way below average.
4. There is not much correlation between an LD child's performance discrepancy and neurological problems.
5. Medical trainees now can take large steps to remediate problems, delineate, and maybe even manage them, but not older doctors.
6. The role of the physician should be to do enough testing in his office to delineate problems and/or look at school testing and determine LD.
7. The physician is in the best position to recognize, explain, support, make referrals, and counsel the family.
8. Trainees in Oklahoma get some counseling course work. In OU's residency program a woman pretends to be a concerned mother and residents have to react.

9. The only time medication may be useful is for kids who can't sit still. There is still the question as to whether or not it helps them learn, but it serves its purpose in keeping them in society.
10. Pediatricians are not going to do routine exams to determine LD. They may set aside a 5-year check up for developmental testing and school readiness.
11. Trainees do learn how to administer tests, but may not choose to use them.
12. Pediatricians should be screening children for development to pick up significant LD.
13. The pediatrician is in the best position to put everything together.

APPENDIX D

DR. LAWRENCE BLOCK'S COMMENTS TRANSCRIBED FROM TAPED INTERVIEW

1. True learning problems are medical problems.
2. True learning disabilities is the inability to cognitively function in a specific area at one's potential. This is not necessarily only in academics. To identify this child, I will see an abnormal neurological pattern.
3. If the primary care physician is tuned in, he'll see problems before the kid enters school.
4. For very specific problems such as attention deficit disorders or allergic attention fatigue, I recommend stimulants.
5. Ten percent of school children that have problems can be helped medically. I postulate that the percentage is 15 in Oklahoma. Those people that settled in Oklahoma were the sort that could not remain in their past environments, holding jobs, sticking with things, and migrated West. Twenty-five percent of the children at Tinker Air Force Base have school problems. I believe much of their problems are a lack of organizational skills.

6. The physician is the child's greatest advocate because he's neutral. He's not a part of the educational process or emotional intervention process. He tries to look at the child in total.
7. I had no specific training in giving developmental tests. Most states prepare you to work with the mentally retarded, if at all. I had no classes that dealt with learning disabilities.
8. Megavitamins may have significant negative side effects. There are few specific incidences where certain vitamins may help.
9. It is the pediatricians responsibility to do early screening. Delays in language may identify a high risk child. At the 3 year exam, I look at balance and rapid alternative movements. At the 4 year exam, I look at serial functioning, singular balancing attention, and vision screening.
10. Parents have expectations of children based on the development of the female.
11. In this state, children are not a priority. Reimbursement for pediatricians is less than for any other practitioner. Medical research funding goes first to male diseases, then women diseases, then to children. Kids don't vote.

APPENDIX E

COVER LETTER (SHISSLER)

Dear Doctor,

I'm writing to encourage you to complete this survey, including the demogrpahic information requested.

I recognize that this will not be an easy questionnaire to answer, but I think it's worth doing, because I think this project will help to fill a significant void for both pediatricians and educators.

You're aware of the fact that there is currently very little information available about the scope of pediatricians' knowledge of learning and behavior problems or about the way they manage these patients. This project, with our help, should culminate in a publication that will enable a pediatrician to compare knowledge of these problems with approaches to management with those of his/her colleagues. Its publication in a widely-read educational journal will give educators of these children a basis for effective communication with the children's pediatricians. Finally, as the information is picked up by popular journals it will help parents-and even the children themselves-to comprehend what you-the pediatricians-are trying to tell them about learning and behavior problems.

I hope you will agree with me that this project has enough potential to justify your taking the time to do the survey.

Sincerely,

Co-Director
Pediatric Practice Model
Oklahoma Children's Memorial Hospital

APPENDIX F

COVER LETTER (O'KEEFE)

Dear Doctor,

I am an Oklahoma State University Ph.D. candidate majoring in Special Education. I am conducting a survey of Oklahoma pediatricians to learn how they work with children who have school-related learning problems. Very little is currently known in this area. Your role in diagnosing and treating the child with learning problems is crucial for educators and parents to understand and will ultimately provide a service to the medical community.

I hope to publish the results in a well-known educational/medical journal, and if you are interested in obtaining a personal copy, it will be available by completing the enclosed self-addressed card. Thank you for your cooperation.

Sincerely,

K. R. O'Keefe
3413 Rogers Drive
Edmond, OK 73013

APPENDIX G

PEDIATRIC SURVEY

PART I

SCHOOL-RELATED LEARNING AND BEHAVIOR PROBLEMS

During office visits, patients sometimes discuss problems that their children are having in school. A large number of labels are applied by various parents and professionals to children who are reported to have school-related learning and behavior problems (e.g.-hyperactive, dyslexic, learning disabled, behavior disordered, childhood adjustment problem, etc.). In order to avoid confusion in answering the questions below, the term learning problems will be used.

The term learning problems is meant to convey a very wide category of children for whom the parent reports that there is a significant school-related learning or behavior problem. The term is not limited to any of the specific labels listed above. On the other hand, by using the term learning problems we wish to exclude children who you consider to be mentally retarded, seriously emotionally disturbed, or who have a significant vision or hearing loss, even after correction with glasses or hearing aid.

1. Estimate how many school-aged children (ages 5-18), including those with and without learning problems you see in a year (Count each child only once.): _____

2. Of the total listed in your answer to question 1, estimate the number of children who are reported to you by parents or teachers as having school-related learning problems as defined above: _____

** If your answer to questions 2 is "none", please go to PART II of this questionnaire.

3. Of this smaller group of children listed in question 2 (i.e., those with learning problems), how many would you estimate have each of the following types of problems and/or characteristics (realizing that a given child may have more than one of the problems listed). Leave blank any questions for which your answer is "don't know".

   a. delayed overall maturation _____

   b. uneven growth patterns or developmental levels _____

   c. neurological abnormalities as indicated by physical or chemical testing (e.g. electro-encephalograms, CAT scans) _____

   d. neurological dysfunction as indicated by physical examination (mild incoordination, soft neurological signs) _____

   e. abnormal or deficient genetic structure _____

   f. prenatal, natal or post-natal complication

(e.g., prematurity, toxemia, infections affecting C.N.S.) _____

g. history of inadequate nutrition _____

h. limited learning opportunities in the home _____

i. limited learning opportunities in the school _____

j. parent behaviors which interfere with the child's emotional well-being and development _____

k. allergies (to foods, inhalents, etc.) _____

l. perceptual processing problems (e.g., visual or auditory discrimination, closure, etc.) _____

m. problems with interpretation or expression of spoken language _____

n. problems learning to read _____

o. problems learning to write (handwriting, spelling, grammar, or organization) _____

p. problems learning mathematics _____

q. more than one of the characteristics associated with attention deficit disorder (hyperactivity, attention problems, impulsivity, distractibility, etc.) _____

r. academic achievement substantially below that expected on the basis of intellectual potential _____

s. poor problem-solving skills _____

t. poor social skills (difficulty interacting appropriately with age peers and adults) _____

u. other causes or characteristics associated with academic and behavioral problems in school (please specify)_____

_____

_____

4. It is important to establish the extent to which various procedures are used by pediatricians in the diagnosis and treatment of children with learning problems. In the first column below, check each diagnostic procedure or treatment (either that you administer or that you have performed by referral) which you use in the overall management of children with learning problems. In the second column (regardless of whether or not you actually use it), check if you were adequately trained in medical school or subsequent formal medical education to administer this procedure or treatment. In the third column, check if you consider the procedure inappropriate for use or referral by physicians treating children with learning problems.

	treatment/ procedure administered	adequately trained	in- appropriately trained
a. developmental assessment	_____	_____	_____
b. perceptual-motor testing	_____	_____	_____
c. neurological assessments	_____	_____	_____

d.	sensory screening (vision & hearing)	_____	_____	_____
e.	genetic testing	_____	_____	_____
f.	identification of birth difficulties that could result in school problems for children	_____	_____	_____
g.	nutritional testing	_____	_____	_____
h.	direct provision of emotional and psychological help to parents of children with learning and behavior problems	_____	_____	_____
i.	allergy testing	_____	_____	_____
j.	screening for or diagnosing academic problem (e.g., in reading or math)	_____	_____	_____
k.	tranquilizers, anti-psychotics, anti-depressants	_____	_____	_____
l.	stimulants	_____	_____	_____
m.	megavitamins	_____	_____	_____

n. elimination of foods with certain dyes, preservatives, etc. _____ _____ _____

o. other modification of diet (please specify)

_____

_____ _____ _____ _____

p. educational intervention (e.g. tutoring) _____ _____ _____

q. other treatments/procedures you use not listed above (please specify)

_____

_____

PART II

LEARNING DISABILITIES

The term "learning disabilities" means different things to various individuals and professional groups. Indicate your own use of the term "learning disabilities" by answering questions 1 and 2 below.

1. Place an M beside the two causes you most associate with your own concept of the term "learning disabilities", and L beside the two you least associate with your concept of the term "learning disabilities".

_____a. delayed overall maturation

_____b. uneven growth patterns or developmental levels

_____c. neurological abnormalities as indicated by physical or chemical testing

_____d. neurological dysfunction as indicated by physical examination

_____e. abnormal or deficient genetic structure

_____f. prenatal, natal, or post-natal complications

_____g. history of inadequate nutrition

_____h. limited learning opportunities in the home

_____i. limited learning opportunities in the school

_____j. parent behaviors which interfere with the child's emotional well-being and development

_____k. allergies

_____l. other causes (please specify)

_____

_____

2. Place an M beside the two characteristics you most associate with your own concept of the term "learning disabilities", and an L beside the two you least associate with your own concept of the term "learning disabilities".

_____a. perceptual processing problems

_____b. problems with interpretation or expression of spoken language

_____c. problems learning to read

_____d. problems learning to write

_____e. problems learning mathematics

_____f. more than one of the characateristics associated with attention deficit disorder

_____g. academic achievement substantially below that expected on the basis of intellectual potential

_____h. poor problem-solving skills

_____i. poor social skills

_____j. other characteristics associated with academic and behavioral problems in school (please specify) _____

_____

PART III

DEMOGRAPHIC INFORMATION

1. What is your sex? (check one) Male___Female___

2. How many years have you been in medical practice (including residency training?_____

3. What percentage of your professional time is devoted to each of the categories below? (percentages should total 100%)

private practice _____%

teaching _____%

research _____%

other (please specify) _____%

_____

_____

4. In what size community is your practice located? (check one)

_____Large City (population 300,000 and above--Tulsa, OKC)

_____Small City (population 10,000 to 100,000--Lawton, Muskogee, Guthrie, Ponca City, Norman, etc.)

_____Small Town (population under 10,000--Elk City, Blackwell, Cushing, Guymon, etc.)

5. In what year did you receive your first medical degree?_____

VITA

Kathleen Reagan O'Keefe

Candidate for the Degree of

Doctor of Philosophy

Thesis: A SURVEY OF PEDIATRICIANS CONCERNING THEIR ATTITUDES AND PRACTICES IN REGARD TO CHILDREN WITH LEARNING AND BEHAVIOR PROBLEMS

Major Field: Applied Behavioral Studies

Biographical:

Personal Data: Born in Gainsville, Texas, April 25, 1956, the daughter of George Dale and Anne Spiro Reagan. Married to Michael John O'Keefe on May 13, 1978. Two sons, Keegan Donovan born April 30, 1984; Tavish McKenzie born July 21, 1987.

Education: Graduated from Harding Academy, Memphis, Tennessee, in May, 1974; received Bachelor of Arts Degree in Education from Harding University in May, 1978; received Master of Arts degree from the University of North Texas in December, 1980; received a diagnostician's certificate from University of North Texas, 1982; completed requirements for the Doctor of Philosophy degree at Oklahoma State University in December, 1988.

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