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Similarities in early development of children with atypical prehension

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**SIMILARITIES IN EARLY DEVELOPMENT OF
CHILDREN WITH ATYPICAL PREHENSION**

A Thesis

Presented to

**The Faculty of the Occupational Therapy Department
San Jose State University**

**In Partial Fulfillment
of the Requirements for the Degree
Master of Science**

by

Michelle Crosby

August, 1996

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ABSTRACT
SIMILARITIES IN EARLY DEVELOPMENT OF
CHILDREN WITH ATYPICAL PREHENSION

by Michelle Crosby

The purpose of this study was to determine whether similarities exist in the early developmental experience of seven year old children with a prehension pattern that has been identified as being outside the range of normal. Parents of seven, seven-year-old children with atypical prehension pattern were interviewed in an open-ended unstructured interview, regarding their child's early developmental experiences. Early developmental experiences are influential in the development of skills and abilities for further growth and development. Possible similarities were found in the early developmental experiences of the subjects in the areas of social behavior, motor development, sensory defensiveness, and toilet training. Information regarding similarities in the early developmental experiences of children identified with atypical prehension patterns, may assist occupational therapists in determining at an early age whether or not a child may later develop an atypical prehension pattern. In addition, knowledge of early developmental experiences of a child with a prehension pattern outside the range of normal, may help in the design of treatment methods and activities that will be of benefit to that child.

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Areas in which Subjects Shared Similar Developmental
Experiences

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CHAPTER 1

INTRODUCTION

Purpose

The purpose of this study was to determine whether similarities exist in the early developmental experiences of seven year old children with a prehension pattern that has been identified as being outside the range of normal. Any similarities found could help in the future to identify children at risk for prehension problems, as well as indicate possible treatment methods. Gesell and Piaget (cited in Lockman & Thelen, 1993) believed that the processes by which infants learned to control and coordinate their bodies set the stage for all further development. There is evidence that "...some experience with and ability to control the body skillfully, early in development, may be a necessary foundation for developing refined control of the use of the hand/limbs in fine manipulative tasks" (Williams, 1983, p. 915).

Problem Statement

Because it is used for a variety of functional activities, the acquisition of the dynamic tripod grasp is important to the overall development and independence of a child. In a study conducted by Benbow (1987) with children between the ages of 7.0 and 7.11, fewer than half the subjects demonstrated the dynamic tripod grasp (Schneck, 1991). McHale and Cermak (1992) determined that "...nearly 10% of elementary school-aged children may experience major difficulty with fine motor tasks" (p. 899). Because fine motor problems affect handwriting, classroom performance and the child's level of learning and achievement in occupational performance, related to the child's role as student,

are affected. Handwriting problems interfere with a child's ability to express himself, communicate, and record ideas (Tseng & Cermak, 1993).

Pencil grasp is important because "it allows the fine movements necessary for writing" (Schneck, 1991, p. 701). The dynamic tripod grasp, acquired between the ages of four and six, is described as the most typical, mature and efficient grasp (Bergmann, 1990). All other grasps are considered atypical or awkward because they may limit writing speed and endurance. In a study conducted with first grade children, Schneck (1991) found that children with handwriting difficulty may demonstrate a lower grip score or less mature grip on a drawing task than children without handwriting problems. However, Bergmann's study (1990) suggested that the ability to form letters has less to do with the exact prehension pattern used and more with the extent to which the grasp allows for precision control and mature coordination of movements. Tseng and Cermak (1993) found that different variations in grip are to be expected and may not necessarily be harmful to handwriting performance; however, some grips may make handwriting easier and more efficient. This work also suggested that because of the complexity of the task of handwriting, other factors such as motor planning and kinesthetic and visual perception are equally important to handwriting performance. Further study of the factors involved in the development of prehension and its relationship to other aspects of performance is needed.

Research Question

This study was designed to answer the following question:

Are there similarities in the early developmental experience, as reported by the parents, of children with prehension patterns that have been identified as outside the range of normal?

Definitions

The following is a list of terms and definitions that were used in this research study:

Atypical prehension pattern or pencil grasp: A prehension pattern or grasp outside the range of normal or different than that which is expected or typical for a particular developmental stage or age. A pattern or grasp that differs from the dynamic tripod grasp.

Early developmental experience: Operationally defined as between the ages of birth and three.

Dynamic tripod grasp: The grasp position of the fingers in which the pencil is resting on the distal aspect of the middle finger while being controlled by very small movements of flexion and extension between the pads of the thumb and index finger.

Fine motor: Motor behavior involving manipulation, finger movements and function, and eye-hand coordination.

Outside the range of normal: Operationally defined as being different from that which is expected or usual in the development of grasp patterns at the age of seven. Also, an atypical or abnormal grasp pattern. By the age of seven, a child typically has developed the dynamic tripod grasp.

Prehension patterns: Operationally defined as various grasps, involving the hand and fingers, used for holding a pencil or crayon.

Tactile defensiveness: Sensory integration deficit characterized by overreaction or underreaction, such as excessive emotional reactions, or behavior problems, to tactile stimulation.

Assumptions

It was assumed that some similarities in the early developmental experience of the children will be found after interviewing the parents. It was also assumed that the sample of children with prehension patterns outside the range of normal has been accurately assessed by occupational therapists to whom they had been referred. An additional assumption was that parents who were interviewed would accurately remember the development of their child.

Limitations

Possible limitations include the selection of the sample with prehension patterns outside the range of normal. Because the sample is from a pediatric occupational therapy clinic, the children may have compounding disabilities which may affect their development. Every effort will be made to select children with only atypical prehension patterns or as few other disabilities as possible. For example, children with autism, cerebral palsy, and other orthopedic conditions will be excluded. An additional limitation is the size of the sample. Seven subjects is a small sample and additional studies are needed to explore the existence of additional similarities or patterns in early developmental experiences.

Parents may also have difficulty accurately remembering details about their child's early developmental experiences and developmental milestones. It is

possible that few similarities will be found between the developmental experiences of the children or that conclusions regarding early developmental experiences and prehension patterns will be limited.

Significance of the Study

There has been minimal research looking at early developmental experiences of children with atypical prehension patterns. Nor has there been much research into developmental factors leading to prehension problems. Research identifying any similarities in the early developmental experience of children with prehension patterns outside the range of normal will provide insight into possible risk factors and predetermining experiences leading to atypical prehension patterns.

According to Gesell and Piaget (cited in Lockman & Thelen, 1993), the process by which a child develops, learns to control and coordinate his body, and reaches developmental milestones, affects and guides future development and function. Studying the early developmental experiences and the attainment of developmental milestones, along with dysfunction or problems that occur later in development, can provide information about children who may be at risk. Such study may further identify those therapy activities that may be beneficial. "Knowledge of the normal development of motor functions...is required to be able to detect mild deviations which may be associated with, or predictive of, later impairment of motor-skill development" (Touwen, Hempel, & Westra, 1992, p. 410). Unless there is an understanding of the nature of earlier growth and development, it is not possible to help or provide treatment for children who are delayed or who are experiencing difficulties.

In a school setting, the majority of referrals to occupational therapy are because of poor handwriting or awkward pencil grasp (Bergmann, 1990). Handwriting, an important skill for school-aged children, provides an opportunity for a child to share what he or she knows. A child with handwriting problems or an awkward grasp may not be able to finish assignments on time because handwriting is difficult and fatiguing (Tseng & Cermak, 1993). The dynamic tripod grasp is considered the most desirable and efficient grasp for writing (Bergmann, 1990). It is believed that the maturation of fine prehension and the development of the dynamic tripod grasp are necessary for manipulation and writing skills (Chakerian & Larson, 1993; Rosenbloom & Horton, 1971).

Occupational therapists can contribute significantly to treatment programs for children with prehension patterns outside the range of normal. As a result, learning and classroom performance of the child will be improved as the child will be able to finish assignments more easily and quickly, focusing on the content rather than on the mechanical aspects of writing (Tseng & Cermak, 1993).

CHAPTER 2

LITERATURE REVIEW

Introduction

There has been minimal research conducted on the early developmental experiences of children with prehension patterns that are outside the range of normal for their developmental stage. There has also been little research published on developmental factors that may lead to prehension problems. Nor has there has been research that identifies whether parents had any early indication of their child's atypical prehension pattern.

Literature will be reviewed and discussed regarding the significance and influence of early developmental experiences, early child development, the development of fine prehension, the nature of atypical pencil grasp patterns, and occupational therapy theory that relates to the research.

Significance and Influence of Early Developmental Experiences

Early experiences of the child are considered to be of exceptional importance in influencing his/her later development. Interference with normal development during the preschool years, more than any other period of development, is likely to produce an adverse effect on the acquisition of skills necessary for future growth and development (Martin & Stendler, 1959). Child development, including motor development, is a continuous sequential process proceeding "stage by stage in an orderly sequence" (Shortridge, 1989, p.48). Achievement of developmental milestones may be used to judge developmental progress (Lockman & Thelen, 1993). Touwen, Hempel, & Westra (1992) believe that knowledge of developmental milestones and normal development of motor functions "is required to be able to detect mild deviations which may be

associated with, or predictive of, later impairment of motor skill development" (p. 410). The early experience of motor functions, such as crawling and locomotion, may contribute to developmental changes occurring during childhood, as well as to psychological development, spatial knowledge, eye-hand coordination, kinesthetic awareness, and tactile input (McEwain, Dihoff, Brosvic, 1991).

An individual's physical and biological make-up can limit or provide opportunities for his/her motor development, as can society and culture (Martin & Stendler, 1959). According to Exner (1989), there are many aspects of development that impact hand function including the child's culture, social factors, cognitive factors, motor and physical factors, visual perceptual development, sensory integration, somatosensory function, and visual regard. Williams (1983) also found that during the early developmental years, hand function and prehension skills may be significantly influenced by several other dimensions of growth, including gross motor control, perception, and certain cognitive behavior. Each aspect of development, including physical, social and cognitive, is related to the other.

Early Child Development

Development of motor skills is related to almost every aspect of the child's psychological and cognitive status, including perception, intelligence, previous learning, present motivation, emotional stability, and to social relationships (Breckenridge & Vincent, 1966). Motor development is defined as "...changes over time in motor behavior that reflect the interaction of the human organism with its environment" (Wickstrom, 1983, p. 3). The first five years of life are generally regarded as a period during which fundamental motor patterns emerge

as the child deals with problems of locomotion and as he learns to manipulate available objects in his environment (Wickstrom, 1983). At birth a child has the physical and functional capacity for only simple movement and possesses no demonstrable gross movement patterns. According to Wickstrom, "simple movements must be put together to form simple combinations" (p. 9). When these combinations are performed with consistency, they become more distinct patterns. Progress is determined by the combination of maturation processes, learning processes and environmental influence.

During the first two years, an infant quickly improves his/her performance of motor activity. Between birth and three months of age, infants usually raise their heads and chests when in a prone position (Bondy, 1980). During the next three months, infants successively achieve the skills to roll over, sit with lateral support and manipulate objects. Generally at seven months an infant can sit independently. At eight months an infant can stand with help and a month later stand holding furniture or other stationary objects. On average crawling occurs at seven months, creeping at eight and one-half months, walking when led at ten to eleven months, pulling to stand at twelve months, and walking alone at twelve to fifteen months (Martin & Stendler, 1959; Wickstrom, 1983). By eighteen months, gross balance has improved so that a child can begin to throw a ball overhead without falling. By thirty-four months a child can catch a large ball with arms straight. When children reach two years of age, they typically run well, use stairs with little assistance, and kick a ball (Bondy, 1980). Between twenty-four and thirty-six months of age, a child is able to jump, progressing from jumping from a twelve inch height with one foot ahead to jumping from an eighteen inch height with both feet (Wickstrom, 1983).

By eighteen months fine motor control is demonstrated by scribbles, improving with imitation in scribbling, skill in stacking small blocks, and increasing success manipulating forks and spoons (Bondy, 1980). At three years of age, a child can copy a circle. By two years of age handedness may be evident in bimanual tasks; and, by three years of age the preference is pronounced (Bondy, 1980). By six months babbling is established. During the infant's second year, he/she acquires approximately fifty words and can put these words together to begin speaking short sentences (Bondy, 1980).

During preschool many social interaction changes take place. Typically there is a decrease in solitary play and parallel play and an increase in cooperative play between two and four years of age (Routh, 1980). Children learn to both play cooperatively and form lasting friendships with peers. It is also during preschool that most children learn toilet training. This includes keeping dry at night and controlling both bowel and bladder (Routh, 1980).

Development of Fine Prehension

An understanding of the development of prehension is beneficial in evaluating grasp and developing appropriate intervention strategies when necessary (Hohlstein, 1982). According to Schneck and Henderson (1990), the development of pencil grip involves "a developmental progression with changes continuing to occur until approximately 10.5 years of age," (p. 893). The development of the basic components of prehension is necessary for later manipulation, writing skills, and environmental interaction (Chakerian & Larson, 1993).

There have been several published studies regarding the development of grasping behavior, including research conducted by Halverson (1937) and

Gesell (1940) as reported by Rosenbloom and Horton, (1971). Gesell believed that hand function developed by the expansion of the total reflex system, "...first dependent upon certain postural sets, then gradually becoming independent, versatile, and smoothly synergized" (Erhardt, 1974, p. 594). Halverson saw prehension beginning with "...visual location of the object, to hand approach until it is direct, and finally to grasp, from primitive squeeze to more mature form" (Erhardt, 1974, p. 594).

The dynamic tripod grasp is considered to be the most mature grasp, usually acquired between the ages of four and six years (Bergmann, 1990). Rosenbloom and Horton (1971) described two stages in the evolution of the dynamic tripod grasp. In the first stage, called the tripod posture, "the posture of the fingers is acquired but intrinsic movements of its components are not seen; these occur later in the second stage," which is called the dynamic tripod (Rosenbloom & Horton, 1971, p. 3). Several immature grasp patterns or stages occur in sequence and precede the dynamic tripod grasp.

Rosenbloom and Horton (1971) found that the earliest or most immature grasp when children hold a crayon is a supinate grasp, followed by the pronate position. In the supinate grasp the arm is in a neutral position, and the crayon is held in a gross grasp at the distal end. In the pronate position the arm is pronated, and the crayon is held at its proximal end with the index finger and thumb extended. It is at this point that the thumb and first two fingers become increasingly involved in holding a crayon or pencil, with adjustments continually being made (Rosenbloom & Horton, 1971). As the finger position develops, a child's grasp moves progressively distally toward the point of the crayon or pencil. Between the ages of four and six years, localized movements

of the thumb and fingers involved in the tripod grasp are produced (Rosenbloom & Horton, 1971).

In a study that investigated developmental progression in pencil and crayon grip, Schneck and Henderson (1990) found that a lateral tripod grasp was used by approximately one-fourth of the children in their study who demonstrated mature grasps. In the lateral tripod grasp, the pencil is stabilized against the radial side of the third digit with the distal pad of the index finger on the top of the pencil and the thumb adducted and braced over or along the lateral border of the index finger (Bergmann, 1990). According to Schneck and Henderson (1990), children three years of age can be expected to use pencil grips ranging from primitive to mature. At four and one-half years of age, children will use transitional or mature grips. Either the dynamic tripod or lateral tripod grasp is typically used by children six and one-half years of age and older. Schneck and Henderson concluded that the children in their study, aged 3 to 6.11 years, demonstrated a similar developmental progression in pencil grip.

Atypical Pencil Grasp

Pencil grip is important because it allows for the fine movement necessary for writing (Schneck, 1991). Variations in pencil grasp of children are normal and often depend on the demands of the writing task. However, ninety-five percent of children six and a half years old typically used either a lateral tripod or dynamic tripod grasp, refining the grip as they got older (Weil & Amundson, 1993). Variations in grasp may not necessarily be harmful to handwriting, however, some grips may make handwriting easier than others. A dysfunctional grip may cause writer's cramp and put stress on certain muscle groups (Tseng & Cermak, 1993). In addition, the poor formation of letters and the failure to join

letters together to form words may be the result of an improper grip (Schneck, 1991).

Children depend on tactile and proprioceptive-kinesthetic feedback to perform handwriting skills. Children with decreased tactile or proprioceptive-kinesthetic feedback may have limited pencil control and may not be able to produce script automatically. These children may also use a tight grip on the pencil because the pressure provides some feedback, subsequently creating an awkward pencil grip (Schneck, 1991). According to Schneck, "an awkward grasp may not affect handwriting when minimal amounts are required, but when large amounts of written work are required, a poor grip may lead to fatigue as well as to the slow, poor formation of letters" (p. 702).

Handwriting is an important skill for the school-aged child (Schneck, 1991). A child's ability to produce fluent and legible writing allows the child to express and record his or her ideas and share what he or she knows. Handwriting problems may prevent a child from finishing assignments on time or attending to the content of information, as the child is forced to concentrate on the mechanical act of writing (Tseng & Cermak, 1993).

Occupational Therapy Theory

"...Occupational therapy is a facilitation process that assists individuals in achieving mastery of life tasks..." (Llorens, 1977, p. 656). With human development, an individual expects and is expected to achieve specific adaptive behaviors which enable him/her to cope in life (Llorens, 1970). According to Lloren's theoretical framework of facilitating growth and development, the mastery of particular physical and neurophysiological skills and abilities, both horizontally and longitudinally, is necessary for adaptation and continued

development (Pratt, Florey & Clark, 1989). Llorens (1970) states that "physical or psychological trauma experienced in any one of the horizontal parameters at any particular time in the longitudinal process can interrupt the developmental cycle" (p. 95). Such trauma, whether it is related to disease, injury, environmental insufficiencies or intrapersonal vulnerabilities, may change the process of growth and development creating a gap in the developmental cycle, possible maladaptation, and difficulty in achieving or acquiring the skills and abilities for future growth and development (Llorens, 1970). Such trauma if identified early enough can be influenced by intervention, allowing the individual to continue developing and achieving adaptive skills (Llorens, 1970).

When a child's development is delayed, the occupational therapist can facilitate growth and development. Structured therapeutic activities assist the child in increasing and developing physical and neurophysiological skills and abilities, as well as preventing maladaptations (Pratt, Florey, & Clark, 1989). Intervention would include activities that facilitate development of sensorimotor functions, developmental play, symbolic activities and interpersonal relationships (Llorens, 1970). Early developmental experiences and the development of prehension skills are necessary for a child's learning and independence as he grows and develops. Occupational therapists who receive referrals for handwriting problems can be instrumental in facilitating the development necessary for handwriting and prehension skills.

Summary

Minimal research has been conducted on the early developmental experiences of children with prehension patterns outside the range of normal. It has been established that early developmental experiences affect later

development. Particular experiences or achievement of milestones may serve as a foundation for development and developmental changes occurring later in childhood. Research has also indicated that a prehension pattern that is determined to be outside the range of normal may affect the child's handwriting and performance in the role of student. However, the existence of similarities in the early developmental experiences of children with atypical grasps has not been studied.

CHAPTER 3

DESIGN AND METHODOLOGY

Purpose

The purpose of this study was to determine whether similarities exist in the early developmental experiences of seven year old children with a prehension pattern that has been identified as being outside the range of normal. Any similarities that were found could help to identify children at risk for prehension problems, as well as indicate possible treatment methods.

Research Question

The research question was posed: Are there similarities in the early developmental experiences, as reported by the parents, of children with prehension patterns that have been identified as outside the range of normal?

Sample

The sample consisted of seven parents of seven-year old children who were identified by occupational therapists as having a prehension pattern outside the range of normal. The children of the subjects were obtained from the private practices of Melanee Murphree, MS, OTR and Teri Wiss, MA, OTR and met the following criteria: (a) must be seven years old , (b) have an atypical prehension pattern, and (c) have few compounding disabilities, particularly physical disabilities such as cerebral palsy, or other orthopedic disabilities.

Parents whose children met the criteria were first approached by Melanee Murphree, MS, OTR and shown a letter from the researcher introducing the research and briefly explaining the procedure (Appendix A). Initial agreement to participate was given verbally to Melanee Murphree, MS, OTR. Immediately

prior to the interview subjects were given a consent form to read and sign (Appendix B).

Parents participating were all the mothers of the children. The children are six boys and one girl. All parents were asked to read and sign the consent form prior to the interview to assure confidentiality and anonymity (Appendix B). Participation was voluntary and all information provided by the parents will remain confidential.

Design

This study is qualitative or naturalistic and uses interview methodology. It is a preliminary, exploratory study. Parents of seven, seven-year old children, with prehension patterns that have been identified as being outside the range of normal, were interviewed regarding the early developmental experiences of their child. The interview was open-ended and unstructured, allowing the parents to provide history, information and insight regarding their child's development and current prehension problem.

Instrument and Procedure

Open-ended and unstructured interviews were conducted by the researcher. An interview guideline designed by the researcher, with input from the thesis advisor and readers, was used to guide the interview (Appendix C). The interview process was explained to each parent, who was informed that the interview would be audio tape recorded with permission. In addition to the tape recording, answers were noted by the researcher for each question. Each interview was thirty to sixty minutes in length. The interview centered around the early developmental experiences, from birth to three years, of each child. During the interview, the researcher encouraged the participants to answer each

question freely, allowing as much time as the participant wished to share information and experiences. After the interview, the tape recordings were transcribed by the researcher and the data analyzed.

Data Analysis

The interviews were analyzed for the possible emergence of any similarities or themes in the early developmental experiences of the children, as provided by the parents. Sufficient information was gathered from the interview to discover possible patterns and to draw inferences regarding early developmental experiences and atypical prehension. The researcher listened to the tape recordings several times and the transcriptions were read repeatedly. Developmental experiences of each child that were considered noteworthy or difficult by the mother were listed for each case. These lists were then compared to determine whether there were any similar experiences in the early developmental experiences of the children, as reported by the mother. An additional list of similar experiences was made with the number of cases noted in which they occurred. Each case was then reread with a focus on the similar experiences that were identified. The common developmental experiences were then incorporated into the results.

CHAPTER 4

DATA AND RESULTS

Presentation of Data

The parents of seven children were interviewed regarding the early development of their child. All children were seven years old and, in each case, the individual interviewed was the mother. The interviews took place in March of 1996. The data presented represents a summary of information obtained through the interview process. Cases are presented in no particular order; however, each case reports demographics, birth history, a brief description of the child's development and the occupational therapy referral.

Case A

Demographics

Case A is a seven year old male. The information was provided by the child's mother. Case A receives occupational therapy that addresses handwriting, reading , spelling, and sports difficulties, as well as decreased self-confidence, decreased self-esteem, and decreased motivation.

Birth History

With the exception of being "very sick" throughout her pregnancy, the mother reported a very "normal" pregnancy. Birth occurred at thirty-nine and one-half weeks gestation.

Child's Development

Between the age of six months and two and one-half years Case A had many ear infections. The mother suspected hearing damage when her son did not babble as much as she observed in other children and did not speak until he was three. However, after taking him to be tested on two occasions, she was told

that his hearing was fine. It was later determined, per the mother's report, that Case A has a learning disability or central auditory processing disorder, described as the inability to interpret or difficulty with interpretation of what he hears. When given more than three simple commands he becomes frustrated, flustered and does nothing. He does not know what to do. If he spills his milk or a similar incident happens, he does not react like other children. He freezes and simply sits still. He has been in speech therapy since just prior to turning four years old, graduating a week before this interview.

The mother also observed that while the subject was playing with his blocks, she could look at him and almost see him thinking through his actions. She described his thought process as slow. She did not observe any delays in his physical development until he entered school, where there were more children with whom to compare his physical abilities. At this time she noticed that he did not skip, hop or catch a ball as did the other children. When thrown a ball, he would not put his arms out or close his arms in an attempt to catch it. She also noticed difficulty with balance. Case A has never been interested in sports activities. The mother stated that she had always attributed his difficulties or awkwardness to his height. She thought that he was just a little clumsy. He walked at twelve and one-half months and crawled for approximately five months.

Between the ages of two and one-half and four Case A was learning to dress himself. He had difficulty learning to tie his shoes and is still unable to untie them correctly. His mother did not recall any tactile defensiveness in his early years; however, she reported that her son is now complaining about the way a blanket on his bed feels and no longer likes to touch it. It was a week before he

turned four that he could hold his bladder for more than seven minutes at a time. After months of trying to train him, his parents were planning to have him evaluated. However, one week before the evaluation was scheduled, he learned to control his bladder.

Case A has always preferred to play by himself. His mother described him as shy, quiet, polite, and more of a loner. He is usually easygoing and willing to share; yet, he would rather play alone.

Occupational Therapy Referral

Case A was referred to occupational therapy by his teachers who had noticed handwriting difficulties. He was screened by the school occupational therapist who determined that he needed occupational therapy. He was then referred and evaluated by Teri Wiss, MA, OTR and continues therapy at her practice.

Case B

Demographics

Case B is a seven year old male. Information was provided by his mother. He is involved in occupational therapy for gross and fine motor problems, postural control problems and attention deficit hyperactivity disorder (ADHD). He uses a gross grasp during writing activities.

Birth History

Case B's mother has been diagnosed with diabetes for twenty-two years and reported a complicated pregnancy. At one point it was believed that the subject had a abnormal fetal heartbeat, however it was later found to be normal. The mother developed protein in the urine at about six months and was placed on complete bedrest. At about eight months she began having contractions. Case B

was delivered by emergency Cesarean Section three and one-half weeks prematurely.

Child's Development

Case B's mother initially reported noticing nothing unusual with respect to the developmental milestones. He crawled at approximately nine months and walked at about thirteen months. He had several ear infections with one being very difficult to cure and requiring several courses of antibiotics. In addition, he has had speech problems and has been in speech therapy for two years. He was diagnosed with ADHD at four years of age after his daycare reported that he was demonstrating aggressive type behaviors.

Prior to being diagnosed with ADHD, his parents had noticed that he had never been particularly coordinated. He does not like physical challenges. His mother observed that if he did not know how to do an activity or if he could not do it, he did not want to try. He did not like to fail so he said, according to his mother, that he did not want to or could not do the activity. He can not hop on one foot and continues to be unable to perform jumping jacks. He never enjoyed artistic activities and used only gross strokes while coloring. He continues to have difficulty coloring inside the lines. His mother reported that he was able to learn to use zippers and buttons without much difficulty, but continues to have difficulty with snaps. Case B's mother observed that there are fabrics that her son does not like. For example, he used to refuse to wear blue jeans; and although he will wear them at this time, he prefers other pants.

Socializing is very difficult for Case B. He has always had a very difficult time getting along with other children his own age. He prefers interaction with adults and adult attention. His mother stated that he wants other children to like

him, but has difficulty dealing with them. His toilet training was unremarkable overall. He was slightly late learning to control his bladder, but his mother recalled no particular problems.

Occupational Therapy Referral

After being told about Case B's aggressive behaviors in day care, his parents took him to a psychologist and later had him evaluated by Children's Health Council in Palo Alto. Results of that evaluation included a referral for occupational therapy. When he was four, his parents took him to an occupational therapist who used biofeedback. After finding little success with this treatment method, his parents were referred to Melanee Murphree, MS, OTR.

Case C

Demographics

Case C is a seven year old male. Information was provided by his mother. Case C is involved with occupational therapy for gross and fine motor difficulties, delayed language development, oral defensiveness and attention deficit hyperactivity disorder (ADHD). During writing activities he places both the third finger and the index finger on top of the pencil shaft and stabilizes the pencil against the fourth finger.

Birth History

The pregnancy with Case C was fine until the later stages, when the mother's blood pressure increased to the point that she was prescribed complete bedrest. At thirty-eight weeks labor was induced and Case C was eventually delivered with the use of forceps. The umbilical cord was slightly wrapped around

Case C's neck. During the birth process, the fetal monitor did not indicate any evidence of distress.

Child's Development

The most noticeable aspect of Case C's development, according to his mother, was that his language was delayed and his attention span was limited. At age two and one-half, he began seeing a speech therapist and continues with therapy at this time. His mother also observed what she described as autistic-like mannerisms attributed to his lack of speech. At six weeks, Case C became colicky, crying for four to five hours every night. According to his mother, he could only be consoled by being held closely in his mother's arms as she ran around the house. He liked being held closely and bounced. In addition, he had chronic ear infections from age one to two years.

Case C "army crawled" on his hands and feet at nine or ten months, and walked at one year. He never enjoyed fine motor activities such as coloring, drawing, cutting or building with legos. He would occasionally paint on a large easel using gross strokes. He has some difficulty with gross motor activities and balance. At this time he does not skip, ride a bike or enjoy swinging. He is able to button, however, can not tie shoes or zipper. As a baby, Case C would put a great deal of food in mouth at once. His mother believed he was trying to get some sort of oral or sensory feedback. The mother noticed that he has always been sensitive to sound and coped by putting his fingers in his ears. He has also been sensitive to bright sunlight and now wears sunglasses. He has exhibited oral defensiveness since the age of two, eating few foods.

Case C has always been less mature than other children his age. His mother noticed that although he appeared to be motivated to be social he was not very

adept at playing with other children. His mother recalled one incident when her son tried to break into a small group of children playing but was not able to. She believes it is because of his language delays.

Toilet training was delayed. His parents began training at three and one-half and it took one year. He was four and one-half when he was trained. His mother remembered it as being difficult and attributed the delay to his poor language skills and their moving out of the country.

Occupational Therapy Referral

Because of concerns about his lack of attention to activities, his difficulty with pencil grasp and cutting with scissors, Case C's mother provided access to a full diagnostic process at Children's Health Council, where occupational therapy was recommended. He was first seen by an occupational therapist who believed that formal therapy was not necessary and exercises could be done at home. He has been seen by his current occupational therapist for one year.

Case D

Demographics

Case D is a seven year old male. Information was provided by his mother. Case D is involved with occupational therapy for fine motor difficulties, and tactile defensiveness. During writing activities, he uses a partial dynamic tripod grasp with extension and thumb locked against the pencil.

Birth History

The mother reported a normal pregnancy. The delivery was with a midwife at a hospital and culminated with a blue baby birth and hemorrhaging by the mother. Case D was hospitalized for ten days for pneumonia.

Child's Development

The mother noticed that Case D was slightly delayed in achieving some of the developmental milestones, for example sitting. He did, however, pull to standing fairly early and walk while holding on to objects quickly. He crawled for a short time, but the mother believed this was too slow for him so he pulled himself up and began walking. He crawled up and down stairs by nine or ten months and was walking while holding on at nine and one-half months. He walked independently at approximately fourteen months. By two he was talking and has no difficulty expressing himself.

Between approximately six and nine months Case D was given a shape sorter toy requiring that he insert the correct shape into the correct hole. This toy caused him extraordinary frustration. He would throw it across the room. If he did not happen to correctly put the shape piece into the opening on the first try, he would begin to cry. The mother believes this incident is illustrative of a behavioral pattern. She has noticed similar reactions to other tasks such as writing or doing buttons. He would throw his pencil down and get very frustrated while trying to do buttons or zippers. When his mother tried to get him to wear jeans he would cry and throw a tantrum because he was unable to do the zipper. When Case D was two and three and in preschool he stopped doing any of the painting activities and did not choose to do any fine motor activities, such as coloring or other arts. He would not voluntarily go up to a table with fine manipulative tasks and engage in that activity. Case D has never liked gooey or sticky substances. He does not like the texture of flour and water or finger-paints. He did like clay but it had to be real clay and not modeling clay. He now does not like the texture of microwaved food.

There was a transient period of time during which Case D demonstrated aggressive behaviors toward other children, biting or hitting. But his mother remembers this as just a phase. When he entered a new environment with different people, he stayed with his mother and observed until he felt more comfortable. He never ran immediately to the toys or the children.

The mother reported little difficulty with toilet training. Case D was trained by the age of two to two and one-half. He did, however, continue to wet his bed at night until he was five and one-half.

Occupational Therapy Referral

Case D's mother was particularly concerned about her son's tantrums over wearing pants with zippers or buttons, as well as his strong resistance to performing the required activities, drawing, coloring, or writing, while in school. During a parent teacher conference at school, the teacher could not show them a writing or drawing sample done by their child and stated that he was tired that day. His parents thought this was peculiar and consulted with the Children's Health Council at Stanford, where an occupational therapy assessment was suggested. He has been seen by Melanee Murphree, MS, OTR for one month.

Case E

Demographics

Case E is a seven year old female. Information was provided by Case E's mother. Case E is involved in occupational therapy for fine and gross motor problems and social difficulties.

Birth History

The pregnancy with Case E was unexpected, as the parents did not think they were able to have children. They had previously tried for some time without success. Toward the end of the pregnancy, the mother was told that the fetus was not growing anymore. It had already been determined that the baby would be delivered by Cesarean section because she was breach. She was delivered one week early.

Child's Development

The mother observed that Case E was somewhat late in achieving the developmental milestones. Once reaching a milestone, for example rolling over, sitting, and crawling, she would usually not repeat the skill for a month. She quickly learned how to walk in the walker. She walked independently when she was approximately fifteen and one-half months old and began saying words at seventeen months of age. Visual motor activities were always difficult for her.

Case E never enjoyed gross motor activities, such as climbing, or fine motor activities, such as drawing. It was difficult to engage her in gross motor activities. She found such activities to be difficult and would therefore choose not to do them. With drawing, she has always had difficulty looking at something and trying to duplicate it. She preferred imaginary type play, looking at books or listening to stories. She had difficulty using utensils and continues to have difficulty cutting. She is currently able to do buttons, but can not tie shoes. The mother reported that Case E has excellent verbal skills and a very good memory. Learning writing skills was very difficult for her. She would yell and scream that she just could not do it.

Her mother noted that Case E often observed activities for a long period of time before attempting them. The mother now believes that her daughter had to see things over and over, working through how to do it in her mind, before attempting the activity. This was also true of joining other children playing. While other children were playing, she sat back and observed. Her mother believes that some activities were and still are very frightening for her and that she needs to figure how to make her body move or how to position herself in a way to perform the activity. According to the mother, she was worried about how another child's space was going to encroach on her space. She needed to make sure that no one else would bump into her or interfere with her.

Case E has always been sensitive to the feel of clothes labels and requests that her mother remove the labels from her clothes. She has also always been resistant to having her hair washed. Her mother describes toilet training as being difficult. She was three years old when she became toilet trained.

Occupational Therapy Referral

Case E's parents had a major evaluation conducted because of concerns about apparent fine and gross motor delays and her social difficulties. Her mother recalled that the preschool that her daughter attended may have suggested the evaluation. When she was four, her parents brought her to the University of California to be evaluated. Occupational therapy was one of the suggestions to come out of the evaluation. She has been seen by Melanee Murphree, MS, OTR since October of 1995, but has been involved with occupational therapy for three years.

Case F

Demographics

Case F is a seven year old male. He is the twin brother of Case G. Information was provided by the mother. He is involved in occupational therapy for developmental delay and has suspected mental retardation. During writing activities he uses a gross grasp and hand dominance remains unclear.

Birth History

After an alpha fetal protein test, it was determined that the mother was carrying twins. Between eighteen and twenty-nine weeks, protein was spilling into the urine indicating that the mother's kidneys were not functioning correctly. Her blood pressure was also escalating leading to preeclampsia. The boys were delivered at twenty-nine weeks gestation. Case F weighed one and three-fourths pounds. He suffered from a premature lung disease and was ventilator dependent for six and one-half months. While in the hospital he also had an intracranial bleed.

Child's Development

Because of the long term intubation, Case F developed a hyperactive gag reflex and reflux and required a gastrostomy tube. He never developed an appropriate suck, nor did he learn to feel hunger or the need to satisfy his hunger. He continues to receive feeds by gastrostomy tube, along with eating some solid foods by mouth. He receives about sixty percent of his nutrition through the feeding pump and forty percent from feeding orally. Between the ages of two and four he was hypersensitive to any oral stimulation, as well as to the smell of food, the sight of anything gooey, or the feel of any substance that felt liquidy, or sticky, or was similar in texture to flour.

Case F is two to three years delayed in both motor and cognitive skills. Because he was in the hospital for so long, he was significantly delayed in achieving the developmental milestones. He sat at thirteen months of age and crawled by nineteen months of age. He crawled for a long period of time, walking at three years of age. His mother recalls that his language development was more typical. He said words at age one and one-half and is currently approximately one year delayed in language development. Toilet training was difficult and he is just recently trained. This is partially due to difficulty with weight shifting in both sitting and standing positions.

His mother stated that Case F is very social and outgoing and loves to talk to people. When he is unable to focus on a task or complete a task, he often uses his sociability as a coping mechanism or distraction. He never experienced stranger anxiety and his mother was concerned that this was not normal. He has also been more social with adults than children.

Occupational Therapy Referral

Case F has been involved in occupational therapy since he was an infant for oral sensitivity and developmental delays. He was previously enrolled in an early intervention program through the University of California at Los Angeles. He began sensory integration therapy at the Ayres' Clinic in Los Angeles.

Case G

Demographics

Case G is a seven year old male. He is the twin brother of Case F. Information was provided by Case G's mother. He was involved in occupational therapy for fine and gross motor delay and low self-esteem. He was recently discharged from occupational therapy services.

Birth History

After an alpha fetal protein test, it was determined that the mother was carrying twins. Between eighteen and twenty-nine weeks, protein was spilling into the urine indicating that the mother's kidneys were not functioning correctly. Her blood pressure was also escalating leading to severe preeclampsia. At twenty-nine weeks the twins were delivered. Case G weighed one and three-fourths pounds. In addition to prematurity and lung disease, Case G was born with a tracheoesophageal (TE) fistula, requiring his first surgery within the first nine hours of life. He had a total of four surgeries to repair the TE fistula problem. He was ventilator dependent for three and one-half months and sedated most of the time.

Child's Development

Since birth Case G has been six to nine months delayed in both motor and cognitive tasks. His mother found that he has always required repetition for learning and needed to observe a task or activity before he felt comfortable doing it. She believes that he processes things slowly and has observed that he does things more slowly, taking longer to complete tasks, than other children. She stated that she can almost see him thinking things through or processing information. He was somewhat delayed in achieving his developmental milestones. He crawled at approximately thirteen months and walked independently quickly afterwards at fifteen to sixteen months. Soon after walking independently he was able to run. Language development was never an issue, as he began speaking by one and one-half years. Toilet training was somewhat difficult and delayed.

His mother described him as being more adept at gross motor activities than fine motor activities. He was always very active, participating in gross motor activities and having less interest in fine motor tasks. While in preschool, his mother noticed and became concerned that his skill level was not at age level.

Socially, Case G has been much different from his twin brother. He is more withdrawn and quiet. He does not warm up to strangers as easily as does his brother. According to his mother, when he was unable to do certain activities well or took longer to complete tasks in a timely manner when compared to other children at his school, his self-esteem decreased and he became more withdrawn, socializing less with his peers. His parents have since decided to hold him back one grade, to repeat kindergarten. He now has many friends and feels better about himself, as he is able to complete tasks and participate in more activities now that he is older and has had more practice.

Occupational Therapy Referral

Case G began seeing an occupational therapist as an infant and received in-home therapy through one year of age. When he was in preschool, his mother was concerned that he appeared to be motorically delayed. He was assessed but did not begin with therapy again until his brother began receiving occupational therapy from Melanee Murphree, MS, OTR.

Findings

This study was designed to answer the following question: Are there similarities in the early developmental experiences, as reported by the parents, of children with prehension patterns that have been identified as outside the range of normal? Although each child's development is unique, there were areas

where similarities were found among the subject's early developmental experiences (see Table 1).

Difficult Social Behavior

From this sample, six of the seven children had some difficulty in social interactions with peers, as reported by their mothers. Three mothers stated that their children either preferred to play alone or had difficulty getting along with other children because their social skills were not well developed. Of these children, one child clearly preferred interaction with adults. Mothers of two of these children described them as being motivated to play with other children or wanting other children to like him/her, but not having the necessary social skills for play. Two mothers reported that their child needed to sit back and observe the situation and the activity before he/she would join a play group. Even after observation, Case E was reluctant or afraid to join other children. According to her mother, she appeared to be concerned about how another child would encroach on her space or interfere with her ability to engage in a motor activity.

Another mother noticed that when her son was unable to participate in activities as did other children or complete tasks in a timely matter when compared with other children, his self-esteem declined, and he became more withdrawn and less social. When put in a situation where he was with younger children and his skills were comparable to theirs, he was able to make more friends and enjoyed playing with other children. Mothers of two of these six children also recalled that their child exhibited aggressive behavior at some point while in a social situation. This may have influenced how other children responded to them or may have affected future interactions with other children. One mother described her child as being less mature than his peers and thought

Table 1

Areas in which Subjects Shared Similar Developmental Experiences (N=7)

Area	Subjects						
	A	B	C	D	E	F	G
Difficult Social Behavior	X	X	X	X	X		X
Problems in Motor Development	X	X	X	X	X	X	X
Sensory Defensiveness	X	X	X	X	X	X	
Difficulty in Toilet Training	X		X	X	X	X	

that his language delay contributed greatly to his social difficulties.

Problems in Motor Development

The mothers of all seven children noticed some motor problems early in their development, whether it was gross motor, fine motor or both. Three mothers noticed early delays or difficulties with both fine and gross motor activities. Three mothers noticed early delays or difficulties with only fine motor activities, one of whom noticed gross motor problems as her son became older and entered school. One mother noticed delays or difficulties with only gross motor activities. Two mothers described their child as being clumsy or not coordinated. Learning to skip, hop, perform jumping jacks, climb, swing and ride a bike continues to be challenging and occasionally frightening for five of the seven children studied. Four mothers noticed that their child was often frustrated by his or her limitations or afraid to try new or previously difficult to perform activities.

Five of the children never liked to engage in fine motor activities such as coloring, drawing or playing with legos and building toys. If any painting or drawing was done by these children, they used large gross strokes on an easel. Two children had tantrums or screamed when learning to use a pencil. Difficulty with or inability to close zippers, buttons or snaps was also commonly reported by the mothers with four of them recalling this problem. Three of the children continue to prefer and often request pants that they simply pull up and have elastic waistbands.

Sensory Defensiveness

Although each child differed in what he/she was sensitive to, six of the seven children had some sort of tactile defensiveness as reported by their

mother. Of these, three of the children were described as having oral sensitivities. Case F's mother believes that her son is orally defensive because of being on a ventilator as an infant. He has always been sensitive to any oral stimulation and the texture of any substance that is gooey, liquidy, sticky or similar to flour. Case C's mother reported that her son hardly eats any solid foods. Case D does not like the texture of foods heated in the microwave and refuses to eat them. He also does not like the texture of gooey foods.

Four of the mothers noticed that their child was sensitive to the touch of certain textures and the way an object or substance felt on their skin. For example, Case A complained of the texture of a mink blanket on his bed. Case B absolutely refused to wear blue jeans complaining of how they felt to him. He continues to prefer other types of pants but will wear blue jeans occasionally. Case D does not like the texture of flour and water, finger-paints and modeling clay. In addition to tactile defensiveness, Case C's mother reported that he has always been sensitive to sound, coping by putting his fingers in his ears, and bright sunlight, for which he wears sunglasses.

Difficulty in Toilet Training

Five of the seven mothers reported some degree of or some type of difficulty with toilet training. It was a week before Case A was four years of age when he became bladder trained. Prior to this he could not control his bladder for more than seven minutes. Case C began toilet training at three and one-half and learned to control his bladder after one year. Learning to control his bowel was more difficult according to his mother. Although Case D had no difficulty with initial toilet training and was trained shortly after turning two years of age, he continued to wet his bed until he was five and one-half or six. Case E's mother

describes toilet training as "tough" and "not the best time" in their lives. She recalls being very frustrated. Bladder control was not difficult for her daughter but bowel control was. She was between three and one-half and four when she was completely toilet trained. Case F, who is two to three years delayed and had difficulty with weight shifting, is just recently toilet trained. According to the literature, toilet training, which includes controlling and moving the bowels and urinating when appropriate and not wetting during the night, should begin at eighteen months and be completed by three and one-half (Breckenridge & Vincent, 1966; Routh, 1980).

Additional Similarities

There were additional similar experiences, as reported by the mothers, occurring in at least two cases. Two mothers reported noticeable delay in the achievement of developmental milestones and were concerned about this at some point. Three of the children crawled or crept for only two months or less. Three children were delayed in speech development or had some difficulty with speech and were either currently seeing or had seen a speech therapist. Two of the children have been diagnosed with attention deficit hyperactive disorder. The mother's of Case B and Case C were concerned early on about their child's lack of attention and aggressive behavior. Two mothers noticed that their child's thought processes were somewhat slow, describing their perception that they able to see their child thinking through a task. Three mothers observed that their child had been afraid to try new activities or afraid to participate in activities that are difficult for him or her. Whether these similarities are actual similarities in the developmental experiences of children later diagnosed with

prehension problems or are simply coincidences, may be determined by a follow-up study with a larger sample.

CHAPTER FIVE

DISCUSSION, PROFESSIONAL IMPLICATIONS, RECOMMENDATIONS FOR FUTURE RESEARCH AND SUMMARY

Discussion

The purpose of this study was to determine if there were similarities in the early developmental experiences of seven year old children with atypical prehension patterns. Although this is a preliminary exploratory study, similarities have been revealed in the early developmental experiences of children with prehension patterns outside the range of normal. From interviews with the mothers of the subjects, similarities in difficulties in social behavior, problems in motor development, sensory defensiveness, and difficulty in toilet training were found.

It was reported in the literature that the achievement of developmental milestones and the development of motor functions may influence later development or be associated with future impairment (Lockman & Thelen, 1993; Touwen, Hempel & Westra, 1992). In addition, there are multiple factors that can influence fine motor development, including social factors, motor and physical factors and sensory integration factors (Exner, 1989). The early experience of motor functions can, in turn, affect other developmental changes occurring in childhood, including psychological development, kinesthetic awareness and sensory-motor development (McEwain, Dihoff & Brosvic, 1991).

As indicated in the literature, typically between the ages of two and four children begin to play cooperatively and form lasting friendships (Routh, 1980). The majority of the children in this study experienced difficulty socializing with

peers and lacked the appropriate skills to form friendships and play in groups. All of the mothers noticed that their children experienced some difficulty with motor skills throughout the period of early development. Five of the mothers reported that their child did not choose to engage in fine motor activities, including drawing, coloring, or playing with Legos or other small manipulatives. According to Bondy (1980), at eighteen months of age children should be scribbling with the use of a pencil or crayon, playing with and stacking small blocks and manipulating utensils. According to the mothers, the majority of the children experienced some type of tactile or oral defensiveness and delayed or difficult toilet training. Additional less consistent similarities were found among the children, including delay in the achievement of developmental milestones; however, these similarities may be simply coincidences.

Professional Implications

Early experiences of the child are considered to be of exceptional importance in influencing his/her later development. Interference with normal development during the preschool years, more than any other period of development, is likely to produce an adverse effect on the acquisition of skills which will be used for future growth and development (Martin & Stendler, 1959). Through identifying similarities in the early developmental experiences of these children, the occupational therapist may be able to determine at an early age whether or not a child may later develop an atypical prehension pattern. When assessing a child who is between the ages of birth and three, the occupational therapist can inquire about the child's development in an effort to determine if he/she has experiences similar to the children in this study and, if

he/she is at risk for prehension problems. Through activities, the therapist can then provide appropriate growth experiences to prevent the development of potential maladaptations (Llorens, 1977).

Knowledge of early developmental experiences of a child with a prehension pattern outside the range of normal, may indicate treatment methods and activities that will be of benefit to that child. According to Llorens (1977), the occupational therapist can serve "...as the acculturation agent for the conditions of physical, social, and psychological health when the developmental level being experienced by the patient or client as a result of natural or traumatic incident is unequal to the age-related demands being made" (p. 656). In addition, the occupational therapist should determine at which developmental level the child is functioning and then provide treatment and activity at this level which will in turn facilitate further growth and development (Llorens, 1970).

In a school setting, the majority of referrals to occupational therapy are because of poor handwriting or awkward pencil grasp (Bergmann, 1990). Handwriting problems and an awkward pencil grasp can affect a child's learning and classroom performance. Through providing appropriate developmental activities and knowing the early developmental experiences of a child, the occupational therapist can facilitate a more appropriate prehension pattern, thus influencing performance in the role of student.

Recommendations for Future Research

Because of the small sample size, it was difficult to determine if all of the similarities that were found in the developmental experiences were actual similarities or simply coincidences occurring among the children of the

subjects. Subsequent research may use a larger sample and determine if the same similar experiences occur. This study examined the developmental period of birth to three years. Future research can examine a longer developmental period, for example birth to five. Parents often observe differences or abnormalities in their child's development and behavior when they are able to compare them to other children at school. Longitudinal studies can also be conducted with children who are determined to be at risk for future prehension problems, beginning at an early age and following the child through development. The developmental experiences of subjects with atypical prehension patterns can be compared to those of subjects with more typical prehension patterns and who are not involved with occupational therapy.

Summary

Minimal research has been conducted on the early developmental experiences of children with prehension patterns outside the range of normal. Early developmental experiences and the achievement of milestones affect developmental behavior in later childhood. The objective of this study was to determine whether similarities exist in the early developmental experiences of children whose prehension patterns have been identified as outside the range of normal. Results of this study indicate that similarities exist in the areas of difficulties in social behavior, problems in motor development, sensory defensiveness, and difficulties in toilet training among children with prehension patterns that have been identified as outside the range of normal. These results may be helpful to pediatric occupational therapists. Similar behavior patterns or developmental experiences that appear in a client or patient may indicate future prehension problems. Knowing the early developmental experiences of a child

with an atypical prehension pattern, may assist the occupational therapist to choose treatment activities designed to address problems with underlying performance skills.

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APPENDIX A
LETTER TO PARENTS

February 6, 1996

Dear Parent,

I am a graduate student at San Jose State University in the Occupational Therapy program. As part of the curriculum it is required that we complete a thesis or research project to graduate. Because of my interest in pediatrics and working with children, I have chosen to do my thesis involving children. After listening to a lecture by Melanee Murphree and talking with various professors, I was able to find a topic of interest to study.

My thesis involves looking at the early developmental experiences of seven year old children who are currently involved with occupational therapy. I will be studying developmental experiences and milestones that occur between birth and three years of age of approximately six different children. I hope that any results of my study will be helpful to occupational therapists providing therapy to children.

In order to be able to do this I need to interview parents who would be willing to share with me what they remember about their child's development between birth and three years of age. The interview will take approximately thirty minutes. Neither your child's name nor your name will be used in the study and all information is kept confidential. The decision to participate or not and any information given to me in the interview will not affect any therapy your child is receiving.

If you are interested in participating in my study please let Melanee know. Thank you for taking the time to read this letter and any consideration you are giving to participating.

Sincerely,

Michelle Crosby

APPENDIX B
SAMPLE CONSENT FORM

College of Applied Sciences and Arts • Department of Occupational Therapy
One Washington Square • San José, California 95192-0059
Main Office: 408/924-3070 • Fieldwork Office: 408/924-3078 • FAX: 408/924-3088

INFORMED CONSENT

I have been asked to participate in a study looking at the early development of children. The result of this study may help occupational therapists to understand early developmental patterns and similarities in children. This information will be helpful when providing occupational therapy to children.

I understand that:

1. I will be asked to participate in a thirty to sixty minute interview at my convenience. The interview will take place in one session.
2. There are no anticipated risks.
3. The possible benefit of this study is that I will be helping the field of occupational therapy to better understand early development and provide therapy for my child or other children.
4. The results of this study may be published, but any information from this study that may identify me and my child will remain confidential and will be disclosed only with my permission.
5. My child will not be identified by name in the study but may be referred to as Subject A, B etc.
6. Any questions about my participation will be answered by Michelle Crosby, OTS at (415) 572-1371. Complaints about the procedures may be presented to Professor Kay Schwartz, Chair, Department of Occupational Therapy at (408) 924-3070. For questions or complaints about research subject rights, or in the event of research related injury, contact Serena Stanford, Ph. D. (Associate Academic Vice President for Graduate Studies and Research) at (408) 924-2480.
7. My consent is given voluntarily without being coerced. I may refuse to participate, or withdraw at any time by notifying the researcher. Refusal to participate in the study or withdrawal for the study will not affect my current or any future relationship with SJSU. Nor will it affect any current therapy or future therapy received from my occupational therapist.
8. I have received a copy of this consent form for my file.

MY SIGNATURE BELOW INDICATES THAT I HAVE READ AND UNDERSTAND THE ABOVE INFORMATION, THAT I HAVE DISCUSSED THIS STUDY WITH THE RESEARCHER, AND THAT I HAVE VOLUNTARILY AGREED TO PARTICIPATE.

Signature of study participant

Date

Signature of investigator

Date

APPENDIX C
INTERVIEW GUIDELINE

INTERVIEW GUIDELINE

DEMOGRAPHICS

Age of child?

Sex of child?

Relationship to the child?

BIRTH HISTORY

Tell me about the pregnancy and the birth of your child.

CHILD'S DEVELOPMENT

Tell me about your child's development between the ages of birth to three years.

*(If parent is focusing on one or only a few aspects of development)

** (If parent doesn't mention any milestones)

During that time, did you have any concerns regarding his/her development?

Were there any significant events?

Did you have any indication that your child would be receiving occupational therapy?

What were the signs that led you to your child's referral to occupational therapy?

Thanks for your assistance with this interview.

*Occupational therapy is concerned with all aspects of a child's development and usually assesses, for example, social, physical, cognitive, psychological and sensorimotor components. You have told me mostly about _____. Is there anything you can tell me about the other areas?

**Can you tell me about your child's achievement of milestones?