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A FIELDWORK STUDY OF HOW YOUNG CHILDREN LEARN FUNDAMENTAL MOTOR SKILLS AND HOW THEY PROGRESS IN THE DEVELOPMENT OF STRIKING

By

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ABSTRACT

A FIELDWORK STUDY OF HOW YOUNG CHILDREN LEARN FUNDAMENTAL MOTOR SKILLS AND HOW THEY PROGRESS IN THE DEVELOPMENT OF STRIKING

By

Clersida Garcia

The purpose of this study was to examine closely how young children learn fundamental motor skills and, more specifically, to observe how children progress in the development of striking as a result of their interactions in their regular motor skills class. The study was conducted over a period of six consecutive months. Fieldwork research methodology was used and data were collected using participant observation, videotaping, audiotaping, formal and informal interviews, and document gathering. Data analysis was an ongoing process during the fieldwork. After completion of the fieldwork, the whole corpus of data was analyzed in order to identify emerging patterns. These patterns were then checked against data from other sources. Analysis of children's daily interaction while learning fundamental motor skills revealed gender differences relating to the way children learn. Girls were found to learn through a cooperative style. Boys were found to learn via a competitive style. A cultural pattern of cooperative interaction among Asian children was found in the setting. In the developmental sequence of striking, children showed patterns that were slightly different from the stages of striking hypothesized by Seefeldt and Haubenstricker (1974). An ABC stage sequence of striking was identified with three transitions between stage B and stage C. The study has implications for teaching, learning, and research on the development of fundamental motor skills. This study provided insightful information about the particular ways girls and boys learned skills in this setting. Cooperation and competition should be considered as two forms of social interaction that can be in conflict within different gender and

cultural groups. Variability in the development of striking should be expected and seen as a sign of progress toward more mature forms of the skill. In the area of research, this study offers a new approach for understanding how movement patterns develop through continuous observation over time, as well as the opportunity to investigate the influence of a child's social, affective, cognitive, environmental, and experiential background in the acquisition of motor skills.

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This was a fieldwork research study to learn how young children acquire fundamental motor skills through their daily interactions while attending a motor skill program at an early childhood center, and how they progress in the development of striking. To gather the data, as is typical of this research methodology, the researcher was a participant observer in the setting. The researcher established a relationship with the child, teacher, and parent participants in the study. In order to protect the anonymity and privacy of those involved, pseudonyms have been used in this study.

Throughout the body of this dissertation, quotation marks (" ") have been used to indicate the exact words of the speaker. In cases where the researcher knew that the words were not exact, (not the exact words) was placed in the text following the quote. When describing a vignette, the day, month, date, and year of the data are given. For instance: On another occasion, on Tuesday, October 23, 1990,... This information indicates that the data were "pulled out" from fieldnotes taken on Tuesday, October 23, 1990. In cases where other sources were used (interviews, documents, videotapes), the source and date also are presented in the text.

There are a few places in Chapters 5 and 6 of the study where it was necessary to express the possible thoughts of participants according to the interpretation of the researcher. In those cases, the quotation marks (—" "—) were used preceded and followed by a dash. For instance, another possibility could be that so and so thought —"I am a bad thrower, too.—" These are the stylistic conventions used in this study.

CHAPTER ONE

INTRODUCTION

This chapter will provide the reader with an overview of the study. The first section addresses the purpose of the study; the second section deals with the importance of fundamental motor skills; and, the third section addresses the justification of this study. Subsequent sections contain the research questions and the research design, respectively. The chapter ends with an overview of the dissertation itself.

Purpose of the Study

The purpose of this study was to examine how young children learn fundamental motor skills and particularly how they progress in the development of striking as demonstrated by children attending a motor skills program in an early childhood center. Fundamental motor skills (FMS) refer to the performance of basic locomotor, manipulative, and stabilizing patterns of movements involving the combination of two or more body segments (Gallahue, 1982). The FMS are divided into three categories: locomotion (e.g., walk, run, jump, gallop, hop, skip), object manipulation (e.g., catch, throw, kick, punt, strike), and postural control (e.g., swing, sway, stretch, bend, turn, pull, hang). Fundamental motor skills have been hypothesized to develop in an orderly manner from a simple form of movement to a more complex form. The importance of the development of fundamental motor skills during early childhood has been supported by numerous researchers (Gesell, 1928; McGraw, 1935; Bayley, 1935, 1936; Halverson, 1966; Espenschade & Eckert, 1967). In this study, the researcher is interested in understanding how children progress through the hypothesized sequence of striking.

The Importance of Fundamental Motor Skills

Motor development is a relatively new field of study when compared to other disciplines. "Motor development studies the changes in motor behavior over the lifespan and the processes which underlie these changes" (Clark & Whitall, 1989, p. 194). Several facts about motor development have been accumulated through extensive research efforts in the last century. Although there is not yet a comprehensive theory of motor development, some theoretical models of motor development have been proposed to provide some direction about the course of motor development from infancy to adulthood.

A brief overview of these models of motor development will provide an understanding of the importance of learning the fundamental motor skills during early childhood. One of the more commonly known models of motor development was proposed by Seefeldt (1979). He established the "Hierarchy of the four levels of motor skills" that was later revised to the "Sequential progression of skill levels in the achievement of motor proficiency". In this model, Seefeldt proposed four progressive levels of motor development toward achievement of motor proficiency. The first level of this model is represented by reflexes and reactions present at birth. Seefeldt called this period of time the "Neonatal period." The second level of this model is represented by the fundamental motor skills which are considered the foundation for more complex sports and dances. It is generally believed that young children should master these fundamental skills during early childhood if optimum development of higher level skills is to occur (Seefeldt, 1979; Haubenstricker & Seefeldt, 1986). The importance of the development of fundamental motor skills during early childhood in Seefeldt's model is expressed by the "Proficiency Barrier". Seefeldt explained his rationale for having a proficiency barrier between fundamental motor skills and transitional skills in the following quote: "The proficiency barrier is placed between 'fundamental' and the 'transitional' skills

because our work has shown that children who are deprived of learning fundamental skills have difficulty when they attempt to learn the transitional skills" (Seefeldt, 1979, p. 316). According to this model, fundamental motor skills represent the foundational ABC's of a movement repertory. The third level of Seefeldt's model represents the "Transitional Motor Skills" which may lead to activities at the next higher level of the model. The transitional skills are combinations of fundamental motor skills with or without modifications. The fourth level of this model depicts "Specific Sports Skills and Dances". Success achieved at any level depends at least in part on the degree of proficiency attained in the previous level of the model. However, the placement of the proficiency barrier clearly emphasizes the special importance of learning the fundamental motor skills during early childhood.

Another comprehensive model of motor development, "The Phases of Motor Development", has been proposed by Gallahue (1982, 1989). This model also contains four levels or phases of motor development and within each phase, various stages of motor development are proposed. The first phase is the Reflexive Movement phase which represents the very first movements of the fetus. Gallahue maintained that these involuntary, subcortically controlled movements form the basis for the phases of motor development.

The Rudimentary Movement phase represents the first forms of voluntary movement. This phase starts at birth and goes to about age two. According to Gallahue, rudimentary movements are maturationally determined and are characterized by highly predictable sequences in their appearance. The rate at which these abilities appear, however, vary from child to child and is dependent on both biological and environmental factors. Following the Rudimentary Movement Phase is the Fundamental Movement phase which, according to Gallahue, represents a time for young children to explore

their movement capabilities and to discover how to perform a variety of locomotor, stability, and manipulative movements. The fundamental movement phase is an outgrowth of the rudimentary movement phase of infancy and embraces the early childhood years (from 2 to 7 years). In this phase, Gallahue identified three separate, but often overlapping, stages and describes the initial, elementary, and mature stages of each fundamental motor skill. Lack of agreement regarding the description of stages of fundamental motor skills exists among motor development researchers. However, there seems to be agreement in the ideal time for acquisition or learning of these skills. Gallahue (1982) stated that most of the data on the acquisition of fundamental motor skills suggest that children can and should be at the mature stage by age 5 or 6 years and that failure to achieve the mature stage within this phase will inhibit complete development in the next phase.

The Specialized Movement phase represents the last level of Gallahue's model. This phase is an outgrowth of the fundamental movement phase. During this phase movement becomes a tool that may be applied to a variety of competitive and cooperative games, sports, dances, and related recreational activities. During this time the fundamental motor skills are refined, combined, and elaborated upon in order to be used in increasingly diverse demanding activities.

The importance of fundamental motor skills during early childhood years has been expressed in these two models. For the learning of fundamental motor skills to occur, practice, motivation, and instruction are needed during early childhood years, otherwise the child will have difficulty progressing toward mature patterns of movements, and participation in physical activities that require basic skills will be hindered. How practice, motivation, and instruction interact to influence motor skill development is not completely understood.

Early studies were concerned with the problem of distinguishing between changes in behavior resulting from the processes of maturation and/or learning on the part of the individual. A number of deprivation studies on lower animals (Dennis, 1941; Spalding, 1873; Spalding, 1875; Yerkes & Bloomfield, 1910) have demonstrated the importance of the interaction between the organism and its environment. Moral considerations do not allow one to conduct these types of experiments on humans. However, some studies have been conducted under naturally restricted or deprived conditions (Dennis, 1935; Dennis and Dennis, 1940). The findings, although not as dramatic as with lower animals, showed slightly delayed or retarded motor development in children deprived of motor activity. Another approach to the study of this issue between maturation and learning examined the effect of additional practice on learning. Gesell and Thompson (1929) conducted a classical study using identical twins. Their findings indicated that learning appears to be profoundly conditioned by maturation. Gesell and Thompson concluded that "Training does not transcend maturation but that maturation does tend to modify or supplant the results of training" (p. 95).

McGraw (1946) decided that the important finding of Gesell and Thompson's study was that the benefit of practice is associated with the time period in which it is implemented. She conducted a longitudinal study of fraternal twin boys from age 21 days to 22 months to determine the age at which children show improvement in various motor activities as a result of practice (McGraw, 1935). She concluded that there are critical periods during the learning of any given skill when it is most susceptible to modification through repetition of performance. She also pointed out that phylogenetic activities (such as reaching and grasping) were less subject to modification than ontogenetic activities (such as throwing and swimming). Her investigation showed that there was great variability in the effect of practice on learning that depends on the individual

(maturation) and on the nature of the activity.

Recent studies on infants (Thelen, 1986) are challenging McGraw's (1935) and Gesell and Thompson's (1929) view of maturation as the leading factor in the development of phylogenetic skills. A new line of inquiry (dynamical systems) is challenging the traditional belief that maturation alone is basically responsible for the appearance of phylogenetic skills.

Studies on infant reflexes (e.g., the stepping reflex) from a dynamical systems perspective emphasize the contributions of all subsystems, with no one major factor responsible for the emergence of a behavior pattern (Thelen, 1985; Thelen, 1986; Thelen, Kelso, & Fogel, 1987). According to Thelen (1986), observed behaviors reflect the dynamical and multidimensional contributions of the infant's maturational state (neurological, biomechanical, psychological), the context, and the task. Thus, many components contribute to a behavior. Likewise, one or more components may be rate-limiting factors. In other words, some components may limit the emergence of a particular behavioral pattern. The behavioral pattern will emerge when all subsystems are developed.

This dynamical systems perspective provides a new challenge to the study of motor skill development. This perspective considers the human patterns of movement to be the result of very complex interactions of several subsystems within the individual and with the environment. Similarly, fieldwork research permits observation of the interaction patterns of children from a naturalistic perspective. This approach can be used to study the learning of fundamental motor skills while simultaneously considering the task, the child's movements, the physical environment, and the subjective meanings of children's actions within their social context.

Justification of the Study

The significance of the proposed study lies in three areas. First, early childhood represents the best time for the acquisition of fundamental motor skills. Second, there is a great need for understanding the process of learning the fundamental motor skills during early childhood. Third, fieldwork research seems to offer new avenues for enhancing our knowledge base of motor skill acquisition.

Fundamental motor skills play a significant role in the lives of children because they serve as the foundation upon which children can build a motor skills repertoire. Participation in sports and dances of the culture is limited when children fail to learn the fundamental motor skills early in life. Furthermore, fundamental motor skills are a very important means for understanding the interaction between body movement and the environment. They are a means for children to learn about body movement and space, direction, effort, and relationships. Understanding of these important relationships through movement will enhance children's movement confidence and their movement capabilities throughout their lives. The social aspect of motor skills, even during the early ages, is very important. Children gain approval from their parents and others as they learn to do things for themselves. During early childhood, children begin sharing more rigorous activities and games in which the fundamental motor skills are needed. Landreth (1958) pointed out that there appears to be a reciprocal action between the motor behavior of a child and the child's emotional responses. Satisfying activity promotes a child's well-being. Thus, success in the performance of an activity leads to expansive actions on the part of the child. This interaction between motor behavior and pleasure feelings has been illustrated through the observation that young children tend to repeat their most recently acquired or developing motor skills (Espenschade and Eckert, 1980). Knowing the importance of fundamental motor skills during the early

childhood years, and that these motor skills will not develop by maturation alone as originally thought, make the learning of motor skills and the environmental and social context in which that learning occurs an interesting topic to study. It seemed appropriate, then, to study how children learn fundamental motor skills in an educational setting.

Fieldwork research offers the opportunity to examine motor skill acquisition from a qualitative and naturalist perspective. Qualitative research of this nature provides an understanding of the context (conditions in which learning occurs) and the content (what they learn, what are they doing, and how are they doing it) of learning through indepth observation, interviews, and documentary analysis of the data. It also allows opportunities to know the participants' perspectives (children, parents, teachers, etc.) and how their actions fit into what really happens. In addition, this method of research allows one to observe the dynamic interactions among participants and to examine the reflections of individuals on their process of learning.

Second, although motor development studies have been criticized for their focus on descriptive data in lieu of experimentation, much of the current knowledge about the development of fundamental motor skills is the result of descriptive research. However, the focus of motor development research has changed through the years. In the 1920's and 30's, researchers such as Bayley (1935), Gesell & Thompson (1929), Halverson (1931), McGraw (1935), and Shirley (1931) were interested in identifying the sequential changes in motor behavior that occurred during infancy and early childhood. The order of appearance of different motor behaviors was identified, and scales for assessing children's normal motor achievement were developed. The main focus was the presence or absence of particular behaviors. Little attention was given to the quality of the skills. Later, distance, accuracy, frequency, or time were used as the indices of

improvement. Subsequently, a qualitative perspective in the description of the motor behaviors emerged and several developmental sequences of fundamental motor skills were described according to the biomechanical changes in body configuration that occurred from rudimentary movements to the most mature form. Patterns of tasks or stages within skills were carefully identified, and although conflicts did arise about the nature and number of developmental levels, a great deal of information was contributed to our knowledge. Notable contributions were made by Halverson (1931), McClenaghan and Gallahue (1978a), Roberton (1977), Seefeldt, Reuschlein, and Vogel (1972), Wickstrom (1983), and Wild (1938).

During this time, experimental research also was conducted to examine the effect of additional practice or deprivation on skill acquisition (Dennis,1935, 1938, 1940; Gesell and Thompson, 1929; McGraw,1935), or the effect of systematic training and manipulation of environmental variables on skill learning (Dusenberry, 1952; Halverson, Roberton, Safrit, & Roberts, 1977). Although this research has been very valuable in providing information about the issue of nature vs. nurture, and ideas about conditions under which learning seems to be more effective, much is still not understood about the process of learning fundamental motor skills. Experimental research has faced great difficulty in controlling the numerous variables that influence skill acquisition.

Fieldwork research offers a new perspective to motor development research. With its broader focus, one can analyze not only the qualitative aspects of movement, but also the link between the mover, the conditions of the environment, and the physical and social demands of the task in context. On the one hand, fieldwork research allows one to observe children in an activity setting and thus account for what is going on in the context in which movement occurs without necessarily limiting intervening variables. On the other hand, this type of research allows one to examine how children's progress

in movement occurs, and to determine if the hypothesized developmental sequences that children seem to go through while learning fundamental motor skills can be verified. How children progress from one stage or level of a skill to the next is not completely understood. Additional information also is needed about the transitions and variability between developmental stages and among children.

Third, research of this kind is highly needed. Roberton, in 1987, wrote that "little is known about the changing ecology of the environment and its influence on the observed developmental status of children's movement". Gallahue (1989) also seems to call for more naturalist research when talking about the developmental sequences of fundamental movements. "Many of the developmental descriptions of fundamental movement abilities are laboratory-generated. That is, they are hypothesized developmental sequences that are the product of research in an artificial setting; a setting quite unlike the real world in which children move" (p. 233). Although previous researchers have helped us to understand the sequential development of movement, children were observed at determined points in time such as every three months, six months, and so forth. Therefore, what actually happened between measures is conjecture. Seefeldt's article in the 1989 Motor Development Academy Newsletter seems to be supporting the worthiness of more naturalistic research observations and ethnographic studies, thus indicating that this type of research has experienced a revival and new credibility in the real world setting.

The fieldwork research employed in this study is believed to be the first of its kind in motor development. This research examined how children's movement progressed by using indepth participant observation of the children in their natural educational environment while they were participating in their regular physical activities. Analyzing children's movement in more natural settings may enhance our

understanding of hypothesized developmental sequences. In addition, this approach to research could provide greater understanding of children's motor behavior and their interaction with their ethological environment. This line of research may shed new light on the learning of fundamental motor skills during early childhood and may add knowledge to the scope and interdisciplinary focus of motor development research.

Research Questions

This section will briefly examine the questions that guided this study. Initially this research started with one very broad question: How do children learn fundamental motor skills? Out of this question a more specific question emerged as the research study was initiated. The new emerging question focused on one skill, striking. How do children progress through the hypothesized developmental sequence of striking? Knowing that children acquire fundamental motor skills through a developmental process and that learning can be influenced by environmental conditions, the context in which fundamental motor skill acquisition occurs is important. This research study focused on the nature of children's interaction when learning fundamental motor skills, and on how children progress through the development of striking. More specific questions evolved and the following questions were asked:

1. How do children interact among themselves when learning fundamental motor skills?
    a. Are there any patterns of interaction among children (boys with boys, boys with girls, girls with girls) in learning fundamental motor skills? If so, what are they in terms of actions, words, silence, movements, associations, etc?

b. Are there interactional gender differences in the way children learn fundamental motor skills? If so, what are they?

c. Are there cultural differences in the way children interact in learning fundamental motor skills, and particulary striking?

2. How do children progress through the hypothesized developmental sequence of striking?

These questions were refined during the process of data collection in response to the form in which events unfolded in the setting. Therefore the questions that finally guided the research were the first question, part b and c, and the second question of those previously proposed.

Research Design

The study of how children learn the fundamental motor skill of striking required fieldwork research methodology using ethnographic techniques for data collection and analysis. For six consecutive months the researcher attended an early childhood center in which a motor skills program was implemented. Several techniques were used to gather information on how children learn, how they interact among themselves when learning fundamental motor skills, and how they progress in their development of the striking sequence. These techniques included participant observation, interviews with children, teachers and parents, document gathering, and videotaping. During six months of "participant observation" this researcher described, by using all sources of data gathered, the nature of child interaction when learning the skill of striking. During the beginning of the research, emphasis was on the social interaction of the child participants - getting to know the roles of participants. Also, emphasis was placed on the physical environment (equipment used, the organization of the class, the lesson, the

activities, etc.) when interaction took place. As the research progressed, the fieldnotes focused more on the progression of movement demonstrated by the children, and on the connection of the interactions with the learning of the skill.

Audiotapes, videotapes, and pictures were used to record these events. Documents and interviews were placed in conjunction with all these data in order to gain a deep understanding of what was going on in the setting.

An enormous amount of data was gathered for analysis and interpretation which is typical of this kind of study. The process of data gathering followed a planned schedule. The proposed dissertation research time line is shown in Appendix A. The specifics of what was done each day are presented in chapter three of this manuscript.

Overview of the Dissertation

This dissertation contains seven chapters. Chapter one provides a general overview of the purpose of the study, its importance, research questions, and the research design. Chapter two contains a review of literature related to the theme of the study. Chapter three presents a description of how the study was accomplished. It includes a background of the study, a description of how the questions evolved, the final research questions asked, and the research methodology including data collection techniques and data analysis. Chapter four provides a description of the nature of the context in which the research was conducted. This chapter describes the school and its philosophy, the motor skills program, the teachers, the assistant teachers, the student teachers, and the main characters of the study - the children. A typical day is presented and the gymnasium location is described. Chapter five addresses the nature of the interactions observed focusing on gender differences in the style of learning fundamental motor skills. The different styles of interaction among boys, girls, boys and girls, and a

cultural pattern of interaction is also discussed. Chapter six addresses the question of how children progress through the developmental sequence of striking. The last chapter contains a discussion of the major findings, and the implications and practical considerations of the study for future research in the field.

CHAPTER TWO

THEORIES OF CHILD DEVELOPMENT, DEVELOPMENTAL SEQUENCES OF MOTOR SKILLS, AND FACTORS ASSOCIATED WITH SKILL DEVELOPMENT

Introduction

The purpose of this chapter is to provide: first, a review of the related literature dealing with relevant theories of child development; second, an historical overview of the developmental sequences of motor skills including a description of the developmental sequence of striking; third, a review of growth, maturation, environmental, and sociological factors associated with the process of motor skill development; and finally, a summary of all the information presented.

Theories of Child Development

Several theories, from the early years of the twentieth century, have been generated in an attempt to explain human development. They have provided valuable contributions to knowledge of child development. Each of these theories reflects the particular trends of the time and its originator's perspective. A brief review of the most prominent theories will be provided in this chapter as a general foundation for the issues addressed in this dissertation.

Maturation Theories

The maturation theories were based on the idea that human development is the result of the unfolding of the human being's genetic inheritance. Therefore, behavior becomes more complete as the human being matures, both physically and mentally. Perhaps, the major influence on the development of these theories was Charles Darwin's

"On the Origin of Species," originally published in 1859. Darwin was interested in demonstrating the evolution of human beings from lower animals. Darwin (1859) considered the behavior of lower animals primarily instinctual and inflexible. On the other hand, Darwin viewed the behavior of the human species as largely trainable and learned from adults. The notion of an evolution of species was the key to studying human behavior from its origins in the infant and child (Schiamberg, 1988). One of the leaders of this maturation theory in the United States was Stanley Hall. Hall (1904) believed that development from conception through adolescence was primarily the result of biological and genetic factors. Hall speculated that the development of the individual human being recapitulated the evolution of the human species. Although Hall's recapitulation theory was under criticism, since by two or three years of age a human child has gone well beyond the abilities of monkeys, apes, and prehistoric human-like creatures, his general emphasis on a genetic basis for the unfolding of development had a marked influence on the study of child development.

Gesell (1928), a student of Stanley Hall, emphasized that growth and development were determined primarily by a fixed timetable of maturation. Gesell was a strong believer in the notion of innate, built-in, or genetic tendencies toward optimal development which controlled the rate of growth and learning in each child. He considered that environmental factors had minimal impact. Gesell conducted detailed observations of children and developed schedules or standard sequences of development for motor, visual-adaptive, personnel-social, and language behavior throughout childhood. The concepts of "maturational readiness", "behavioral stages", and "reciprocal interweaving" became popular during the 1930s and 1940s as a result of Gesell's classic experimental studies on identical twins. The major criticism of Gesell and others representative of the traditional maturation theories was that they ignored

the significant role of environment in development. They considered human development nature-based, or based on genetic inheritance.

Behavior and Learning Theories

In contrast to maturation theories, behavior and learning theories explain human behavior as a result of environmental stimulation. Much of what an individual becomes is the result of what he or she has experienced or learned. In that sense, this theory of learning was developed in the field of psychology, changing the prevailing emphasis of psychology from nativism and subjectivism to behaviorism. Watson (1924) challenged the nativism or maturationists, he insisted that children were not born with innate characteristics, rather, they enter the world as "tabula rasa" to be shaped and influenced entirely by the environment. Watson placed a strong emphasis on the environment as the primary force in influencing the development of children. Watson also rejected the idea that the study of human development should deal with "mentalistic" concepts such as feelings, thoughts, intentions, and so on. He suggested that the focus shift from the study of mind to the study of behavior. Watson argued that psychologists should examine observable or overt behavior and explain such behavior with terms such as stimulus, response, and reinforcement. Watson considered that all behaviors were learned and that behaviors were learned in small units or bits. Watson believed that the complex behaviors of adults were built on the elementary foundation of the simple inborn reflexes of infants continually refined through experiences of the environment. This process was described as being composed of chains of S-R (stimulus-response) units that become associated with one another through learning. Learning theories had generally agreed on two types of conditioning regarded as important for human learning and development, the classical conditioning represented by Watson (1924) and Pavlov

(1927) and the opperante conditioning represented by Thorndike (1905) and Skinner (1938).

John Dewey (1896) criticized behaviorism as a too simplistic and unrealistic view of human behavior. Dewey argued that the parts of the stimulus-response model are not separate units. Rather, they exist only as functioning units in the unified activities of behavior. The nature of a stimulus is determined by the makeup of the organism and the activities going on inside it. He pointed out that every response produces additional stimulating properties, which themselves produce behavior. Dewey suggested that the entire process was a "dynamic" and "continuous" one that could not be reduced to stimulus-response units. Thus, Dewey was proposing a continued interaction that modified both the individual's previous behavior in response to the environment and its continued interaction.

Behaviorism and learning theories were also criticized because they tended to see human beings as reactive organisms, emphasizing a mechanistic interpretation of human life. Their reductionistic perspective tended to explain complex behavior by the simple stimuli and response units. This reductionism failed to answer more important questions about how the human being organizes, controls, and regulates behavior.

Social Learning Theory

Social learning theory is considered to be an extension of and variation on traditional behaviorism (Schiamberg, 1988). This approach examines the range of learning that is accomplished by means of observation and imitation (modeling). Social learning theorists maintained that much of what we learned is learned by watching the behavior of others rather than through the direct shaping or "conditioning" of response (Bandura, 1973, 1977; Bandura and Walters, 1963). This theory deals with the ways

human beings learn such behaviors as aggression, generosity, and affiliation by the observation and imitation of those behaviors in significant others such as parents, peers, teachers, and friends. Another component of this theory is symbolic activity, which refers to the individual's ability to process information by using words and concepts that may serve as a guide for organizing future behaviors. For instance, a child's experience of seeing a fight is stored in memory, from where it can be retrieved as needed on future actions. A third component of social learning theory is self-regulation, which refers to the ability to monitor one's behavior in relation to antecedents (informative environmental cues that create expectations based on past experiences) and consequences (the results or consequences of actions). The likelihood of particular actions is increased by anticipated reward and reduced by anticipated punishment (Bandura, 1977). A considerable body of research on social learning and television has demonstrated that the viewing of aggressive or violent behavior on television can have significant impact on the subsequent performance of such behavior by children (Bandura, 1973, 1977).

According to social learning theorists Parke and Slaby (1983), the modeling of aggressive behavior depends on several factors: (a) Does the child identify with the aggressive model? Is the model someone whose behavior the child is likely to imitate? (b) What are the consequences of aggression to the model? Is the model praised or treated positively by others or punished as a result of aggression? (c) What is the age of the child? Is the child old enough to distinguish between reality and fantasy? (d) What do parents or significant others say to the child about the aggression of the model?

Social learning theory has made important contributions to our understanding of child development. It modified the traditional theory idea that "stimuli" are simple external entities. According to social learning theory, stimuli can be internal processes

such as symbols that help human beings make decisions and exercise control over their lives. Social learning theory has also suggested that other people including family members, peers, adults in the community, are significant in human learning and development. The fact that human beings can learn from one another is an important aspect of human development. Likewise, this aspect highlights the importance of interaction among children and adolescents as a significant aspect in the process of learning and development.

Although important contributions are recognized, social learning theory has been criticized for lack of an explanatory description of the internal cognitive processes such as memory or perception that are considered to be involved in the imitation or modeling of behaviors. Furthermore, social learning theorists believe that new behaviors learned through imitation do not involve new levels of psychological functioning. Some critics disagree with that and argue that the ability of the child to imitate a model is based on the child's stage of cognitive functioning.

Cognitive Theory of Piaget

The cognitive or organismic approach to learning and human development emphasizes mental or internal factors as contrasted to the environmental or external factors of the traditional behaviorists. Although many special learning theories incorporate cognitive processes into their theories, the chief proponent of cognitive theory was Jean Piaget (1952). Piaget viewed the mind as central to the understanding of how human beings develop. According to Piaget, the mind is not simply a passive receiver of information but an active processor of experience. Therefore, the mind actively changes and adapts to the world. Piaget theorized that an individual can act upon the environment and the environment can act upon the individual, so that an interaction

occurs between the two. Thinking involves adaptation to an environment and results in the organization of the mind. The organized patterns of behaviors and perception are called schemas. He considered infant schemas to be action-oriented, whereas adult schemas are abstractions. He theorized that the cognitive schemas of the adult were derived from the motor schemas of the child (Kagan, 1984; Piaget, 1963). Two complementary processes, assimilation and adaptation, are responsible for the adaptation of schemas. Assimilation consists of using the same schema in more than one way. For instance, an infant sucks on a nipple, its thumb, its hand, and even its blanket. Accommodation is the process of changing the schema to fit new situations. An example is the infant who adjusts its sucking action in order to drink from a cup.

These two processes work together throughout the life span and are necessary for cognitive growth. A balance between assimilation and accommodation is important and is referred to by Piaget as equilibrium. The absence of equilibrium provides the motivation for seeking a new state of balance. The interaction of assimilation and accommodation in the process of attaining equilibrium accounts for cognitive development. According to Piaget (1963), cognitive development proceeds through a series of stages, each qualitatively different from the prior stage. Piaget divided cognitive development into four broad stages: (a) Sensory Motor Intelligence Stage (0-2 years). Behavior is primarily motor. Infant schemas involve action, movement, and perceptual activity. (b) Preoperational Thoughts Stage (2-7 years). Development of symbolic functions such as language or imaginative play occurs. From 2 to 4 years the child is egocentric which starts decreasing from 4 to 7 years old. During this preoperational period, the child is increasingly able to represent events internally, "to think." (c) Concrete Operations Stage (7-11 years). The child becomes able to use operations or logical thought processes that can be applied to concrete (actual or real)

objects or experiences. And (d) Formal Operations Stage (11-15 years). The child's thinking reaches its greatest level of development. The child is able to apply logic to all types of problems including the abstract and the hypothetical.

Piaget has greatly contributed to the understanding of child development and more specifically intelligence development. This theory impacted all areas of human development because, for Piaget, human development resulted from the interaction of the developmental process encompassing biological growth, children's experiences, social transformation of information and attitudes from adults to children, with the inherent tendency for persons to seek equilibrium with the environment and within themselves (Salkind, 1981). Piaget recognized that the child is actively involved in interpreting the environment. The children do not simply respond to the world as a "tabula rasa" as behavioralists had claimed. Nor does the child simply unfold his or her inborn or innate characteristics as the maturationalists claimed. Rather, Piaget suggested that the child actively explores and interprets the environment.

Another contribution of Piaget to developmental study was the notion of "stage," that is, periods of times during which children's thinking and behavior reflects a certain type of underlying structure. Although the word stage had been used before, Piaget thought of stages as based on a qualitative, structural change intransitivity. His "stage" was a new use of the word and implied, (a) a fixed hierarchical order, and (b) cannot be skipped. Developmentalists today disagree on the definition and use of the word "stage" as conceived by Piaget. However, the word "stage" is still widely used in its aesthetic, descriptive, and explanatory categories (Brainerd, 1978; Roberton, 1978; Haywood, 1986). Critics to Piaget's theory of cognitive development included: (a) concerns with Piaget's methodology and the validity of his concepts (Diamond, 1982), (b) overemphasis on intellectual or mental processes in development. He pays minimal

attention to the role of social and cultural variations in children's thinking (Schiamberg, 1988), (c) unclear explanation of how and why the child moves from one stage to the next, i.e., a problem with horizontal decalage, and (d) underestimates of the cognitive ability of young children and overestimates of the cognitive ability of adolescents and adults. Piaget argued that young children are egocentric and have difficulty understanding an alternative perspective. Recently, Borke (1978) and Gelman (1978) found evidence that young children are less egocentric and more numerically skilled than observed by Piaget. In addition, Piaget has also been criticized for being biased, favoring boys' legal sense in moral development and considering them far ahead of girls in this area (Lever, 1976).

Kohlberg's Theory of Moral Development

Kohlberg (1958) was deeply influenced by Piaget's (1932) classic study, "the moral judgement of the child." Kohlberg's work was an extension of Piaget's theory, and he developed a major model of the growth of moral reasoning. The evolution of moral reasoning in the Kohlberg framework is assumed to reflect cognitive development and the order of moral development. For Kohlberg, as for Piaget, the development of moral reasoning proceeds through an orderly sequence of stages. Kohlberg defined six stages and three levels of moral reasoning. Each stage is qualitatively different from the previous one. The first level was a premoral level, the second was morality of conceptional role conformity, and the third was morality of self-accepted moral principle. Within each level, two stages were described. Moral reasoning becomes more sophisticated as development proceeds in a stepwise fashion. Each stage is characterized by a moral orientation. In the premoral level, stage one is called "punishment and obedience orientation"; stage two, "naive instrumental hedonism"; stage three "good-boy

morality of maintaining good relations, approval of others"; stage four, "authority maintaining morality"; stage five, "morality of contract and of democratically accepted law"; and stage six, "morality of individual principles of conscience."

The primary source for Kohlberg's (1958) derivations of his stages of moral reasoning was his doctoral dissertation. He administrated a variety of moral dilemmas to 72 middle-class and lower class boys, ages 10, 13, and 16 in suburban Chicago. The responses of these boys provided the basis for the six stages of reasoning. Subsequently, other researchers (Haan et al., 1968; Fodor, 1972; Ruma & Mosher, 1967) have used the same or modified moral development scales to assess these stages described by Kohlberg (1958). The variability and complexity of the scoring schemas for Moral Judgement Scales have created several problems that challenge the validity and reliability of this theory. First of all, the judgmental nature of the coding procedures introduces a potential for scoring bias. Second, the variability of scoring and reporting procedures confound the interpretation of results. Third, the intricate and ambiguous nature of the scoring scheme tend to discourage independent research. Fourth, there are confounding variables such as the main characters of the dilemmas are males and the first study which originated the six stages was done only with boys. This lack of recognition of differential role expectations lead Kohlberg to the conclusion that females appear to be less mature than males (Holstein, 1972; Kohlberg & Kramer, 1969). In addition, not all of the dilemmas are independent which can reduce the range of responses elicited. Furthermore, as in all scales of projective measures, the results of these scales can be influenced by IQ, social class, and verbal facility (Entwisle, 1972; Jensen, 1959; Mogowan & Lee, 1970).

Kohlberg's theory of moral development stimulated a great deal of work and research in the area of moral reasoning. However, the research done with Kohlberg's

framework is beset with a multitude of problems that challenge the validity and usefulness of this model. Results in actuality do not support the major assumptions of the developmental model, such as the hierarchical nature and qualitative differences between stages (Haan et al., 1968; Saltzstein et al., 1972; Holstein, 1972). In addition, Holstein found differences (favoring boys) in the way boys and girls move along the sequence of stages. Other researchers have demonstrated that different types of moral reasoning may be learned (Bandura & McDonald, 1963). Cowan, Langer, Heavenrich, and Nathanson (1969) and Prentice (1972) imply that the order of the stages can be changed. Finally, the last stages of moral development are under a lot of criticisms and questioning (Turiel, 1966).

The Psychoanalytic Tradition

The psychoanalytic tradition involves the theories of Sigmund Freud (1961) and the Neo-Freudians. These theories focus on emotional factors and personality development. Freud's notion of human beings was essentially deterministic and he placed the source of determinism on powerful forces existing within the person. The psychoanalytic theory considered human beings to be driven by inner forces that often remain at the unconscious level. Human development represented the effort of the individual to channel or redirect these potentially self-destructive forces of sex and aggression in socially constructive directions.

Freud formulated a stage theory on the development of emotions and personality. The driving force in Freud's theory is his concept of libido (or sexual energy). The libido is center in certain areas of the body at certain periods of life. At each location site of the libido, the individual can be gratified or frustrated depending on whether or not stimulation occurs and tensions are released. Frustration was associated with the

development of emotional or psychological problems later in life. Freud postulated that personality develops in a relatively predictable sequence of unvarying psychosexual stages. A brief description of these stages follows. The Oral Stage occurs from 0-18 months. The source of pleasure includes sucking, biting, and swallowing. There is a preoccupation with immediate gratification of impulses. The Anal Stage is from 18 months - 3 years. The source of gratification includes urination and the expulsion or retention of feces. The Phallic Stage extends from 3-6 years. The child becomes concerned with the genitals. In the male phallic stage, the boy sexually desires his mother. The father stands in the way of obtaining his goal so the boy develops negative feelings (Oedipus Complex). Boys gradually give up their desires and replace them with identification with their father. The females' phallic stage involves the girl's desire to sexually posseses her father. The mother stands in the way of the girl's goal. The girl develops negative feelings and fears punishment. Gradually her dislike for the mother is transformed into identification. The Latency Stage extends from 6 years to the onset of puberty and involves loss of interest in sexual gratification and identification with the like sex parent. The Genital Stage goes from puberty to adulthood. There is concern with adult modes of sexual pleasure, barring fixations or regressions. The individual is prepared for full adult sexuality.

The psychosocial theory of Erickson (1950) has much in common with Freud's, however it differs from Freud's theory in three major areas. Erickson emphasized the concept of ego or the self in relation to the social environment. Whereas Freud emphasized the importance of feelings, Erickson introduced a social and more complete framework. This framework introduced the parents, siblings, friends, and the family setting in relation to a wider social-cultural setting. Erickson was concerned with successful solution of developmental crises whereas Freud was concerned with pathologic

development. According to Erickson, the self develops as new demands are continually being placed on it by the social environment. Erickson proposed a stage theory of psychosocial development based on a maturational principle, the epigenetic principle which states that anything that grows has a ground plan. This ground plan is the whole and has parts that develop at different times or stages until all parts have arisen to form a functioning whole (Erickson, 1950). Erickson's major idea is that the stages of development require the individual to adapt to the social environment in terms of changes in the ego or self. Erickson (1950) postulated eight stages of development, suggesting that human beings experience eight crises during the course of the lifespace. They are: trust vs. mistrust (0-18 months), autonomy vs. shame and doubt (18 months - 3 years), initiative vs. guilt (3-6 years), industry vs. inferiority (6 years to puberty), identity vs. role confusion (adolescence), intimacy vs. isolation (young adulthood), generativity vs. stagnation (middle age), and ego integrity vs. despair (old age).

The psychoanalytic traditions view human development from a holistic perspective including topics such as emotions, motivation, and other aspects of human behavior, and also attempt to understand problems of human behavior in developmental terms. A major weakness of psychoanalytic theory is its lack of scientific validity in terms of procedures, methods of measurement, and findings. In addition, much of the so-called evidence of this theory comes from case studies of adults and, therefore, may represent a narrow view of a specific stage of human development. Furthermore, the psychoanalytic theory has been criticized for its sex bias which seems to represent a male model of development. According to Gilligan, this model gives little importance, considers failure, or lack of development females differences response and behaviors (Gilligan, 1982).

Ecological Systems Theories

Systems theories emphasize the necessary interaction between the developing person and the environment. According to this theory, human development is the result of three major factors: (a) the person and what he or she brings to a particular situation or stage of development, including experience and motivation, (b) the environment, what is available to the individual in a particular situation or stage of life, including the significant contexts in which life takes place such as family, school, neighborhood, and community, and (c) the reciprocal interaction between the person and the environment. This perspective, originated by the European gestalt psychologists, emphasizes the unity and the integration of the whole person (Koffka, 1935, 1963). Field theory was interested in the study of how the environment influenced children's behaviors as a whole (Schiamberg, 1988). Barker and Wright (1955) conducted naturalistic research studies in real life settings. They studied child behavior in a larger environmental context. Barker and Schoggen (1973) and Schoggen (1983) conducted unique research in this tradition. They examined children's beliefs expressed by children or adults, how the total environment influenced children, and how children participated in these environments. They found interesting differences between children of different cities. Barker and his colleagues concluded that the behavior of their subjects was more situation-oriented than person-oriented. Barker referred to this process as one of "behavior setting." Several other research studies were conducted looking at the interaction of person and environment. This research looked at children in their everyday environment such as housing (Walter, 1981, 1982), environment for preschoolers (Belsky, 1984; Weikert, 1984), and public school environment (Stigler et al., 1982; Hess & Holloway, 1984).

Another group of naturalistic researchers called ethologists have attempted to describe development in a real life or natural setting. Although they have been primarily concerned with the study of animal behaviors, their research has been applied to human development. They view development as a process of adaptation to the environment in which survival of a species depends on successful organism-environment interaction (Immelman, 1980). A relatively recent view of an adaptation or systems theory "ecology of human development" is the work of the developmental psychologist Urie Bronfenbrenner (1979, 1986). Bronfenbrenner used the word ecology to refer to the situation of the person and his or her social and physical setting. Bronfenbrenner (1979) stated that if we are to understand the way human beings develop, behavior and development should be observed in natural settings; settings that involve interactions with familiar people over long periods of time. Bronfenbrenner defines the ecology of human development as "the scientific study of the progressive, mutual accommodation between an active growing human being and...the setting in which the developing person lives" (1979, p. 21).

Three aspects are of significant importance in Bronfenbrenner's approach to the study of the ecology of human development. First, the developing person is viewed as a growing, active individual. Second, the interaction between the developing person and the environment is viewed as a reciprocal relationship. Third, the environment that is relevant to human development is not limited to one single setting, instead interaction between immediate settings and larger settings, including the culture, are considered. Bronfenbrenner classified the ecological environment into different categories or systems and defined its relationship within and between each system. A major contribution of the ecological system perspective on human development is its focus of attention on defining issues and formulating questions relative to social policy matters.

The influences and interaction of environmental systems and subsystems have contributed to a greater understanding of child abuse and adolescence maltreatment (Belsky, 1980; Galbarino, 1982; Galbarino, Schellenback & Sebes, 1986).

Developmental Sequences of Motor Skills

The field of motor development is relatively new, however, its historical development reflects the influence of these theories of child development. The study of developmental sequences of motor skills began in the late 1920's and early 1930's with the publication of important descriptions of motor development, such as the stages of progress to upright posture and walking (Shirley, 1931). Halverson (1931) described 10 stages in the acquisition of a mature pattern of prehension in infants. The classic study of the overhand throw by Wild (1938) supported the idea that the fundamental motor skills develop in an orderly fashion and that changes in motor behavior could be recorded in the form of identifiable motor patterns. These early investigations stimulated the study of developmental sequences of fundamental motor skills in later years.

The study of developmental motor patterns was virtually non-existent until the early 1960's. During the interim, normative studies of motor development resulted in the development of several scales that illustrate a relationship between age and motor performance, for example, Bayley's (1936) scales of infant motor development, the work of Gesell (1928), and that of McGraw (1940). Cratty and Martin (1969) presented an age-related sequence in the acquisition of a variety of locomotor, manipulative, and perceptual abilities of 365 children ranging in age from 4 to 12 years. Williams' (1970) summary of the movement abilities of children between 3 and 6 years of age documented more advanced forms of movements with increases in age.

Sinclair (1973) studied the motor development of 2- to 6-year-old children using longitudinal film analysis of 25 movement tasks at six month intervals. Her findings lent further support to the basic assumption that movement is a developing process during the early childhood years. These normative studies provided valuable information about the direction of development in quantitative terms such as distance and velocity ("how far", "how fast", "how many", etc.), but they failed to provide detailed information on the qualitative changes in body movement that occurred as the child progressed toward mature forms.

In the 1970's, some researchers began to focus on changes in body configurations and/or the movement patterns of body parts during skill acquisition, following the early orientation of Wild (1938) and Halverson (1931). Children's movements were observed and analyzed as they progressed from rudimentary performance to efficient, mature execution of fundamental motor skills.

The importance of the study of fundamental motor skills lies in its critical role in the course of motor development from infancy to adulthood. Although there is not yet a comprehensive theory of motor development, several theoretical models of motor development have been proposed. One of the more commonly known models of motor development was proposed by Seefeldt (1979). He established the "Hierarchy of the four levels of motor skills" that was later revised to the "Sequential progression of skill levels in the achievement of motor proficiency" (see Figure 1). In this model, four progressive levels of motor development toward achievement of motor proficiency are proposed. The first level of this model is represented by reflexes and reactions present prior to or at birth. Some of these reflexes and reactions will serve as the substrate for additional movements and some will be suppressed to allow a higher level of movement to proceed. Seefeldt called this period of time the "Neonatal period." The second level of

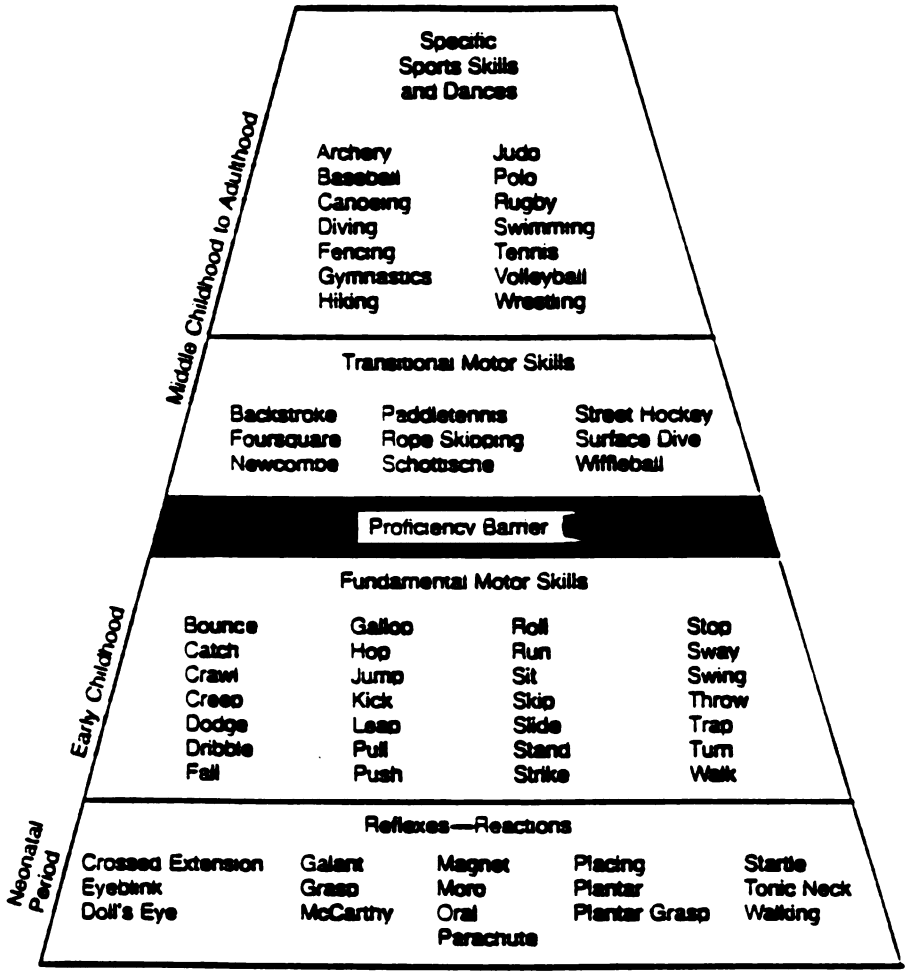


Figure 1. Sequential progression of skill levels in the achievement of motor proficiency. (Adapted from "Developmental motor patterns: Implications for elementary school physical education" by Vern Seefeldt. In C. Nadeau, W. Holliwell, K. Newell, & G. Roberts (Eds.), Psychology of motor behavior and sport (p. 317. 1979, Champaign, IL: Human Kinetics Publishers. Uses with author's permission.)

this model is represented by the fundamental motor skills which are considered to be the foundation for more complex sports and dances. It is generally believed that young children should master these fundamental skills during early childhood if optimum development of higher level skills is to occur (Seefeldt, 1979; Haubenstricker & Seefeldt, 1986).

The importance of the development of fundamental motor skills during early childhood in Seefeldt's model is expressed by the proficiency barrier. Seefeldt explained his rationale for having a "proficiency barrier" between the fundamental motor skills and transitional skills in the following quote: "the proficiency barrier is placed between 'fundamental' and the 'transitional' skills because our work has shown that children who are deprived of learning fundamental motor skills have difficulty when they attempt to learn the transitional skills" (Seefeldt, 1979, p. 316). According to this model, fundamental motor skills represent the foundational ABC's of a movement repertory. The third level of Seefeldt's model represents the transitional motor skills which may lead to activities at the next higher level of the model "Specific Sports Skills and Dances". The transitional skills are combinations of fundamental motor skills with or without modifications. The fourth level of this model depicts specific sports skills and dances. This level includes the more complex sports and dance skills and their applications in highly organized games, sports, and motor activities. The third and fourth levels of this model embrace the period of middle childhood to adulthood. Success achieved at any level depends at least in part on the degree of proficiency attained in the previous level of the model. However, the placement of the proficiency barrier clearly emphasizes the special importance of learning the fundamental motor skills during early childhood.

Another comprehensive model of motor development, "The Phases of Motor Development," has been proposed by Gallahue (1982; 1989). This model also contains

four levels or phases of motor development and within each phase, stages of motor development are proposed (see Figure 2). The first phase is the Reflexive Movement phase which represents the very first movements of the fetus. Gallahue maintained that these involuntary, subcortically controlled movements form the basis for the phases of motor development. This phase has been divided by Gallahue into two stages. The information encoding stage is characterized by observable involuntary movement activity during the fetal period until about the fourth month of pregnancy. During this stage, lower brain centers are more developed than the motor cortex and are essentially in command of fetal and neonatal movement. The information decoding stage begins around the fourth postnatal month. During this stage, there is a gradual inhibition of many reflexes and the motor area of the cerebral cortex gradually takes control over lower brain centers and begins to regulate voluntary movement activity. The decoding stage replaces sensorimotor activity with perceptual-motor behavior.

The Rudimentary Movement phase represents the first forms of voluntary movement. This phase starts at birth and goes up to about age two. According to Gallahue, rudimentary movements are maturationally determined and are characterized by highly predictable sequences in their appearance. The rate at which these abilities appear, however, varies from child to child and is dependent on both biological and environmental factors. The rudimentary movement abilities of the infant represent the basic forms of voluntary movement required for survival. Rudimentary movements involve (a) stability movements such as gaining control of head, neck, and trunk muscles, (b) the manipulative tasks of reach, grasp, and release, and (c) the locomotor movements of creep, crawl, and walk. The Rudimentary Movement phase of development in this model is subdivided into two phases, the reflex inhibition stage and the precontrol stage in which children begin to gain greater precision and control of their movements.

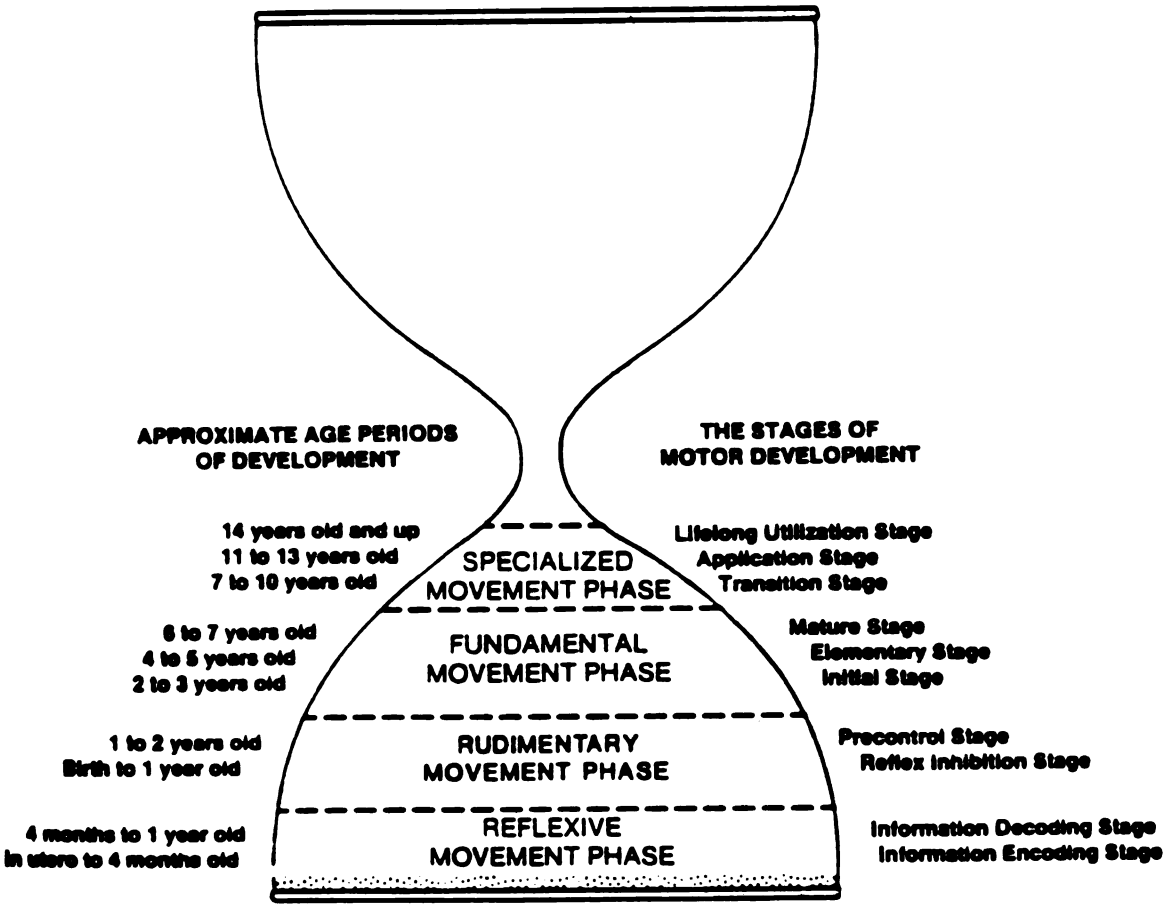


Figure 2. The Phases of Motor Development. In: Gallahue, David L. (1989) Understanding Motor Development: Infants, Children, Adolescents (2nd Edition). Dubuque, IA: William C. Brown and Benchmark. Used with author's permission.

Following the Rudimentary Movement phase is the Fundamental Movement phase which, according to Gallahue, represents a time for young children to explore their movement capabilities and to discover how to perform a variety of locomotor, stability, and manipulative movements. The fundamental movement phase is an outgrowth of the rudimentary movement phase of infancy and embraces the early childhood years (from 2 to 7 years old). In this phase, Gallahue identified three separate, but often overlapping, stages and describes the initial, elementary, and mature stages of each fundamental motor skill.

Lack of agreement regarding the description of stages of fundamental motor skills exists among motor development researchers. However, there seems to be agreement in the ideal time for acquisition or learning of these skills. Gallahue (1982, 1989) stated that most of the data on the acquisition of fundamental motor skills suggest that children can and should be at the mature stage by age 5 or 6 years and that failure to achieve the mature stage within this phase will inhibit complete development in the next phase. Gallahue (1989) pointed out that a major misconception about the developmental concept of the fundamental movement ability phase is the notion that these abilities are maturationally determined and are little influenced by environmental factors. He explains that maturation plays a role but it is not the only influential factor. Other factors such as opportunities to practice, encouragement, and instruction all play important roles in the degree to which fundamental movement abilities develop.

The Specialized Movement phase follows the Fundamental Movement phase and represents the last level of Gallahue's model. In this phase the fundamental motor skills are refined, combined, and elaborated upon in order to be used in increasingly diverse demanding activities. According to Gallahue (1989) this phase may be subdivided into three stages: Transitional stage, Application stage, and Lifelong Utilization stage.

Within the fundamental motor skill category, qualitative developmental sequences have been developed describing progressive development of skills such as catching, throwing, kicking, and striking. These sequences were called intra-skill sequences (Seefeldt, et al, 1972) or intra-task sequences (Roberton, 1978). The sequences represent progress along a continuum toward the mature performance of a skill. Each successive motor pattern in the developmental sequence is more complex than the previous one. The sequences are considered to be age-related but not necessarily age-dependent, because individual children acquire the fundamental motor skills at different rates. This line of research has provided a greater understanding of the progressive qualitative development of the fundamental motor skills toward mature forms. Representatives of this research approach were Halverson (1966), Halverson and Roberton (1966), Halverson, Roberton, and Harper (1973), McClenaghan and Gallahue (1978b), Roberton (1977), Seefeldt, Reuschlein, and Vogel (1972), Seefeldt and Haubenstricker (1974), and Wickstrom (1983).

Although controversies have arisen, and lack of agreement exists, regarding the nature and number of developmental levels in each specific skill, as well as the method used to identify levels of development of the skills, two well-defined models for the analysis of developmental sequences emerged. The total body model (Seefeldt, Reuschlein, and Vogel, 1972) and the component model (Roberton, 1978) were identified independently.

In the total body model, each developmental level is described as an overall configuration involving the whole body. Each developmental level is called "stage". A "stage" is defined by Seefeldt (1972, pg. 2) as "the comprehensive series of movements which the performer exhibits to accomplish a specific motor task." In order to qualify as a stage, the series of movements must demonstrate sufficient commonality as a

general phenomenon when the specific motor skill is performed by children. The movement patterns of selected body segments and other factors (i.e., weight transfer) are identified within each stage. This model does not require simultaneous change in the movement patterns of all body segments from one stage to the next. However, the total body movement configuration does change and is clearly distinguishable from those of the adjacent stages. Configurations that are not in full compliance with one of the described stages are considered to be in transition between stages (Haubenstricker and Seefeldt, 1986). In relation to transitions, Seefeldt (1972) explained that they may include some movement characteristics from each of the adjacent stages. Seefeldt also considered the omissions and reversals within sequence as a reality. They may occur but they do not, in any way, invalidate the sequence because the sequence's utility lies in its ability to predict movement characteristics of a majority of the performers (Seefeldt, 1972).

The second model is called the component model (Roberton, 1978). In this model, developmental changes are identified for individual body parts or body segments. Roberton deals with the development of body areas such as leg action or arm action within the task. The rationale for the component approach is based on the assumption that the movement patterns of individual body segments do not develop at the same rate. Therefore, each segment should be assessed independently. Roberton criticized the use of the word "stage" to refer to levels of intra-task skill sequences as atheoretical. She suggested the use of the word "steps" as a more theoretical and appropriate one. Roberton believed that if there were stages of motor task development, perhaps these stages occurred only in the components rather than in the total body configuration. She explained that in throwing a child might move ahead a stage in trunk action while retaining the same stage of arm action. Another child might keep the trunk action stage but move ahead in arm action. Few people would ever be at the same point in all

component stages at the same time, so few people would look exactly the same as they learned to throw a ball. Yet they would have gone through the same stages of development (Roberton, 1977).

Roberton considered the component approach the best way to see development. She argued that it allows for (a) different rates of development in the respective component and (b) a more rich array of individual differences. She seemed to imply that the total body model did not consider the rate of development of the different components, thus suggesting a lock-step fashion in development. However, that appears to be a misconception. According to Seefeldt (1972) and Haubenstricker and Seefeldt (1986), the total body model does not require simultaneous change in the movement patterns of all body segments from one stage to the next. The model allows for transitions between stages in which movement configurations are not in full compliance with one of the described stages. In addition, Seefeldt and Haubenstricker (1982) indicated that they agreed that all of the patterns or subroutines within a stage do not advance as an indivisible unit. However, they found sufficient cohesion between certain of the subroutines so that listing them within a "stage" appeals to them as the least complicated way to describe a particular developmental task.

In addition to this well defined model for the analysis of developmental sequences, McClenaghan and Gallahue (1978a) provided another approach for daily teaching situations. Their method recognizes the differential rates of development within fundamental movement patterns. They outlined three stages within the fundamental movement phase of their model: initial, elementary, and mature.

The initial stage is characterized by the child's first observable attempts at the movement pattern. Many of the components of a refined pattern, such as the preparatory action, and follow-through may be missing.

The elementary stage is a transitional stage in the child's movement development. Coordination and performance improve, and the child gains more control over body movements. More components of the mature pattern are integrated into the skill, although they are performed incorrectly.

The mature stage integrates all the component movements into a well-coordinated, purposeful act. The movement resembles the motor pattern of a skilled adult, in terms of control and quality, but it is lacking in terms of movement performance as measured quantitatively.

Gallahue and McClenaghan pointed out that not all movement patterns fit precisely into an arbitrary three-stage progression. However, they believe the three-stage approach fits the developmental sequence of most movement patterns and provides an easy to use, observational assessment technique.

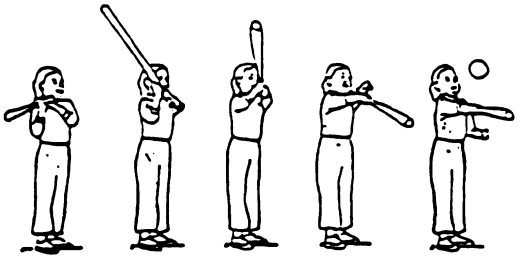
The hypothesized developmental sequences of the various researchers have contributed to our knowledge of the development of fundamental motor skills. Seefeldt's hypothesized sequences were the product of studies on mixed longitudinal film data collected at intervals of six months. Over 36,000 feet of film on children from 1- to 12-years-old performing selected fundamental movement skills in a laboratory setting were analyzed. The research study conducted by Roberton (1978) was an idiographic case by case test of the stage theory. It also contributed important information to the understanding of how fundamental motor skills develop. Her method expands the stage theory to an analysis of the separate components of movement. She used a two-phase research approach which first examined children's movement across trials at one point in time (10 trials of throwing for 73 first grade children). Their movements were recorded on 16 mm film which allowed repeated study of simultaneous side and rear view. The second phase of this study refilmed the same children over three years at

regular intervals. The third approach, by McClenaghan and Gallahue (1978a), provided opportunities for both methods depending on the needs, interests, and abilities of the observer.

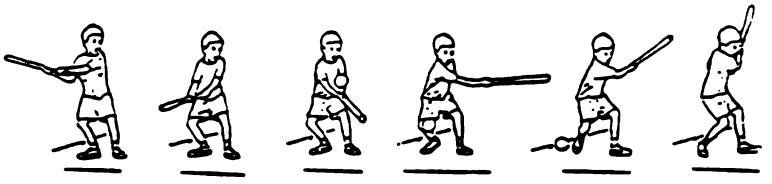
The Developmental Sequence of Striking

The developmental sequence of striking proposed by Seefeldt and Haubenstricker (1974) included four stages (see Figure 3). In this sequence, stage one represents the lower end of a continuum toward more mature performance. Stage four represents the mature end of the continuum. In stage one, the motion of the bat is from posterior to anterior, with extension of the elbows, similar to a "chop" action. And, the child usually directly faces the object to be struck. In stage two, the child moves the bat and arms in a horizontal pattern, flattening out the swing. The body moves in unitary rotation with hip-spinal linkage about an imaginary vertical axis, commonly referred to as block rotation. The feet remain stationary or a step may be taken toward the approaching ball. In stage three, a shift of weight occurs onto the ipsilateral foot. The child steps with the foot that is on the same side as the bat. The movement of the bat is in an oblique-vertical plane instead of the transverse path characteristic of stage two. In stage four, there is transfer of weight, hip-spine-shoulder rotation, and a contralateral pattern. The shift of weight to the forward foot occurs while the bat is still moving backward and as the hips, spine, and shoulder girdle assume their force-producing positions. At the initiation of the forward movement, the bat is kept near the body, elbows are away from the body in preparation, and elbow extension and the supination - pronation of the hands do not occur until the arms and hands are well forward and ready to extend the lever in preparation to meet the ball. At contact with the ball, the weight is on the forward foot. According to Espenschade & Eckert (1980), stage two of striking becomes well defined

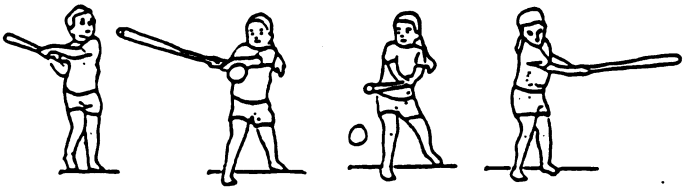
Stage 1
The motion is posterior - anterior. Similar to "chop" action in Stage 1 of Throw.
Feet stationary



Stage 2
Horizontal swing
Block rotation
Feet stationary or stepping forward



Stage 3
Shift of weight in an ipsilateral pattern
Bat moves in an oblique-vertical plane



Stage 4
Contralateral step
Elbows away from body
Additional wind-up as person takes a stride
Segmented body rotation
Wrist follow-through -- after contact with ball

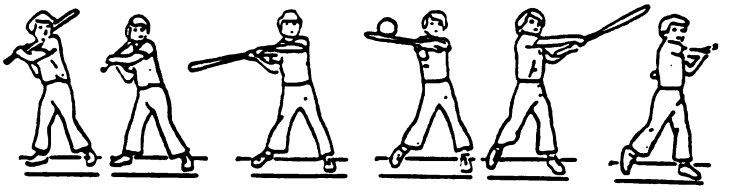


Figure 3. Developmental sequence of striking (4 stages). Developed by Seefeldt and Haubenstricker (1974), unpublished materials, Michigan State University. Drawing by Joy Kiger, diagrams and organization by Garcia and Haubenstricker (1990). Use with author's permission.

when children are approximately 36 months old.

Wickstrom in 1983 examined the sidearm striking pattern of 33 preschool children 21 to 60 months old. His data revealed that children younger than 30 months used the overarm striking pattern when attempting to contact a suspended ball with either a bat or a paddle. Older children used an overarm striking pattern, but they responded favorable when encouraged to use a sidearm striking pattern. In this study, Wickstrom was amazed at how close a four-year-old's striking pattern was to the adult form of this skill.

Researchers at Michigan State University have observed variability in the striking behavior of young children. In testing sessions, the stage three pattern is not often observed. Some children appear to skip this stage, whereas other children move back and forth between stages during the testing sessions. The amount of variability in performance observed indicated a need to re-examine the developmental sequence for striking for possible modification.

A fieldwork research study seemed appropriate to observe the acquisition of striking behavior by young children in a natural surrounding. This methodology allows the researcher to obtain valuable information on a continuous basis, and may result in information useful to the formulation of theories regarding skill acquisition. Perhaps information that impacts on the continuum concept of motor skill development will be found. Such knowledge could shed light on the understanding of skill sequences.

Growth, Maturation, Environmental, and Sociological Factors Associated With the Process of Motor Skill Development

The process of motor skill development is influenced by growth, maturation, environmental, and sociological factors that intervene both in isolation and in combination with one another. The motor development status of an individual is the

product of the intrinsic interaction of all these factors.

After birth, and once the infant has successfully established the physiological transitions necessary in its adaptation to a new environment, the processes of growth and maturation proceed along with the development of behavior necessary for the continued successful functioning of the organism. The Stedman's Medical Dictionary (1990) defines growth as "The increase in size of the living being or any of its parts occurring in the process of development." The term "growth" in human development, indicates a change in physical size of the body or its parts, as the child progresses toward maturity (Lowery, 1986). More specifically, growth refers to the quantitative structural changes that occur with age (Payne and Isaacs, 1987). Malina (1975, 1986) indicates that growth can involve hyperplasia - an increase in cell number, also called multiplicative growth; hypertrophy - an increase in cell size, growth is said to be auxetic; and accretion - an increase in inter-cellular matter, growth is called accretionary.

The definition of maturation leads to a greater divergence of opinion among investigators. Gesell (1933) considers maturation to be the intrinsic regulatory mechanism which preserves the balance and direction of the total pattern of growth. Krogman (1950) defines maturation as a time-linked phase or process, leading to the ultimate status of maturity of each different structure. Payne and Isaacs (1987) explain that maturation is indicative of the qualitative functional changes that occur with age. Maturation refers to organizational changes in the function of the organs and tissues. Malina (1986) indicates that maturation implies progress towards the mature state, which varies with the biological system involved. Skeletal maturity is a fully ossified skeleton; sexual maturity is reproductive capability. Maturation is important in motor development because children mature physically at different rates, they acquire new

skills at different rates, and they achieve specific levels of movements at different rates. Some of the variability in skill level or in the acquisition of a new skill, at a given chronological age, is attributable to the variability in physical maturity. Other variabilities can be attributed to experience. A child is likely to refine a skill at an earlier age if practice opportunities are provided. Therefore, individual children might be relatively advanced in some skills but unskilled in others. Skill acquisition and refinement are independent of, although related to, chronological age and would be expected to vary among children as well as in each child. Variability in skill acquisition and refinement can be attributable to physical growth, maturation, increased strength, endurance, and the movement experiences unique to each child.

Espenschade and Eckert (1980, pg. 133) pointed out that maturation is often used to describe changes which develop in an orderly fashion without direct influence of known external stimuli but which are almost certainly, in part at least, a product of the interaction of the organism and its environment. The common expression "learning to walk" seems to recognize the need for practice to perfect this function. Although this example recognizes the intrinsic interaction of growth, maturation, and environment, controversy exists as to whether one can accelerate the learning of voluntary skills by repeatedly stimulating reflexes considered to be pre-cursors of such skills? Recently, new studies on the walking reflex have offered new views on the role of reflexes in skill acquisition. These studies are challenging previous beliefs that the locomotor reflexes must disappear several months before the onset of the voluntary walking behavior. Zelazo and co-workers (1972a, 1972b, 1974) conducted an experiment in which they elicited the walking reflex in a small number of infants during their first eight weeks. These children later tended to be early walkers. The investigators concluded that the walking reflex could be transformed into an instrumental action. This view was heavily

criticized by Pontius (1973). Thelen (1983) argued that the Zelazo studies do, in fact, demonstrate continuity between reflexive walking and voluntary walking. However, she proposed an alternative explanation. She hypothesized that the walking reflex disappears because the infant's leg mass increases. Practice of the reflex improves lower body strength and allows an infant to continue the reflexive response by lifting the legs alternately. Thelen also noted that 4- to 6-week-old infants reduced their reflexive walking response when weight was added to their legs, but increased them when their legs were submerged in and consequently buoyed by water. These new views of the role of reflexes strengthened the intrinsic interrelationships of maturational factors (C.N.S.), growth factors (mass increase, strength, etc.), and environmental variables such as instruction and practice.

Environmental Factors

In this review, environmental factors are those that interact with the individual to influence growth, maturation, and learning of motor skills. A number of studies on lower animals have demonstrated the importance of interaction between the organism and its environment (Spalding, 1873, 1875; Yerkes & Bloomfield, 1910; Dennis, 1941). Numerous studies were conducted on the nature versus nurture debates, but little has been settled in the attempt to categorize the effect of each on development. The current trend has been to respect the individual importance of each and to recognize that the influences of both maturation and experience are completely intertwined.

Moral considerations prevent investigators from conducting experiments on humans to the extent that malfunctioning or atypical behavior will result. However, some studies have been done using restricted environments that were naturally present, such as those of cultures that impose motor restrictions on their children (Dennis &

Dennis, 1940; Danzinger & Frankl, 1934) or those situations in which infants were reared in institutions which provided minimal stimulation or even restrictions in some areas of development (Dennis, 1935). Therefore, two types of studies have been conducted, those in which environment was restricted and those in which the environment was enriched. These studies have been useful to highlight the importance of environmental stimulation on children's motor development.

Deprivation Studies

Few studies have been conducted on the effect of restricted environment on human beings. Dennis (1960) examined infants reared at three different institutions in Iran. The infants in two of the institutions were found to be severely retarded in their motor development. Infants of the third institution presented little motor retardation. Dennis investigated these discrepancies by examining the life-styles of the children in each institution. The results led Dennis to conclude that lack of handling, blandness of surroundings, and general lack of movement opportunity or experience were causes of motor retardation in the two institutions. Another investigation by Dennis and Najarian (1957) revealed similar findings in a smaller number of Creche infants reared in Beirut, Lebanon. These investigations supported the hypothesis that behavioral development cannot be fully accounted for by the maturation hypothesis and severe restrictions and lack of experience can delay normal development.

A study involving fraternal twin infant girls reared in a very sterile nursery environment was conducted by Dennis (1935). In this situation, minimal amounts of motor and social stimulation were given. After 14 months, the movement behavior of the girls was compared with normative data and found to be retarded beyond the normal limits. Social development, however, showed no appreciable difference when compared

against standard norms. This factor may suggest a greater need for motor stimulation than for social stimulation of infants or, maybe the girls had social stimulation provided by each other even though the nursery school did not plan for it. More research is needed in order to draw clear conclusions on this matter.

The child rearing practices of the Hopi Indians were the subject of another investigation by Dennis (1940). In this case Dennis was studying the influences of cradle binding on the motor development of infants. He found no appreciable degree of delay in the motor development of the Hopi infants when their motor behavior was compared to norms for American infants. Visual stimulation and the feeling of the movements of the mother seem to explain these findings. In addition, these results seem to imply that the physical restrictions imposed by the Hopi Indians were within the limit that humans can tolerate and still result in normal progress. This study may point out the close identification of the visual modality with the motor dimension of behavior. It leads one to consider the interrelatedness of perceptual and motor functions and the importance of enriching stimulation.

Stimulation Studies

Research in which the environment is enriched is a more accepted line of investigation since it does not have the moral constraints of deprivation studies. These types of studies investigated the effect of special training on the learning of fundamental motor skills. Several co-twin studies have been conducted. The famous Gesell and Thompson (1929) study using identical twins indicated that learning appears to be profoundly conditioned by maturation. These investigators concluded that training does not transcend maturation but that maturation does tend to modify the results of training. Gesell and Thompson noted that although performance times for the completion of the

task (stair climbing) were similar at the end of the experiment, the experimental twin was more skillful, agile, confident, and walked faster than the control twin at all times. McGraw (1946) believed that the real issue in the Gesell and Thompson experiment involved consideration of the relative effects of practice as associated with the time of introduction of the practice period. It appeared that the practice sessions given to the control twin were much more effective at the later period when the infant presumably had achieved the degree of maturity necessary for rapid improvement. Hilgard (1932) conducted a similar experimental study with young children and the results showed that although the experimentally trained group exceeded the nonpractice control group on all tests after 12 weeks of practice, the control group was able to achieve the same level of performance at a later date with only one week of practice. These findings led the investigator to conclude that factors other than training contributed to the development of the skills used in the study. Maturation and practice were cited as providing partial contributions to the development of the skills.

Subsequently, McGraw (1935) conducted a longitudinal, fraternal twin study to determine the age at which children will show improvement in various motor activities as a result of training. One twin was the experimental subject. He was trained in activities in which he was somewhat capable from the time he was 21 days old until the age of 22 months. The control twin was kept in a crib so that his activities were restricted. Comparisons of the behavioral development of the twins with norms showed that the experimental twin was advanced in those events in which he had received training while the control twin, after giving a short period of practice, was within the normal range of the developmental norms. From these results McGraw concluded that there are critical periods for any given activity when it is most susceptible to modification, and that phylogenetic activities were less susceptible to modification

through practice than ontogenetic activities. A limitation of McGraw's classic work is that the twins were fraternal. Therefore the effect of genetics, gender, and race are still unclear.

Dusenberry (1952) trained 14 boys and 14 girls in overhand ball-throwing for six instructional periods at one week intervals. Comparisons of the trained children with the control group showed that training was much more effective for 5-6 year olds than it was for 3-4 year olds. Also, although significant gains were registered for both sexes at 5-6 years of age, the gains for the trained boys were much greater than those of the trained girls from the initial test to the final test. It seems that other variables, biological, environmental, or cultural, may have had some effect on the girls' performance and on that of boys. There is no record of what these children did outside of their experiment between training sessions. Traditionally, boys seem more prone to throw or probably are more stimulated toward ball skills, performing slightly better than girls. At this early age, morphological differences between boys and girls such as muscle-to-fat ratio, greater proportional limb length, and wider shoulders, that would positively affect performance of males are minimal (Fountain, 1978, 1980). It is interesting to speculate why at this age one can see clear differences in throwing performance between boys and girls: Is it due to lack of practice, lack of stimulation, lack of role models, a matter of female likes and dislikes, etc.? At this point we cannot explain the differences but it seems evident that differences exist.

There is, then, considerable variability in the relative influence of maturation and learning on skill acquisition which seems to be related to the age of the individual and the nature of the activity. It is difficult to identify either maturation or learning as the primary influence on development. The literature is overwhelmingly in favor of the interaction of one with the other. Both play an important role in the acquisition of motor

skills. Although experience seems to have little influence on the sequence in which fundamental motor skills emerge, it does affect their time of appearance and the extent of their development.

Dynamic Systems Theory

Recently a new perspective, dynamical systems theory, suggests that principles emerging from the various theoretical approaches to understanding nonlinear and complex systems may provide a useful approach to understanding the development and control of human movement. This perspective, inspired by Bernstein (1967), considers that the action patterns of a complex open system result from the cooperation of many systems. Movement patterns are formed by changes in the endogenous properties of the system as well as the context or task itself (Kelso, Holt, Kugler & Turvey, 1980; Kugler, Kelso & Turvey, 1980; Thelen 1986; Thelen, Kelso & Fogel, 1987).

Thelen (1985) has dedicated a great deal of her work to provide understanding of the usefulness of principles from dynamical systems theory in the development and coordination of human movement by applying them into the infant stepping reflex and voluntary upright locomotion. One principle of dynamical systems theory that serves as a foundation for her work is that developing organisms are complex systems with observed behaviors derived from the influence of many interacting subsystems, each having its own course of development and proceeding at its own rate. This principle challenges the traditional view that motor behavior emerged via maturational prescription, in which environmental influences could support or modify, but not generate, progression of development.

Another principle of the dynamic systems perspective emphasizes the contributions of all subsystems. Related to this principle is the finding that action patterns are self-organized and softly assembled, rather than hard-wired (Ulrich, 1989). Moving and developing systems have certain "self-organizing" properties. Self-organizing means that these systems can spontaneously form patterns that arise solely from the interaction of the component parts. For instance, when an infant kicks, the trajectory of the movement, which has highly predictable and rhythmical properties, is not coded anywhere in the nervous system. Rather, the trajectory is a function of the assembly of many elements, including the neural substrate, but also the anatomical linkages, the body composition of the infant, his or her generalized activation level, the gravitational conditions, etc.

"Self assembly" occurs only within a particular context for the organism. Thus it is not enough to ask about the parts and processes of the organism without considering also how those parts and processes are assembled in a context. Therefore, at any point during development the motor outcome is a product of all the functionally related elements acting cooperatively, rather than of some pre-existing code in the nervous system or in some abstract developmental timetable.

This characterization of motor systems as self-organizing abandons the notions of motor programs or reflexes as rigidly determined and adopt a view of movement as continua of relative stability and flexibility. Therefore, movement patterns are formed by and vary according to changes in the endogenous properties of the system as well as the context, or the task itself. Observed behaviors reflect the dynamic and multidimensional contributions of the infant's maturational state (neurological, biomechanical, psychological), the context and the task in which some subsystem components contribute to a behavior while others may be rate-limiting factors (Thelen,

1986; Thelen & Fogel, 1989).

In a series of studies on stepping behavior, Thelen and Fisher (1982) and Thelen, Fisher, and Ridley-Johnson (1984) challenged the traditional assumption that the disappearance of the stepping response in early infancy is attributable to hierarchical development of the central nervous system (CNS). They tested the possibility that other subsystems could significantly affect this observed behavioral regression. Other researchers have demonstrated that the stepping response can be maintained beyond the usual age of disappearance. Super (1976) found that in some African regions infants showed alternating steps from the newborn period until they eventually walked. He maintained that infants "learned" to perform stepping beyond the neonatal period because of the jumping and stepping exercises given to them. Thelen and Fisher (1982) thought that training or practice given to infants in the upright posture may have played an important role in advancing motor development, since this position provides the overload training for legs, neck, and trunk that is simply not experienced by a baby who is horizontal for most of the day and night. These studies suggested a need to study the effects of child-care customs on motor development. Zelazo, Zelazo, and Kolb (1972a) engaged infants in an exercise program of practice in the posture used to elicit the newborn stepping response. All infants continued the stepping response and increased their step rate throughout the experimental period. Zelazo (1983) attributed this continuity to instrumental learning. Thelen (1979) observed naturalistically every two weeks spontaneous kicking movements in 20 infants. She found that kicking increased dramatically from ages 4 weeks to 6 months without any intervention. In another study, Thelen (1981) noted that infants kicked increasingly more during this period, and they kicked in a wider variety of contexts. She concluded that if their physical strength was sufficient this increase in kicking may have also been reflected in

"vertical kicking" or stepping. Thelen and colleagues (Thelen et al., 1984; Thelen & Fisher, 1982) considered the lack of muscle strength the critical factor associated with the decrease in newborn stepping. Thelen and Fisher (1982) suggest that if functional use of the legs in early infancy has no adaptive significance, there would be no selective pressure for mass and strength development to occur synchronously. It may well be that weight gain and the concomitant benefits of temperature regulation and fat storage are more important adaptive priorities in young infants than motor precocity. Although Zelazo (1983) disagrees with this explanation, the evidence suggests that a physical constraint, rather than a primarily neurological one, acts as the rate-limiting factor. These studies demonstrate that early stepping responses are significantly influenced by multiple subsystems and changes in critical components can shift the system both forward or backward developmentally.

Another important assumption in the dynamic systems approach is that during ontogeny the component structures and processes of a skill develop in an asynchronous and nonlinear manner. That is, some elements show an accelerated developmental course and may be available long in advance of the skill, whereas others mature more slowly. Since all components are necessary for the performance of the skill, earlier components must await the slower, or rate limiting, elements. At any point in time the resulting behavior is the cooperative interaction of these elements, specific to and organized by the context (the task and the environment at hand). Thus, for any given task environment and any given development status of the components, the organism will prefer a certain behavioral output. Under other conditions, different movement topographies may emerge. Depending on the context, available components may be masked or manifest, since their appearance is a function of the composite assembly.

Finally, an important property characteristic of complex dynamical systems is that shifts from one qualitative behavioral mode to another are often discontinous. For instance, as a horse increases speed in locomotion, it shifts from a walk to a trot to a gallop with no apparent intermediate gait configurations. The significance of this shift is that it is accomplished by a continuous scalar to one parameter, the energy delivered to the system (Kelso, 1982). In dynamical terminology, this parameter that can shift a qualitative behavioral mode is called the control parameter. For development, this suggests that, although all systems are undergoing change, a small change in only one or a few control parameters can disrupt the entire system sufficiently to have it seek another preferred stable output. At different times in ontogeny different subsystems act as control parameters (Thelen, Ulrich and Jensen, 1989). The dynamical systems theory approaches the development and control of movement from a broad perspective by investigating progressive development of movement and its continued interaction with the context, physical constraints (strength, body posture, balance), CNS maturation, task, motivation, and practice. Although the studies done in this perspective have been experimental in nature, it is encouraging to observe this multi-system interaction from a naturalist perspective, especially when the context can be such an active contributor to emergent motor behavior and continuous movement development.

Socialization Factors

Other factors related to the learning of movement are socialization, gender, and culture. Socialization is the process of learning the rules, regulations, and expectations of a society (Kenyon & McPherson, 1973). Socialization is a lifelong process, believed to facilitate a person's function within society throughout childhood, adolescence, and adulthood. The socialization process is commonly associated with the learning that

occurs through social interaction. However, socialization can include any means by which a person gathers information about society. According to Payne and Isaacs (1991, p. 37), "The most important means of learning society rules and expectations is through social interaction, which is also true for learning human movement. The influence of others around us is extremely important in determining how and when persons acquire certain movements as well as what movements."

This statement shows the intrinsic relationship of social forces with movement and movement development. This relationship is considered reciprocal, thus socialization can affect a person's movement, and conversely, a person's movement behavior can have an effect on the person's social development or social interaction. The process of socialization teaches members of a society their social roles. A social role is the behavior that members of a particular social group expect in a particular situation (Kaluger and Kaluger, 1984). The family is the primary socialization agency during childhood (Kenyon & McPherson, 1973). Although the magnitude of its effect may be decreasing because of the present cultural trends, such as child rearing practices (babysitting, preschools starting at early ages, increased television viewing, mothers working outside the home, etc.), the family is still considered the institution that exerts the greatest influence on early childhood socialization (Loy & Ingham, 1973). The family is also the earliest and greatest determinant of a child's movement choices and movement success because it strongly influences the child's attitudes and expectations about movement. Family approval or disapproval of the child's movement endeavors is crucial in determining future movement habits. If a child behaves motorically in a way that is rewarded, either overtly or subtly, he or she will more likely reproduce that movement behavior. However, ignoring the child's motor behavior or responding negatively may cause the behavior to subside. Parents, therefore, can consciously or

subconsciously shape their children's movement behavior by approving or disapproving of their movement actions (Snyder and Spreitzer, 1973).

The role of family members in their children's sport socialization was studied by Greendorfer and Lewko (1978). In this research, 95 children ages 8 to 13 years were surveyed. These researchers concluded that sport socialization begins during childhood and continues into adolescence. More specifically, parents were found to be a significant influence on the child's involvement in sport activities. Fathers were found to be important predictors of sports selections for both males and females. However, the study also showed that boys received greater exposure to more sports socializing agents, and were more encouraged to participate in sports than girls. Particularly interesting was the fact that fathers, peers, and teachers were found as significant influences for the boys; whereas, only the peers and the father were significantly influential for girls. This research supports the view that boys have had more opportunities for socialization into sports and that sex differentiations exist in this area.

The importance of the family was further supported by Greendorfer and Ewing (1981) in the study "Race and Gender Differences in Children's Socialization into Sports". Children participating in this study were 9 to 12 years old. The findings supported that the family can be an important predictor of involvement in sports, but that this process of socialization can affect children differently, depending on the children's race and gender. They concluded that among white children, boys were more influenced by their peers and their fathers; the greatest influences for girls were their teachers and their mothers. Among black children, the boys were most greatly influenced by their peers, and the girls were more likely to be influenced by their teachers or sisters. Based on these findings, the family obviously plays an integral part in the movement development and sport socialization process of children.

In a study examining the effects of child rearing practices on the motor performance of black and white children, Lee (1980) studied lower socio-economic children from both races. The children ranged in age from slightly over 7 years to approximately 9 1/2 years and were grouped according to their mother's attitudes concerning child rearing. The mothers were categorized as authoritarian or nonauthoritarian in attitude. The authoritarian parents were characterized by demands for obedience and the firm reinforcement of their expectations. The nonauthoritarian mothers were more likely to exhibit permissiveness and grant their children independence. From this research, Lee determined that the children reared by the non-authoritarian mothers had superior jumping and running skills. Lee concluded that a non-restrictive environment may be a more ideal setting for a child's motor development because increased independence may enhance the child's opportunities to be physically active.

Gender

Gender role identification is another aspect intervening in a child's movement behavior and sports participation. The expectations for behavior based on gender start early in childhood and often depend on children's associations with the parents of the same sex. Chodorow (1974), attempting to explain the differences that characterize masculine and feminine personalities and roles, attributed these differences between sexes not to anatomy but rather to the fact that women are largely responsible for child care. She argues that this early social environment which is experienced differently by male and female children influences personality development. As a result, female personalities come to define themselves in relation and connection to other people more than masculine personalities. Chodorow explains these differences based on Robert

Stoller's studies of gender identity. In these studies, Stoller (1964) indicates that gender identity was firmly and irreversibly established for both sexes by the time the child was around three years of age.

Given that the primary caretaker in the first three years of life is typically female, Chodorow suggested that the interpersonal dynamics of gender identity formation are different for boys and girls. Female identity formation takes place in a context of an ongoing relationship, since mothers experience their daughters as more alike, and girls also experience themselves as like their mother, the experience is of attachment and continuity in their process of identity formation. In contrast, mothers experience their son as opposite and assist the boys in defining themselves as masculine. They experience separation, thus curtailing their primary love. Consequently, males develop a more emphatic individualization and differentiation.

Chodorow (1974) argued that the existence of sex differences in the early experiences of individualization and relationship translate in different experiences and different views of the world. Girls emerge with a stronger basis for experiencing another's needs or feelings as one's own. They see themselves as more continuous and less differentiated. Consequently, issues of dependency are experienced differently for boys and men, issues of separation and individualization are critically tied to gender identity. For girls, gender identity does not depend on the achievement of separation, instead femininity is defined through attachment. Therefore, male gender identity is threatened by intimacy while female gender identity is threatened by separation. These differences in gender identity and its implications on sex roles and social interactions is considered a very important determinant of human behavior (McClelland, 1975). Psychologists have always found that, but have tended to regard male behavior as the "norm" and female behavior as a deviation from that norm (Gilligan, 1982).

These gender differences are expressed even in the anxiety levels on competitive achievement (Horner, 1972). McClelland (1975) divided the concept of achievement motivation into what appeared to be its two logical components, a motive to approach success, "hope success" and a motive to avoid failure, "fear of failure." Horner (1972), in her studies of women, identified a third category, the unlikely motivation to avoid success, "fear of success." Women were found to have problems with competitive achievement. Sassen (1980) suggested that the conflicts expressed by the women might instead indicate a heightened perception of the other side of competitive success, that refers to the great emotional costs at which success was achieved. Sassen reported that in Horner's studies success anxiety was present in women only when achievement was directly competitive, that is, where one person's success was at the expense of another's failure. Thus, this concern with success at expense of someone else's failure is indicative of the care and concern for others that infuse the psychology of women's development. Given these differences it seems that women bring to life different priorities (Gilligan, 1982).

Macoby (1990) argued that although it is possible that boys may have been more reinforced for power assertive behavior by their parents, and girls more for politeness, it is probably not the only reason why children behave differently with their different sex partners. She also considered the possibility of observational learning as children may have seen their fathers as more influential than their mothers. However, she is skeptical of these two explanations and to the propositions of Chodorow (1974) and Gilligan (1982). Macoby (1988) considered the gender relation differences due to certain important ways in which gender is implicated in social behavior. Children feel attracted to the same gender category at a very early age because the same sex partners are more compatible in play situations. Some of the important factors in the preschool

years are the rough-and-tumble play style characteristic of boys and their orientation toward issues of competition and dominance. This aspect of male-male interaction appears somewhat aversive to most girls. The second factor Macoby (1988) found was that girls found it difficult to influence boys. As children get progressively older boys become less and less responsive to polite suggestions, so that the style adopted by girls became less effective with boys. However, the girls style of influence was effective with each other and adopted to interact with teachers and adults. Macoby (1988) also found that boys were unresponsive to the vocal prohibitions of female partners but they did respond to male partner's prohibitions. Macoby hypothesized that this adverse and unresponsive response may be one of the reasons why girls avoid interaction with boys. Little is known about why these interaction patterns are so apparent in young children, however, they are present in children.

Maltz and Borker (1983) have summarized their findings on the interaction of boys and girls as follows: boys in their groups are more likely than girls in all groups to interrupt one another; to use commands, threats, or to boast of authority. Girls in all groups, on the other hand, are more likely than boys to express agreement with what another speaker has just said, to pause to give another girl a chance to speak, or when starting a speaking turn to acknowledge a point previously made by another speaker. These results imply that for boys speech serves largely as an egotistic function, used to establish and protect individual turf. Whereas for girls, conversation is a more socially binding process. Leaper (1989) found that verbal exchange among girls five- to seven-years-old involved positive reciprocity, whereas among boys, speech acts were more controlling and included more negative reciprocity. Sheldon (1989) reported that for girls talk seems to have two agendas; one was to be nice and the second was to sustain social relationships. For boys, the agenda was more often the single one of self-

assertion.

Macoby (1990) claimed that the interactional styles of children had a lot to do with the peer groups as the setting in which children first discover the compatibility of same sex. Boys discover the requirement of maintaining one's status in the male hierarchy and the importance of the gender of one's partners. Gumperz (1987) reported that it seems as though American men and women learn different subcultures of interaction in conversations. He explained that when we become adults we already possess a variety of rules for interaction in different situations. These rules were learned during the approximate age span of 5 to 15, when boys and girls interact primarily with members of their own sex (Lakoff, 1975; Meditch, 1975; Haas, 1979). These subcultures suggest a complex feature of girls play with the speech within it. For girls, play is cooperative and activities are usually organized in non-competitive ways (Lever, 1976; Goodwin, 1980b).

Differentiation between girls is not made in terms of power, but relative closeness (Gumperz, 1987). Friends are supposed to be equal and everyone is supposed to get along, but in fact they do not always do so. Conflicts must be resolved. However, girls cannot assert social power or superiority as an individual to resolve it. Lever (1976), in his study of fifth graders, found that girls just broke up when quarrels arise. Goodwin (1980a) found that when disputes arise, girls learn to phrase their arguments in terms of group needs and situational requirements rather than personal power or desire.

The role of speech differs for boys and girls. According to Gumperz (1987), speech is used by girls in three different ways: (a) first, to create and maintain relationships of closeness and equality, (b) second, to criticize others in acceptable ways, and (c) finally, to interpret accurately the speech of other girls. Boys, in

contrast, play more hierarchically organized groups than do girls. Relative status in this ever-fluctuating hierarchy is the main thing that boys learn to manipulate when in interaction with their peers. According to Gumperz (1987) boys use speech in three different ways: (a) first, to assert one's position of dominance, (b) second, to attract and maintain an audience, and (c) finally, to assert oneself when other speakers have the floor. In this analysis Gumperz presented two different ways of conversational styles and interaction within boys and girls and also suggested that gender differences, although appearing greater in adulthood, start forming in early peer relations during childhood.

Although many behaviors traditionally considered acceptable for only one gender are now acceptable for both, many human characteristics are still considered masculine or feminine. Hamilton (1977) conducted research with college students in which they described the ideal sex role for children in their care. Fifty percent of the students responded by citing dominance, aggressiveness, and achievement for males and deference, nurturance, and abasement for females. Similarly, Michael (1970) in his article on sex typing and socialization stated that aggressive behaviors were acceptable in males whereas the opposite was expected for females.

Animal behavior studies report exhaustively on the effects of testosterone in fostering aggression (DeVore, 1965; Brownmieler, 1984). Research into the hormonal influence on human behavior is inconclusive. According to Brownmieler (1984), the testosterone level in human males is ten times higher than in human females. However, the male is not ten times as hairy, ten times as muscular, or ten times as tall as the female. Within a gender, testosterone levels do not correspond with the comparative hairiness, muscularity, or height. She argued that this endocrine difference between sexes gave males a historic advantage in terms of brute force or physical aggression. Brownmieler (1984) believed that for males aggression in human behaviors is a

learned response and for females a learned inhibition affected by childhood training, community values, laws, social customs, and religious codes. Therefore, aggression is associated as an acceptable male response but unacceptable for females. Thus, gender role identification may affect children's decisions concerning their involvement in movement activity.

Sex role conflict can appear during adolescence for individuals when participation in an activity does not match with the social or adolescent view of their role. Anthrop and Allison (1983) examined this phenomenon by assessing the level of role conflict in female high school athletes. Fifty percent of the athletes cited no role conflict; 32 percent cited a little problem with role conflict; while 17 percent believed they had a great problem with role conflict. The authors stated that although they believe games are critical to the total socialization process, games are predominantly masculine. Thus, participation in games for males is regarded as positive whereas the participation of females can cause gender role conflict. The stereotypical male characteristics of aggression, toughness, dominance, and strength are further reinforced by a male's involvement in many movement activities, whereas a female's participation may cause slight to severe role conflict. This situation may be discouraging for girls who experience role conflict, and can also create an aversion to sports by those who might have perceived or anticipated role conflict due to participation.

In a study by Ostrow, Jones, & Spiker (1981), boys were found more affiliated into sport activities than girls for two reasons. First, the relative small number of female role models is believed to reduce the number of female participants. Second, of the 12 sports examined, 10 were considered to be "masculine"; only ballet and figure skating were deemed more appropriate for females.

The stigma concerning the roles of females in sports may be declining due to the Title IX mandate enacted in 1972. This mandate has greatly increased the number of sport programs available for females. This mandate may produce changes in families' view of gender roles and of socialization. A feminist view of Title IX, although recognizing the importance of the passage of this mandate, is concerned about the construction and institutionalization of gender. Knoppers (1990), in her paper "The Construction of Gender in Physical Education", stated that although there is more visibility of female athletes in Olympic competition and in communities, the majority of girls do not participate in athletics. She discussed the role of physical education and the current gender order. Physical education and sports for boys were largely, and still are, supposed to build manly character and self-discipline since most sports were invented by men for males, with an emphasis on competition. In contrast, physical education for girls and women came about for health reasons to help women survive the intellectual rigors of college. The merger of the two programs, as mandated by Title IX, has resulted in a primarily sports-dominated curriculum (Diller & Houston, 1983). The curriculum in content and intent is structured for boys, especially for those who prize athletic skills and competition. Likewise, hegemonic masculinity is enforced through violence or threat of violence. The greater the hit, the more we pay a person for his skill. According to Knoppers (1990, p. 10) "This equating of excellence with physical intimidation often carries over into physical education." Boys butt into lines, dominate equipment, push, hassle and make fun of girls. Griffin (1983) explains that such harassment occurs because boys fail to learn the inexcusability of such behaviors and girls fail to learn assertive skills to confront these behaviors. These situations discourage many girls from participation. According to Dewar (1987), physical education is a site of resistance to current practices for many girls, thus diminishing

their participation. Consequently, it is not surprising that the fitness levels of school age girls have declined (Raithel, 1987), that there has been little or no improvement in their movement skills (Bennett et al, 1987), and that one in four females is a victim of assault (Griffin, 1983). Obviously, the socialization forces and family social impact on children need serious consideration if equal participation for females is a goal.

Cooperative and Competitive Behavior and Culture

Another aspect related to the social development of the child is related to cooperative and competitive behavior. Culture seems to be associated with these concepts. Successful participation as a team member in competitive games requires a conscious effort to play as part of a group. It is believed that the child has to cooperate in order to compete. According to Roberton and Halverson (1984), in many physical education programs, even in the primary grades, competitive games play a dominant role. An implicit assumption in such programs is that children at all developmental levels know how to cooperate in order to compete. Studies of cooperative and competitive behavior between age and culture have illustrated, when using the games created by Madsen and associates (Madsen and Shapira, 1970; Nelson and Kagan, 1972; Shapira and Madsen, 1969; Kagan and Madsen, 1971; Kagan and Madsen, 1972; Miller and Thomas, 1972) that regardless of age, children chose to compete even though they both lost the prize. Nelson and Kagan (1972) assumed that finding ways to cooperate was too difficult for 5-year-old children. However, they questioned why older children would continue to compete irrationally. Nelson (1972) modified the games of Madsen so that the only way to gain prizes was by cooperating, thus both children participating could obtain prizes. In this experiment, the younger children tended to compete rather than cooperate. Eight-to-10-year-olds tended to cooperate in the mutual prize situation.

The investigator concluded that the capacity of children to cooperate increased from ages 5 to 10. However, the researcher was surprised that this group of older children did not use this increased capacity when placed in conflict-of-interest situations. The single prize games evoked irrational competitive behaviors.

Madsen and associates also studied competitive and cooperative behavior in other cultures. They observed competitive behavior of pairs of children from rural Mexico (Madsen and Shapira, 1970; Kagan and Madsen, 1971; Kagan and Madsen, 1972), rural Canada (Miller and Thomas, 1972), and an Israeli Kibbutz (Shapira and Madsen, 1969) using experimental conditions similar to those previously discussed. Children from cultures where daily living stressed cooperation rather than competition tended to cooperate and share prizes even under the single prize conflict of interest condition. The investigators noted that in some rural cultures the cooperative pendulum may have swung too far. The children showed irrationally cooperative behavior to the point of excessive submission in the face of opposition. These researchers suggest that cooperative and competitive behaviors may reflect cultural values.

The Korean culture is specifically addressed in this review of culture because a small population in the study belongs to this culture. This review may be useful to the understanding of that population. The Chinese Confucian cultural tradition had such great effect in Korea that it is almost impossible to understand Korean traditional culture in general, and the family system in particular, without understanding the influence of Chinese Confucianism (Pyong Gap Min, 1988). Confucius provided many important principles with which he advised individuals to behave harmoniously in social relations. Five categories of interpersonal relations form the basis of his teachings concerning the duties and obligations of each individual. These relations are between (a) parents and children, (b) King and people, (c) husband and wife, (d) older (brother)

and younger (brother), and (e) friends. The significance of Confucianism for the Korean family is highly relevant because three of these five cardinal relations involve the family. In this sense, Confucianism, as applied to the Korean family system and social life, demands of children one-sided obedience to and respect for parents and other adult members. A clear role differentiation between husband and wife is also emphasized. In the traditional Korean society, the husband was considered the primary breadwinner and decision-maker in the family, and exercises authority over his wife and children. The traditional Korean society was based on patrilineage and patriarchy. Sons were considered more valuable and given more power than daughters. Older brothers or sisters were allowed to exercise a moderate level of authority over younger brothers and sisters. Because of this emphasis on age, sibling rivalry was not frequent in the traditional family. Age was important for not only sibling relations but also for interpersonal relations in general. People were expected to be polite and respectful to other people with whom they interacted when they were younger than the others even if only by a few years. Koreans highly value cooperativeness among families and other members of their communities. They had an established network of support to incoming immigrants to help them in the adaptation process with United States. Koreans put great emphasis on education as the main avenue for social mobility (Pyong Gap Min, 1988).

Summary

In this chapter relevant theories of child development were examined in order: 1) to provide an overview of the different frameworks that have been used to explain development and learning; 2) to visualize the different ways of organizing facts of human behavior and their respective interpretation according to a theory and its assumptions; and, 3) to evaluate how the knowledge of child development has evolved in order to

generate questions or answer questions previously posed. Maturation theory is based on the assumption that human development is the result of the timed unfolding of a human being's genetic inheritance. The major contributors to this theory included Stanley Hall and Arnold Gesell. Behavior and learning theories contrast with maturation theory by portraying human behavior as primarily the result of environmental stimulation. Important contributions to this approach were made by Watson, Pavlov, and Skinner. In traditional behavior and learning theory, human beings are portrayed as primarily reactive organisms. These theories have a tendency to be reductionistic. Social learning theory, as developed by Albert Bandura, represents a significant modification of traditional learning theory.

The cognitive theory of child development emphasizes mental or internal factors as contrasted with the environmental or external emphasis of the traditional behaviorists. One of the foremost cognitive theorists was Jean Piaget (1952). Piaget emphasized that the human mind actively changed and adapted to the world rather than simply responding or reacting to the experience. Cognitive development proceeds in a sequence of stages, each of which is qualitatively different from, and yet depending on, the prior stage. In this vein, Kohlberg's stages of moral development are also presented and critically discussed.

The psychoanalytical approach to development focuses largely on those dimensions of the human functioning omitted by cognitive theorists - the emotional and personality development. The major contributors to this approach were Freud and Erickson. Freud's approach was deterministic, the source of determinism was not the environment but the powerful forces within the person. Human development was the effort to redirect these potentially self-destructive forces of sex and aggression in socially and personally constructive directions. Erickson's model has a lot in common

with Freud's theory, however his model is psychosocial, whereas Freud's model is psychosexual. Erickson's theory covers the whole lifespan and deals with emotion, feelings, and motivation. A major weakness of these models is the lack of scientific evidence to support them.

The systems theories of human development emphasizes the necessary and mutual interaction between the developing person and the environment or contexts of life. Three major factors considered are: the person, the environment, and the interaction between both person and the environment.

The influences of these theories are reflected in the field of motor development. These influences are apparent in the historic overview of developmental sequences of motor skills. Likewise, the relatively new field of motor development reflects the theoretical approaches discussed here. Motor development has been influenced mainly by the maturational theories, behavioral and learning theories, cognitive theories, and lately by the systems theory. Understanding of these theories helps to provide direction on how the study of human development has evolved.

In this chapter, the importance of the fundamental motor skills in early childhood is addressed and two theoretical proposed models of motor development are presented. A description of the developmental sequence of striking is provided in order to reduce the discussion of developmental sequences to the focus of this research.

The last part of this chapter addressed growth, maturational, environmental, and sociological factors associated with the process of motor skill development. An important aspect discussed was the dynamical systems theory. This new perspective, suggesting the use of various theoretical approaches to understanding a nonlinear and complex systems, may provide a useful approach to the understanding of development and the control of human movement. Several principles related to this approach are

discussed. This approach also challenges the view that motor behavior emerges via maturational prescription. The dynamical systems theory emphasizes the contribution of all subsystems involved including maturational state, the context, and the task in which some components contribute to a behavior while others may be rate limiting factors (Thelen, 1986). The chapter ends with a discussion of the important aspect of socialization related to the learning of movement. Socialization can affect a person's movement as well as a person's movement behavior and can have an affect on the person's social development or social interaction. The role of family, gender, cooperation and competition behaviors, and culture are discussed. The implication of all these factors in movement development is highly relevant to this study.

CHAPTER THREE

THE METHOD OF INQUIRY: A NEW APPROACH TO THE STUDY OF MOTOR DEVELOPMENT

Introduction

This chapter is organized into four sections. The first section addresses the background of the study, the second deals with the research questions. The next section describes the methodology and data collection schedule, and the final section discusses the process of analysis that led to the findings of this study.

Background of the Study

Many reasons account for the researcher's interest in understanding how children learn the fundamental motor skills. Professional and personal experiences guided the focus of interest, while learning about fieldwork research guided the methodology used in this research. The actual experience of conducting a 10-week field study in the classroom of this preschool center was highly beneficial and provided (a) an insightful understanding of this particular methodology, (b) background information about this particular setting, and (c) a great number of questions to address in future research. These particular experiences and the previous professional and personal experiences guided the initial questions proposed in this study. As a graduate student in the Department of Physical Education and Exercise Science, the researcher was extensively involved in the area of teaching and research in the three main motor development programs for children conducted by the department. In this process, while applying the knowledge acquired in previous classes about motor development and observing the sequential progression in motor behavior children usually went through, the researcher became very familiar with the stages of fundamental motor skills used by

the Michigan State University team. The researcher became deeply interested in the every day variation in the movement of children as they were learning. The researcher experienced that at times a "word" made the difference in a child's movement and at other times a smile produced a better result. The researcher was amazed by the joy of the children as expressed by their faces when they were able to do skills they could not do before. The researcher realized the need for constant repetition of any newly learned skills, and the subtle changes of movements that occurred as they progressed in the developmental stages. All of these experiences, together with the fact that as a foreign graduate student the researcher was experiencing the learning of a new language in a new context with a different culture and values, made the researcher more aware and sensitive to the learning process. The researcher developed a greater interest in the understanding of learning. During this time the researcher started wondering and questioning her own thoughts and beliefs and felt there was a lot not known about the learning of fundamental motor skills in general and about the development of specific skills, such as striking.

During this time of learning, wondering, and questioning thoughts, knowledge, and beliefs, the researcher became interested in a new approach to research in the field of education; namely, fieldwork research methodology. This methodology was perceived as a possible means for finding answers to her questions. The researcher developed skills in field research in a three course sequence in Fieldwork Research in Educational Settings under the direction of Dr. Campbell. As a class requirement for this research sequence, the researcher completed a 10-week field study in an early childhood center where the focus of the study was on how children learn during their regular daily classroom program. This theoretical preparation and methodological practical experience provided the researcher with the necessary tools to carry out her research.

At the time this researcher finished the course sequence she was convinced that this type of research methodology could provide answers to her quest for a greater understanding of the learning of fundamental motor skills during early childhood.

Conducting the 10-week fieldwork study in the early childhood center was highly worthwhile since, in addition to learning how to carry out this type of research, the researcher became familiar with the general procedures and schedules of the center and met the principal, teachers, children, and parents. This situation was beneficial in saving time that usually is expended in establishing a rapport with all the parties involved. In addition, the 10-week fieldwork study provided a general picture of what and how children learn in their classroom activities and help to generate several questions about how children learn fundamental motor skills. These questions, together with the previous experience in the field, guided the researcher's initial research questions addressed in this study.

Research Questions

Given that children go through a hypothesized sequence of developmental stages when learning fundamental motor skills and that the learning of fundamental motor skills can be influenced by environmental conditions and interactions among participants in the context, this research focused on the nature of children's interaction when learning the fundamental motor skill of striking and examined how the striking movements of children changed during a period of continued observation over time. Initially, the main question asked in this research was "How do children learn fundamental motor skills in early childhood?" After meeting with the guidance committee, it was suggested to narrow down this main question since it was too general. Although at that time the researcher knew it was too broad, she found it difficult to

decide which skill to choose out of the three categories of fundamental motor skills. In addition, the researcher wanted to have a feel or sense of the setting before narrowing the focus. This procedure of starting with a broad question and then narrowing it down is typical of this research methodology.

After the first two weeks of fieldwork observation and personal reflection on the focus of inquiry, striking was selected as the fundamental motor skill on which to focus. There were several reasons why striking was chosen. One reason was the great variability observed in children's progress toward attaining mature striking behavior. A second reason was the inconsistency in performance observed from trial to trial when the striking behavior of young children was assessed in testing situations. A third reason was that the validity of the current developmental sequence of striking has been questioned because it does not appear to account for all the striking patterns observed in children. For all these reasons, a more specific question focusing on striking was asked: How do children progress through the hypothesized developmental sequence of striking? In addition to this question, the nature of the interaction of children while learning fundamental motor skills was examined. More specifically, the following questions were asked:

1. How do children interact among themselves when learning fundamental motor skills?
    a. Are there any patterns of interaction among children (boys with boys, boys with girls, girls with girls) in learning fundamental motor skills? If so, what are they in terms of actions, words, silence, movements, associations, etc.?
    b. Are there interactional gender differences in the way children learn fundamental motor skills? If so, what are they?

c. Are there cultural differences in the way children interact in the learning of fundamental motor skills? If so, what are they?

2. How do children progress through the hypothesized developmental sequence of striking?

3. Do children practice striking in different settings such as the playground, the classroom, the halls, the gymnasium, at home, etc? If so, in what settings and in what ways?

4. What happens when children can not move in a specific given manner? Do they stop moving? Do they continue trying? Do they do something else? Do they just observe? What happens and how does it happen?

5. Do children recognize their own progress or regression? If so, how is it recognized?

During the early stage of data collection as events were unfolding these questions were reorganized and more precise directions were conceived. According to Erickson (1986) research questions can go through a process of reconstruction as the researcher gains an understanding of events and their organization during the time spent in the field. In fact, as the researcher gained understanding of events that were occurring in the setting and the ways in which children were interacting among themselves while learning fundamental motor skills, and more specifically how to strike, she considered that from all the preconceived questions two questions offered the best opportunity to understand learning in the motor domain. They were as follows:

1. How do children interact among themselves when learning fundamental motor skills?

a. Are there interactional gender differences in the way children learn fundamental motor skills? If so, what are they?

b. Are there cultural differences in the way children interact in the learning of fundamental motor skills? If so, what are they?

2. How do children progress through the hypothesized developmental sequence of striking?

With this set of questions the researcher proceeded with her research, and these were the questions addressed in the analysis of the data collected.

Methodology

Fieldwork research methods were used in this study. This research approach has been largely used in the fields of anthropology and sociology and has been adapted to educational settings. This methodology uses extensive participant observation as a data gathering technique. It places an emphasis on understanding the meaning of actions to participants in the context being studied (Bogdan & Biklen, 1982). In the current study, the emphasis was on understanding the meaning of actions and movements performed by the participants. The primary tools of the researcher were her eyes, ears, and other sensory abilities. These human abilities were enhanced by using mechanical devices such as videotape and audiotape recording machines and a still picture camera.

Several sources of data were draw upon in this study. Data were gathered by extensive participant observation, by formal and informal interviews, by the collection of documents such as written records, memos, lesson plans, pictures, drawings, and by audiotaping and videotaping motor skill classes.

The written fieldnotes usually involve two categories: low inference descriptions and high inference interpretations and analysis. The advantage of the use of these two types of fieldnotes is that it allows the researcher to keep the raw data intact for more

analysis and at the same time permits the researcher to initiate preliminary analyses and interpretations. These methodological procedures and the use of three main different sources of data allowed cross-checking the accuracy of the data collected in one way with data gathered in another way.

Participant Observation

Extensive participant observation began late in October of the 1990-91 school year and continued when sessions were scheduled. The researcher was present in the gymnasium on a weekly basis four days per week when sessions were scheduled. Fieldnotes were carefully written and transcribed, usually the same day or the following day after observation as recommended by Schatzman and Strauss (1973). The observation time was usually from one hour and 30 minutes to two hours daily. During this period of participant observations, 68 motor skill classes were observed, from October 22 through May 9, 1991. Over 500 hand-written pages were gathered during the participant observation phase of the study. Contact was maintained with the teachers and children by means of phone calls and face-to-face contacts until the close of the school year in June of 1991. These contacts allowed the researcher to clarify questions and to confirm or disconfirm tentative findings from the data analysis.

Observation focused primarily on the children's movements and actions, and their interaction with other children. The teachers' interactions with children and the physical environment were also recorded as they were relevant to the guiding questions of the study. Children were singled out for observation by the researcher due to their movement characteristics. Particularities in their interaction or consistency as a regular participant over the three-term period caused them to become a key focus in the fieldnotes, audiotapes, and videotapes. Particular attention was given to the ways these

children interacted with their peers, their teachers, and their physical environment. Besides the write-up process in which fieldnotes were rewritten, using low inference description, analytic memos, methodological notes, and reflections also were written by the researcher almost weekly.

Interviews

In order to gather data from the participants' points of view, periodic conversations (informal and formal interviews) were held with children, teachers, and few parents. These interviews allowed for the possibility of redirecting analyses by confirming or disconfirming the researcher's inferences with supporting evidence that reflected the participants' meaning of their action. These interviews were usually scheduled (a) at a post-session of the class with the student teachers, (b) during or before a class with children, and (c) as the time allowed with other teachers and parents. Children were interviewed during class time when they were not participating in any activity. Both structured and nonstructured interviews were carried out as the need arose, and when the availability of time and opportunity were given.

Audiotapes were used in an attempt to capture the verbalization of children's questions and answers while in small group activities. During the interviews with children, initially animal puppets were used to make the interviews interesting and unintimidating for children. However, the researcher found out that the children talked freely with the researcher without problems and that the puppet was not needed. Pictures were used to gain a better understanding of the children's choices and actions and the meaning of their actions as they interacted with other children, teachers, and the physical environment. During interviews, the questions generated during analytical memos were asked. Sometimes the same questions were asked of different children, such

as: "What is your favorite color? What is your favorite ball? Which of these implements do you like to play striking with?" In some cases a picture portraying equipment used in previous classes was used to aid their recall. Other questions generated from the analytical memos were more specific to each child depending on what was previously observed, such as: "I noticed that when it was time to find an X you and so and so started running around the circle. Could you tell me what's going on or why you and so and so were doing that?" Or: "I noticed that you played batting the ball today. Did you enjoy the game? Which way do you like to swing? Can you show me? What makes you happy when you play that game?"

The formal and informal interviews helped the researcher (a) to clarify analytical memos and questions left unanswered in previous field notes, (b) to check the consistency of previous answers, and (c) to gain insight about the meaning of the actions of children. Daily, informal conversations with all participants in the setting provided an array of information that was at times overwhelming. Examples of the questions asked of student teachers after their teaching of small groups of children were: "How do you feel about your teaching? Did you notice any differences in the way children interact during the activities? Was there any comment from the children about the activities, equipment, or the movements?"

Even when using structured questions in the interview there was always room for unstructured questions or ongoing conversation about any relevant point brought up by the participant. Over 35 formal interviews were conducted, and numerous informal interviews and conversations were held with all participants in the study.

Documents

Documents pertinent to what was happening in the gymnasium were gathered throughout the study. Lesson plans, parent newsletters, children's records, everyday written observations, memos, children's drawings, pictures, and video and audiotapes were collected. Pictures were used to show equipment already used, organization of the gym, and children's movements and facial expressions when participating in movement activities, especially striking.

Audiotaping and Videotaping

Audiotaping was used during pre- and post-sessions to record the discussion of teachers before and after class and during small group sessions. During small group sessions audiotapes were used to capture children's verbalizations, questions, and answers. However, the audiotapes did not work out very well during the small group sessions due to low quality equipment, high noise level, and the mobility of the children. It was difficult to decide where to set the recording machine. Therefore when interviewing student teachers, questions or information missed during the small group sessions were specifically asked at that time.

Videotaping was another technique used to document what was going on in the setting, with the specific purpose of focusing on the children's movement and their patterns of interactions during the study. Nineteen motor skill classes were videotaped. Four were videotaped on November 26, 27, 28, and 29 of 1990; three were videotaped on February 26, 27, and 28; two on March 5 and 6; two on March 11 and 12; four on April 15, 16, 17, and 18; and four on May 6, 7, 8, and 9 of 1991. The videotapes were particularly useful during the analysis of the data. They allowed the researcher to revisit and cross check information obtained from other sources. Initial familiarization

procedures included permitting the children to look through the camera while it was operating and waving to it. After the first week of videotaping, the children did not look for the camera anymore.

Selected videotapes were used occasionally in viewing sessions with the student teachers to stimulate recall during interviews. It was not possible to review tapes with the children due to their daily schedules. When used with student teachers, the tape was stopped whenever the student teacher wanted to elaborate on events recorded on the tape. On other occasions, the researcher stopped the tape and asked the student teacher about what was going on in order to clarify her analysis or to collect confirming or disconfirming evidence. The focus of videotaping was mostly on the children's movements and actions and not the individual teachers. The portable video camera was placed either in a corner next to the children's entrance to the gymnasium or on the side across from the children's entrance to the gymnasium. These two angles were the best to record the overall classroom activity and to observe the striking station. The camera was sometimes placed on a tripod and at other times carried by the researcher. The tripod was convenient as it allowed the researcher to take notes simultaneously. But, since the children moved around a lot in these classes, at times it was more convenient to carry the camera in order to keep the children in focus. The wide angle shot was the most often used; however, a few close-ups were taken as the judgment of the researcher indicated so. Table 1 provides a synopsis of the research data collection schedule.

Table 1. Data Collection Schedule

Fall 1990

		Field Notes	Interview	Documents
Week #1	Oct. 22 Research begins	X		
	Oct. 23	X		
	Oct. 24	No observation		
	Oct. 25	X		
Week #2	Oct. 29	X		
	Oct. 30	X		
	Oct. 31	X		
	Nov. 1	Proposal Defense		
Week #3	Nov. 5	X		
	Nov. 6	X		
	Nov. 7	X		
	Nov. 8	No observation		
Week #4	Nov. 12	No observation		
	Nov. 13	X		
	Nov. 14	X		
	Nov. 15	Help teaching		
Week #5	Nov. 19	X		
	Nov. 20	X		
	Nov. 21	X		
	Nov. 22	Thanksgiving		
Week #6	Nov. 26			Videotape
	Nov. 27			Videotape
	Nov. 28			Videotape
	Nov. 29			Videotape

December - Christmas break

Table 1 (cont'd)

Winter 1991

Research continued

		Field Notes	Interview	Documents
Week #7	Jan. 7	X		
(no striking)	Jan. 8		Help with teaching	
	Jan. 9		" " "	
	Jan. 10		" " "	
Week #8	Jan. 14	X	X S. Teachers	*
	Jan. 15	X	X	*
	Jan. 16	X	X	*
	Jan. 17	X	X	Pictures *
Week #9	Jan. 21	X	X	Pictures *
	Jan. 22	X	X	Pictures *
	Jan. 23	X	X	Pictures *
	Jan. 24	X	X	Pictures *
Week #10	Jan. 28	X	X C. Teachers	*
	Jan. 29	Feeling Sick	Reflections	*
	Jan. 30	X	X	*
	Jan. 31	X	X	*
Week #11	Feb. 4		Distancing	
	Feb. 5		from the	
	Feb. 6		setting	
	Feb. 7	Meeting with Dr. Campbell, Dr. Knoppers, Dr. Branta, Dr. Schuitemann, Dr. Feltz, Dr. Covey Doctoral Student in Clinical Psychology, Sherry Dimmer Doctoral Student in Sport Psychology, Linda Lyman		

* = document of focus points of everyday notes of cadet teachers.

Table 1 (cont'd)

First Overview of All Data up to January 17

		Field Notes	Interview	Documents
Week #12	Feb. 11	X		*
	Feb. 12	X	Child (Becky)	*
	Feb. 13	X	Child (Mike)	Audiotaped T. Instructions Pictures - "Grrr" Robbie
	Feb. 14	X	Rick in Mrs. Lewis' class	
Week #13	Feb. 18-21	Distancing - No striking activity. Preparation for job interview.		
Week #14	(Hockey)			
	Feb. 25	Job interview-no observation.		
	Feb. 26			Videotape (LG)
	Feb. 27			Videotape (CL)
	Feb. 28			Videotape (CG)
Week #15	(Nutrition)			
	March 4	X		
	March 5	X		Videotaped
	March 6	X	Audiotaped Children Mary and Becky. Interviewed Soon-He, Eddie, Jeff, Joe Dan, Becky, and Seon-Jin Informal Interview with Billy, Danny, Chul-Ho, Todd, and Eddie. Ian refused. Informal Interview with Ian's Mom.	Videotaped
Week #16 (only 4 children)	March 11	X		Videotaped
	March 12	X		Videotaped
Week #17 and 18			SPRING BREAK	

Table 1 (cont'd)

Spring 1991

		Field Notes	Interview	Documents
Week #19	April 1	X		
	April 2	X		
	April 3	X		
	April 4	X		
Week #20			Distancing - No striking	
	April 8-11		Working on notes.	
Week #21	April 15	X		Videotaped
	April 16	X	S. Teachers	Videotaped
	April 17	X	X	Videotaped
	April 18	X	X	Videotaped
Week #22	April 22	X	X	
	April 23	X	X	
Last week of	April 24	X	Formal Interview of	
observation	April 25	X	Susie's Mom	
Week #23	April 25-27		Leave the Setting Job interview	
Week #24	April 29-30		Job interview	
Week #25	Testing Week			Striking
	May 6			Videotaped
	May 7			Videotaped
	May 8		Main Teacher audiotaped interview.	Videotaped
	May 9			Videotaped

Analysis

Data analysis in this type of research occurred throughout the course of data collection and continued after the data collection process was over. Two tasks of the data analysis were basic to this research. One was to generate assertions, largely through induction, and the second task was to establish evidentiary warrant for the assertions being proposed (Erickson, 1986).

The first task was accomplished by searching the data corpus and by reviewing the full set of fieldnotes, interview notes, audiotapes, side documents, and audiovisual recordings. The second task was accomplished by reviewing the data corpus repeatedly to test the validity of the assertions that were generated seeking disconfirming and confirming evidence. During this process the assertions were reframed, refined, and cleaned as the analysis proceeded. To generate and test assertions, the researcher looked for "key linkages," similar or related events among various items of data (Erickson, 1986; Schatzman and Strauss, 1973). They were written down on separate pieces of numbered papers. In each revision a new mark was given to key linkages found. The key linkages were of central significance for the major assertions, because they connected many items of data as analogous of the same phenomenon. It was within these key linkages that the overriding pattern and the theoretical constructs developed.

Triangulation of the data was a key feature of data analysis in this research (Hammersley and Atkinson, 1983). Triangulation is the cross-checking of data collected from one source against data collected from other sources. Triangulation provided a validity check and added depth and clarity to the emerging construct of the study. It prevented the investigator from accepting too readily the validity of initial impressions. Triangulation involved more than a search for positive confirmation; negative cases or discrepant data were important pieces of evidence contrasted with

positive confirming evidence. Discrepant cases allowed for the refinement and elaboration of more valid assertions.

This research methodology required a rigorous examination for bias in each decision of the research process. Analytical memos and reflection notes were kept to maintain awareness of self interaction. It required a constant dialogue with self, the keeping of diaries, and the practice of recursive analysis in which the researcher made explicit the subjective aspects of interaction with the research participants (children and teachers) building it into the research study.

Another analytical procedure consisted of the systematic use of external criticism as well as self-critique, playing the insider/outsider role, and distancing from the setting as a way to regain perspective. Two distancing periods were held; one from February 4 to February 7 and another from April 8 to April 12 in which the researcher was looking for external input and met individually with members of the guidance committee (Dr. Campbell, Dr. Knoppers, Dr. Branta, Dr. Schuiteman, Dr. Feltz), a doctoral student in clinical pscyhology, and a doctoral student in sport science. In addition, commentary was sought from other researchers, mentors, and colleagues as an aid in clarifying concepts, developing and refining questions, and gaining insight to the study.

CHAPTER FOUR

THE SCHOOL AND THE PARTICIPANTS

Introduction

The purpose of this chapter is to present a description of the setting as well as a profile of the participants in the study. First, the school and motor skill program will be described in detail. Second, an overview of the main teacher is given. This is followed by an overview of the assistant teachers and student teachers. Fourth, a profile of the children participating in the study is provided. Fifth, a description of a typical day, and sixth, a description of the gymnasium floor plan will be provided.

The School

This research was conducted in a preschool located in mid-Michigan. This preschool was operated by the Department of Family and Child Ecology of one of the universities in the area. The overall educational purpose of the preschool is to provide rich and varied educational experiences for young children. The primary aim is to help children develop positive attitudes about themselves as learners. According to its program pamphlet, "the preschool works hard to foster rather than force development."

The philosophy of the preschool is that learning is an active, exciting process which should be balanced among all areas of development, encompassing the emotional, intellectual, language, perceptual, physical, and social areas. To carry out their philosophy, teachers and parents plan together to develop specific goals for each child. Children then increase their knowledge and skills one step at a time, and they move at a pace which is most comfortable for them by participating in activities which have been designed to match their individual abilities and interests. Throughout the year teachers

assess and record the children's progress so they are able to maintain a course of action which is developmentally appropriate for each child. Program content is based on the assumption that children should be exposed to a wide range of experiences which teach them "how to learn." The preschool staff believes that their philosophy will prepare children not only for their future school experiences but also will give children skills upon which they can build throughout their lives (preschool program pamphlet, 1989-1990).* In its connection with the university, this preschool has a threefold purpose: (a) to provide a setting for student observation of and participation with young children, (b) to provide a research setting for university faculty and students, and (c) to offer exemplary educational services to children and their families (summary review of preschool activities, 1990).*

This preschool has a mainstreamed, multi-cultural environment representative of the community. During the period of the study approximately 153 children, ages two through five years old, were enrolled. Families whose children were enrolled varied in their ethnic and socio-economic backgrounds as well as in the lifestyles they pursue. The total population of children and families served by the center is approximately 269. From this population, 93 children, ages three months to three years old, are enrolled in a family and infant toddler learning center. The 269 families enrolled comprise an internationally mixed population in which 17 different countries are represented. A small number of African-American, Asian American, Hispanic, and Native American families are enrolled in the program. Likewise, this preschool provides a mainstreamed environment, serving both handicapped and non-handicapped children. This preschool was open to all families in the area. Some children came from homes where both

*The author of these documents is not given to protect the anonymity of the participants in this research. The documents' names have been modified for the same reason.

parents are professionals or are working toward an advanced degree in the nearest university. Others come from homes where only one parent is a professional, while others come from homes where neither of the parents are professional. Likewise the economic status of the families and children enrolled is varied. This year the preschool offered 10 to 12 scholarships to children of families with very limited resources. Children are expected to attend four days per week from Monday through Thursday.

The school has 13 classrooms: eight designated as preschool, four as nursery schools, and one as the family/toddler learning center. The preschool also has a gymnasium in the basement in which the motor skills classes are held; however, it can be used when available by classroom teachers and children as an indoor facility to foster physical development as well as to stimulate learning in all curricular domains.

Each classroom has a head teacher with a master's degree in Child Development or Early Childhood Education and extensive experience teaching young children. Teacher selection is based on demonstrated competence in planning and conducting a children's program as well as supervising student trainees within a child development setting. Teachers are advised by a program supervisor who is responsible for coordinating an appropriate educational program for the children as well as for the university students involved. Each classroom has one or two student teachers working on their degree or toward early childhood certification. In addition, each classroom has other student trainees.

Two preschool sessions are held. The hours of operation were:

Morning session from 9:00 to 11:30 a.m.

Afternoon session from 1:15 to 3:45 p.m.

In 1990-1991, the tuition fees were:

2-year-olds - $252.00 per term

3-, 4- and 5-year-olds - $231.00 per term

Prior to starting school regularly, the children receive a teacher home visit and then they are invited to visit the school before regular attendance starts. An open house is held to present the facilities and program opportunities to all parents and children enrolled. This open house includes a presentation of the gymnasium and the motor skill program available in the school. The school building has five entrances. However, children always use the side entrance that faces the circular drive by which parents enter the school grounds and place their children in the care of the teachers. The building has two floors and a basement. All the classrooms, except the gymnasium, have an area for observation with a one-way window.

The gym is located in the basement along with a few other adjacent rooms (a closet, a bathroom, and a classroom). On the first floor are the offices of the teachers, the main office of the preschool, and three classrooms. The second floor has three classrooms, a parents' meeting room, a bathroom, and some other rooms. Each classroom has a bathroom which is shared with the adjacent classroom. There are three playgrounds outside the school which are enclosed by fences.

The Motor Skills Program

The motor skills program of the preschool is an additional program, offered by the preschool in a cooperative project with other university departments. Participation in this program is a parent's choice and also depends on availability of openings. There are two sessions, one in the morning and one in the afternoon. This schedule was planned to extend the time periods of the regular morning and afternoon preschool sessions. The hours of operation are before the regular class sessions:

MPS morning session	8:00 to 9:00 a.m.
MPS afternoon session	12:15 to 1:15 p.m.

A total of 43 children were enrolled in this class during the study; 14 attended the morning session and 29 the afternoon session. The supervisor of the motor skills program was responsible for coordinating the program and supervising the instructors for the daily sessions, as well as for meeting periodically with university faculty to evaluate program effectiveness. According to the supervisor of the program, the projected enrollment of children in the morning session for the 1990-91 school year was low, so there were doubts about opening the morning session. The afternoon session was over its maximum with 29 children enrolled, so this session was definitely going to be held during this school year. This uncertain situation with the morning session led the researcher to decide to study the afternoon session. Since this was an optional class, not all children enrolled in the regular afternoon preschool session went to the motor skills class. Children enrolled in the motor skills class arrived at the preschool one hour early for their regular afternoon session; consequently, they had a longer time in the school. At 1:15 the children were transported from their motor skills class by the gym teachers to the place where the other classroom children met before going to their regular classroom.

This motor skills program had a fee ($85.00) which was in addition to the preschool regular fee. The class was offered three terms during the school year. During summer, the class was integrated into the regular school day and all children attending in the summer session participated. The instructors during the summer session were the classroom teachers. They usually received some suggestions and guidelines from the supervisor of the motor skills program. During the school year (Fall, Winter, and Spring terms), the children attended the motor skills program four days per week from Monday through Thursday for eight weeks each term, except for the kindergarten children who had a ninth week. During this week, only the kindergarten children and the

supervisor met in the gymnasium. The afternoon session, in contrast to the morning session, had a waiting list. As in the regular program, children were dropped off on the curved drive to attend this class. Some children had one of their parents drop them off, others had a babysitter, while others were car-pooled by a parent or babysitter.

The purpose of the motor skills class, as stated in one document sent to all parents, was "to contribute to the healthy lifestyle of the children through exercise, skill development, nutritional awareness and enjoyment of movements." Eight goal areas are listed as the basis for the curriculum of this program. These goal areas are: (a) basic body movement, (b) locomotor skills, (c) stability skills, (d) manipulative skills, (e) physical fitness, (f) rhythmic skills, (g) social and emotional development, and (h) nutrition awareness.

The basic body movement area focuses on movement concepts such as body direction, effort, and relationships. The locomotor area focuses on those movements in which the body travels in a horizontal or vertical direction from one point in space to another. Examples of these movements are crawling, walking, running, galloping, jumping, hopping, and skipping. The stability goal involves two types of movement: static balance, in which the body remains in place but moves around its horizontal or vertical axis; and dynamic balance, in which the body moves in the space while maintaining balance. The manipulative movements focus on skills that involve giving force to an object or receiving force from an object. Examples of such activities are throwing, catching, kicking, punting, and striking. The physical fitness goal deals with the concept of a positive state of well-being related to vigorous physical activity, genetic make-up, and nutritional awareness. In this area, two aspects are addressed: health-related outcomes such as coordination, muscular endurance, flexibility, and aerobic endurance; and performance related outcomes, such as muscular strength, speed, agility,

power, and balance. The rhythmic area focuses on developing awareness of the various elements of rhythm and expression of them through movement. This area involves activities such as singing rhythms, creative rhythms, and dance. The social and emotional development area addresses the ability to interact effectively with others and to develop a healthy self-concept. The nutrition awareness area involves the understanding of the importance of a healthy diet for a quality lifestyle.

During each term of the study, all eight areas are addressed, however six of them are directly specified in the lessons. They include: locomotors skills (LO), nutritional awareness (NU), object control or manipulative skills (OC), physical fitness components (PF), rhythmic awareness (RH), and stability skills (ST). The other two areas, basic body movement and social/emotional development, apparently are to be addressed during the opening and closing activities, although that is not specifically expressed in the term plan. Therefore, it seems as though these two areas are covered without specifying them in the term plan. In each class session, four small group stations are set up. At each station one of these eight areas is addressed. Each group of children has the opportunity to visit one area per day. By the end of the week they have been at each of the four stations or areas. In addition, during the daily free choice time, children can visit any of the four stations set up in the gymnasium. The term plans used during Fall 1990, Winter 1991, and Spring 1991 are located in Appendix B, C, and D, respectively.

Each weekly lesson plan included four goal areas. Although the goal areas might repeat during the same week, the activities might be different and usually addressed different objectives. The opening activities of each class were with music most of the time. Initially children were in a circle and then they moved freely in the space. The opening activities generally included guided movements, game activities, rhythmic

activities, and parachute activities. The opening activity on Monday was repeated on Tuesday with variations. On Wednesday a new opening activity was used and this activity was repeated on Thursday with variations. Variations were selected by the teachers in charge of these activities. The closings were usually action poems or action songs, finger plays, or imitations while sitting or standing in a circle. The closing activities were the same the first two days of the week (Monday and Tuesday) varying on the second day and a different closing poem or song was used for the last two days of the week (Wednesday and Thursday) with variations on Thursday. The opening and closing activities used by week and term are located in Appendices E, F, and G.

The Teachers

The purpose of this section is to introduce the reader to Mrs. Johnson (not her real name), the teacher in charge of the program, and the one who was responsible for the planning and organization of the motor skills class. In addition, a brief profile of other teachers involved in the program will be provided. Mrs. Johnson is in her early 30's, married, the mother of two boys of elementary school age. Mrs. Johnson grew up with all brothers. She enjoyed playing baseball from the time she was six years old. She was always interested in sports. During her high school years she was a cheerleader as a way to get involved in sports. According to her, there were not many women's sports so the best way to get involved in sports was to be a cheerleader. "I tuned in to every single sport the school had."

At the end of high school she decided to become a physical education teacher. In 1979 she received her bachelors degree in physical education with certification at the elementary level. At that time she knew that was the age group with whom she wanted to work. After having her first child, she started working part time teaching gymnastics to

young children. She really enjoyed her job, but financially needed a full time job. So she worked for a year and a half in a bookstore. Since she really missed her teaching and contact with children, she decided to return to teaching gymnastics. At the same time she decided to pursue her Master's degree which she started in 1987 and finished in 1989. In her master's program, she specialized in motor development. During her studies she worked as a graduate student in programs involving children of early childhood and elementary school age. When she finished her degree, the university hired her as a part time instructor to work in a motor skills program for children. When interviewed, Mrs. Johnson expressed to the researcher that she really loves to work with children, that that is the favorite part of her job. Her favorite age group is from 3 to 6 years. She likes this age group because she thinks they are unique, honest, and pretty eager to learn. They give her challenges and keep her renovated. She said, "At this age children are very expressive about their feelings." However, in her job she also has to work with adults, college students who are learning to teach children. She found that to be the hardest part of her job, although she likes the challenge of what she does with adults.

Each term Mrs. Johnson has a different set of students. Her responsibilities include organizing their schedules with the motor skill class schedules: who is teaching what, when, and where. In addition, university researchers are collecting data in her program every fall and spring term, so she needs to fit that into her schedule. Although it is time consuming, Mrs. Johnson likes organizing and making the pieces fit together. She expressed to the researcher, "Once the term gets organized, I feel I have accomplished something." This year Mrs. Johnson is also in charge of another motor program sponsored by the university. The second program, although similar to this one, has different logistics, children, and setting. Working in two different buildings and programs was wearing on Mrs. Johnson. She felt as though she was constantly hopping

into her car and heading to one building for two hours, then hopping in the car again heading to the other building for two more hours, and once again hopping in the car to go to the first building for another two hours. "It is really exhausting" she said. One day she went back and forth four times. She wishes her days were not so broken up.

Mrs. Johnson's responsibilities with the college students are (a) to provide opportunities to the students to learn and practice how to teach motor skills, (b) to provide opportunities for the students to pick up stages of motor skill development, (c) to provide the students with feedback on their teaching and hints to improve, (d) to evaluate their lesson planning (one per term), and (e) to evaluate their teaching performance. Her responsibilities with children in the motor skills class are (a) to provide for the well-being of the children involved, (b) to plan for their development in the eight goal areas by developing the term plan for all days and weeks, (c) to establish communication lines between the children and the students, and (d) to work on communication skills with the children. Furthermore, she needs to build communication lines with school head teachers, with children's parents, and with the school. In addition, Mrs. Johnson links communication lines between the university departments involved in the program research project.

Mrs. Johnson wishes to have more time for communication, especially with each child, the head teachers, and the parents. Mrs. Johnson believes that the staff of the school is a very supportive one. All head teachers are open to discuss and provide ideas or hints on techniques that they use to help children through particular problems. Planning and communication are a big part of the program. The part that concerns Mrs. Johnson the most is the beginning of the term. The college students need to receive a lot of information to start the first week of teaching and the amount of information is overwhelming. The college students or student teachers need to be aware of several

standard policies geared to protect the children and to protect the students. For instance, the children must always be holding an adult's hand when they are entering or exiting vehicles for the motor skills program. Mrs. Johnson has to go through all these procedures and motor skills class procedures before they begin to teach. During fall term the students have two orientation periods because the term is longer. Winter and spring are shorter terms so they only get one orientation period. Mrs. Johnson knows that the students feel overwhelmed by what they need to know, and she also feels overwhelmed by what she needs to teach them in a short period of time.

Even though her job is overwhelming, Mrs. Johnson was jovial, active, kind, and willing to cooperate with this research. She loves her job, especially teaching children. She was very attentive and responsive at all times when dealing with children, students, parents, and head teachers. She was very open to suggestions and was always searching for ways to improve the motor skills program. Mrs. Johnson has also developed materials and equipment for special activities (pillow balls, streamers, etc.). She recorded a variety of children's music for her classes. She has made three sets of all the music she uses so her student teachers can listen and become familiar with the music before using it in class.

The Assistant Teachers

An assistant teacher, a graduate student, assisted Mrs. Johnson in each session. During some terms, two assistant teachers worked, one on Mondays and Wednesdays and the other on Tuesdays and Thursdays. Usually they were obtaining a Master's degree in Child Development. They were very familiar with the setting, policies, and procedures. They moved around in the gymnasium, supervising and helping any teacher who needed an extra hand. They also knew the lesson plan and what was being taught at each station.

In the case of momentary absence of Mrs. Johnson, they took charge to assist student teachers and children. They usually helped take children to the bathroom, looked for first aid, or assisted with a child that had a behavior problem in such a way that the gymnasium activities continued smoothly while the student teachers took care of the rest of the children. They were very supportive of Mrs. Johnson and the student teachers. They also attended the pre- and post-sessions of each teaching day. Most of the time they observed the activities and foresaw the need for their assistance.

The Student Teachers

The student teachers, also called adult students, were university undergraduate students. Although a few were freshmen or sophomores, most of them were juniors or seniors. They had to attend the motor skills program as a laboratory assignment of a lecture class in which they were learning about the motor development of children during the early childhood and elementary school years. The laboratory experience was worth one credit and the grading was all under the responsibility of Mrs. Johnson. All of them were aware of the ongoing research and were willing to participate. Their participation was mostly as teachers and informants. As teachers, they explained to children what they were going to do and helped them to do it. After practicing they asked children questions about the activities practiced. All of this was part of their normal responsibilities. As informants, they shared with the researcher their feelings and ideas of what they thought happened during the part in which they were in charge of the class. Their information was always confidential and obtained privately. They were willing to watch the videos and talked about them when their time allowed them to do so. Also, they offered their phone numbers and addresses during breaks to the researcher in case the researcher was in need to double check or clarify an issue. Most of them were

students in the department of Child Development, pursuing a degree in early childhood education. The majority were females, only one male was involved one term during the study.

The student teachers, at the beginning of the year, had to buy their lesson plan packets so they had the information of what the program lesson plans were and what they would teach each week. The student teachers taught twice per week and each day they were responsible for teaching a small group activity. They were required to know what activities were planned for the station and what equipment to use. They also were expected to check the equipment at the station. Although the set up of the gymnasium was permanent for a week, students from other classrooms could go down to the gymnasium any time and use the equipment. Sometimes these other groups moved equipment to different places, so student teachers needed to double check their equipment to make sure they had everything they needed to teach their group. The student teachers also might teach one opening or closing activity to the large group. The day they taught the whole lesson they did the opening or closing activity they had planned for that day. Therefore, during the term they might have taught two large group activities, openings, or closings. If the number of student teachers in the session was small, they might have a chance to do more than two of these large group activities. In addition, every day they went to the program, they helped or supported the teachers in charge of the large group by singing and participating in the activities, by helping a child that arrived late to get involved quickly, by standing beside the children that were disturbing the large group activity, or by taking care of a child that needed adult attention. In the small group activity they worked as partners. With two teachers to a group of children, one would be leading and the other one would be assisting the lead teacher. The next time they taught the roles were reversed; in that way they both got experience leading the small group.

The student teachers were required to attend the pre- and post-session of their teaching day. The pre-session occurred prior to the time that the children arrived. Each teaching day Mrs. Johnson, student teachers, and assistant teachers met for 15 minutes to discuss the lesson of the day, clarify doubts about the way of doing the activities, go over specific safety hints when using particular equipment, pass messages from parents or teachers about children enrolled, and find more specific information about ways to carry out the activities of the day. The post-session occurred after the children had left. The teachers would sit down with Mrs. Johnson to review and discuss the session. It was a time for comments, questions, and suggestions on how the lesson went, for discussion of strategies to deal with the problems encountered, and usually for providing suggestions for the next session. Responsibilities for the next week were usually reviewed and teachers also filled out information about children's participation in their small group. The session usually lasted about 15 minutes, but might go longer if they felt the need to discuss something more or have specific questions for Mrs. Johnson.

The Children

This section is dedicated to the main characters of the study - the children. The children ranged in age from 2 years 11 months to 5 years 9 months. At the end of the study they were six and a half months older. The class was composed of 29 children during the first term of observation: 16 boys and 13 girls. For the second term, seven of these children did not come back: among them four girls and three boys. The second term four new boys and two girls added the class. Therefore, the class totaled 28 children composed of 17 boys and 11 girls. Spring term two girls and one boy did not come back, while four new boys added. The total number of children in the class was 29,

and the class was composed of 9 girls and 20 boys.

Among some of the known reasons that children did not return to the program were: (a) parental pregnancy and illness, (b) transportation difficulties, (c) graduation of parents, (d) sabbatical of parents, (e) perceived lack of need, and (f) children's days too long.

The philosophy of enrollment in the program is on a first-come, first-served basis. There was a waiting list of less than 18 children for the afternoon program. The first family (person) on the waiting list gets the first chance to enroll their child or children in the program. The afternoon program was likely more attractive. Mrs. Johnson expressed that they were overloaded and had accepted more children than the previous year. The children in the program were representative of the diverse overall school population representing a variety of cultural, racial, and socio-economic status (Table 2). During the first term, five children in the program were from Korea or were born of Korean parents, one child was black, one was of a mix of Arabic and an American parent, and one was from an English family. The rest were caucasian Americans. During the second term this diversity in the population was almost the same. The third term two more Korean children joined the program, increasing the number of Korean children in the setting. Two groups were predominant: the caucasian, representing the majority, and the Korean.

Table 2. Representation of cultures in the setting.

Term I	Term II	Term III
21 Caucasian American	21 Caucasian American	20 Caucasian American
5 Korean	5 Korean	7 Korean
1 Black American	1 Black American	1 Black American
1 European American	1 European American	1 European American
1 Arab American		
29 Children	28 Children	29 Children

Each term the children were divided into four groups. Each group had a name that identified one of the favorite animals of children at this age. The animal name was chosen based on their characteristic motion associated with one of the skills being learned. For instance, if the teacher gave them the name "bears", they may be called the "jumping bears" and so on. These names were already set by the teacher, Mrs. Johnson, when they arrived, and she grouped them mostly according to age and ability level. All children in the class had a name tag that identified their group in the gymnasium, with the name of the child in big letters and a little figure of the animal representative of that group. The shape of the name tag represented the classroom to which they belonged in the regular school program. All children in the program knew at least the first letter of their name and the name of their group, and it seemed as though they enjoyed searching for their name tag on the low table located at the right of the door where they usually entered the gymnasium.

In each small group there were seven or eight children; there were usually two teachers per group. There were two children who were twin brothers, and a sister and a brother in the same class, but not in the same group, and two boys who were cousins. A girl, Vicky, and a boy, Danny, were friends out of the school and were living close to each other. There was a girl with an eye impairment and a girl who was motorically delayed.

Of the 15 girls involved in the program, eight of them attended all three terms. In order to protect their privacy, we will call them by the following names for the purpose of identification for this project: Jill, Becky, Mary, Susie, Seon-Jin, Soon He, Lilly and Vicky. In addition, Angela started in the second term and continued until the end of the study. Of the 24 boys enrolled in the program, 12 were constant for the three terms. In order to protect their privacy we will call them by the following names for the purpose of identification for this project: Brian, Billy, Jeff, Young Chul, Eric,

Danny, Matthew, Ian, Joon-Ho, Robbie, Dan, and Bruce. Some other children who attended one or two terms are also mentioned in the analysis. Most of the children in the setting have older or younger siblings, except for one girl and one boy.

The children were not afraid to talk to adults. It seemed as though they saw all adults in the setting as teachers. In general, they liked to express their ideas and feelings, especially the older ones. The least talkative group with adults was the youngest group.

A Typical Day

The purpose of this section is to provide the reader with an idea of the everyday routine of the motor skill program at the center. The activities in the gymnasium followed a daily schedule that started with the pre-session previously described in the student teacher section, and finished with a post-session. The following chart represents the everyday schedule.

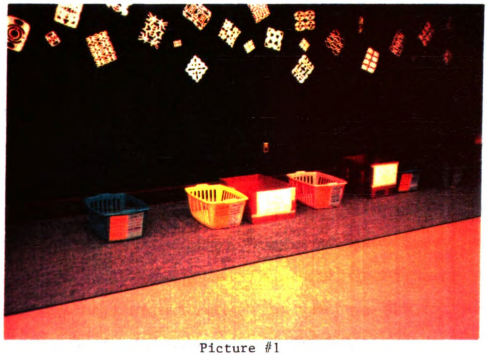
Everyday Schedule

12:00-12:15	Pre-session and set-up
12:15-12:30	Unloading
12:30-12:40	Opening - Large group activity
12:40-12:52	Stations - small group activity
12:52-1:02	Free choice
1:02-1:05	Closing - Large group activity
1:05-1:15	Children leaving
1:15-1:30	Post-session

A brief description of each session of the schedule follows.

The Pre-session. During this time teachers met with Mrs. Johnson and her assistant to discuss and to clarify the lesson of the day. Teachers checked equipment or set up their station for their small group activity if it was not yet ready. Sometimes the stations were ready because the morning group set them up.

Unloading. After the pre-session was over some teachers stayed in the gymnasium to supervise the children's play activities when they arrived while others went to the unloading area to help unload and transport children to the gymnasium. Once the children were released to the student teachers in the gymnasium, the teachers went back to the unloading area to bring more children down until the time for unloading was over. In the meantime, children that had arrived in the gymnasium were playing with the equipment available to them. The teachers that went to the unloading station rotated during the week in such a way that at the end of the week all of them had been in both situations, unloading or supervising the play activity in the gymnasium. When children arrived in the gymnasium the first thing they did was to place their back pack or bags and jackets in their classroom baskets. There were six classroom baskets with different colors. Each had the name of the classroom teacher and the name of the children in the program that belonged to that classroom (see picture #1). Most of the older children recognized their baskets. The younger children needed help, especially at the beginning of each term. After placing their bags and jackets in the baskets, they came to the lower rectangular table on which their name tags were placed and they picked up their name tags and attached it to their T-shirt (see picture #2). The youngest children needed adult help to do so; the others seemed proud of being able to do it by themselves. Then they went to the area where they wished to play, either alone or with friends. One of their favorite areas was the climber.



Picture #1

Picture #2

The Opening. At 12:30, when most of the children had arrived and the teachers responsible for unloading had returned, Mrs. Johnson or the student teacher in charge of the opening asked the children to find their "X" on the floor and to sit on it. The children seemed to know the routine and some of them were on the "X's" before being asked, waiting for the opening. Other children needed a constant reminder to find an "X" and get in the large group. During the large group opening activity, the directing teacher was usually in one specific spot so that all children in the setting could identify the person leading the opening by observing who was in the appropriate position. On several occasions Mrs. Johnson asked them "guess who is leading the opening activity today" and they guessed by pointing to the teacher or saying her or his name. This procedure also seemed to help in directing children's attention to the lead teacher of the day. During this time they sang acting songs using creative movement, they did circle games and games using locomotor activities while moving freely in the space. If a child was having difficulty in attending to or participating in the group activity, the assistant teacher or any teacher could be asked to go near to the child to encourage him or her to participate. Or, if the child was disturbing the activity, the teacher might remove the child from the group and go to a quiet spot to listen and talk to the child.

After the group activity was over, Mrs. Johnson asked them to get very close to her. She might ask them to use a particular movement to get where she was. For instance she could ask them to "scoot over" or "can you stroll toward me (walk)". When all children gathered around Mrs. Johnson, the student teachers walked to their stations and Mrs. Johnson asked them which group they were expecting that day. They answered with the name of one group and that group of children moved over to where that teacher was. Each group had a chance to visit the four stations during the week. Each day they went to one station only, the next day they would go to the next, and so on. There was a

schedule posted on the bulletin board of each small group area that specified by each day of the week the group and the corresponding activity area for the small group.

Stations and Small Group. In the gymnasium, there were four areas identified with colors (yellow, blue, green, and red). Each of them had a bulletin board on which the lesson plan activities of that week were posted. During the small group activity, children got instruction on the activities planned for that day and week. The instruction was given by the student teachers and this time provided children with opportunity for more individualized instruction and practice. In the small group activity usually there was enough equipment for all children to have their own within the limits of safety. For instance, the black bats were used with some restrictions (no more than three at the same time) because they could all swing at the same time and hit somebody's head without intention. In the small group activity, the first thing the teacher did was to have the children sit down and talk about the activity they were going to do. Then they practiced the activity, taking turns. Toward the end of the activity the lights were blinked as a sign for teachers to close their small group activity by sitting with the children in the group and discussing what they had done, how they liked it, and what they learned. Then the teacher indicated that it was time for them to go to free choice.

Free Choice. At approximately 12:52 p.m. the free choice time started. During this time children had the opportunity to choose a play area and to use the equipment available there. Teachers were at their stations and encouraged children wandering around to come to practice. Teachers also played with the children if they asked for help. Another way teachers encouraged children close to the area was by smiling, or by doing the activities or experimenting with the equipment and materials in the settings. Children could move freely during this time from one station to the next. Teachers were alert to their station and the overall classroom activities, and were ready to move if a

need for adult support arose during this time. Toward the end of the free choice time during the first term, the sound of a tambourine was used to announce the clean up time. During the second term, soft, relaxing bell music was used to announce the clean up time.

The Clean Up Time. The initial signal for clean up during the first term was the shaking sound of the tambourine which indicated to the children that they should freeze in position. After all children froze where they were, the teacher verbally indicated that it was the time to clean up. This tambourine noise seemed to make children jump and move really quickly, then to collapse and adopt a frozen position. It was creating a lot more excitement instead of getting children ready for the closing. Mrs. Johnson was concerned about noise level and the excitement before and during the closing time. She wanted the children to calm down and relax before leaving. After a conversation with the researcher in which the researcher shared her observations with her, Mrs. Johnson decided to change to the music of bells. The children's response to this music was by telling others it was time to pick up equipment or by starting to collect equipment as soon as the music began. Then they moved to the X's in the large circle to find a place to sit for the closing activity. During this time the student teachers helped get children involved in cleaning up by finding possible tasks and guiding them during the activity. After this activity, everybody resumed their place in the large circle for the closing activity.

Closing. The closing activity was scheduled from 1:02 to 1:05 p.m. and consisted of a short action poem that teachers and children verbalized accompanied by body actions. Then Mrs. Johnson usually summarized children's participation during that day. After that she sent the children to the baskets for their belongings. At the baskets one or two student teachers were ready to help children find their jackets and bags. Children were

encouraged to do as much by themselves as possible so usually the teachers put the students' belongings aside and the child was in charge of putting them on. Then children were escorted in lines or by partners to their classroom or to the playground depending on where their classroom teacher met the children each day. After leaving children with a responsible adult in their respective classroom or meeting station, the student teachers came back to the gymnasium for the post-session.

The Post-session. The post-session was held in a classroom adjacent to the gymnasium, in which Mrs. Johnson had forms and record materials of the session. It started at 1:15 p.m. and went until 1:30 p.m. or longer. The student teachers and Mrs. Johnson sat in a circle and talked about how the day went, and suggestions and strategies to deal with particular situations were discussed. Some events that were not understood by the teachers in the gymnasium were usually explained. For instance one of the teachers might ask "why such and such was crying" or "I noticed that such and such did this or that. Can someone explain to me what was going on?" This meeting was very open, and at the end Mrs. Johnson usually had a conference with the person in charge of the opening and closing to talk about how things went, to point out areas of strength and areas of weakness, as well as to offer suggestions. Usually after the post-session I interviewed teachers in charge of the small group, especially those working at the station I had observed.

The Gymnasium

The gymnasim used was located in the basement of the building. This facility was used by other children in the preschool, when available, especially during snowy days. Schedules allowed for its use because the motor skills program was conducted one hour prior to the preschool regular schedule so the schedules did not conflict. The gymnasium

was rectangular and children accessed it via doors at one end of the longest wall. There was a main door with an exit sign diagonal to the children's access door. This door was in the center of the other longer wall of the rectangular shape (see Figure 4). Across from the children's access door there was a lane of carpeted area that connected with another door which connected with the hallway outside the gymnasium. To the right down the hall there is a double door that leads to the stairs. To the left there is a pop machine and a water fountain (toward the end of the hall). Between this door and the pop machine is the classroom used for the post-session meeting. The line of carpet in the gymnasium is the place where the classroom teachers' baskets were placed. Also on the ceiling of this area balls are suspended when needed. The wall next to this carpeted area was green and usually was decorated with different signs depending on the activity. For instance, after Fall term it was decorated with snow flakes. The door by which children accessed the gymnasium was the one closest to the unloading area. At the right hand side of this doorway was a low rectangular table where the name tags of the children were placed prior to class. Underneath this table the equipment of the day for use in the brown area was kept. The gymnasium had two columns on each side of the main double door. They were approximately two meters from the double door. These two columns limited the blue area which went from the piano down to the other wall toward the green wall. The red area was across from the carpeted lane by the children's access door and was also carpeted. The climber was located in this area, as well as all heavy equipment such as the balance beam, monkey bars, slides, and jumping boxes. At the beginning of the study, a huge teddy bear was sitting in one of the corners of this area. The teddy bear was taken to a classroom before the end of the first term because children wanted to sit by him instead of being active in the gymnasium. A piano was against the wall in the red area. An imaginary line divided the middle of the gymnasium into two sides. One side

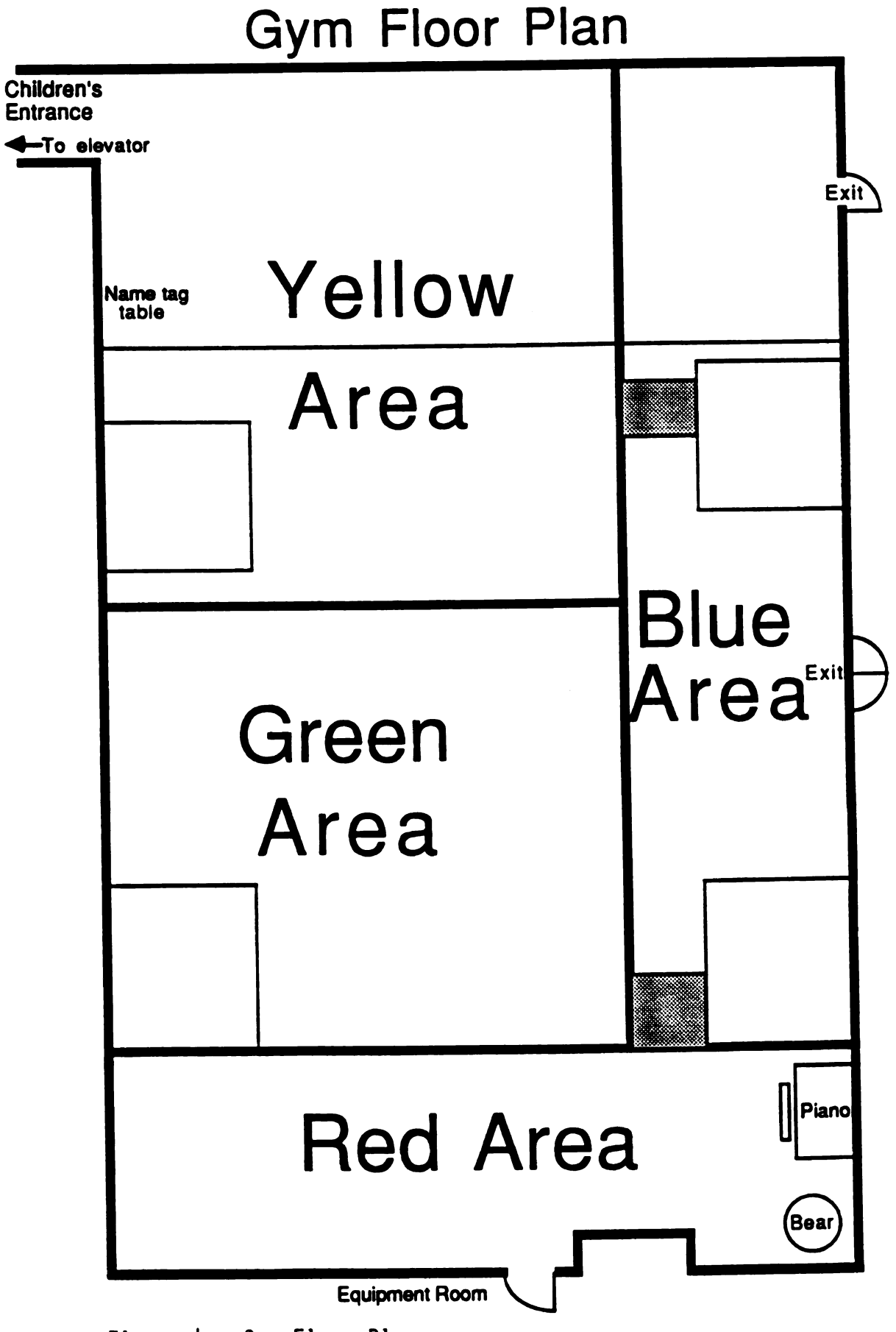
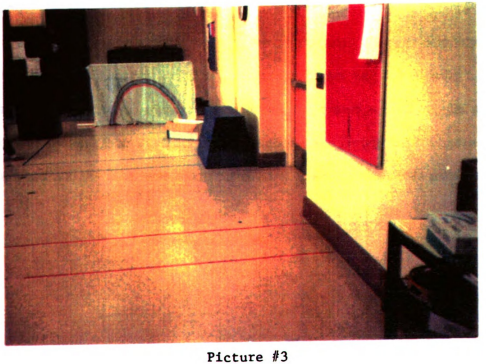


Figure 4. Gym Floor Plan

was adjacent to the red area and blue area. This was called the green area. The other side by the green area, that was limited on one side by the snowflakes wall and on the other by the blue area, was called the yellow area. Each area had a bulletin board in which the lesson plan of the week, pictures of the stages of the different fundamental motor skills, as well as the rotation schedule of the small groups were posted.

The large group activity for opening and closing was done in a big circle of X's that covered part of the brown and green areas and represented the center of the gymnasium. The walls of the gymnasium did not have decorations because of the result of a school regulation to preserve them. However, hanging decorations made out of cloth (such as a sky, a lion, a big sun, big targets for throwing) were allowed and used. Sheets with motifs (such as giant dinosaurs with big geometric shapes distributed on their body) were also used as targets. White sheets over equipment typically indicated that that equipment was not in use, but during classes, sheets decorated with colorful views were used to stimulate imagination in different tasks (see picture #3). The floor was tile, and on the floor, colorful tape was used to make various patterns, each one indicating a different activity. Four big squares were also drawn on the floor, next to the wall on which each bulletin board was hanging. These squares were used by classroom teachers at the end of the day to group their children in the gymnasium while they were waiting to go home.

The storage room was located behind the red area and could be accessed by a door located approximately in the center of the wall. There was a clock on the gymnasium wall by the main double door entrance and there was an equipment cart on which the recorded tapes and play-recorder machine were placed for use. The columns were covered with green mats, and under the climber equipment mats were distributed according to the teacher's discretion. Across from the main double door there was a set

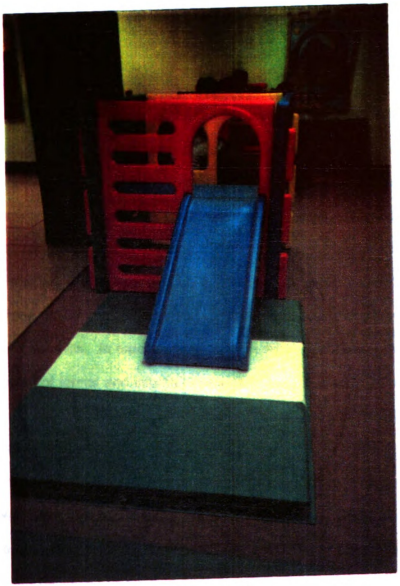


Picture #3

of windows that allowed day light and ventilation to the gymnasium. The gymnasium had good electrical lights, and these lights were used as a signal to start the closure meeting in the small group or to call the attention of the whole group when they were too noisy or out of control.

The main double door connected the basement with the upper floor by two flights of stairs, one at each side of the door. These stairs continued up to the second floor of the building.

The equipment used added color to the gymnasium. It was all colorful and usually represented different shapes and sizes. All the equipment was light in weight. Toward the end of the third term, a horizontal bar was incorporated into the regular equipment of the gymnasium. It was available in the climber area. One of the climbers was made out of wood and the other was made out of hard, colorful plastic (see picture #4).



Picture #4

CHAPTER FIVE

GENDER DIFFERENCES IN THE SOCIAL INTERACTION OF CHILDREN WHEN LEARNING FUNDAMENTAL MOTOR SKILLS

Introduction

This chapter deals with one of the major questions of the study: How do children interact among themselves when learning fundamental motor skills? Under this main question two other questions were asked: (a) Are there interactional gender differences in the way children learn the fundamental motor skills? If so, what are they? and (b) Are there cultural differences in the way children interact in the learning of fundamental motor skills? If so, what are they? These questions specifically focus on the nature of the social interaction among participants in the setting when learning the fundamental motor skills. In order to shed light on these questions, representative vignettes, quotes of formal and informal interviews, and documents collected will be presented to portray the patterns found in the study. Analysis and interpretation of these three sources of data led the researcher to consider closely gender differences in the way children socially interact when learning fundamental motor skills. These gender differences will be analyzed in three different categories: The interactions between girls, the interactions between boys, and the interactions between girls and boys.

From the beginning of the observations, patterns in children's interactions began to emerge, and they became stronger as the data collection process continued until the end of the study. These patterns were intrinsic to the way children socially approached the learning of motor skills, particularly the fundamental motor skills taught in this program. The social interaction of girls was based on cooperation and care, while boys showed an individualized and competitive pattern of learning. The girls were striving to be alike, looking for similarities among themselves, and they were continuously helping

each other to learn. The boys were striving to be different from each other. They were egocentric and they competed and challenged each other in their learning relationships.

Four assertions emerged from the analysis of the data. The first assertion of this chapter addresses the social interaction of learning among girls.

The social interaction of learning fundamental motor skills among girls.

> Girls learn from a cooperative, caring, and sharing interaction. They directly teach and learn from each other.

The following vignettes illustrate the girls' cooperative, sharing and caring interactions in the learning of motor skills as well as their drive for being alike. In this vignette the reader can notice that there was also boys' participation and interaction. However, the vignette focuses on the interaction that occurred among the girls.

On Tuesday, November 20, 1990, in the small group activity, they were learning catching. The children (four girls, three boys) were in a semi-circle and the teacher was in the center, at about the same distance from all of them. The activity was to catch a ball tossed by the teacher and return it back to the teacher. The teacher then would toss the ball to another child in the group.

The teacher was ready to pass the ball. The first person to receive it was Peter. Peter caught the ball by reaching for it with his arms extended in front of him and then grabbed the ball using his hands only and brought it to his chest. Then the teacher tossed the ball to Becky. Becky reached for the ball with fingers open wide, grabbed the ball in the air using only her hands, and then brought it to her chest. Soon-He also caught the ball by reaching for it and using her hands only. The ball was then tossed to Mary, and Mary opened her arms and bent her body forward a little bit. The ball came through her arms and she missed it. Mary's face changed. She suddenly looked pale. Her expression went from a smiling face to a serious face, and her eyes turned down as with sadness.

Then she turned her face slowly up to look for her friends. Her friends smiled at her; she smiled back. Her friends laughed; she then laughed, too. All the girls were laughing. The teacher decided to pass the ball again to Mary. Mary tried to catch it. She seemed tense, her mouth was tight, and her arms looked stiff and again opened wide. The ball came. She attempted to grab it but it passed through her arms before she could bring them together and she missed again. Her face was really serious. She turned her face down. All the girls laughed and she turned to see them. A few seconds passed and then her face became relaxed and she smiled at them. The teacher said, "It's not nice to laugh."

Next it was Rosie's turn. The teacher tossed the ball to her and Rosie prepared her arms and hands in front but did not attempt to catch the ball. The ball went right through her arms. Immediately she turned to her friends and laughed. They all laughed too, including Mary. Then the ball was sent to Joe, and he caught the ball using his hands only. The teacher said to him "Good catch, you caught it with your hands." The girls all laughed. Becky claimed she wanted a turn. The teacher tossed the ball to her. Becky let it go through her arms, without even an attempt to use her hands or arms. Quickly she turned her face to see her friends and laughed. Then it was Soon-He's turn and she caught the ball using her hands only; she then smiled very quietly. Becky said, "I want another turn." The teacher turned to her and tossed the ball, which Becky caught using both hands, reaching for the ball, bringing the ball slowly down to her chest. She then smiled while watching Soon-He, then Brian had another turn and caught the ball using his hands only.

The three boys were concentrating on catching the ball. They did not seem to realize the game that the girls were playing, and they did not laugh. Maybe they did not like that type of game, or care about other people's feelings. Or perhaps they would rather play the teacher's game. The interesting issue here is that the girls created a

game that seemed to help their friend cope with her lack of ability and failure to catch the ball as well as spare her feelings. Without direct agreement (no words were spoken by them) all the girls followed the game. In the same manner it seemed as though they wanted to show her that they were alike since they also missed the ball, or that catching the ball was not that important for friendship relations. Likewise, Mary's expression of sadness changed to a relaxed and smiling face. It seemed as though this way of interacting really helped her feel better about herself. It also seemed as though the other girls did not want to show their ability when it was better than their friend's ability. Similarly, when one girl, Soon-He, decided to catch the ball, Becky, a very caring girl, immediately asked for a turn and caught the ball thus showing support for this girl, too.

On November 5, 1990, a similar situation occurred. In this instance, instead of moving down to a lower level, a girl who learned something tried to teach the others so they could move up to her skill level and all do the same. The activity was throwing, and I was observing the same group of children. They were throwing toward the wall from a distance of approximately five feet. The teacher had just changed the activity. The activity was to throw a ball after picking it up from a cone that was set behind and by the throwing side. Becky tried to set the ball on the cone several times but the ball fell down again and again. In previous attempts Becky consistently threw the ball without changing her body weight from a stationary position; she also showed difficulty bringing the throwing arm from the back of her body to the front. The position of her throwing arm was constantly changing, from down by the side to the front with some arm turning or twisting movements. At other times she brought the throwing arm extended from the side in a lateral motion to the front and dropped the ball at the level of her waist. At other times her throwing arm started flexed behind her head.

Rosie had showed consistently a more mature throwing pattern. She changed her body weight, stepped with a contralateral foot and turned her trunk in each trial. Her throwing arm always started flexed up behind her head.

The teacher went over to the area where Becky, Rosie, and Mary were. They were laughing because of the frustration of trying to set the ball on the cone. Mary decided to play with the cone so she put her cone on her head and sat on the floor. The other girls laughed and Becky started doing the same thing when the teacher came to their section. During this activity each of them used a cone, a ball, and an area to throw to with a space between them. However, these three girls were too close and away from their spots. The teacher came in to organize them and asked them to keep trying the activity the way she showed them. The teacher explained to Rosie how to do the throwing while Becky and Mary were setting their balls on the cones. Rosie did it, then she said, "Watch me teacher!" The teacher did not see her. After she threw she said to the teacher "See?" Then she noticed the teacher was walking away from her, but she did not seem worried about that. She turned around and said, "Becky, see, the teacher explained to me if you use this foot then you use this hand, like this" (meaning if you use your right hand you step with your left foot as she showed Becky). She also called Mary's attention, "Watch, Mary." She threw and Becky observed her. Then Becky did it right after her. Becky was concentrated. It seemed she was following her friend's instruction. This time Becky stepped with her contralateral foot and did it on the same side that Rosie showed her, thus showing a more mature pattern than previously.

This is a typical example of one girl helping another girl to learn the skill she knows. Showing cooperation in learning and thus helping her friend to move to where she was, Rosie was not only concerned about Becky but she also called it to the attention of Mary. It seemed as though she wanted her friends to learn what she just learned. It

seems that girls like to have their friends doing the skills the way they are able to do it. In other words, it appears that they wanted to be alike.

On Monday, January 7, 1991, during free choice time, Lilly was playing catch with the teacher and Susie came over. Susie was wandering around them possibly indicating she was willing to play. The teacher noticed her and asked if she wanted to play. Susie said, "Yes", and quickly got between the teacher and Lilly making a kind of triangular shape within the three positions. The teacher tossed to Susie and then Susie tossed to Lilly. Lilly missed the ball and Susie said, "I have a bad throwing." They laughed and Susie covered her mouth with her hands. Then Lilly went to pick up the ball and came back with it. They continued playing and laughing every time they caught or missed; they laughed until the class was over. They looked at each other a lot during the game, and before each episode of laughing.

Interesting is the fact that Susie blamed herself for Lilly's failure to catch the ball instead of blaming Lilly. Lilly on the other hand could have thought she was a bad catcher or that Susie was a bad thrower. However, when Susie said, "I have a bad throwing" the remaining thought that Lilly may have had was —"I am a bad catcher"—. If that was so, then they both had something in common —"a bad something"— and they became alike. Another possibility could be that Lilly thought (a) —"I am a bad thrower too"—, (b) —"neither of us is bad, we are just alike"—, or (c) —"catching is not important, let's just enjoy our time together and keep trying to play this game without blaming ourselves."— The fact that they laughed after every trial seems to show that they were having fun independently of performance on the skill (catching or not).

They were having a social interaction (seeing each other and laughing) and that seemed to be the best part of the game. The ball was the means for the interaction. It allowed them to know about each other's movements, thus allowing them to see their

similarities while enjoying their time. At the same time, the fact that they found that they were alike seemed to develop a friendship among them.

On another occasion, on November 5, 1990, after their arrival and before class started, Susie was in the gymnasium when Jill arrived. After greeting each other, Jill ran to the climber, hung on the horizontal rungs first with her hands, and then with her hands and legs. Then, she dropped her hands and hung upside down by her legs. Susie who was watching from her side, said, "Don't do that."

Susie's face looked scared, her eyes were wide open, and it seemed she was holding her breath with her mouth slightly open.

Jill said, "I like it!"

Susie replied, "Be careful!", holding her breath again.

Jill said, "Come down."

Then Jill got off and smiled to Susie.

After Jill got off, Susie went up, hung by her arms, then brought up her legs. But, she did not let her hands go. Instead, she pulled herself up and held the sides of the climber, getting her arms through the holes over the side of the ladder.

Susie start yelling, "Help! Help!"

Jill said, "I will help you."

Jill tried to hold her but could not reach her. Then, she quickly ran to the center of the gymnasium and pulled one of the teachers by her hand over to the climber while saying, "She needs help," until the teacher realized it and came over.

Susie said, "I am stuck."

It seems that she was frozen in the position. She probably thought if she moved she would fall down. The teacher helped her and said, "Don't get stuck again."

This vignette shows that even though the skill was scary for Susie, she still wanted to attempt to do what her friend did. Also mutual caring and cooperation was present in this event. When Susie expressed her worries about her friend Jill by warning, "Don't do that," and "Be careful," it seemed as though she was worried for the physical integrity of her friend. Her friend, on the other hand, seemed to understand Susie's concern by telling her, "I like it", and after a pause, "Come down." This could be the equivalent of "I enjoyed this activity, don't worry." These phrases could also have been encouraging for Susie to attempt to learn something she was scared to do in the first place. In addition, Susie may have wanted to show her willingness to be alike. Likewise, Jill expressed her caring and cooperation for Susie by trying to help her herself and then by looking for an adult's help. Caring and cooperation seemed characteristic of these girls' interaction. Although one can see this interaction as competitive since one girl was kind of keeping up with the skill showed by her friend, the way they showed concern for safety, a willingness to help, and the intonation of their voices without yelling or threatening each other, seem to support their caring and cooperative style of interaction. The girl's expression "I like it," may have taught the other girls that she may enjoy that activity too, that there was no reason to be scared.

In another event, during an opening activity, another interesting case took place. On November 5, 1990, when Becky arrived at the gymnasium, most of the children in the program had arrived and were playing in different areas. When Becky came in, four girls (Rosie, Lisa, Mary, and Kim) got close to her and started talking to her while touching her dress, and expanding or opening her skirt. They all were smiling. Becky paid attention while Rosie and Lisa talked. Mary and Kim listened.

When the teacher said, "It's time to sit on your X's," some children immediately looked for an X and sat on it. Others were already sitting. Mary tried to grab Becky's

hand, but Becky started running at the same time and the other girls, including Mary, followed her (Susie, Rosie, Lisa, and Mary). They stopped for a second as if they were going to sit after the second turn around the circle, but then they continued running. On the third time around the circle, Becky stopped. Rosie took the X next to Becky and Lisa the X next to Rosie. Mary continued running to get the X next to Becky on the other side but a boy got it first. Susie continued running to find an X somewhere else, and Mary started telling Becky to search for another X so they all could sit together. Becky did not seem to be willing to change places. Mary continued talking to Becky and asked her, "Please, could you sit by me, please." Becky held both of Mary's hands and looking at her eyes said, "I will sit with you another time, next time, okay?" She was moving her head up and down, keeping eye contact with Mary. Rosie who was by Becky explained to Mary, "When we get close to the teacher in the small group you will sit close to her." Mary still did not seem happy with that; she seemed to be ready to cry. A teacher noticed the conflict and came over. Everybody was in place in the big circle except Mary. She did not seem to realize that she was the only one out of place and Mary continued her request to be close to Becky. When the teacher came close to them, Becky turned her palms up and raised her shoulders as though she was saying, —"I am helpless, there is no empty X by me." —

Mary said to the teacher, "I want to be on the X where Rosie or Lisa are."

Rosie said, "This is my X."

Mary asked again, "Please sit by me." She then turned her face searching around and said, "Let's go to another place" and showed her another place with two X's, one next to the other.

Becky said, "You go, you are still my friend," holding her shoulder with one arm and pointing to the X's with the other.

Mary said, "If you don't go with me, I will not be your friend and my sister will not play with you."

Becky held her hands again and said, "You are my friend, next time okay?"

Rosie said to Mary, "Mary you are my friend, too."

The teacher tried to help, holding Mary's shoulders and moving her softly to the direction of the empty X's but Mary did not want anyone close to her so she walked away from the teacher but close to Becky.

Mary asked the teacher, "Can I be close to her?" Then, "I want to sit by her, can any of these girls give me their X's or can Becky come with me?"

At that time the music started. Mary turned around and quickly walked across the circle to the other side where an empty X was and she sat on it. Her face was serious, her eyes were lowered, and her lips were tight. Apparently, she was sad.

During the first song children moved on their own X's. Mary did not participate in the first activity. She kept watching the girls on the other side with no smile and a blank expression. When the next music began, children started moving around freely. Susie came close to hold the hand of Becky. Becky extended her hand and smiled to her, then the four of them (Susie, Becky, Rosie, and Lisa) held hands and moved over toward Mary who was not yet participating. Becky offered her hand that was holding Rosie's to Mary, and Rosie offered Mary her other hand. Mary joined the group and they all smiled at each other and continued together (the five of them) during the rest of the large group activity.

This vignette showed a tremendous affection and caring for each other, but also it seemed as though Becky was teaching Mary that, even though they had to sit apart, they were still friends. She did that in a caring manner, holding her hands, watching her eyes, and talking with calmness, thus ignoring Mary's comments about their friendship

and her sister. Mary seemed possessive in her request and used all possible ways to get what she wanted, as evidenced by her solutions and questions to her teacher. "Can I be close to her?" "I want to sit by her!" Another question was "Can any of these girls give me their X or can Becky come with me?" She was looking for help to accomplish her goal. Becky tried to calm her in a warm and reassuring manner that their friendship was still there. She was apparently teaching that sharing is important. Rosie also supported Becky and tried to calm Mary by explaining that it would be only for a short period of time.

Cooperation, sharing, and caring for others were present in these interactions. All the girls as a group, while doing the activity requested by the teacher, went to Mary's place, thus showing their care and friendship. They allowed Mary to be close to Becky, thus making Mary happier by holding her friend's hands. It seems as though they all agreed to go for her and to place her in the middle where Becky was instead of at the extremes of the line which could have been a more logical place to join the group. This agreement seemed to be based on an understanding of their relationship because they did not talk about it. There was not time to talk, and they were active all the time while they were moving toward Mary. In this manner it is similar to the case of catching and not catching, when one girl did not catch. No words were necessary for them to agree on the subsequent action. They understood their feelings and these feelings seemed to be common to all of them. Again, this vignette seems to show that the girls wanted other girls to learn about sharing and caring, a more flexible style of friendship. They had not just one friend, but many, and they needed to share with all of them. Likewise, the vignette portrays their style of working as a group together. When one person did not know something they understood and valued, for instance sharing, they taught the value to that person in a caring manner. At the same time, they supported each other for the

learning and the teaching.

In another instance, on November 6, 1990, a girl was learning or practicing a skill with the teacher. The girl threw the ball five times. After that she asked the teacher to switch roles so that she could hold the hoop while the teacher threw. After four trials the teacher proposed to switch again. The girl agreed and seemed to be having a great time. It seems that it is more enjoyable for girls when there is sharing and interaction than when the activity is only performed by one person. Girls seem to prefer to work with partners or in groups, not alone.

On another occasion, on January 21, 1991, during the free choice activity in the striking station Jill was practicing striking a ball off the cone. Angela came in and was watching her. Angela seemed to be willing to do it but continued watching. Then Jill came to her and explained and demonstrated how to hit the ball. By the end of the explanation the "freeze" signal sounded and Jill said to her "freeze" and she got stiff. The teacher who was close to Angela also became frozen, then Jill left and started picking up equipment (which is the routine). The teacher gave a bat to Angela and set up the ball. Angela struck two times, one with the help of the teacher and one alone.

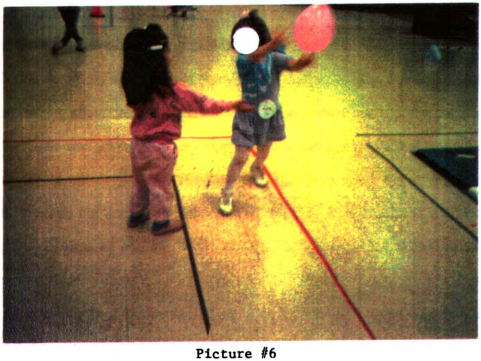
In this occasion, Jill on her part had the opportunity to teach (explaining and showing) another girl not just the striking movement itself, but what the freeze sign was for and what to do after the freeze signal. Jill told her to freeze and she froze and then went to pick up equipment. It seemed that she was teaching by actions and demonstrations. Angela was a girl with a lack of muscle tone. She learned to walk when she was over two years old and she was slow in motor skill development. However, she showed interest in the learning of motor skills. She attempted all activities even though it took longer for her to initiate the movements. She had a special interest in striking since the first day she came in. One of the first things she did was to hit a balloon with a

paddle softly. She very often visited the striking station during free choice. It is possible that Jill noticed that Angela needed help to do the activity, so she provided all this explanation and demonstrations. Perhaps this opportunity for helping someone makes girls feel good about themselves.

In another event, on February 11, 1991, while in the small group activity, the teacher said, "Find a partner." The three girls in that group went together very quickly and hugged each other as they jumped up and down. One of them, Mary, passed her arm over Soon-He. The teacher then came in and asked Soon-He to go and play with the other teacher. Soon-He went over to where the teacher requested. Mary and Becky started playing together with one balloon as the teacher asked. Then Becky stopped hitting the balloon and started showing Mary how to move her arm from flexed hand on shoulder to extended up, to hit the balloon out and to the front. Mary said, "Like this, hitting very softly" (also very similar to Becky's movement) and Becky said "Yes" and smiled. They saw each other and smiled, then laughed. They continued working, passing the balloon to each other or to the air and then to the person. Every time the balloon went in the wrong direction they laughed and laughed. Usually only one went for the balloon while the other person waited. They continued the game. They were having a lot of fun and were busy all the time. At the end of the activity Becky said, "I am thirsty," and Mary said, "I am thirsty, too." In every occasion it seemed they were striving for similarities.

Documentary evidence in the form of pictures support this assertion. These pictures portrayed the type of social interaction that occurred as typical of girls while participating in an activity (see pictures #5 and #6). In these pictures we have two girls playing catch with an expression of enjoyment on their face and constant eye contact. In one of them the balloon is falling down, and they seem to care less about the balloon. It seems that there was some kind of communication without words, just by eye

Picture #5



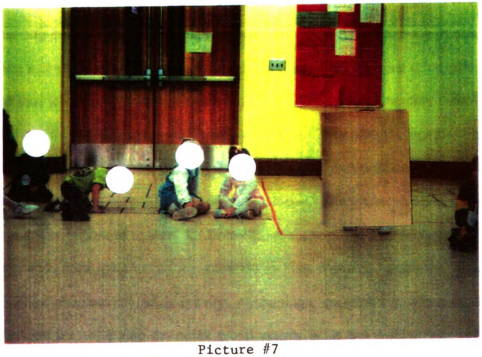
Picture #6

contact, that was very important or more important than catching the balloon. Whether they caught the balloon or not it was okay, they smiled. But even more important, if a friend did not catch the balloon, then the other person would not catch her balloon either, in order to be alike. The toss was another interesting factor. The girls passed softly, low and gently so the other person had more chances to catch. They passed or tossed as easily as possible to help the other person succeed in the task. Girls usually did several passes back and forth and spent more time in the activity than when working alone.

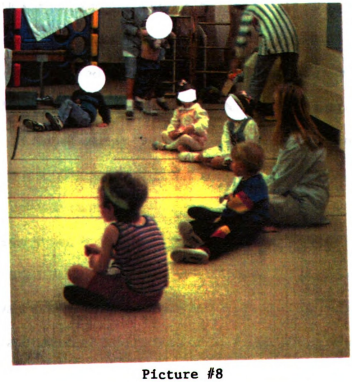
These girls' issue of being alike started with the clothing and accessories they wore every day. If two girls had a similar bow in their hair, that bow made a special connection for those two girls on that day. For instance, on October 31, Halloween Day, two girls arrived and showed the teachers that they were wearing Halloween socks. The socks were the same color and had different Halloween decorations. They held hands and laughed while showing their socks to the teachers and friends. They were together during the opening and free choice activities.

On the same day when getting ready for the closing activity, Becky, Lisa, and Rosie were talking about dresses. The theme of conversation was a pretty dress with flowers that Susie was wearing. Becky said Susie's dress was pretty and Rosie said, "I had a pretty dress with flowers too." Becky was going to talk again, but as she opened her mouth, she saw the teacher coming in her direction so she did not talk and closed her mouth again. Pictures #7 and #8 are evidence of how wearing similar clothes connected these two girls. During opening and closing they sat together. When they were in different groups, they kept eye contact every now and then during the small group activity, but they also played together during free choice.

Dresses seemed to be an important issue and matter of conversation for girls. The following quotes represent some of the several instances of this aspect.



Picture #7



Picture #8

On Wednesday, November 14, 1990, when Susie arrived for the class after dropping her bag in the basket, she came over to where I was and said to me, "Look, today I am wearing a dress." Then she started running around. That day five other girls wore a dress and they joined each other making a big group. They played together before the class started and during the opening and free choice time. They also sat together beside each other in the circle. On another occasion Becky arrived with a dress on and Mary told her, "Becky you were supposed to wear slacks today." Mary was wearing slacks. It seemed that it was important to Mary for Becky to wear the same type of outfit. In several other instances, girls called my attention to their dresses, necklaces, rings, boots, etc. They also commented on my ring, my earrings, and clothing. On another occasion on January 14, during the small group activity while the teacher was talking about what they were going to do, Mary, Jill, and Becky were talking about a necklace that Mary had on. Jill was touching it and saying, "It is beautiful." Then she added, "I have one like this." Then Mary smiled at Jill.

After that the teacher asked them to line up for the activity. They were going to take turns. Becky, Mary, and Jill lined up, one after the other. The teacher told Jill to go behind a boy, but Jill did not want to. Instead Jill hugged Mary and smiled at her. Mary seemed happy with it. She accepted Jill's affection and did not ask Jill to get away from her. Then Mrs. Johnson came over and asked Jill to get away from Mary and try to do the activity. Jill said to her, "I don't want to play." Then Mary said, "I don't want to play either." They started walking away from the line toward the teacher, holding hands. Jill said, "We don't want to play." The teacher said, "Okay," and they walked away and sat against the wall and talked all the time until time for that activity was over. Jill and Mary were holding hands for the rest of the time. At the end of class Mary and Jill were sitting together still looking at each other. Mrs. Johnson called their attention. She said

"Jill, I know you are not listening. You need to look at me." Jill turned her face toward her but when Mrs. Johnson turned away to talk to the rest of the class, Jill immediately turned back to see her friend again and smiled at her. Mary smiled back. They got even closer and held hands again. By the end, when everybody was sitting waiting to be called to move toward their classroom's basket, Jill and Mary stood up and started walking toward the center of the circle in the opposite direction. They were holding hands. The teacher called and asked them to go back to their places and they did. They looked back and seemed surprised because everybody was sitting in the circle. Then when they were called to move to their basket they did not move until Becky said, "Go to your group, Mary." Jill then said to Mary, "Bye bye, Mary," and Mary said, "Bye bye" with a big smile.

The point of connection seemed to be the fact that they had "the same necklace." Mary had it on and Jill said she had hers at home. This issue seemed to connect them to the point of non-participation in the class activity. They were talking, seeing each other, holding hands, as if they were playing a special game that only the two of them understood. They were totally unaware of what was going on in the class to the point that they started walking in the circle when everybody was sitting. They did not realize that until the teacher called them and they turned their faces and looked surprised. Likewise, at the end when the teacher called Mary's group to go, she did not hear and her friend Becky called her and told her what to do, as if she knew what was going on between her friends.

In the corpus of data, several cases like this illustrate the fact that for girls, same or similar dresses and accessories are points of connection and friendship. This issue of wearing similar clothing and accessories or having them even when they are not wearing them at the moment is another aspect that supports the willingness of girls to be

alike or their searching for similarities. Having the same things was another aspect that make them similar. Likewise doing things the same way, for example catching or throwing, makes them similar. Being similar was important for friendship relations among girls.

Other documentary evidence supporting this assertion was provided by videos. On April 16, Lilly and Mary were dressed in similar colors, dark skirts, red tops, white socks, and dark dress shoes. This association in dresses connected them for the activities on that day.

Boys interaction among themselves was different. They showed an individualized, competitive, and challenging pattern of learning. The following assertion describes the way boys interact among themselves when learning fundamental motor skills:

The social interaction of learning fundamental motor skills among boys.

> Boys learn from a competitive, individualized, and egocentric interaction and they indirectly teach and learn by showing and challenging other boys with their abilities.

The following vignettes attempt to describe this type of relationship. On Tuesday, November 5, 1990, before the class started, the children that had arrived were doing different activities. This is free time because they choose what they want to do with the available equipment.

Jeff came to me and said, "Look how fast I can run."

After that he ran in a big circle two times around the open space.

Bruce, who saw Jeff running, told me, "I can run faster." He ran around three times in the same circle. After that, Bruce came over. Jeff was close to me watching.

Bruce said, "I go a mile per hour."

Jeff said to him, "I run faster than my cousin, I go five miles."

Then Jeff went to run again and Bruce quickly followed. They ran two times. Bruce passed Jeff. Jeff, after running around the circle twice, got off the circle and went to play with a ball. Bruce finished one more circle and then went to another area and started chasing another child that just arrived.

In this vignette, initially Jeff seemed confident with his abilities and wanted to show them to the researcher. Bruce, who saw Jeff, seemed willing to show that he was a faster runner by saying, "I can run faster" and showing his ability, thus competing with Jeff. Bruce also mentioned the speed at which he thought he was running, or the speed at which he wanted to run. Jeff answered by comparing himself with his cousin and then added the speed at which he thought he could run or at which he wanted to run. Jeff's answer was also competitive in style, although Jeff seemed not willing to compete with Bruce. He probably perceived Bruce as bigger or better than he, or it was more important to him to compete with his cousin. However, it was interesting that Jeff's chosen speed was five miles per hour, a number bigger than the previous one given by Bruce, one mile per hour. Subsequently, when Jeff started to run again and Bruce passed him, Jeff decided to stop running and play another game. Bruce ran one more time after Jeff gave up. Maybe Jeff felt less confident when competing with Bruce, or maybe Jeff got tired or was not interested in competing with him at all. Bruce seemed willing to show his superiority in strength and speed on this skill. Evidently both of them wanted to show their abilities and their style seemed competitive. Jeff wanted to show off his abilities and compared himself with his cousin, while Bruce was interested in showing his abilities and probably competing with Jeff.

On another occasion, on November 21, 1990, during the free choice activity, Paul was dribbling his ball and it rolled away from him. The ball got close to me before he picked it up.

He asked me, "Do you want to see how good I dribble?"

He showed me, then stopped and said, "I do it with the tips of my fingers, pushing the ball down."

I told him, "It seems like you like to play basketball."

He said, "Yes, I do."

In this vignette, he is expressing how he felt about himself dribbling the ball. He thought he was very good and he really was good. However, during all my time observing in the setting I never had a girl express her individual abilities. This, shows that girls: (a) were not aware of their abilities, (b) were not confident of them, (c) chose not to stand out from the rest of the group, (d) felt they were not good at those skills, or (e) thought that it was not important for them.

On Tuesday, October 23, 1990, during the free choice time, one boy was playing catch with a teacher and one girl was playing catch with another teacher. Another boy came in and pushed the girl away and got in position to catch. The girl went away. The teacher came to the boy and said to him, "You don't have to push her, you just need to say it's your turn to catch." He listened and continued being ready to catch. After a few trials another girl came in to play and she stood by him. The teacher passed the ball to her and he tried to catch the ball but he did not, the girl caught it and sent it back. Then the teacher passed the ball to him, he returned it back to the teacher, then the teacher passed the ball to the girl and the boy went away. He did not play anymore.

This vignette suggests that this particular boy wanted the teacher's individual attention first by pushing the girl away so he could be alone on a one-to-one relationship. Second, when a new girl joined in, he did not push her but he left the place. There is the possibility that he was tired of the activity, although he was in the activity a relatively short period of time, or that he did not like to play with girls or others. Also

it seemed that there was no caring or willingness to share. Perhaps he was expecting some competition or rushing for the ball when he attempted to catch the ball.

On Tuesday, October 23, 1990, when the class was dismissed, and children were getting ready to leave the gymnasium to go outside to the playground where their classroom teachers were waiting for them, Bruce said to Rick, "I am going to show you my new coat. It's awesome."

Without pause or waiting for any reaction of his friend Rick, he continued, "Do you want to see it on me?"

Bruce did not realize that his friend was apparently not paying attention. Rick was not looking at his jacket or answering his questions. Bruce continued talking and putting the jacket on.

Bruce said, "It's awesome! I need to put my spider on the bag."

Bruce never looked at Rick's eyes or face, nor was Rick looking at his jacket or at his spider.

I asked him, "Can I see your spider?"

Bruce said, "Yes" and he passed me the bag. I looked at it. Rick and Jill came over. Rick came closer and saw inside the bag.

Bruce said, "See, see, it is there," while Rick was looking at the spider. There was no reply to Rick's comment.

Jill said, "Can I see it Bruce?"

Bruce said, "No, only teachers can see it." Then after a pause he said, "Well, okay, but not many children can see it." Then Jill looked at it and left. Bruce took his bag and went to line up. Rick was already in line.

This vignette is an example of how self-centered is the world of boys. When Bruce asked all the questions he was talking to himself. He did not expect answers to his

question, and he continued on, even answering his own question, as when he said, "Do you want to see it on me?" Then he said, "It is awesome," and continued on and on. Rick on his part was there but did not interact with Bruce. He was looking at his things and putting on his jacket. When he saw me looking at the spider with the bag in my hands, he came over and saw it without asking for permission. On the other hand, when Jill came over, she asked Bruce for permission to see the spider and Bruce answered her. This vignette illustrates that the boy was showing something special or unique that he possessed, the new jacket and the spider, but also we can see that the social relationship was more individualized and egocentric as though interacting with himself. The girl, on the other hand, seemed to be aware of Bruce's conversation about the spider, which protrays girls' awareness of their surroundings.

In another event, on November 21, 1990, this individualized egocentric interaction of the boys was contrasted with the cooperative interaction of the girls. The children were in the small group activity session of the program and the teacher asked them to get a ball. Each of them got a ball. All the boys ran quickly to get the ball first, and the last two balls were for the two girls that were waiting to get close to the basket to pick up their balls. Susie started tossing and catching, then tossing, bouncing, and catching. The two girls looked at each other every time they bounced and caught or tossed and caught. The boys were very active (playing, dribbling, and tossing) and very concentrated on their balls. There was no pause. They did not see each other after each action. Only if they lost control of the ball did they look around or in the direction of the ball and immediately ran after it. The boys seemed to be very concentrated on the relationship of boy and ball. Paul's ball got away and he came very close to me to get the ball. The ball touched me. He saw me and said, "We are playing basketball," and went to continue his game. He dribbled the ball and went to the basket, ran, tossed the ball

through, and got the ball again. Each boy had his own ball.

The two girls put one ball away and started playing partner catch, tossing and catching with one ball. When they caught there was a pause. They looked at each other and smiled. When the ball was missed, they laughed. The person closest to the ball went to get it while the other one waited in her place. The girls were close together, a meter and 1/2 of distance from each other. The boys were talking and playing at the same time. They were verbalizing what they were doing: "Dribble, dribble and shoot!"

Rick said, "Let's play monkey in the middle. I will be the monkey."

Nobody answered him. He threw his ball in the box of balls, took away the basket, and stood in the middle between Paul and Bruce. He started yelling, "Ah, Ah, Ah", raising his hands up and trying to get their attention. He was also jumping up and down. Paul continued dribbling and shooting to the basket. He hit Rick on his back. He then got the ball and continued dribbling. I do not know if he realized he hit Rick. Bruce was dribbling all this time without shooting; his back was to Rick.

Then Rick said, "Okay Bruce you are in the middle now."

Bruce went to the middle, and Rick dribbled and threw the ball high over Bruce's head. They both ran to pick it up. They pushed each other and Rick got the ball again.

Paul finally saw them and said, "How do you play that monkey game?.....How do you play that monkey game?"

No answer.

Paul asked again. "How do you play that monkey game?"

Nobody answered him. Paul continued dribbling and shooting to the center where the basket was, without asking anymore.

In this vignette we can see the contrast between the way the girls played with each other and the way the boys played. Even when one boy was invited to play a game, it

seemed that each boy was playing his own game and wanted to continue doing so. When Rick was in the center jumping and yelling, no one passed the ball to him. Bruce continued his dribbling game and Paul shot to the basket or to Rick who was where the basket was supposed to be or was before. When Paul asked, "How do you play that game?" nobody answered him and he continued his game. When Rick was on the outside, he threw the ball over Bruce's head. Bruce tried to get it and ran after the ball. One wonders if Bruce understood the game that Rick was talking about. Paul evidently did not know how to play the game. The other interesting fact is that even though they were playing different games, they were having fun and they might have thought that they did in fact play a game. However, what is portrayed here is the individualized interaction that seems typical of boys, as well as the strong connection of boys with the object, in this case the ball. It seems as though the ball is the focus of their attention. In the case of the girls playing catch, the social interaction by eye contact, smiling and laughing seems to be the center of their attention and the ball a means to interact.

The power relationship of boys with the object (in this case the ball) was supported throughout all the data from several sources. For instance, on several occasions boys, while doing the motor skill activity, talked to the ball, thus expressing their intrinsic interaction with the ball and their power relationship with it. On other occasions they talked to themselves or made a particular noise associated with strength at the time of contact with the ball. The following quotes represent this interaction typical of boys.

On October 31, 1990, during the free choice time, a boy was in the striking station swinging at a ball. Every time the boy hit or attempted to hit the ball with a foam bat, he said, "Punk." Also, "Eh, you ball you touched me," and "Don't you touch me, ha ha." In this quote we can see the intrinsic relationship of the boy talking to his ball, as

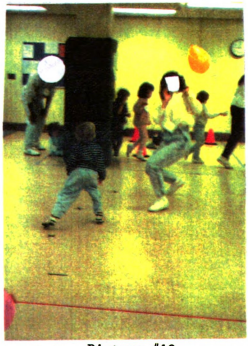
well as a power relationship that seems to be the boy challenging the ball when he said "don't you touch me." However it seems that he was showing his power over the ball when he laughed and when he went to a girl's ball to hit it with his bat.

The following quote seems to support the boys' desire for power. On April 21, 1991, another boy, Brian, was striking with the teacher. When he hit a ball past the teacher he said, "I have a lot of power." Boys seemed to enjoy showing their power and strength with the ball while girls seem to enjoy showing their affection and care for the ball. Boys tossed or hit very hard or high, making it difficult for another person to catch or for themselves to be able to hit the ball again. They also seemed to enjoy playing with an adult more than with a child, maybe because the adult can pass easily to them and can also catch their challenging high and hard passes (see pictures #9 and #10).

On another occasion, on November 13, 1990, while in the small group, the children were learning to toss and catch their own ball. The boys yelled every time they tossed. The toss was real hard and high; they did not make any attempt to catch it. The girl in the group was squeezing her ball against her body and then gently tossing it very low, a very small toss and catch. It seemed that she did not want the ball to fall on the floor or go away from her hands. A clear contrast is given in picture #11 in which a girl is carefully waiting for the balloon to return to her paddle. Her face and shoulders seemed to express her willingness to be gentle with the ball. The girl on the side, while holding her balloon, seemed ready to catch her friend's balloon in case it fell down, thus showing care for her friend or her friend's balloon.

On another occasion, on January 7, 1991, the children were working on kicking. The boys said "Uh!" every time they kicked the ball. They also kicked very hard as if willing to raise the ball all the way to the ceiling. Three boys in this group hit the wall very hard and the ball went close to the ceiling. They jumped up and down yelling and

Picture #9



Picture #10

Picture #11

laughing. When one of these boys hit the ceiling, the other two boys tried also and made an "Uh" or "Grrrr" noise when they kicked. When they hit the windows that were very close to the ceiling, they also seemed very happy, jumping up and down and laughing. They smiled to those that hit the wall or ceiling and then immediately tried to do the same.

Another quote was from January 28, 1991, when the teacher was demonstrating the activity of that day, which was striking a hockey puck. The teacher just pushed the puck (softly) as the girls often do when they strike the ball off the cone or when they struck the hanging ball early in the study. One boy immediately changed his face, seemed disappointed as expressed by his eyebrows contracting and a serious face. He told the teacher, "You are supposed to hit the puck." The teacher went back and set up the puck again to give a second demonstration. Again she gave a soft touch. The boys turned away before she finished her instructions. They were already getting their hockey sticks while the girls were watching and waiting sitting on the floor. The boys came back and then started hitting the puck real hard, raising the stick very high and hitting the wall with the puck with only one swing. They were very much into their activity.

These quotes and boys' actions seem to express that the expectation of the boys was that the teacher should hit the puck hard. The teacher hit the puck but, contrary to the boys expectations, her contact was soft. Perhaps that way of hitting was not what the boys were expecting. The boys' reactions after the first and second demonstration maybe was an expression of disappointment. They became anxious to do the activity the way it was supposed to be done according to their perspective. Actually they did hit the puck real hard to the point that most of them hit the wall with one swing, and the puck came back half way or went away from the area.

Documentary evidence in picture #17 on page 170 shows the facial expression of a boy when hitting a ball at the same time that he was saying, "Grrrr, grrrr." These quotes and documentary evidence represent the boys' willingness to use all their power and strength in their actions every time they interact with an object, thus expressing their competitive style of learning. These characteristics were not observed or heard in the girls' actions and movements with balls.

Competition in the learning of motor skills was also present in several entries in the fieldnotes, quotes, and documentary sources. For instance, on January 28, 1991, during the small group activity of playing hockey, children were hitting the puck toward the wall. The teacher started placing lines of cones all the way down to the wall. One of the boys, Eddie, saw the cones and started hitting the puck in zig-zag direction.

The teacher said, "Okay Eddie, do you want to show everybody how to do that?

Eddie said, "Okay I will."

Bruce, another child in the group, said very loudly, "I know how to do it."

Teacher continued, "Eddie could you show us?"

Eddie was about to start when Bruce threw his stick down to the floor. He looked upset; his face was serious with his lower lip out and his fists were tight, arms down straight. His whole body looked stiff. The teacher went over to where he was and talked to him, then Bruce started showing the skill. Bruce did it and after he finished the teacher said, "Okay Eddie could you show us now?" Eddie showed the skill too. The activity continued, and Nancy, a girl in this group, started trying. She brought the puck all the way down using several soft touches. After finishing, she came back to the end of the line; she did it all very quietly. Eddie did it again and at the end he said, "I did it." Bruce did it again. Dan did it. Bruce did it again. Dan returned while yelling that he was ready to do it again. Nancy started doing it again. Susie was going to try. Bruce ran in

her way. He hit her stick and then threw down the cone with his stick. Susie stopped her action and immediately set it up. Bruce continued in the middle of Susie's way. Susie tried to finish the task carefully without hitting Bruce by using a very limited swing movement. She was aware of his presence but he did not seem to see her, did not care about their contact, or he wanted her to get out of his way. Bruce finished and continued in the middle for a while, then he went back with the puck (wrong direction). Susie still tried to finish and he got in her way again. She waited until he passed and then she continued down on her first trial. He then played around on the back, making some noise and then he put the puck on the floor and hit it from the back where he was toward the target (the wall) with only one swing.

Seon-Jin, another girl waiting, still had not performed the task the first time yet. She was in the ready position but did not start hitting the puck. She was watching the puck and was holding the stick with two hands. The stick was on the floor. Maybe she was waiting until all the area on her line cleared. Susie finished and went back. She started again and was handling the stick as a broom, the same way she did on her previous trial. There was no correction of hand position on her own or by the teachers. Nancy sat on the floor. Now Seon-Jin sat on the floor, too, and Bo was outside the area.

Time was up and they got together for the closing. The teacher asked, "Do you know other sports where you can do this movement?" (Not the exact words.) Bruce said, "Hockey." Susie said, "Baseball." Eddie stood up and showed his baseball swing. The teacher said, "It seems that you have a very strong swing, Eddie." Bruce said very loudly, "I have a very strong swing" and he stood up and showed his swing, too. The teacher did not say anything. Then he said, "That's not my strongest." Then one child from another group came in and the teacher told them it was time to go to free choice.

In this vignette, we can see that Bruce is competing with Eddie, and probably with Susie, too. He feels frustrated when he was not the one chosen by the teacher to demonstrate to others. He also seemed to be competing on speed. Likewise, all the boys were doing the task very quickly. Bruce was not the only one working fast. They did not wait for the girls to go; they did the task repeatedly without any pause. The girls seemed hesitant to do the activity. One of them was waiting and never performed the task. Perhaps the boys were considering the number of repetitions or trials they had. The three boys seemed in a hurry to do the skills. Thus, Bruce passed over the girl, knocked the cone down, and did not stop. Also, Bruce performed the task in the wrong direction, although maybe he wanted to break the rules or seek adult attention for doing something different. He may have thought that the teacher may like this different way of doing the task. He then may have been expecting to be asked to show the task to the others. Nothing happened. Then he swung another puck against the wall. Maybe he was showing his skill to other children in the group.

In the small group closure when the teacher asked the question of other sports in which they can do a similar movement, Bruce again jumped in when the teacher commented on Eddie's swing. After Bruce showed his swing, there was a pause and then he said, "That is not my strongest." It seems that Bruce felt or thought that his demonstration was not as good as he wanted it to be. The fact that the teacher did not make any comment may be the reason he made that comment about that swing not being his best. However, Bruce's reaction and comments showed a competitive behavior and a strong drive to be the center of attention, thus a willingness to be praised and recognized.

On another occasion, on February 11, 1991, during the opening activity "Body Talk," Bruce commented to the child next to him at the end of the activity, "My body was shaking inside while the rest of you were shaking outside." The other child continued

shaking as if he did not hear or as if the music was on. He did not respond to Bruce.

On this occasion Bruce was comparing his body feelings with the rest of the children in the class. He seemed to be looking for differences among them. During the same observation, the following quote supported the assertion of the competitive behavior among boys. In the small group activity the teacher asked, "Who wants to be first?" The three boys in the group, Brian, Joe, and Danny, all said "Meeeeeeee" simultaneously elongating the end of the word, pushing each other to get in front of the teacher. The teacher chose one of them. The girls did not talk. They were watching and listening. The boys wanted to make sure their voice was the last heard by the teacher, all of the boys were willing to be first in line.

On March 4, during the small group activity, without the teacher asking the question Bruce said, "I want to be first", and Eddie said, "I want to be first, too." Then after a pause Eddie said for the second game, "I am first." Evidently being first and different seems to be as important for the boys as it was important for the girls to be alike.

These vignettes, quotes, and documents support the fact that children learn from each other, but the way the interaction occurs is different depending on gender. In the case of the girls they teach and invite the other girls to learn what they know. In the case of the boys, they do something to demonstrate their skills to others. Other boys watched and copied, willing to do as good or better than the previous boy. There was not a direct teaching among boys. Actually it looked more like boys challenge the others, as saying, —"See what I can do"— or —"I am better than...."— or —"I am very good at...."—, a relationship based on differences and competition. In the case of the girls it was, —"to do this you need to move like this"—, —"let's try"—, or —"let's do it like this"—, or —"let's do it the same way I do."— There was direct teaching and social interaction

among girls while learning motor skills based on cooperation and in an attempt to be equal. The social interaction among boys was based on competition or challenges set up by body actions or words, in which power and strength were bases for their differences.

Discrepant cases were found in the corpus of data. For instance, documentary evidence on videotape taken on Tuesday, April 16, 1991, demonstrated a fit and a discrepancy in the interactional style of boys. In the first part of this video the two boys' actions were supporting the assertion of a competitive and individualized social relationship. In this film the two boys were showing their mom how they could strike the ball that was on the cone. These two boys were twin brothers. One of them said, "Watch this," and after the action he made the sound "bam bam." His brother watched him and then said, "Watch this," and seemed as though he tried to copy his brother's action, as though he was competing or being challenged by his brother. Then the other boy looked for a unique or different way to strike the ball, and again his brother tried to copy. Then the first boy tried other skills, performing them in an atypical or different way, maybe to get the mother's attention.

However, later on in the film another boy (Joon-Ho, an Asian) came into the action. Joon-Ho and his interaction represented a discrepant case. This boy first commented to Brian on his swing, "Good, you do it first", "I see you", then let Brian do the striking first while watching him. Then he looked for the ball and said "here" and passed it to him. Brian picked up the ball and said to him, "I can do it pretty hard, hmmm!" Joon-Ho turned and started getting ready to swing. He missed the ball and they smiled. A teacher intervened to correct Joon-Ho's foot position. After that, and before swinging, Joon-Ho turned his head to check that Brian was watching before he struck. Brian, who was indeed watching, commented on his swing. Then Brian tried the skill again and seemed to add more power to the striking action after seeing Joon-Ho. This

case may represent a willingness from the Asian child to have similarities between them rather than differences or to teach others what he knows. Having his friend do it as well as he was doing it make them alike. Maybe saying, —"See how I strike"— could be an invitation, —"would you like to do it like me?"— —"or learn from me"—, although it could also have been —"see how good I am"— or —"I am better than you"—. He did not say these words; on the contrary, he started by commenting on Brian's swing. He also showed some kind of cooperation by passing him the ball and giving him the chance of being first, which was very difficult, particularly for boys.

In addition, other evidence of this boy helping other boys and girls seemed to incline the balance toward a willingness to cooperate, to help and teach others a different style of interaction among boys. This is a pattern that emerged as a cultural characteristic of this subgroup, which could be a cultural difference.

Cultural differences in the learning interaction.

> The Asian children in this group of boys and girls seemed to have a social interaction based on cooperation and support among them.

The following vignettes are representative of these patterns of social interaction among Asian children in the setting. On Monday, October 29, 1990, while children were arriving, the children that were in early were playing on the climber. Three Asian children were playing. One of them, Chul-Ho, fell off the low balance board, and he laid on the floor with legs and arms apart. An Asian girl who was at the top of the climber got down quickly and another younger Asian boy that was under the climber got out. Both ran to where the boy was. The girl asked him in English, "Are you okay?" The boy raised his head from the floor and said "I am dead," and laid down continuing in the same position with a smile on his face. The girl asked again and he did not respond but he continued smiling with eyes closed. Then she laughed and after that he laughed loudly.

Then Chul-Ho stood up and went to the climber with her and the other little Asian boy who was watching closely to what had happened to this boy.

Later the same day, the same Asian child, Chul-Ho, was playing in the climber and had a hand on the rung of the ladder of the climber when another child who was going up stepped on Chul-Ho's hand without noticing it. The Asian child started crying and immediately the two Asian children who were on the climber, got off quickly and went to see him. The girl hugged him and asked him something in their language. The other younger boy also said something while in a squat position watching the boy. Chul-Ho stopped crying and after that they took him by both hands to where they were in the climber.

In both of these instances we can see a protective interaction among these children, independent of gender and family ties, since they were not relatives to Chul-Ho. On several other occasions when Caucasian boys cried the Caucasian boys did not intervene, even when the crying child was sitting right by another Caucasian boy. The Asian boys were the ones who sometimes wandered around crying Caucasian boys and girls or they came close to see the child and then left, thus showing some concern for other children different from their ethnic group.

On Tuesday, November 6, 1990, before the opening activity when the children were arriving and the ones in the gymnasium were playing freely, Bruce started chasing Joon-Ho, one of the Asian Children. Then the other two Asian children went along with Joon-Ho and they started chasing Bruce. Bruce stopped and yelled, "Help! Help!" Nobody heard him or saw him. The Asian children stopped when he yelled. They listened and watched as if waiting to see if help was coming, but nothing happened. Then Bruce saw them standing and started chasing them again. One of the Asians, the little one, Young Chul, fell down when Bruce put his hands on his back. Then Bruce held his hands on

Young Chul's back as if pressing him against the floor. Joon-Ho, the older of the three Asian boys, started punching Bruce and telling the teachers that "He did it", meaning Bruce hurt Young Chul. Bruce was paralyzed for a few seconds while Joon-Ho was pushing him. Bruce then moved back a little and Joon-Ho stopped. Then he went down to see his friend. An Asian girl and the other boy, Chul-Ho, were taking care of the little one on the floor. Joon-Ho and the other Asian boy went down and talked to Young Chul in their language. They rubbed him, got him up, and Joon-Ho put his arms over Young Chul's back and they moved toward the climber together.

On another occasion, on Tuesday, November 20, 1990, one of the youngest Asian boys was playing around chasing other children when suddenly he heard his sister crying. He stopped immediately, turned around, and ran to see her. He squatted by her, saying something in his language, maybe asking questions. He stopped playing and was there with his sister until the class started. On another time Joon-Ho was explaining to Chul-Ho how to strike a ball.

Documentary evidences in the form of pictures were representative of these events. Pictures #12 shows Joon-Ho explaining and demonstrating to Chul-Ho the striking motion and picture #13 shows Joon-Ho demonstrating to his small group how to swing the ball.

Other interactions between boys and girls were present in the data. These types of interaction represented another subassertion in the study, and support the assertions about boys' interaction among themselves as well as girls' interactional style.

<u>The social interaction of learning fundamental motor skills between boys and girls</u>.

> Both the boys and the girls tried to maintain their interaction style of learning when dealing with the opposite sex.

Picture #12

Picture #13

Girls made attempts to interact with boys. On several occasions, girls invited boys to chase them or they chased the boys. They ran and looked back to check if they were following them. This game could start with one girl and one boy and then other girls or boys could join. The boys chased the girls until the girls stopped at one spot, usually against the wall. They were safe in that place. The boys stayed away from the wall and showed them their hands with open and flexed fingers, at the same time they made a scary face. If boys caught the girls, the boys hugged them very hard. For instance, on November 14, 1990, Susie came in and started running around, soon five other girls joined her. Young Chul was chasing them. The girls ran and one of them said, "He is chasing us." They laughed. Young Chul had a yellow hoop on his hands. Then two other boys got hoops or rope and started chasing Young Chul. Another girl joined the girls' group and they continued running and stopping in the same safe spot to continue the game. The boys were making "grrrrr" noises, and they also showed their hands open with fingers flexed. One girl fell and she asked the boy that was chasing her to retrieve her shoe that she lost on the way. The boy stopped, turned his face back, and went for her shoe. He waited until she finished putting her shoe on and let her go first before he started chasing her again making the "grrrrrr" noise.

This was a typical way for the boys and girls to interact. The girls ran as a group. The boys made a noise similar to the one they used when hitting the ball, also similar to a monster voice. This noise seemed to represent strength and power, and its function seemed to be to scare the girls. However, both boys and girls seemed to agree in this pretending game. The case of the girl that lost her shoe showed cooperation on the boy's side; however, the girl initiated it by asking the boy to get her shoe. The boy did it probably to keep the game going or he was learning cooperation. One time, in an informal interview with Becky, the researcher asked what they were playing. Becky

indicated that it was a Peter Pan game and the boys were Captain Hook and alligators. The girl was Wendy, another was Peter Pan. Then Susie said, "I am someone else." This informal interview seems to reveal that, although playing together, their roles match their styles of social interaction. The boys were strong and rough while girls were in groups holding hands, helping each other to be safe. One of them pretended to be the character that in the movie Peter Pan was the person who cared about other children, the one who protected the others from Captain Hook and the monsters. Susie's answer portrayed that it did not matter who she was as long as she belonged to the group of good people in the movie. Apparently, there was no competition on the girls' side to be Wendy or Peter Pan, while the boys yelled at each other saying that they were Captain Hook, thus showing that many of them wanted to be the bad guy.

The following quote seems to support the mother-child relationship which was typical of the girl (Vicky) with this particular boy (Danny). At the end of the class during the clean up time Danny bumped into Eric. Eric tripped and fell down on the floor. Danny was smiling. Vicky seemed disappointed with her friend Danny. She asked him with her hands on her waist, "Danny, why did you hurt him?" Danny did not answer; he brought one finger into his mouth and seemed concerned. Vicky then said to the teacher, "Teacher, Danny hurt him."

In this quote Vicky acted as a mother, placing her hands on waist and asking him very seriously, "Why did you hurt him?" Also Danny seemed to be concerned about what he had done. She was trying to communicate to him that his behavior was wrong and that she disagreed with it. So, she told the teacher who was the responsible one for that action.

On January 28, 1991, the children were on their X's to start the opening activity of the day. Joon-Ho and Danny were in the climber area. The teacher called

them and was waiting to start the class. They did not come to the circle. The teacher stood up and walked over to bring them to the circle. Then Seon Jim stood up quickly and went under the climber and talked to Joon-Ho. Then she took hold of his hand and brought him to an X. He came with her without protesting. Young Chul, who was sitting, called them to show an empty X. Danny was on the other side of the climber. Danny shook his head "No" as if he did not want to come to the circle when the teacher called him. Vicky stood up and went to the climber, talked to him, and brought him back to sit with her. He came back without complaining.

In the fieldnotes of the same day, there is another instance of Vicky teaching manners to Mike. In the circle during the second group activity the teacher was passing scarfs out to the children. When the teacher gave the scarf to Mike he said, "No thanks" and threw the scarf away. Vicky who was next to him told him, "Mike, pick up the scarf". Mike went and picked it up and sat on his place again.

The boys' interactions with girls were physically rough and aggressive, thus intimidating them sometimes. The following event represents a typical instance of this interaction. On Wednesday, January 30, 1991, during the small group activity, the teacher sent children to pick up the hockey sticks, Lilly and Vicky each took one. Vicky started turning around with her stick several times while Lilly was waiting, probably for more instruction. Suddenly Mike came in and attempted to take the hockey stick away from Vicky. Vicky did not want to give it to him. She was smiling but holding the stick. Mike kicked her and pushed her to the floor. Vicky fell and still smiling at him started saying with a calm and soft voice, "Mike.....Mike.....Mike...." Then Mike threw himself over her and talked to her at her face level touching her nose.

This vignette shows the physically rough interaction of the boys with girls. This particular girl seemed to accept this behavior and tried to calm him down with her soft

voice calling his name and waiting or pausing in between as if she was expecting a change of behavior. She seems caring and apparently waited for him to realize that what he was doing was wrong. Thus she was representing the way girls interact among themselves while Mike was representing the way boys interact with boys. Some girls have difficulty coping with the rough and aggressive behavior of the boys and seem scared or intimidated. Some girls seem to accept or understand them and teach them the way they should act or behave, even when they were kicked, pushed, or had their hair pulled.

There were discrepant cases of Asian boys teaching, sharing, and interacting in a different manner with girls (for instance, on Monday, April 1, 1991). During the small group activity Seon-Jin came over and talked to Joon-Ho in their language. It seemed that she invited him to play with her. They went over to the net, one on each side, and started playing. Joon-Ho passed the balloon to her and she missed. She was looking for the balloon in one direction and the balloon was falling in the opposite direction. She smiled and went to pick it up. Joon-Ho smiled to her too. Then Joon-Ho called her over to the net and talked to her. It seemed as though he was explaining something with the paddle. They were talking in their language, but Joon-Ho was moving his paddle down, up, and sideways. Then Joon-Ho took the balloon and softly tapped it twice in the air. The third time he sent it to her and she hit it back to him. They laughed. Joon-Ho, after moving quickly to get the balloon, sent it back hard and she missed. They laughed again. Then Joon-Ho started again and tapped twice before sending it to her, and she sent it back to him with only one hit. He tapped twice again before sending it to her, and the third time he sent it to her. They did this three times each without letting the balloon fall down. They both were moving, looking for the balloon.

He hit the balloon softly and easily, which was interesting because before he had always hit it hard (before playing with her, he was playing alone). The other

interesting aspect was that he was teaching her - a girl. However, this girl belongs to the same culture (both of them were Asian/Korean). They seemed to be having fun. In addition, the fact that Joon-Ho used two taps before sending the balloon to her was helpful for the girl because it gave her time to get in position and recuperate and be successful again. Instead of competing, it seemed as though they were trying to keep the balloon up for a long time. This way of playing and practicing may offer an alternative way to help girls in the learning and practicing of skills, and help boys practice using different levels of force (other than maximum force) and to develop cooperative behavior when working on a motor task.

Summary

This chapter addressed the ways children interact among themselves when learning fundamental motor skills. Representative vignettes and quotes from interviews and documents collected portrayed the patterns found. Gender differences in style of learning were found through the study. The social interaction of girls when learning fundamental motor skills was based on cooperation, caring, and sharing. The girls taught directly and learned from each other. Boys' interaction when learning fundamental motor skills was found to be different. Boys learned from a competitive, individualized, and egocentric interaction, they taught indirectly and learned by showing their skills and challenging other boys with their abilities. The interactional style of learning among the Asian children in this population was based on cooperation and support among them. They taught directly and learned from each other. In general, when both boys and girls interacted they tried to maintain their interactional style of learning when dealing with the opposite sex.

CHAPTER SIX

THE ABC STRIKING SEQUENCE

Introduction

This chapter will address the following question: How do children progress in the dvelopmental sequence of striking? This question will focus on how children move toward more mature forms of striking.

In the development of the striking skill, children progressed in the hypothesized sequence showing both similarities and differences in the way they moved along the continuum. Girls and boys showed typical patterns toward the development of more mature forms of striking. However, these patterns were slightly different from each other, especially at the beginning of the development of this skill. Perhaps these represent the interactional gender differences typical of each gender group.

These differences initially materialized at the beginning of the observations; however, the patterns did not remain apparent during the process of data collection. They were confirmed after all data were transcribed, and analysis and interpretation of the whole corpus of data were done thoroughly.

Children's different patterns in striking begin by the way they approach the ball.

The way children approached the ball seemed to express different intentions in their actions. For instance, at the beginning of the year, when observations of striking began, girls tended to touch the ball softly, as though their goal was to physically contact the ball without imposing any force on it. They seemed to enjoy the touch and the soft swing of the suspended ball, as expressed by their placid faces smiling at the ball, swinging slowly. Boys tended to hit the ball with force; they swung hard and they seemed

to be willing to hit the ceiling or the wall with the struck ball. The farther and higher the ball went, the more excited and happy the boys became. Excitement was expressed by jumping up and down, laughing, smiling, and showing bright jubilant, sparkling eyes.

The following vignettes represent typical events observed several times during the process of data collection.

On Tuesday, October 30, 1990, the planned activity for the small group was striking a ball suspended from the ceiling. Paul was crying, apparently because he did not have a ball and was waiting for his turn. He finally got a turn and his face changed to a smile afterward. He seemed happy then. He started striking very hard with an oblique swing showing a contralateral step and sequential rotation. He called for the attention of other children and said, "Did you see how high my ball went?" He was smiling. The other boys, who were waiting for their turn, did not say anything and started a game running behind all the balls and yelling, "Try to hit us." They went to the other end where the girls were. The girls either ignored or did not hear them, did not want to hit them, or did not want to play with them. After a few times of Rick and Bruce running up and down, the teacher in the station told them, "You don't want to be hit, do you?" The children replied, "Yes, we want to be hit." The teacher asked, "Don't you want to swing the ball?" The children exclaimed, "Nooooo!"

In this part of the vignette two things can be seen. First, Paul's question of how high his ball went may indicate that the height was an important issue for him, thus his goal may have been to hit the ball hard so it went high. Maybe his question was representing his competitive style of learning as discussed in the previous chapter. Second, the request of the two boys, Rick and Bruce, for the other children to hit them may show the boys' perspective of hitting a ball with the purpose of hitting something else or to hit hard so it goes farther and may reach them. In this case, they wanted to be

the targets for the ball.

Another interesting detail in this event was the question that the teacher asked, "Don't you want to swing the ball?" It called attention to a potentially different perspective that a hanging ball may provide to children and adults or males and females. The teacher was a female. Maybe for the teacher a ball attached to a string was a "swinging ball" and maybe that is the way the girls perceived the suspended ball, too. But for boys, a suspended ball was maybe an oncoming fly ball without a string. Subsequent evidence may support these early hunches.

During this activity four girls were at the station. The first girl was just touching (a soft touch that made the ball sway slowly) and she smiled while she watched the ball. She touched the ball this way for six consecutive times. She concentrated on the slow or soft swing the ball made and waited with this calm smiling all the time until she touched it again. It seemed that she smiled more when the ball was approaching her than when she stopped the ball. She seemed to enjoy the swinging motion.

Two other girls also were touching and pushing their ball slowly, but they were playing as partners. They still stopped the ball before touching it again and they smiled or laughed when the ball got closer to them. These two girls were using their hands to touch the ball and they were touching it with a slow semi-extension of the arm, with the hand open. Then they slowly brought the arm back to the flexed position, at the shoulder level. The fourth girl had a paddle and was trying to push a little harder, using the side of the paddle. She was smiling as the ball was swinging.

Another boy who was waiting had a chance to strike the suspended ball. He looked very skillful. He used a paddle and hit the ball hard. He looked like a tennis player hitting from both sides moving the arms with the racquet from the right or left side forward. He twisted his body with the swing and ran or walked to one side of the room or

to the other side in order to reach for the ball. His face looked as though he was playing with someone else, very concentrated into his game. He seemed to be enjoying his activity.

In these vignettes differences can be seen in the way these children approached the suspended ball. Girls were into touching the ball or pushing it, while boys were into hitting the ball so the ball went high, hit something, or went far to another child. Even though Yoon-Ho was interested in cooperative play, his strike was still a hard hit. It was different from the action of the two girls that were partners who were just touching the ball and stopping it every time before making the next contact. All these children seemed to be having fun and enjoying the activity while gaining confidence in their body movements. However, the main point in this vignette is to illustrate the differences in the way boys and girls approached a hanging ball.

On another occasion, on October 31, these different ways of approaching the ball were illustrated again. In this case one boy, Ian, and one girl, Vicky, were playing with suspended balls, one ball next to the other. Every time Ian attempted to hit the ball with a bat, he said, "Punk", "Punk". He also talked to the ball saying, "Eh you ball, you touched me. Don't you touch me, ha ha." Ian showed rotation of the body in a block fashion in his striking action. The swing was horizontal and the ball went high. He laughed and smiled. Vicky had a paddle and she touched the ball with it and smiled quietly as though she was enjoying the sway of the ball, while holding her paddle up at the point of contact, waiting for her ball to come back with feet stationary. Vicky touched the ball with the outside border of the paddle, and she always stopped the ball before touching it again during all attempts. Then Ian went to hit Vicky's ball. He came with his bat in a ready position, but Vicky stepped in front of him and took the ball with both hands against her chest as though hugging it and said to Ian, "No." Ian then decided to go back to

his original ball.

This vignette illustrated two different ways of playing with a suspended ball. While Ian was having fun and playing with the ball as seen in his words and laughter, he hit it as hard as he possibly could. The ball swung very high and came down very quickly. Vicky was playing on the other side, touching and swinging her ball. She really seemed to have great enjoyment while the ball swung, thus showing care or possessiveness for her ball when not letting someone (Ian) hit it hard. They both seemed to have a different interaction with their ball while striking. However, Ian's interaction seems to resemble the way boys play and interact with each other, while Vicky's interaction seems to resemble the way girls interact among themselves.

The following quotes support these differences about the way boys and girls approach a ball for striking. After the class on January 14, 1991, in an interview with the teacher in charge of the striking activity, one of the questions asked by the researcher was:

Researcher: Did you notice anything that called your attention to the way in which the children did the activity?

Teacher: A lot of them were less attentive to the way they strike, meaning the way their bodies moved in the striking action, but attentive to the way the ball went around (either the swinging action of the ball in the case of the girls and the hitting action of the ball after striking it in the case of boys).

Certainly, it seems true, both were attentive to the way the ball went around but in a different manner. Apparently, boys were looking at how high the ball went and if the ball hit the ceiling or the wall, while girls were looking at how or the way the ball swung after being touched.

During the same week in another interview with another teacher (on Wednesday, January 16, 1991), again after the class session was over, the following questions were asked to the teacher in charge of the striking activity.

Researcher: Did you notice any difference in the way children in your group approached the hanging ball?

Teacher: They were interested in how high or how far the ball went; very excited when they hit the ceiling.

Researcher: Was it the same for boys and girls?

Teacher: Not really. The girls were into hitting. The fact that they hit was very important for them, they felt happy about it. The boys, on the other hand, wanted to hit it hard!

In this quote the teacher expressed a notice of clear differences when she said "The girls were into hitting.....hitting was very important for them." It seems that what she called hitting was more like a touch, and hitting meant making contact. She did not talk about hitting hard as she did when she was talking about boys, so it seems that she was talking about a soft touch and contact with the ball when she said "hit" but when she talked about boys, she said, "Boys on the other hand want to hit it harder." Thus implicit is the fact that "hit" maybe meant contact or soft touch for girls and female teachers, while it might mean hitting hard for boys. Just a touch was not the way boys approached the ball. They used some force to hit the ball harder and that is what made them happy.

On the next day, during the closure in the small group, the teacher asked the children the following questions:

Teacher: What did you like today?

Nobody said anything (children did not answer).

Teacher: Did you hit the ball with your nose?

The children raised their hands (smiling), then all together said: Nooooo!

Then Billy said: I liked to hit with the paddle and I was trying to hit the snowflakes.

It was interesting that this little boy expressed his intentions when hitting the ball. Even a three year old boy wanted to hit the snowflakes that were decorating the wall.

The following week on January 21, 1991, after the striking activity and during the closure, the teacher asked the children a few questions related to the striking activities. The activity had been to strike a rolling ball and then to strike a ball off the cone. The teacher asked the following question.

Teacher: Which game did you like better?

Soon-he: I don't know.

Danny: I liked both.

Brian: I liked when the ball went over there and then over there (pointing to the windows and walls). I liked hitting hard.

Although the questions were about the games, Brian expressed the way he liked to hit the ball, thus supporting the assertion that boys like to hit hard, imposing force to their swing.

In another event on April 23, 1991, after the small group activity, the teacher asked the following question of Soon-he.

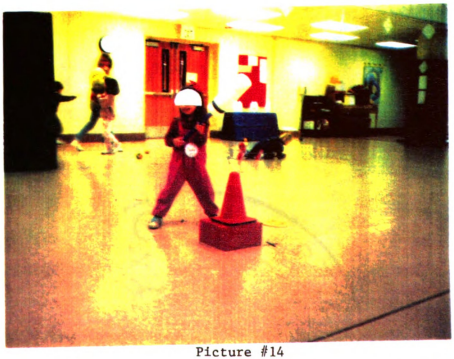
Teacher: Soon-he, I want you to tell me how you hit the ball your favorite way.

Soon-he: I like very slow. I touch it like this (she opened her hand and moved it forward a little with a slow motion, thus resembling the way she used to play with the hanging ball).

In this quote one girl verbally expressed the way she liked to approach the ball. This quote seemed to support the fieldnotes observations and previous hunches about the way girls initially approached balls for striking. It seems clear that it is a matter of choice about different ways to enjoy movement and interaction with the environment (in this case a hanging ball). Another explanation is that girls in their interaction with the ball reflects their caring style of learning while boys reflect their more aggressive, competitive interaction as discussed in the previous chapter.

These differences in approaching the ball could be a result of these boys demonstrating more mature forms of striking movement than these girls. However, even the youngest boys that were in early stages supported these differences; both physically and verbally. Physically they used force, the opposite of those movements showed by the girls. Verbally, boys expressed their willingness to hit the ball hard while girls expressed their willingness to hit softly.

In addition, documentary evidence seemed to support this assertion. See pictures #14 and #15 in which a young girl and also an older girl, respectively, were hitting a ball off a cone or a suspended ball with a bat and compare their approach to pictures #16 and #17 of a young boy and an older boy in the group. One boy was hitting a ball off the cone. The other was hitting a suspended ball held by a teacher, both of them using a bat. Their expressions are self-explanatory of the force they were using. Likewise, their expressions seem to reflect the intent of their actions. Since gender differences in muscle strength at this early age are minimal (Fountain, 1978; 1980), there is no reason to believe that they approached the ball differently because of greater strength. It seems possible to believe that these differences are apparently a matter of choice of each gender group.



Picture #14

Picture #15

Picture #16

Picture #17

The way boys and girls approached the ball was one of the first points noticed during the beginning of the research study, but the touching approach of girls changed progressively across the study. The slight differences noticed and discussed were more pronounced early in the striking movement continuum. These differences tended to disappear toward the end of the developmental sequence. In this study, these gender differences are represented in the descriptions of the movements for each group. Therefore, although the movement descriptions somehow may correspond to the developmental sequence of striking developed by Seefeldt and Haubenstricker (1974), the descriptions represent the body movement characteristics observed in this population and setting. Instead of calling these descriptions of stages 1, 2, 3, and 4 they will be called "The ABC striking sequence" in which the movement characteristics of stages A and B differed slightly by gender. In addition, along the continuum of movement from characteristics of Stage B to those of Stage C, there is a transition period in which three different forms of movement were observed in both groups. These will be referred to as transitions in this study. They were oscillatory movements, changing from one trial to the next. Thus, it seems that children go back and forth when moving toward more mature forms of movement, recapitulating or reorganizing movement until a more mature and stable form of movement appears. The more stable and efficient form of movement in this sequence is Stage C and corresponds with stage 4 of the Michigan State University developmental sequence.

The typical movement characteristics of the sequence observed will be described as assertions. There will be an assertion for each stage, and the assertions will follow the stage title.

Stage A: Early development of girls' striking motion.

> In stage A, during the early development of girls' striking motion, they tended to touch the ball softly, by semi-extending and flexing the striking arm (forward at the level of the chest). The arm action was stopped as soon as ball contact was made. Feet were stationary and the body was facing the ball.

Some vignettes were presented early in the discussion about the way children approached the ball. Additional vignettes representative of this typical pattern will follow. On January 14, 1991, during the small group activity in the striking station there were three girls participating, two of them decided to sit by the wall and did not participate, but one of them participated the entire time. Becky was on task, touching the ball softly with her hand open; she was facing the ball, her feet were stationary and parallel. She waited for the ball to come to her, she semi-extended her arm forward and, as soon as contact was made, she retracted her hand back and waited with her hand open. After Becky did this action several times, the teacher got in front of the ball, close to the wall, facing Brian and Becky. Brian was trying to hit him with the ball and the teacher was avoiding being struck by Brian's ball. But, he also was playing with Becky. He was stopping her ball and then letting it go back slowly, or touching the ball softly returning it back to Becky. She smiled at him and tried again. She seemed very calm and relaxed waiting for the ball to return. Brian who was by her was laughing at his attempts to hit the teacher. The teacher was laughing too and so was Becky. Becky caught the ball a couple of time and then sent it softly to him again (with the same kind of touch and no weight transfer; the action was frontal during the entire movement). Then the lights went off as a signal of time to do closure of small groups.

> Becky said to the teacher "We did not have time to play with the paddle."
>
> The teacher said "Becky you can do it during the free choice time."
>
> Becky nodded her head as in agreement.

In this fieldnote entry, Becky's pattern of hitting the hanging ball was the same over and over. The interesting issue here was that the teacher in his first class day showed this special attention to each child. He played with the boy as the moving target, while with the girl he played her soft touch. They all seemed to enjoy their time. In addition, it was also interesting that after being all the time on task, Becky missed the striking activity with the paddle. She wanted to continue with the activity. That day unfortunately they did not have free choice time to really see if in fact Becky and the boy would have stayed in the striking station.

The Stage A in boys was less common (see Figure 5), thus making one think that when boys entered this program, they had already passed the early stages observed in girls (see Figure 6). Or, is it maybe possible that the boys go through a slightly different sequence? In an interview with the mother of the youngest boy in the program, she expressed that her child played baseball with his father and older boys. When children in her neighborhood usually invited her husband to play baseball outside, her boy usually got trials to bat, and observed and participated in games every time they met. The youngest boy in this setting was receiving some experience in striking outside the school. The differences shown by girls observed early in the study tended to decrease through the study, suggesting a positive practice effect on the development of striking skills. The movements of boys' seemed to reflect that they may have had previous experience in striking. Documentary evidence seems to demonstrate that when the activity was with balloons, the striking action showed by girls was mostly from down-up with the arm flexed at the elbow and the palm held upward at the height of the waist. They also continued the pattern of soft contact by flexing their arm upward and then waiting for the ball to come back. They showed this pattern with hands or with paddle. Evidence of this pattern was shown in the videotape taken in November (26, 27, 28, and

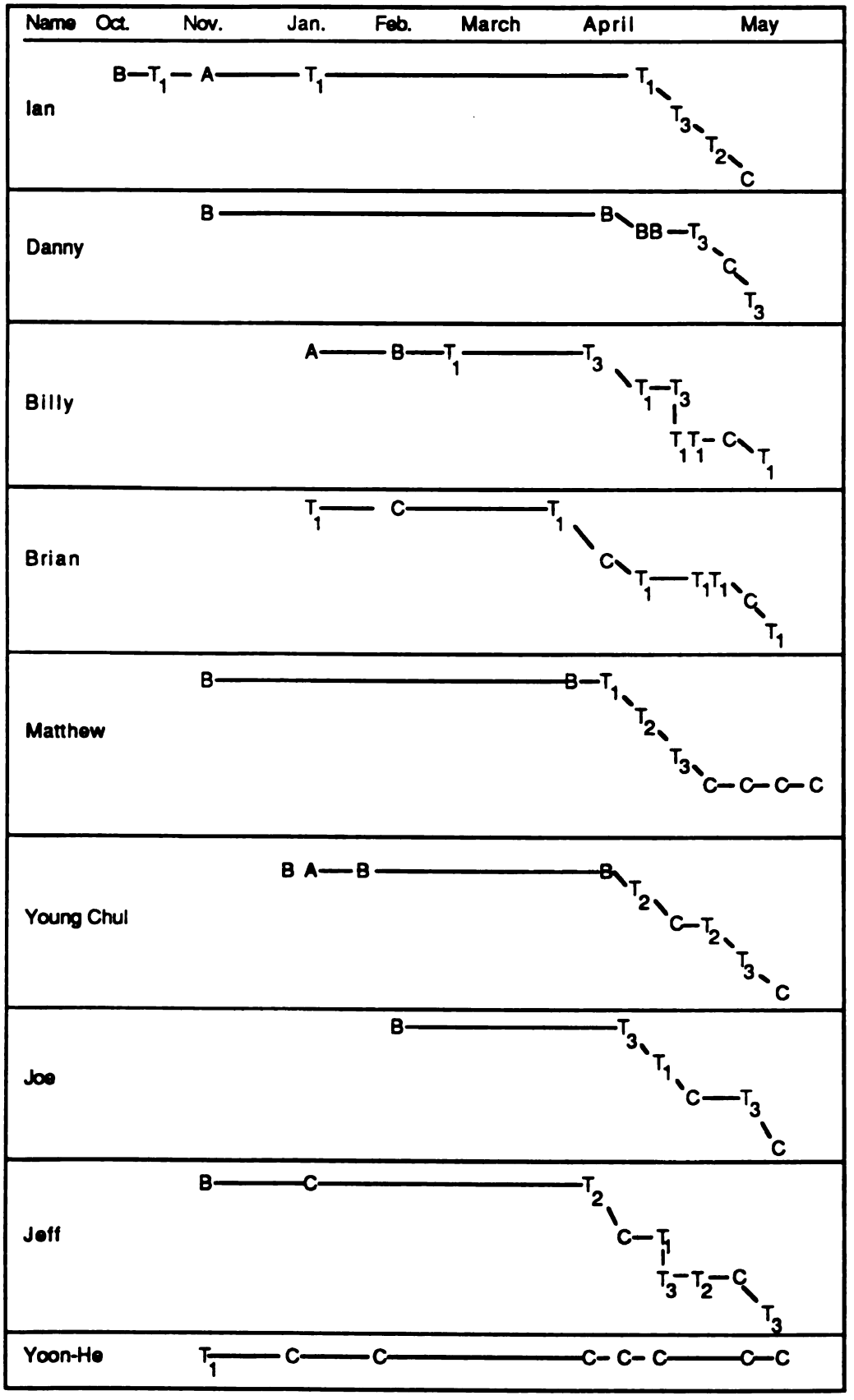


Figure 5. Boys patterns across time.

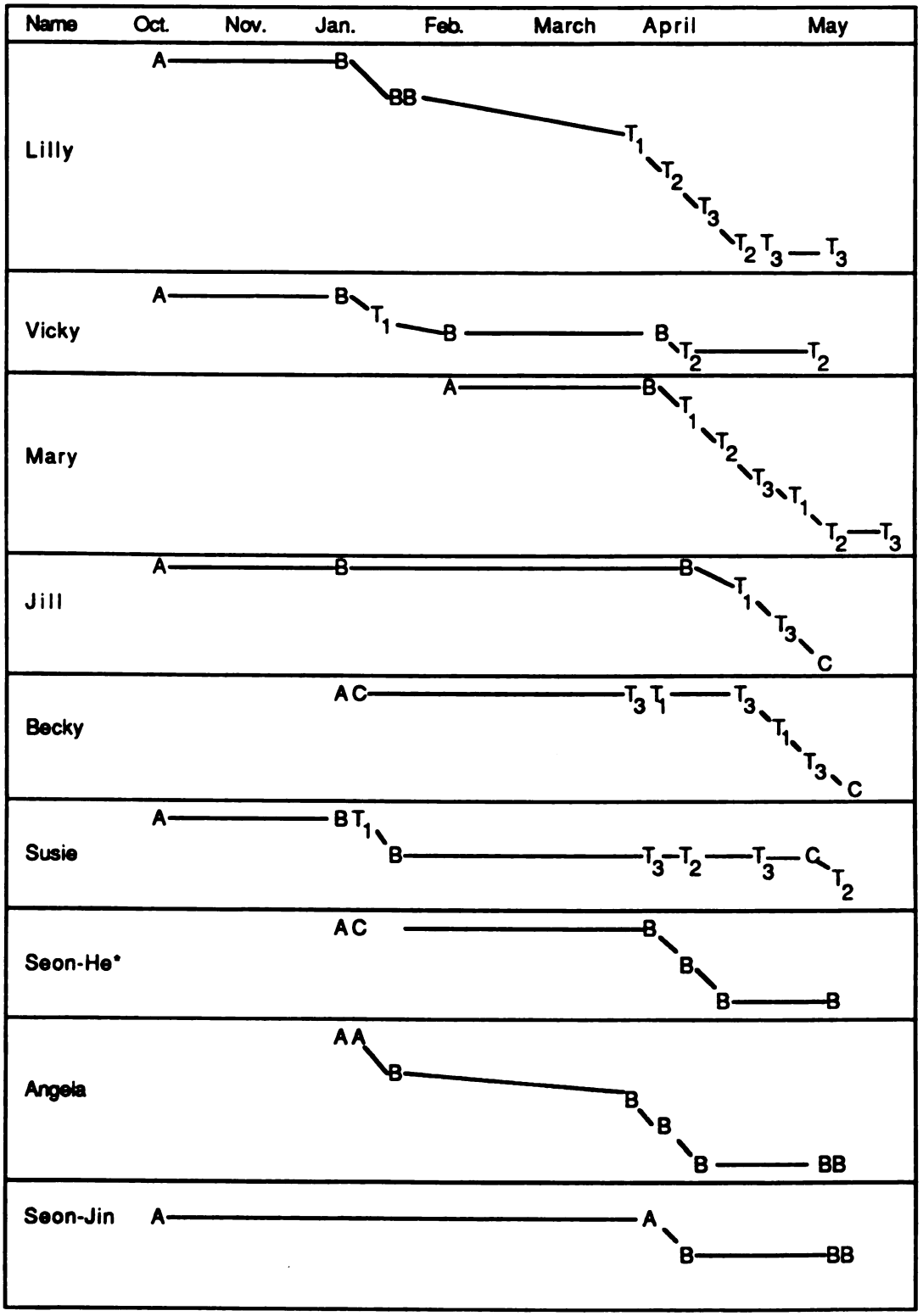


Figure 6. Girls patterns across time.

29). In addition, picture #11 (page 145) and picture #9 (page 144) in chapter five, showed evidence of this pattern when they were using balloons; the differences are apparent. The action of the striking arm was incomplete on the girls' side. The striking action of the boys was from down-up, but started with hand or paddle at the shoulder level and flexion of the elbow at the height of the shoulder. Then there was a complete extension in vertical direction. After hitting the ball, the swinging arm came down and then assumed the ready position again. The second assertion addresses the way boys start developing their Stage A striking skills in the setting.

Stage A: Early development of boys' striking motion.

> In Stage A, during the early development of striking motion, boys tended to flex the striking arm with hand facing upward at the level of the shoulder and then swing from there upward and then downward in a vertical motion that continued down after contact with the ball. The striking arm was almost completely extended after contact with the ball. The feet were stationary and the body was facing forward. They may bend knees and jump up on two feet to reach for high balls.

The following vignettes will attempt to illustrate this typical pattern. During the free choice activity on the video of November 26, 1990, some younger children went to the striking station. Billy picked up a paddle and a red balloon. He was standing behind the tennis net which was at his chest level. With feet stationary, Billy flexed his arm over his head and holding the balloon with the left hand, he hit it with the paddle using his right hand. He extended his striking arm in a choppy motion that started at the shoulder and went upward, and then downward. His body was facing forward, the movement continued after ball contact. Billy performed in this way nine consecutive times. The teacher returned the ball to him every time. Then the teacher got close to him and looked as though she was talking to Billy. After that Billy hit three more times with the same movement characteristics.

On November 27, 28, and 29, Billy again repeated the same pattern. Every day during free choice, Billy went to the striking station, even the day he was striking in the small group. Few boys were in this stage, especially with the consistency demonstrated by Billy. Other boys (Danny, Young Chul, and Chul Ho) demonstrated this stage but showed more consistency with the second stage.

Some other boys showed an interesting addition to the pattern. When the ball was high, they jumped on two feet to reach for a high ball, showing the same arm motion in a choppy manner. The movement was facing forward, without block rotation. For instance, on the video of November 28, Chul Ho, Young Chul, and Ian executed a jump on two feet swinging at a high hanging ball, by extending their striking arm up away from them and then back down.

This movement was interesting since it is difficult to jump and swing; however, it seems as though the position of the hanging ball was very attractive to them, thus motivating them to perform this jump. The balls that these children swung at were hanging very high; jumping was the only possible way to hit them. This was interesting because some of these children had demonstrated several times before using the horizontal swing. However, since their objective was to hit the ball, it seemed that they changed to a more appropriate movement to accomplish their goal. This aspect also shows how the environmental structure can elicit movement responses that fit the intention of movement. Thus, the early, more immature form of movement, is still in their repertory to be used or combined when needed. At this point, this was a hunch of the researcher.

There was a discrepant case among boys in this early stage. Eric performed a totally different movement. Eric was a boy who, instead of swinging his striking arm up and down in the stationary position, held the balloon with one hand flexed close to his

shoulder and the paddle was in his right hand close to his shoulder. From there he extended both arms forward, first the one with the balloon and then the one with the paddle. It seemed a little more uncoordinated, as though he was striking with both arms one after the other. The rest of the children held one arm straight with the balloon and swung with the other. He was the only young boy who performed this movement. It seems that Eric could have been experiencing a different type of movement, as he did in several other opportunities in which he created his own game and played with the implements pretending they were different things. For instance, once he was using the bat in front of his body resting it on his chest and marching as if the bat was a flag or a gun. On other occasions he took two paddles and slapped them together as though pretending they were a musical instrument, or re-used the bat as a telescope, TV camera, or picture camera, since he was searching the environment through the bat in his pretend game.

However, other explanations for this discrepancy will follow. Eric could have used both arms because he was unable to isolate an unfamiliar movement of one hand with movements of the other hand. Or Eric has a lack of previous experience with this type of movement so he is practicing and searching for movement solutions to strike a balloon off his hand. This last explanation may be useful in understanding why some children move in a specific manner more quickly than others. Maybe, if their experience base has a kind of movement similar to the one they need to perform the skill, then perhaps the child will be better in adjusting quickly and adapting to the new demands of the new task. A lack of an experiential base is possibly why girls have more difficulty holding the bat with the appropriate hand positions for striking. These hand positions may be unfamiliar to them. The continuation of Stage A into Stage B appears to happen by modifying Stage A in two areas.

Stage B

> In Stage B, the striking arm starts the motion with a horizontal sideways swing and the trunk rotates with the swinging arm. The arm is semi-extended during the swing. The feet are still stationary, as in Stage A, either together or slightly separated. The swing is stopped after contact with the balls, therefore the swing goes around the frontal plane of the child in a horizontal halfway rotation.

Hand position and batting side seem to be two of the difficulties experienced by children at this stage, especially for girls. The following vignettes illustrated this pattern representing the girls' movement characteristics.

On January 23, 1991, in the small group during the striking activity, Lilly was waiting for her turn to strike a ball off the cone with a bat. She was quietly observing the activity. She watched the other boys and girls in her group and sometimes the researcher. There was only one other girl in this group and four boys. They were divided into two lines, one girl in each group. They were taking turns hitting a ball off a cone. The teacher put the ball on one of the cones. Lilly stood sideways and placed the bat at the side of her body perpendicular to her waist. She was holding it with both hands and from there she moved the bat and trunk together until she hit the ball off the cone. The swing was soft and finished at contact with the ball. Then she smiled and watched the ball roll on the floor. After the other children's trials, Lilly's turn came again. She stood sideways with the bat in front of her body and perpendicular to her semi-flexed arms. While she was in this position the lights went off as the signal for closing the small group activity. She waited in this position until they went on again and then continued with the movement. She turned her trunk and touched the ball with the bat, stopping the swing after hitting the ball. Then, she stayed there for a while watching the ball rolling on the floor. This touch was different than the Stage A "touch" because it was a little harder. The extra force resulted from the increased horizontal distance the bat travelled and the small amount of body rotation. On several occasions it looked as though

girls tended to stop the swing when they were going to hit the ball. Maybe they are concerned about making contact with the ball. When it was easy to contact the ball they reduced speed. They apparently did not want to hit the ball too hard. This pattern was very typical of girls and was observed in several fieldnote entries throughout the study.

Of the nine girls in the setting, all of them except Becky demonstrated this pattern on several occasions (see Figure 6 on page 175). In another event on January 22, 1991, Susie went to the striking station during the small group activity. At their station, the teacher started talking about the striking activity and explained how to hold the bat. The teacher explained "raise the hand that you need to put on the top of the bat." They all raised one hand. Then the teacher asked them to go and get their bats. They all grabbed the bat and the girls placed them in front of their bodies, holding it with their two hands. The boys set the bat to their batting side, most of them on the right side of their bodies. The teacher then talked about the swing. The girls missed the explanation as they were watching each other. Then the teacher set the ball on the top of the cones for children to take turns striking the ball. Susie seemed to be having a hard time deciding on which side to set the bat, so she swung from one side, then from the other side. One teacher noticed Susie's problem with the bat and came in to help her. She placed the bat on Susie's right side and told Susie to try. However, it seemed that Susie was left-handed; she looked uncomfortable and her arms were twisted. Then the teacher left and she turned her body facing the ball as a left hand batter but her bat was still on the right side. Then she switched the bat to her left side and swung slowly until she contacted the ball. Her swing was horizontal and the swinging action stopped at contact. She held the bat in the contact position while she watched the ball roll on the floor. After that she ran for the ball and put it back on the cone. She was preparing to bat left sided, but suddenly she changed to the right side as if she remembered the teacher's instruction

which were on the right side. She again looked uncomfortable; maybe her hands were not in the right position. The teacher then came in and asked her, "Which way do you need to face?" Susie said, "I don't know."

This situation was observed several times in girls at this stage. They were uncertain about how and where to hold the bat, and how to face the ball. The way they held the bat seemed to be one of the difficulties girls faced in Stage B.

Documentary evidence also seemed to support the movement characteristics of this stage. Video tapes recorded on different occasions during the study and some pictures taken on other occasions represented characteristics of this stage. For instance, in a videotaped class on April 17, during the small group activity, children were practicing striking a ball off a cone. There were three groups of children lined up by three cones. Each group had a cone set on two plastic red rubber blocks in front of them with a ball on the cone. Children were asked to strike the ball off the cone. Two Asian girls were placed with one cone, two boys with the second cone, and the last two boys were assigned to the third cone. Mary walked to the wall and started watching them perform the activity. She was holding her body off the floor by supporting herself with her hands straight on the furnace covers. The teacher noticed that she was not participating or that she could be hit by an oncoming ball. She went there and talked to Mary. Then they both moved to the first cone on the left side of the room and the teacher talked to her. It seemed as though she was talking about the bat because both she and the teacher were holding bats. Then the teacher took the bat and stood by the cone. The teacher started giving her an explanation-demonstration, encouraging her to try it right after her. Mary was going to start and the teacher reminded her of the bat position and again showed her. Mary tried the swing from where the teacher requested and missed the ball, then she adjusted the bat slightly down to her side and swung in a horizontal fashion

hitting the ball off the cone. Her feet were stationary and her trunk moved with her bat. She watched the ball rolling and then she ran to grab it and set the ball on the cone to try striking again. She repeated the same movement. At the same station, Soon-He was also performing, demonstrating the same movement characteristics of this stage.

This stage was often seen in the girls in the setting while seen only in seven boys in the group. There was also a rather quick passage through it, although girls seemed to stay longer at this stage. For instance, on a videotape of the April 15 class, two younger boys showed this stage when practicing striking with the hanging ball. One of these boys was Matthew who was in the program from the beginning of the study. In this film Matthew was using the bat from both sides to swing at the ball, and his swing was only in the frontal plane, between the horizontal and diagonal, while his feet were stationary. Matthew demonstrated the difficulty that children at this stage seem to have of identifying their striking side. Although Matthew could have been practicing striking from both sides, his hand positions were appropriate for one side but wrong for the other. The other boy in the film, Sun-Ro, was a new Asian boy who had just started in the program during the spring term. This boy was demonstrating the same characteristics that were common to this stage. His swing was horizontal and short, his feet were stationary, and only his trunk turned with his bat. He and Matthew repeated this movement several times during the activity with the hanging ball. Sun-Ro also repeated this characteristic movement when striking the ball off a cone during the same class period. Matthew did not perform with the cone.

This pattern was observed only in the younger boys' group during the observation fieldnotes. The rest of the boys demonstrated more mature and transitional forms of movements. Boys also moved along the continuum quickly, thus changing their movement characteristics from one set of trials to the next set of trials, while girls

were in Stage B for a longer time. For instance, on October 31, 1991, in the previous vignette in which Ian was talking to the ball, initially when he said, "Eh, you ball you touched me." Ian demonstrated a horizontal swing characteristic of this stage while his feet were stationary. His swing was not complete and he was showing trunk rotation with the bat. However, after a few trials, he stopped and prepared the bat resting over his shoulder. In the following attempts, he began stepping forward and his swing was in a more perpendicular or diagonal angle. He was saying, "Don't you touch me, ha ha ha." His rotation and swing still needed improvement but the characteristics of the second movement seemed smoother and more mature than the previous movement. Evidence of both boys and girls being at this stage were presented in the pictures of Vicky, Angela, Jill, Susie, Chul-Ho, Ian, and Matthew. In these pictures the position of the bat in relationship to the body, the feet, and the range of swing were typical of this Stage B.

The transition from Stage A to stage B seemed to occur by bringing the bat down to the side to hit the ball with a horizontal swing instead of a vertical swing, with the body position changed from facing the ball to one of standing by the ball. It seems as though this transition occurred as an adjustment of the body movement to the position of the ball.

There was a discrepant case among the girls - the case of Becky, in which more direct teaching seemed to have a positive effect on the learning of more mature forms of the striking movement. The following vignette will describe this case.

On January 21, after the large group was divided into small groups, Becky went to the striking station with Jill, Soon-He, Brian, and Jeff. In the striking station the teacher called their names and told them she needed their attention. The teacher said, "We are going to hit the ball as a golf ball." Brian picked up the bat from the floor. The teacher said, "Brian, you are holding the bat. You need to listen." The three girls seemed

to be listening. They were quietly looking at the teacher. The two boys were talking about the bats. They were looking at the equipment and Jeff said, "Look at those bows and arrows" (not exactly the same words). He was looking at the upper part of the foam bats. He thought they were bows and arrows. Brian said "Bows and arrows!" The teacher listened to them and said, "No they are not." Jeff said, "It looks like a bow and arrow to me." The teacher asked them to listen and continued grouping them into two groups. Then for the explanation she took the two boys and start explaining and demonstrating by telling them what to do. Teacher: "He (Jeff) is going to roll the ball to you (Brian) and you will hit the ball, you need to step and then hit the ball." The girls were watching. The explanation was repeated twice. Then the children made two lines. The boys made one line and the girls made another line. The first boy started working, stepping and swinging two times each and then they switched. The assistant teacher was monitoring the boys, especially making sure they took turns. Jill, in the other line, had her second turn. She did not step. The teacher came in and it was Becky's turn, she explained again to Becky that she needed to step and swing. Then Becky said, "I played baseball." The teacher continued explaining to her once more and guided Becky's body movement. She touched Becky's legs and asked her to step and then she swung, guiding Becky's hands. The teacher was behind Becky explaining and moving Becky's arms with her. Then the teacher rolled the ball to Becky and Becky swung and hit it. She did not step. Again the teacher explained to her with emphasis on the step. She showed her and touched Becky's foot that needed to be moved forward. Then she rolled the ball and Becky did step this time and swing. The ball rolled fast after being hit and Becky seemed surprised. She smiled opening her mouth and then covered her mouth with one hand. After that Soon-He had her turn. She came and she also stepped, swinging and hitting the rolling ball. She smiled also and tried again, with step and swing. The teacher then changed the activity to

hit the ball off the cone, and again Becky stepped and hit it and the ball hit the wall and rolled on the floor into another area. Becky covered her face as scared, surprised, or both. Soon-He demonstrated a similar pattern to that shown by Becky.

Both Becky and Soon-He were in a more mature stage in which there was weight transfer, some sequential body rotation, a diagonal swing, and a contralateral step. Soon-He's swing was still soft, she did not hit the ball as hard as Becky did but harder than what she had previously. That day children did each activity with only one set of trials which consisted of two turns and after that they switched to the activity with the cones. More explanation than usual was used. Usually when working with lines like these they have three or four trials on each activity. This case received extra attention, especially because the week before on January 15 Becky was in Stage A, just touching the ball very softly (see Figure 7). It seemed interesting in this vignette that this teacher spent time explaining by using two boys that did step and swing in their demonstration. But she also spent time explaining the movement to Becky and she also guided the movement with her. Then she gave Becky immediate feedback when she did not step. She also touched the leg Becky needed to put forward. It seemed that teaching this way had an effect on Becky, moving her along the continuum. Moreover, it is impressive that Becky was the girl who apparently jumped from Stage A to Stage C, without going through the transitions. Another interesting event in this vignette is that Soon-He, who was next in line observing the teacher's explanations, also demonstrated improvement and movement characteristics similar to those showed by Becky (see Figure 8). Was that the result of seeing her friend's movement or the effect of the teacher's explanation that she observed, or was it the effect of seeing the combination of both situations? This discrepant case seems to imply that more specific teaching can help children , especially girls, to move toward more mature forms of movement more rapidly than with general or indirect

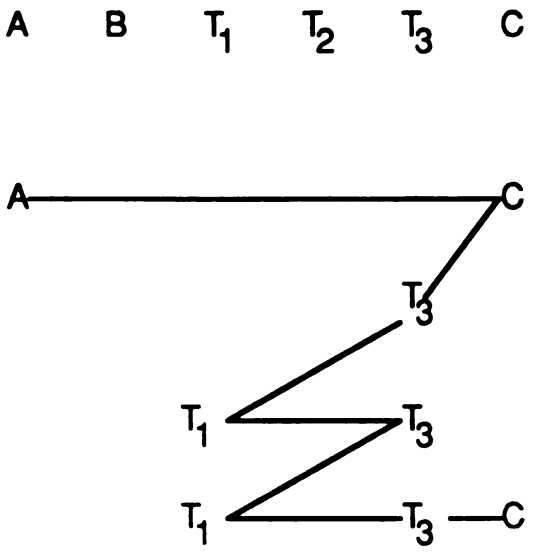


Figure 7. Progressing through the ABC Striking Sequence (Becky)*

*discrepant case

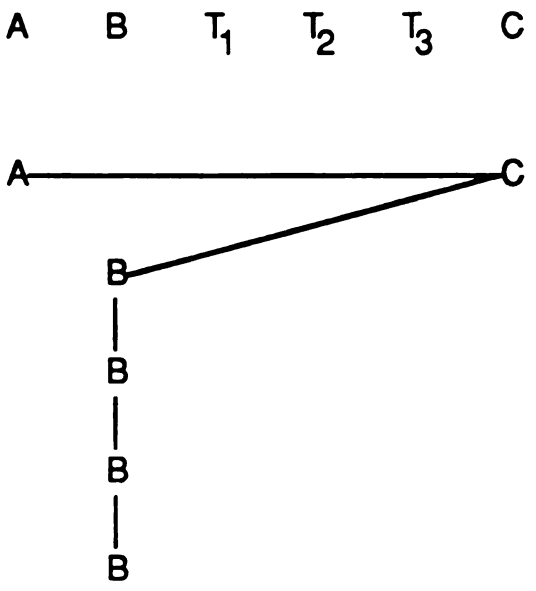


Figure 8. Progressing through the ABC Striking Sequence (Seon-He)*

*discrepant case

learning.

From Stage B to Stage C there was a movement transition time in which different patterns appeared and children moved from one form of movement to another form, even during a set of trials, until they became stable at Stage C. At Stage C they repeated this form of movement with great consistency, even when the conditions of the presentation of the ball were varied. These forms of movements are organized for the sake of presentation to the reader as Transition One (T1), Transition Two (T2), and Transition Three (T3). However these numbers do not imply order, at least not at this point of the analysis. Most of the children demonstrated passage through all of them. (See Figure 6 on page 175 and Figure 5 on page 174) Some boys achieved stability during the study. However, girls did not show stability at the time when the study was concluded.

These transitions represented a period of instability in movement configuration. During this time several of the children's movements and body configurations changed back and forth from one form or pattern of movement to another and then returned to the first form. They performed at Stage C and then returned to transitory patterns of movement, until Stage C become the consistent pattern of movement.

Transition One was the body movement that commonly occurred after Stage B, when the feet were parallel and stationary. The following assertion will describe the characteristics of this movement.

Transition One (T1)

> Now children added a turn of the forward foot in the direction of the strike. The body started to rotate backward to the striking side. With the swing a full derotation continued, and arms followed through around the body to the other side. The bat was held hanging behind the child's back, with elbows high. The feet were usually approximately shoulder width apart but could be placed close together.

The following vignettes will attempt to illustrate this characteristic movement. On January 30 at the striking station, the children were practicing with the special hockey stick, a black plastic stick with a big styrofoam hitting surface. The pucks used were large and made of styrofoam. Rubber, orange balls were also used as pucks at this station. During the free choice time, Ian came in and squatted on the floor for a while. No other children were at the station. The two teachers in the station noticed Ian. One of them walked toward him and invited Ian to play. He was provided with a hockey stick that one teacher had and a flat, round foam puck. He started playing with it and he tapped the puck two or three times before hitting it. When tapping the puck he started his swing at his waist level. After a few trials he came to the box and picked up an orange rubber ball. Then he put the ball on the floor approximately three meters from the wall. He stood sideways to the ball, feet separated, and brought his stick up like a bat with elbows high at shoulder level. He turned his body to the opposite side. Then with a quick swing he hit the ball, turning his forward foot toward the wall. After that he retrieved the ball, placed it again in the same spot, and hit it using the same movement characteristics. His swing was quick and hard. He rotated his hips and trunk both before and after the swing. It seemed as though he enjoyed this activity as he was smiling and was full of energy. He ran quickly to set the ball back into position and struck it again and again, showing the same movement characteristics.

It seems as though Ian, when using the flat, round foam shapes (special puck), was playing something similar to hockey or golf. But, when he picked up the ball, he seemed to be playing golf or baseball. During his first attempts with the flat foam puck, his stick did not go as high as it went when he used the ball. He was trying to aim to the flat foam puck as he popped it two or three times before hitting it. Conversely, in his second game of either golf or baseball, his swing was very much like the description

given for the movement characteristics of T1. He did not tap the ball as he did with the special puck.

After this class a formal interview with the teacher was scheduled. The following quote seemed to support the description given by the fieldnotes in the above vignette.

Researcher: Were there differences in the way children moved their sticks or in the way they swang?

Teacher: Yes, for instance, when Ian was doing it at first, he tapped the puck two or three times as in aiming and then he swung. He also swung with the stick high when hitting the ball. I had to remind him to keep the stick down.

This teacher noticed that Ian was tapping at the puck before hitting it and also that when using the ball, his stick went higher. She probably noticed this particular difference because Ian was moving his stick and doing things differently than the previous group. In addition, he was the only child in the station during the free choice time.

Another incident, on February 14, occurred during the small group activity of striking. The teacher gave the children instructions and some of them seemed to be listening (they were watching the teacher), while others were playing and talking (looking around, or talking to a friend). The teacher said, "We are going to take turns to bat" as she set up the equipment. They were sitting and watching but before she finished setting up the equipment, the three boys (Eric, Young Chul, and Billy) ran to each of the red block towers one after the other . On the top of each tower there was a ball. Then, Billy went to the equipment basket and got a bat and came back to stand up by the tower facing sideways. His legs were apart, bat held behind him, elbows very high, and body rotated backwards. From this position he swung, turning his forward foot in the direction of the wall and rotating his body at the end. Billy struck four times in a row

using this characteristic movement pattern. He stayed in the preparatory position for a while before he swung and he lost eye contact with the ball during the preparation as the body turned away from the ball. This vignette illustrated the same typical pattern as the one described early in the previous vignette with Ian. This pattern was more often seen in boys than the previous Stage B.

Documentary evidence seemed to support the movement characteristics of children in this transitory stage. On a videotape recorded during the third week of April, this typical pattern can be observed by watching the movement performed by Brian (see Figure 9). While the girls in the film were in Stage B, Brian and Billy were in T1 (see Figure 10). Brian showed the initial position (elbows high, bat behind his back, body turned away). Then he derotated his body, moved his bat in a diagnonal to horizontal direction, and his forward foot also turned to the wall at the end of the swing. Joe, in the same film, showed very similar transitional characteristics to those shown by Brian and Billy. Likewise, on April 16, Brian repeated these characteristic movements again. Documentary evidence also seems to demonstrate the continuity or movement transformation from Stage B to T1. In a videotape taken at the end of November, Eric illustrated a body movement that resembled a combination in which his swing was a Stage B but his feet were T1. He appeared to be moving toward this transitory stage. In addition, it was noticed that most of the boys in this study went through this transition; however, some of them stayed in the transition longer than others. The assertion that describes the movement characteristics of T2 follows.

Transition Two (T2)

> T2 was characterized by a swing that continued as the body turned around. The body rotated on the front foot, moving the back foot around. The bat came diagonally downward and continued horizontally around the body.

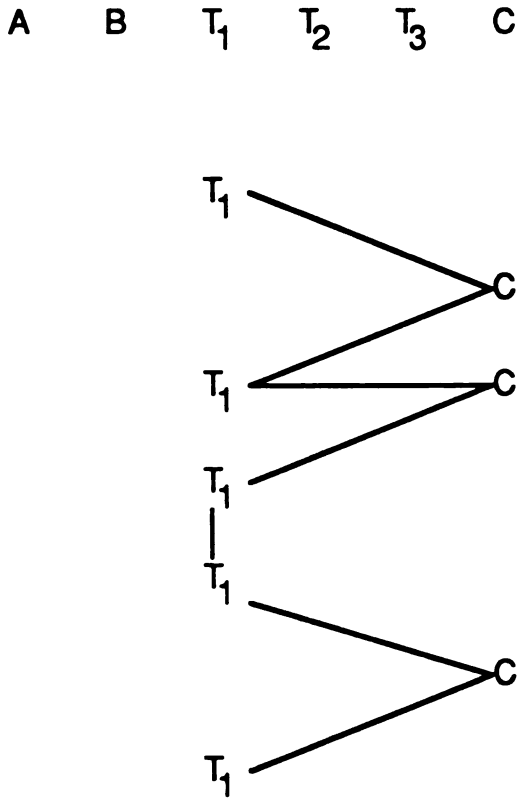


Figure 9. Progressing through the ABC Striking Sequence (Brian)

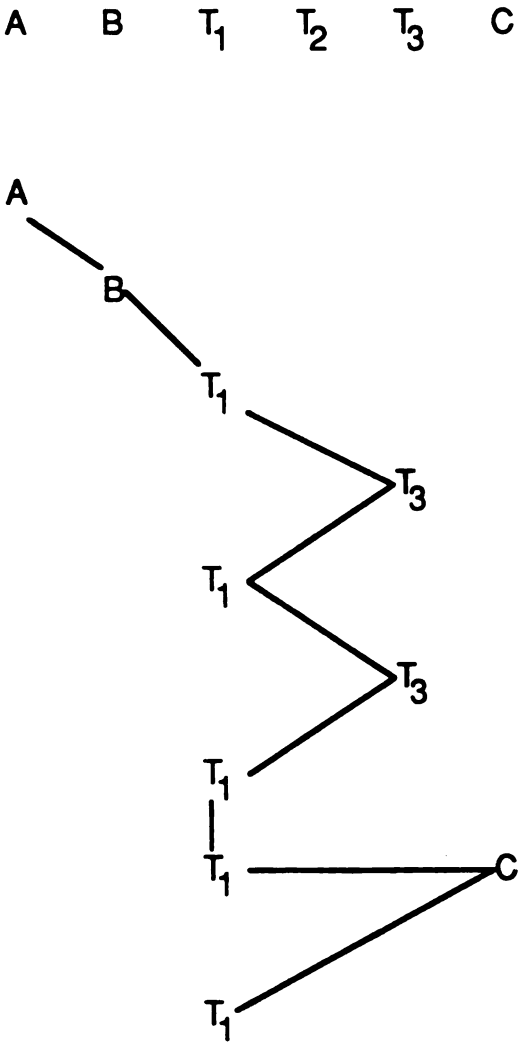


Figure 10. Progressing through the ABC Striking Sequence (Billy)

This transition was observed in both boys and girls; however, not all boys showed this transition. Four out of the nine girls who were in the full study demonstrated this transition. Of the five girls left, two did not progress up to this level and one jumped to Stage C then returned to B, and two others skipped the transition. In addition, when boys showed the transition, they passed through it rather quickly while girls stayed a little longer. For instance, in four trials boys showed one or two in T2 while girls tended to demonstrate all in T2.

The following vignette illustrates the movement characteristics of this pattern. On April 22, during the small group activity at the striking station, the activity was to hit the suspended ball using hand, paddles, or bats. When the teacher was going to explain the activity, Lilly ran to where the teacher was and performed it with the teacher. Then she went to where the balls were suspended and hit a ball, she first hugged the ball and then she stood sideways. After that, using her open hand, she hit the ball and turned around bringing her back foot along side her front foot during the turn. She hit harder than usual and her hand stayed on the side and behind her body with a small semiflexion of the elbow. She showed this movement pattern three times and then started hitting and stepping with the ipsilateral foot (see Figure 11). In subsequent observations, she showed again T2 and then went to T3. She did not turn when using an ipsilateral step. Her ball was swinging so high at one time that it tangled up with Danny's ball. Then they both laughed about it.

This vignette protrays that Lilly was more confident of her striking movement, which could also indicate that her movements were achieving more mature forms. In other words she seemed to be moving along the continuum toward more mature forms, and this way of feeling the movement seemed to make her happy about it. The fact that she wanted to demonstrate with the teacher shows her confidence. In addition, she hit

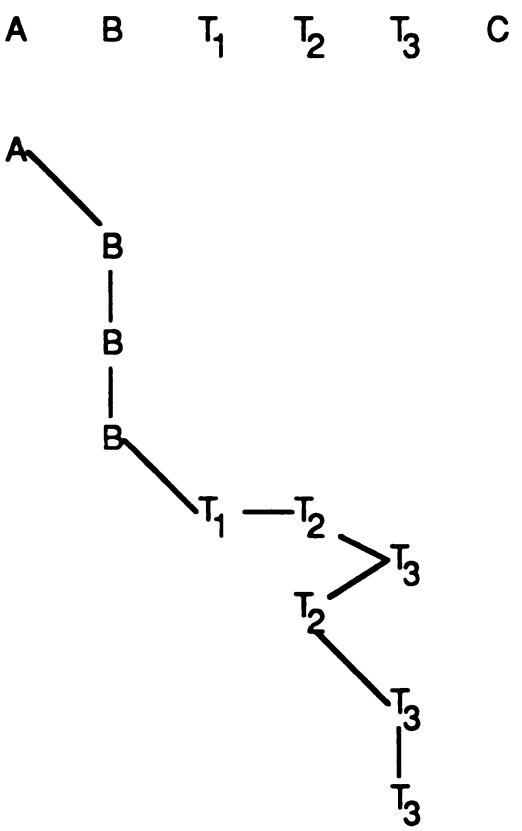


Figure 11. Progressing through the ABC Striking Sequence (Lilly)

harder and moved her body more. However, before hitting hard, she hugged the ball as if she was communicating something to the ball. Maybe she was aware she was going to hit harder or she was happy with the ball. Furthermore, in this vignette she showed the instability of this transitory time. This movement (from turning to ipsilateral stepping) seemed to be a typical occurrence in girls. In the same observation on April 22, during the free choice, other girls showed that they were at the same transition stage. Mary, who came over to strike the suspended ball, began by touching the ball softly, then she took a bat, set it on her shoulder, and then swung the bat turning her body entirely around. Each time she hit the ball harder. She smiled during her turn as though she was enjoying it. Mary repeated this pattern two more times. The third time she hit a child next to her who had walked backward while she was turning. Then she stopped performing the skill and stopped smiling, she said to him, "Oh, I am sorry." Her face was sad and she appeared ready to cry.

Also on April 23, during the free choice time three boys and two girls came over to the striking station. Vicky was one of the girls who came to the station. Vicky started with her body sideways pushing the ball high. She stopped the ball and used a side arm motion with hand semiflexed a little behind her body. She swung turning around after hitting the ball. She did it this way two times and then went for the paddle and continued turning around after hitting. Danny was taking turns with her, but he was using a black bat and did not turn around. The free choice time ended after that.

Some boys in the setting showed this movement characteristic of T2. The following vignettes illustrated this pattern. On April 23, during the free choice time, Jeff took a black plastic bat and went to one suspended ball. He stood sideways, placed his feet apart, set the bat on his shoulder, and swung at the ball turning around and falling on the floor. He laughed and laughed after the fall. Then, in the next trial he stepped

with the contralateral foot. But, in the next trial he did not step but kept his feet stationary.

This vignette showed that in each trial he did something different, thus showing the instability of movement patterns characteristic of this transitory time. However, one of the movements that he performed met the characteristics of the T2, thus indicating that although they demonstrated these steps less often, boys also showed their progress throughout this transitory movement.

In addition, the fieldnotes of April 24 for free choice time described the movements of Young Chul who was practicing striking with the suspended ball and a bat. Young Chul demonstrated a turn around after hitting the ball with his dominant left side. He repeated this pattern three times in a row. Then he dropped the bat and left. Likewise, the following vignette illustrated this typical transitory pattern. On April 15, during the striking activity in the small group, Ian wanted to do the striking activity from a cone. He set the ball on the cone to strike but the teacher took it off and put the cone away. The activity was with balls on the floor. While the teacher was putting the cone away Ian held the ball with one hand and swung to it with the left hand, turning around with the swing. He placed the ball at the height of the cone (as though pretending the cone was there). He performed this way five times, consecutively swinging with full turn until a ball rolling on the floor got his attention. He then ran and said, "My ball" to the child who was going to pick it up. The other child went for another ball. In these two vignettes two other children showed the movements characteristic of this transitory period. Additional evidence demonstrates the typicality of this T2 in the study. The videotapes taken on April 15 showed the transition two performed by Ian and the video on April 18 showed the T2 demonstrated by Matthew.

Some discrepant cases were recorded during fieldnote observations as this transition was not observed in five girls. Two of them were Angela and Seon-Jin who stayed in Stage B until the end of the study. Another was Becky, the girl who jumped all the way to Stage C and, although she later went back to transitory stages, did not show the movement characteristics of Stage B or T2. Seon-He was another discrepant case. However, she jumped all the way to Stage C, came back to Stage B, and did not move from there at least until the data collection period ended and Jill who apparently skipped to T2. The possibility among these cases of going through this T2 is still open.

In the case of boys, discrepant cases for this transition were also present. Five boys out of nine did not show this T2 (see Figure 5 on page 174). There is the possibility that they went through this transition out of school since they showed more advanced movements. However, there is also a possibility that some children do not necessarily go through all the transitions mentioned. The assertion describing T3 follows.

Transition Three (T3)

> T3 was characterized by an ipsilateral step with an oblique diagonal swing with little body rotation.

Although these transitory movements were present at one point in time, children did not stay in this transition for very long. For example, in the vignette of April 22, in which Lilly's movement characteristic represented T2, after three trials on T2 she passed into T3, showing an ipsilateral step and diagonal swing. Another vignette illustrated this transitory movement characteristic as demonstrated by Mary's striking actions.

On April 25, during the free choice time, Mary came over to the striking station. They were using suspended balls, and the children were allowed to hit the ball with

hands, paddles, or bats. Mary chose to hit with a bat that had a wider striking surface at the end. It is white styrofoam decorated with blue. Mary swung at the yellow ball with a diagonal swing and moved her ipsilateral foot forward in her first attempt. In her next trial she demonstrated T1, after which she repeated the movement in an ipsilateral step fashion. She seemed to strike this way when the ball was in an uncomfortable position such as too close or too far from her.

On the same day of this observation during the small group activity the new Korean boy Sun-ro showed T2 in striking, turning his body around. Then he struck with an ipsilateral step and diagonal swing, after which he repeated the ipsilateral step swing three times.

These observations were interesting because, at the time of observation, the researcher did not understand what was going on. However, this situation gave rise to a series of hunches and explanations for understanding. In the case of Mary it was interesting to see, on one hand, that she chose by herself to go to the striking station to practice striking when she had to be encouraged to participate in the striking activity the week before. Thus she demonstrated a greater confidence in herself and her body movement, and a greater willingness to practice the skill than previously. Maybe there is a relationship between confidence in the movement and attempts to practice the skill. On the other hand, we can see the instability of the transitory movements, since on April 22 she was turning around showing T2 and on April 25 she demonstrated the characteristics of T3.

Documentary evidence seems to portray not only the characteristics of this transition, but also the instability of the transitions. In the video tapes recorded on the testing days Mary, Becky, and Susie were representatives of this transition.

Also on the videotapes taken on April 15, 16, 18, and May 9 Ian, Danny, Billy, and Matthew are representatives of this transitory movement characteristic in consecutive trials. From the nine girls that were in the entire study, four of them did not show this transition. These four girls, however, are not considered discrepant cases because they did not achieve this level. They may move forward in the future. One of them was in T2 the last time she was observed, the other three were in Stage B. One girl (Becky), who did not show the transition, jumped all the way from Stage A to Stage C. Later she returned to the transitory patterns and showed T3. In the case of boys, only two of the nine in the study during the whole time did not go through this transition three. One boy (Brian) was the one who expressed on several occasions that he wanted to strike like a baseball player. He was quoted earlier as the one who remembered that he needs to step contralaterally and then swing. The other was a very skillful Asian child that tried to teach the previous boy the skill of striking. It seems that Brian's motivation, attention to instruction, observation of his friend's demonstration, and practice of striking in almost every free choice time in which striking was there (according to fieldnotes), may have helped him to move forward without going through T2 and T3. Another explanation is that not all children need to go through all these transitions to get to mature forms of striking. Or that teaching, when combined with the motivation to do the skill, speeded up the learning of the skill. The stage that follows after the three transitions is Stage C.

Stage C

> The movement characteristics of this stage are given by an initial shift of body weight to the back foot with elbows high, bat resting on shoulders, and the body turned away from the oncoming ball. This is followed by a contralateral step (big stride forward) with change of body weight, a perpendicular swing with arms straight at the point of contact with the ball, and the swing continued around the body after ball contact.

The rotation of the body is accompanied by the shift of weight. Documentary evidence shows that in this study seven boys out of the eight tested moved to Stage C, especially when the ball was tossed. When the ball was on a cone they demonstrated the characteristics of transitions. Only four boys were at Stage C in both conditions. Only two girls moved to Stage C. The stage was demonstrated when striking a ball placed on a cone. A tossed ball yielded different movement characteristics that represented transitions in the girls' group. This documentary evidence seems to indicate that most of the children were in one or another form of transition. The children that demonstrated stability in the two testing situations and across trials seem to be the ones that meet the movement characteristics of Stage C.

Analysis of the corpus of data showed that children, both boys and girls, can show at one time movement characteristics of Stage C and then go back to transition, as if they need to reorganize again the movement until it becomes the stable pattern. An example representing this occurrence is Becky who, after moving from Stage A to Stage C without passing through stage B and transitions, went back to different transitions. T1 and T3 were demonstrated on video during the testing day on May 7. From a teacher quote on May 24, the teacher wrote, "Becky was sometimes using the contralateral step and at others using the ipsilateral step." Another case was Matthew who, on the April 15 and 18 videotapes, demonstrated Stage C and transitions. By the May 8 testing time his pattern was stable at Stage C.

Young Chul was another case who showed a contralateral step (April 16, videotape), then turned around showing T2 (April 23, fieldnotes) and showed T3 with a ball on a cone (May 8, testing); and, finally demonstrated a Stage C when the ball was tossed (May 8, testing) (see Figure 5 on page 174 and Figure 12).

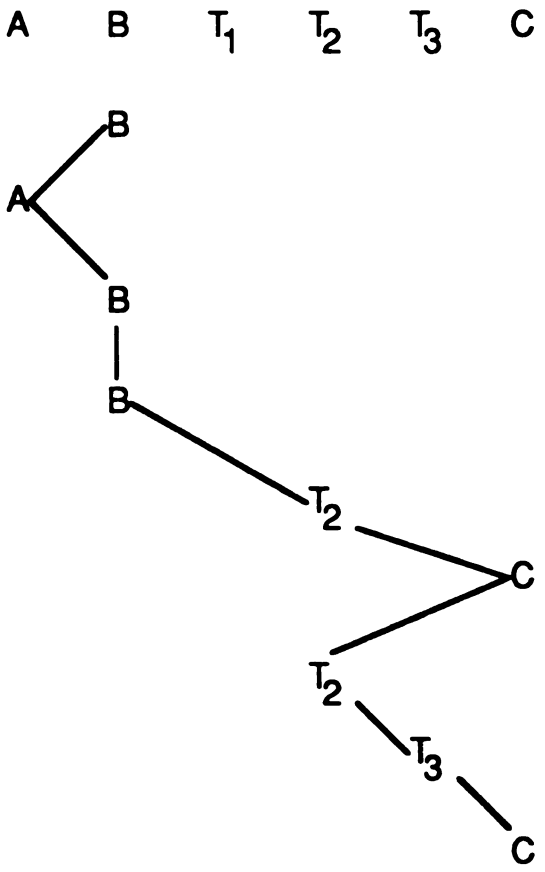


Figure 12. Progressing through the ABC Striking Sequence (Young Chul)

These typical cases seem to support the notion that the development of the striking movements occurs in an evolving fashion, and involves constant reorganization. This evaluation depends on the conditions in the environment, including practice, instruction, and confidence in movement.

Summary

An ABC striking sequence was described. The way children approach the ball seemed to express different intentions in the children's actions, and thus seem to be associated with children's style of interaction discussed in Chapter 5. These differences in the early ways of approaching the ball elicited separate Stage A's for the girls and boys. These differences in the early stages diminish as children move to Stage B. From Stage B to Stage C, three transitions (T1, T2, T3) were observed in both boys and girls. These transitions were oscillatory movements, changing from one trial to the next. Therefore, the trajectory of children's movement over time was not linear, instead the description of movement over time was more likely a zig-zag line. Regressions among transitions and stages were characteristic of movement development in this study. The form of presentation of the ball, the use of strength, and the intentions of the action all influenced the striking motion and consequently, the body movements. It seems that children move from stability to instability in order to move toward more mature forms. It also seems very important to recognize that the transitory aspects of movement are key points toward movement development. Furthermore, it seems as though movement is transformed by the demands of the environment, and that during this early childhood time rudimentary forms of movement are kept in memories and can be used again, as needed. A great flexibility of movement seems to exist during this time that allows for a lot of adaptations and additions. The most stable and efficient form of movement observed

was Stage C which corresponds with the stage four described by Seefeldt and Haubenstricker (1974).

CHAPTER SEVEN

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

The purpose of this chapter is to provide an overview of the study and its findings, as well as to reflect on the significance of these findings and their implications for teaching and research. The chapter has been divided into three sections. The first section provides an overview of the study, including the research questions, methodology, and findings. The second section discusses the major conclusions of the research. The third section reflects on the implications of the study in the teaching and learning of fundamental motor skills, particularly striking, and in future research in the area of motor development.

Overview

The present study has been an empirical effort to examine closely how children interact when learning fundamental motor skills and how they progress in the development of striking while participating in a motor skill program in their preschool center. Striking was selected as the specific fundamental motor skill to examine in order to provide a narrow focus to the inquiry as studying all the fundamental motor skills in detail would have been an unattainable goal, especially using this methodology. However, more specific reasons also influenced this decision. Striking has been the fundamental motor skill sequence that showed the greatest variability in children's progress along the continuum of the sequence. It has been noted that some children move in lineal order from stage one to stage four, while others skip or omit a stage to proceed in the sequence. Still others jump one stage and then seem to regress before moving toward a more mature stage. In addition, in this sequence a great amount of

inconsistency between trials has been observed at testing sessions. Furthermore, cases of children performing at stage three were rare. In conversations with researchers in the area, there was a common concern about this developmental sequence and comments about need for continued work on it were expressed. In other words, more research seemed to be needed to understand what was going on in the development of mature striking behavior.

In addition to these concerns about the striking sequence itself, the fact that hypothesized developmental sequences of striking were generated in laboratory settings where children were observed at intervals of six months (mixed longitudinal study, Seefeldt, 1972) or every three months (idiographic case by case study, Roberton, 1978) made the researcher interested in observing the development of striking from a more naturalist perspective. The observations were made almost daily from Monday through Thursday for six consecutive months. This study was carried out with the intention of determining how children learn this fundamental motor skill in their daily motor skill class interaction. Therefore, this study also examined how children in this setting interact among themselves when learning fundamental motor skills in general. In order to shed light on the above questions, the researcher negotiated entry to an early childhood center in which a program of motor skills was to be conducted for its third consecutive year. The program was run every day from Monday through Thursday. Fieldwork research methodology was used in this study. Six months of intensive fieldnote observations were accumulated during this time. In addition, several pictures of actions during, before, and after class were taken. Some classes were video- and audiotaped. Several formal and informal interviews with teachers, children, and parents were conducted; and, documents were collected with the purpose of portraying how children learned by interaction in the setting, and specifically, how the children

progressed in developing the fundamental motor skill of striking.

The main question addressed in this study was "How do children learn the fundamental motor skills in early childhood?" This general question remained the same throughout the study, and from this general question the researcher focused on one category, "The nature of children's interaction". In this category, several questions were proposed as possible directions for the focus, as is typical of this kind of research. During the early stages of data collection and preliminary analysis, it was soon discovered that there were too many questions to be answered. Once the researcher was faced with the way the events were unfolding in the setting, more precise questions were conceived; therefore, the researcher considered that of those preconceived ideas three questions offered major richness to the understanding of the main question. The two main questions that guided the final analysis were (1) How do children interact among themselves when learning the fundamental motor skills? From this question two more specific questions were asked. (a) Are there interactional gender differences in the way children learn the fundamental motor skills? If so, what are they?; and (b) Are there ethnic differences in the way children interact in the learning of fundamental motor skills? If so, what are they? and (2) How do children progress through the hypothesized developmental sequence of striking? The total body approach for striking developed by Seefeldt and Haubenstricker (1974) was used as a framework of the study. These questions remained the focus of the study and were addressed in the final analysis.

The findings of this study are highly interesting. The first question addressed dealt with gender differences that interact with children's learning of fundamental motor skills. This question was addressed first in the analysis because of its implications for the understanding of the second main question. The gender differences were found to deal with the way children learn. Girls were found to learn from a cooperative, caring and

sharing interaction in which they directly teach and learn from each other. Boys were found to learn from a competitive, individualized, and egocentric interaction in which they teach indirectly and learn by showing and by challenging other boys with their abilities. Thus boys and girls have different styles of learning at this early age. In addition, both boys and girls tried to maintain their interactional style of learning when dealing with the opposite sex. From this interaction, boys tended to benefit the most because girls continued with their cooperative style in their interaction with boys, while boys, also keeping their style, were competitive, individualist, and egocentric.

Part b of question one also was addressed in the chapter of gender differences because the case expanded on gender differences and culture. The findings showed that the Asian children in this group of boys and girls seemed to have a social interaction based on cooperation and support among them. This subassertion stood out as an interesting observation upon which to reflect.

The second question addressed dealt with the way children progressed through the hypothesized developmental sequence of striking. The finding showed that the way children move along the sequence was more complex than originally thought. Children demonstrated patterns that were slightly different from the hypothesized stages of Seefeldt and Haubenstricker (1974). These different patterns in striking began by the way in which children approached the ball. Children showed different interactions in their actions of striking a ball. Due to their different meaning of action or interactions, the body movements demonstrated by boys and girls were different. Therefore, the researcher described an ABC stage sequence of striking. In this stage sequence the differences between boys and girls are greater in the early stages than later in the sequence. The findings showed a Stage A for girls and a Stage A for boys, then they both moved to a common Stage B. Three transition behaviors were found between Stage B and

Stage C. In addition, children's movement along the sequence does not show a linear pattern. Instead they move back and forward from Stage B to Stage C along the transitions until they consolidate the characteristics of Stage C which represents the most mature form of striking.

Conclusions

This section of the study presents some of the major conclusions in two broad aspects: (a) how children interact when learning the fundamental motor skills in general, and (b) how they progress in the development of the fundamental motor skill of striking.

In the first and more general aspect, the main conclusion of the study was that there were gender differences in the way children socially interacted when learning fundamental motor skills. Girls and boys learned through different ways of interaction among themselves. The way girls interacted while learning and participating in the activities planned by the teachers was based on cooperation, mutual care, support, and help for each other. The social interaction was more important than the objects with which they were playing . Thus, social interaction was the main focus of the girls' learning style. The activities or the play objects were means that provided them opportunities for interacting, opportunities to know more about each other, and opportunities for establishing connections with others. Their similarities were sources of joy and happiness and led to the development of friendship. For girls it was very importance to look alike, have the same things (accessories, clothes, balls, colors), or perform the skill the same way (throwing in the same manner). They taught and learned from each other to attain this goal. Having the same or similar clothing in terms of colors, fabrics, fashions, or models of clothes or having the same or similar accessories

such as necklaces, rings, or headbands was a point of connection for friendship development. Those similarities provided reasons to be together or close to each other at all times possible or to do the same kind of jump and attempt the same activities. Girls were striving for similarities among themselves in every aspect during the gymnasium activities. They preferred playing with someone rather than by themselves because they would rather have social interaction with someone than with an object. When interacting they worked a long time on task; when with objects alone, they tended to get bored and started searching for eye contact and smiles from friends.

The way the girls interacted in this setting seems to refute the general idea of young children being egocentric as generalized by Piaget's Theory (1952). In this study, girls were striving for social interaction and cooperation. They showed care for each other. In addition, when considering these girl's pro-social actions and concern for the feelings of others, they seem to correspond with Chodorow's (1974) analysis of female personality, in which from very early in life females define themselves in relation to others. Likewise, the way the girls in this study interacted seems to correspond with Gilligan's (1982) studies of adolescent girls in which girls showed concern for their action and its consequences, and seemed to analyze the presented conflict from a different perspective in which continuity of relationships and concern for the consequences of one's action on others is very important. Girls seem to interpret and analyze the consequences of their actions from a different perspective. Although in Kohlberg's (1958) stage theory female moral reasoning is considered to be at lower stages (commonly stage 3), this study seems to challenge this stage of moral reasoning by showing that these particular girls have a different social and moral awareness. From a dynamical systems perspective, it seems that the social interaction style of girls can become a limiting factor to learning the fundamental motor skills, particularly striking.

The social interaction and learning styles of boys was different from that of girls. They showed a competitive, individualized, and egocentric interaction style. They were very proud of their individual abilities. They seemed to value their abilities in comparison to others. When confident in the skills, they wanted to show their abilities to adults and also talked about them. They liked to be the center of attention (to show or demonstrate) and, when asked to play with partners, liked to have the teacher as partner. They looked for teacher attention either by not choosing a partner, by choosing the teacher, or by misbehaving. Boys showed a strong connection with the object (running after the ball everywhere the ball went even when another person went for it, and always wanting to have their own ball to play with). At the same time, they showed a power relationship with the ball either by talking or yelling at it, or by showing their strength by the way they interacted with the ball (hitting hard or making noises of strength at the time of hitting). They competed by trying to do the activities better, harder and farther, but at the same time, this competition encouraged other boys to try to imitate, thus the goal was to do the activity better than the other. They were striving for differences among themselves, showing off their individual qualities. They demonstrated an individualized interaction with themselves even when in groups. The boys' interaction was different than that of girls, thus they were egocentric corresponding more with Piaget's (1952) stage theory at this preoperation phase. From a dynamic systems perspective, it seems that since boys were more egocentric and value their individual physical abilities their social interaction was not a limiting factor, instead they were challenged and motivated by others abilities as well as their own, thus their individualized style of learning aided their development of motor skills.

Gender differences in their styles of learning were maintained when interacting with the opposite sex. Girls made efforts to interact with boys, inviting them to play a

game or chasing them to give a soft hug. They also tried to teach more accepted social behaviors and manners by telling them what was right or wrong or what they should or should not do in the specific situation as pointed out by Macoby (1990). The interaction of boys with girls was physically rough and aggressive, thus intimidating and scaring some of the girls. Others seemed to accept or understand the boys' behaviors, thus showing care for them. They continued trying to teach them still within their style of interaction by: (a) using a soft voice, (b) making eye contact, (c) getting close, and (d) showing a calm behavior even when being physically hurt. The girls showed patience and seemed to wait for changes in the boys' behaviors corresponding with the findings of Lever (1976), Goodwin (1980b), and Gumperz (1987).

The cooperative style of interaction and learning in girls was also present when attempting activities with boys as partners. The girls were the ones passing the ball to boys so they could hit; they also let them have many more trials at determined activities such as hitting a suspended ball. They laughed and smiled at the way the boys acted. They passed the ball softly and easily so the boys could hit, and the girls had a hard time attempting the activity because the boys often tossed the ball either too high, too far away, too low, too fast, or too hard. This interaction seems to represent sex stereotype roles and behaviors of the society (Griffin, 1983). However, although the girls seemed to enjoy the interaction. This interaction appeared to be more beneficial for boys in terms of actual skill pattern. It is important to recognize that this way of interaction places girls at a disadvantage when considering opportunities to learn depending on practice. Practice is a very important aspect in the development of movement. This factor has been pointed out by several researchers (Dusenberry, 1952; Hilgard, 1932; Dennis and Najarian,1957; Zelazo, 1983; Thelen, Fisher, and Ridley-Johnson, 1984). The lack of actual skill practice can be a critical factor in the development of movements

for girls. Maybe one of the reasons why girls begin to lag in the manipulative skills is that those are the skills in which they share equipment. Not only do girls have no practice at all when intimidated by boys but, when in an apparently happy interaction, because of their cooperative style and willingness to help others, they have less actual practice time. In addition, when in apparently happy interaction (they laughed and seemed to be having fun) it was very hard for them to be successful at the skills because of the way the balls were presented to them (boys sent the balls too far, too high, too fast, too hard). This situation may diminish their self-confidence in their movement abilities thus affecting their future participation in those types of skills. All of these factors, together with the apparent (a) less experiential background in manipulative skills (less mature form in the manipulative skills), (b) less teacher attention due to their compliance with rules and quiet manners, and (c) less chances of working with teachers place the girls in a disadvantageous situation when learning fundamental manipulative skills.

The last important conclusion of this first broad aspect dealt with a cultural pattern found in the study. The Asian children, boys and girls, in the setting demonstrated a social pattern of interaction for learning the fundamental motor skills based on cooperation and support among them. This pattern was similar to the way the girls in the setting interact among themselves. This group of Asian children protected, cooperated, helped, and taught each other independently of gender, boys with boys, boys with girls, girls with girls, and girls with boys, thus representing the cooperative behaviors traditional of this culture (Pyong Gap Min, 1988). They also showed concern and care for other children in the setting that belonged to ethnic groups different from their own. They showed their concern or care by either getting close to a crying child, expressing their affection verbally or physically to another child, or by teaching other

children. This aspect was interesting since it seems to translate their cultural value to other children around them, independently of culture or gender.

The second main aspect of this investigation dealt with the way children progress in the development of the fundamental motor skill of striking. The way children progressed in the hypothesized developmental sequence showed both similarities and differences with the total body approach striking sequence developed by Seefeldt and Haubenstricker (1974). Since they did not completely fit the description of stages as given by the total body approach, the researcher developed an ABC striking sequence that fit the data and showed similarities and differences with the already established striking sequence.

One of the main conclusions of this second aspect is that the way children develop the fundamental motor skill of striking is more complex than the way it was originally thought. First of all, the idea of a linear relationship when going from stage one to stage two to stage three to stage four was not the typical pattern demonstrated by these data (see Figure 6 on page 175 and Figure 5 on page 174). Instead children moved back and forth between stages and transitions, thus evolving on previous motor behavior and returning as many times as needed before they consolidated at a mature stage. These conclusions seem to support the study of movement development and movement control from a dynamic system perspective since in this study there is a non-linear relationship and many other systems (strength, style of interaction, actual interaction, the task, background experience) appear to be interacting in the development of the striking skills. Secondly, the differences in children's styles of learning interacted with the way they approached a ball for striking and consequently influenced their body movements. Therefore, at the beginning of the sequence, there were differences in the way boys and girls approached a ball (indicating the meaning of their actions) and

consequently differences in the way they moved their bodies. These differences in the meaning of actions seemed to act as rate limiters and therefore changed the output of movement behavior. When the meaning of actions were similar, differences diminished.

In the way they approached the ball, girls tended to touch the ball softly without imposing force. They enjoyed this type of touch and the observation of the ball slowly swinging at their touch. Boys hit the ball harder with the intention of hitting it somewhere. This way of approaching the ball clearly represented the two different styles of learning. The first based on cooperativeness and care and the second based on competition and aggression. It seems that at this early age children had already perceived differences in their roles, as found by Michael (1970) and Hamilton (1977). These differences in the way boys and girls approached the ball was very evident during the beginning of the study; however, as this study progressed, the patterns changed and the touching approach of girls changed progressively to one more similar to the boys' approach. However, although body configuration differences between boys and girls diminish along the continuum toward more mature forms of striking, girls always used less force than boys, and were less aggressive in their actions. Furthermore, during the time of the study, not one of the girls in the group reached the mature pattern; therefore, the complete disappearance of these differences was not observed.

Some boys, on the other hand, reached mature patterns in the striking skill. Strength in boys may be a factor contributing to learning, thus working on strength may develop their fundamental movement quickly, and may help in the synchronization of all endogenous systems intervening in the movement action. If strength is in fact a factor that aids the development of striking, as we usually hear teachers or coaches cueing children with the expression "hit it hard", "strike hard", maybe this factor is easily adapted by boys due to their competitiveness, and egocentric interaction. Strength then

could be seen as a scalar parameter in the development of striking for both boys and girls. For girls, since they do not want to hurt anyone (again social and personality systems are in conflict with skill development) because they are concerned about their social relations with others, using force or strength could hurt someone. This situation may be reflected by the fact that they cover their mouth when they hit their ball harder than usual or almost cry when hitting someone that runs in their way. Thus, if strength is a scalar parameter factor required to develop mature striking behavior, girls lag behind not so much because of differences in strength, muscle, or other structural differences (minimal differences at this age, Fountain 1978; 1980) but because of difference in intentions and conflict with the consequences of the use of that ability (Gilligan, 1982), which is commensurate with the girls' style of learning, as described in this study.

Young boys and girls demonstrated two slightly distinctive patterns that were called Stage A for girls and Stage A for boys. In Stage A for girls, girls touched the ball softly with semi-extension of the striking arm to immediate flexion back to the level of the chest. The arm action was stopped as soon as contact with the ball was made. The feet were stationary and the body faced the ball. The action of the striking arm for girls was incomplete. They did not extend their striking arm. A very small amount of force was used as they wanted to touch the ball softly.

Stage A for boys was slightly different. They flexed the striking arm with the hand facing upward at the level of the shoulder and then swung from there, upward and downward (choppy) with a vertical motion that continued downward after contact with ball. The striking arm was completely extended after ball contact, the feet were stationary, and the body faced forward. The action of the striking arm demonstrated by boys was complete; they extended the striking arm almost before contact and continued

the motion downward after contact. Few boys were at this stage. Some of them demonstrated variations such as bending their knees and jumping up on two feet to reach for a high hanging ball, their action was totally frontal facing the ball with their bodies. The position of the hanging ball seemed to motivate them to do this action, thus once again the intention or motive to do something and the environment context modified the actions performed by the body. For instance, in this case the boys added a jump to the movement to reach and hit a high ball. Likewise, in the case of the girls at Stage A, they stopped their arm action because they wanted to touch the ball softly to make it swing. Another interesting aspect is modeling after a friend or a significant one; both boys and girls seemed to learn by watching the way their friends moved. These variations in movements and movement intentions give possibility to the idea that having background experience with the kind of movements of the task may help children to adjust quickly and adapt to new but similar movement demands. If that were true, then it could be the reason for these differences at early stages. Only a few boys were in early stages, while the majority of the girls were at Stage A as previously described. Boys may have had previous experiences in striking before entering into this program (two boys' parents reported that their boys played baseball with their father and neighbors even when the age difference was more than seven years) while girls may have experienced different movements such as skipping and galloping and other manipulative tasks such as sweeping with a broom.

When progressing from Stage A (boys and girls) to Stage B, the children modified their movements in two areas. First, the striking arm started the motion with a horizontal swing and the trunk rotated with the swinging arm. Second, the body position changed from facing the ball to a side stand next to the ball. The swing described a half circle at the level of the waist and was stopped after contact with the ball. The feet were

stationary and the arm semi-extended. Positioning the hands was difficult for children at this stage, especially for girls. They were uncertain as to how and where to hold the bat and which side of their body was supposed to face the ball. Boys moved along the sequence very quickly, thus changing their body's movement characteristics from one set of trials to the next set of trials, while girls were in Stage B for a longer time. This observation in Stage B strengthened the idea mentioned earlier about the previous background experience in movements similar to those needed to accomplish the task. Maybe previous background experience provided more advanced role models for boys, while girls had less background experience and were provided less advanced role models in that particular skill. Some children may have had greater or more significant previous experience in striking or in similar movements than others. This may be why girls showed greater difficulties than boys to learn the appropriate hand position when holding a bat or a hockey stick. Boys may have had more experience holding bats and striking at balls, but the way girls tended to hold the bat was similar to the way one holds the stick of a broom to sweep a floor. The hands were placed at about 10 inches from the top, and approximately four to six inches apart, with both palms facing the stick. The thumb were facing up and on the top of all the fingers. Arms were flexed, with the stick placed parallel to the body. Boys held the stick differently. The stick was at an angle to their body and the ground. Their hands were placed about four inches away from the top of the stick and about three to four inches away from each other. The thumbs were both facing down with the rest of the fingers on the top. Their fingers were pointing upward. Brooming is a task that, for a long time, has been considered a woman's task and one in which girls may have some background experience, either doing it themselves or seeing their mother doing it. This experience is probably the one form of movement in the girls' repertory more similar to the new movement task. This implies

that each child comes to learn new skills from previous experiences from which he/she builds. Moreover, there could be interaction with the gender style of learning motor skills. Probably girls were more familiar with sweeping movements. But also the way the hands were placed on the stick of the broom set the broom in a safe position, lessening the possibility of hitting someone with it . Since girls tended to be caring and showed concern for others in their relationship (Gilligan, 1982; Sassen, 1980), they may have chosen the broom holding style as a safer way to handle the stick without hurting anyone. This helps explain how the previous experiential background in movement, as well as the gender interactional style of learning can intervene in the development of a fundamental motor skill.

The transition from Stage A to Stage B occurred as a result of a change in body position (sideways to the ball). When sideways to the ball the only way a child could hit the ball was by bringing the bat into a horizontal swing. A vertical swing would not have allowed useful contact with the ball, and hitting or touching the ball was the overall goal of the children during these types of activities.

Progress from Stage B to Stage C was more complex. Three transitory patterns of movements were observed, and children's variability along these transitions and stages was very common. They moved back and forth between the transitions, even during a set of trials, until they became stable in a set of movements and body configurations that resembled the Stage C of this sequence. At this time, children repeated these movements and body configurations with great consistency even when the conditions of the presentation of the ball changed. Most of the children passed through all of these transitions; however the order varied tremendously. Some boys achieved stability at Stage C during the study. By the time this study was concluded, however, the girls did not show stability at this stage. Some children showed a Stage C and then went

back to a transitory form of movement.

Transitions represented a period of instability in movement configuration. The children's movements changed in short periods of time, even between trials. Three patterns were commonly observed during this time and were called transition one, T2, and T3. This was the most common order followed by children in the setting; however, there were changes in order and fluctuation back and forth all along from Stage B to Stage C.

Progression from Stage B (sideways position, feet parallel) to T1 occurred as children added a turn of the forward foot in the direction of the strike action. The body also started to rotate the bat first in the backward direction to the striking side, then with the swing full derogation continued and the arms and bat went around the body to the other side. The bat was started from a position hanging behind the child's back, and elbows were very high level with the shoulder or higher. Early in the study, this transition was more often seen in boys than the previous Stage B, thus suggesting that while more boys were at T1, most of the girls were at Stage B. Girls also stayed longer in Stage B (see Figure 5 on page 174 and Figure 6 on page 175).

T2 was characterized by a swing that continued on a turn around the body with the bat. The whole body rotated on the front foot, moving the back foot around and off the floor, the bat's movement came up above the shoulder diagonal down and forward around the body. This transition was shown by both boys and girls; four out of the nine girls constant in the study demonstrated their passage through this T2. Of the remaining five girls, two did not progress up to this level during the time of the study and one jumped from Stage A to Stage C and then returned to T3. Another jumped from Stage A to Stage C and then returned to Stage B, and another one seemed to skip this T2. Those boys that showed this T2 transition passed through it rather quickly while girls stayed a little

longer. Boys also moved forward to more advanced stages. Girls showed joy and happiness while performing the movement characteristics of this transitional level, they seemed to enjoy this particular movement more than the boys. This movement evidently added some perceptual feelings to which the girls seemed more sensitive. Since this rotation increased the speed of their swing, they hit the ball harder. Some of the girls showed affection and care for the ball before or after performing this movement (hugging, kissing, or talking to the ball), thus showing the consistency of their interactional style still interacting in their striking movement.

T3 was characterized by an ipsilateral step with a diagonal swing with the bat coming forward, with little body rotation. All four girls that showed T2 went to T3. In the case of girls, this transition seemed to be the next following transition two. The step characteristic of this transition tended to stop the total rotation of the body. In the case of boys, more variability was seen. When they showed transition two, they either moved to T3 or back to T1, or to Stage C. From the group of nine boys only two did not pass through this transition. Both of these boys showed high motivation for this skill and always practiced the skill when the station was available. In addition, one of these boys, who was an Asian, was at one point teaching the other one how to strike. He gave a positive comment to him about his swing, thus suggesting that motivation for the learning of the skill, together with interaction, demonstration (role model), and practice, helped speed up the learning and the passage through these transitions. An even more astonishing case was the case of Becky and Soon-He who jumped all transitions from Stage A to Stage C after receiving directed instruction by one teacher. This instruction included a manual and visual demonstration followed by continued feedback about the way one of the girls was performing the movement. Immediately after this directed and specific instruction and demonstration Becky moved from Stage A to Stage C.

After her Soon-He, who was observing her friend perform the skills, showed the same movement characteristics, although with less force. They repeated this kind of movement when the conditions of the ball were changed during the same day. One of them performed the movement characteristics with less force while the other performed the movement with similar force to that used by boys but showed concern, covering her open mouth with her hand after striking. Her concern could have been for either the ball or the fast trajectory of it and the possibility of hitting someone. While performing the skills in the way the teacher taught and showed her it was very difficult for her not to hit hard; however, her expression after the movement seemed conflictive with her style of interaction. Probably girls have to fight with their gender style of interaction in order to perform skills that may seem contradictory to them with the way they want to be and behave (for instance, those manipulative movements in which force is used to propel or hit objects). Also there is the possibility that girls all along chose to do the body movements as shown or requested but not to use all their strength, because that will conflict with their way of interaction or with the way females are socialized. As pointed out by Brownmieler (1984), males' aggression is a learned response but for females it is a learned inhibition. Probably females learn to inhibit the use of force or strength because they associate it with aggression.

After these girls were in this particular Stage C they moved back; Soon-He to Stage B and Becky to T3. Probably they both felt more comfortable at these stages, although able to perform at higher levels, they apparently conformed to their style of interaction. Perhaps more encouragement, practice, and feedback were needed to help them to continue performing at this stage or to feel comfortable with it. Or perhaps they both need to reorganize their movement at other transitional levels. Further research into these interactions is needed to enhance understanding in the areas discussed.

In Stage C children start their movement from a sideways position of the body with respect to the ball, and from there they first shifted the body weight to the back foot with elbows high and away from the body with bat resting on the shoulders. Then the body is rotated backward to then swing forward with a big contralateral step shifting the body weight progressively to the forward foot. The swing was perpendicular with arms straight at the point of contact with the ball. This swing continued around the body in the dissipation of the force after ball contact. Seven out of the nine boys studied moved to Stage C during the study when the presentation of the ball was in a tossed manner. However, they showed transitory patterns when the ball was on a cone. The same happened with some girls, but the other way around. With balls on cones, two girls showed Stage C; when the ball was tossed, transitory stages were observed. Although all boys showed at some point Stage C only four boys were consistent in both conditions, thus showing stability at Stage C. Only four girls showed Stage C, however none of them was consistent at that stage.

This study permitted one to appreciate that the development of striking occurs in an evolving fashion in which children are constantly reorganizing movement to meet the demands of the task as well as to correspond to their motivations and styles of learning. Regression and variations in the body's movements were the rule of movement development rather than the exception. Instead of a linear relationship toward more mature forms, they described a zig-zag evolving relationship. Dynamical systems theory seems to offer explanations to the way children in this setting develop movements. The environmental demands and the interactional style of each gender interact with the learning of fundamental motor skills. Direct instruction can have a tremendous impact on speeding up the learning of the skills. Instruction and practice can greatly enhance confidence in movement. The movement experiential background is

of importance in the development of movement. Rudimentary focus of movements or previous movements used are kept in memories and can be used again in order to reorganize new forms of movements maybe until more mature forms of movements become consistent patterns. Maybe the differences in the development of striking found here are the reflection of several minimal by itself differences that when summed all together can limit and slow down or accelerate the learning of motor skills. A great flexibility to adapt, adjust, and modify movements seemed to be a special characteristic present at this age which allows room for the learning of new skills.

Implications for Teaching and Learning of Fundamental Motor Skills

The results of this study are fascinating in their contribution to the field of education and motor development. They are frightening and encouraging to those who share concern for the education of young children, future teachers, and parents. The development of movement is a very complex process and several factors can intervene to enhance or to inhibit movement development. Probably the most significant aspect interacting in this process is the one dealing with gender differences at such an early age. Even more astonishing is its consistency and prevalence during all motor skill activities within the study, and during activities with the opposite sex. Another significant contribution of this study is its contribution to the understanding of the way children in this setting progressed to more mature forms of striking.

This study provides teachers, parents, and researchers with information about the particular way girls and boys in this setting enjoyed learning. If girls enjoyed learning from each other, we as teachers and parents may consider activities in which this interaction can occur as a way to stimulate their learning style. Teachers need to be aware of the connection and bonds that seem essential and relevant for girls' interaction

and participation in the class activities, thus providing joyful learning experiences to this group, with plenty of practice and more instructional attention. While at the same time, teachers should be aware that boys became strongly connected to the object (for instance, the ball) and they benefit from a relationship of one ball for each child. Recognize that this type of activity can become meaningless for girls because they are always searching for interaction with others. They would rather play with someone than with the ball alone, even if the game consisted of setting the ball on a cone or passing the ball to another person (boy or girl) without having their own trial on the activity. Probably the traditional style of teaching motor skills fits boys' style of learning better than the girls' style of learning (e.g. everybody has a ball and practices skill against the wall). In addition, teachers and parents need to be aware than due to their competitive, individualist, and egocentric style of learning, boys strive for adult attention (teachers, adults around, parents). They can request attention by verbally asking for it, by physically demonstrating their abilities until they capture the teacher's eyes, or by breaking rules or misbehaving even when these last two situations have negative consequences for them as pointed out by Maltz and Borken (1983), Sheldon (1989), Gumperz (1987), and supported by this study. Boys need attention and adults need to fulfill these boys' needs. But we also should be aware of the compliance, cooperative, and caring behavior shown by girls and to compliment them, to encourage boys to behave more cooperatively, and to help girls to be more assertive and feel more confident about the way they behave and the way they move. Since boys learn by challenging others with their abilities, demonstration of their abilities may be beneficial to other boys. It is probably important to provide opportunities for boys and girls to interact with their own group as well as to mix them, in order to provide both with more opportunities for safe participation since at times boys intimidated girls to the extreme of halting

participation. Opportunities to learn about each other and to be exposed to the ways in which others interact are also critical. To aid in this aspect, it seems important to teach different levels of force to both boys and girls since both will benefit. Boys tend to always use the maximum force in any propelling skill or activity, and girls seem to have a conflict in using all their strength.

Parents and teachers need to be aware that boys tend to get more attention due to their eagerness, competitive and individualist style of learning, and misbehaviors, while girls' compliance with rules or willingness to cooperate with others seems to provide them with less teacher instructional direction. This direct instruction and practice opportunities are critical for girls because they also learn from each other. They will cooperate and help to move other girls in the continuum. Otherwise, the role model they may follow can hold back their development of movement or even purposed regress it as occurred in the case of the catching scenario mentioned in chapter five.

A beautiful contribution to the study was given by the Asian children's ways of interacting and participating in the setting. They were supportive, cooperative, and helped each other in any skill or activity in which they were together. They did not intimidate the girls of their group, and protected some children. Probably the biggest difference between these children and the other children in the setting was the lack of competition among them. This situation seems to be ideal for movement development and learning at these early ages.

Another contribution of this study for teachers, parents, and researchers was a greater understanding of how children in this setting progressed in the development of the striking movement. Children's progress in the ABC striking sequence was characterized by an evolving circular fashion of movement in which they move back and forth as they are reorganizing their previous movement. Therefore, variability in the

development of this skill should be expected and seen as a sign of progress toward mature forms of the skill. A variety of conditions, as well as repetition of previous kinds of activities, can be beneficial. They can provide greater opportunities for this reconstruction or reorganization of movement to occur. Furthermore, since the way children move can be directly related to their gender interactional style of learning, it is important to bear in mind when teaching that the same activity may be performed differently to convey different meanings and interactions. Therefore the meaning of the activity can be openly expressed to add variety and to encourage both boys and girls to perform, attending to their different meaning for that action. Likewise, it will be beneficial for both boys and girls to expand their movement capabilities using different intentions instead of always choosing a movement action with only one intention in their action, for instance hitting hard. Boys could probably benefit by learning to do skills softly while girls could benefit by learning to use more strength in their skills. Both may learn to value and recognize movement from other perspectives, especially when their own perspective is considered, valued, and used in different movement activities.

The movement experiential background of children was found to interact in the way children interpret new forms of movements. Teachers, adults, and parents working with children should expect these variations in children's experience background and use patient help to establish links that aid the adaptation from whichever level or type of movement to the new one. Therefore, the same movement may take longer for some children to accomplish (be easy for one group and difficult for another group independently of gender). Directed instruction and practice, free practice, and directed practice, can develop children's confidence in the new movement. Confidence is really important because it contributes to the joy of learning to move and stimulates movement to learn. Body position in relation to the ball was also critical to develop changes in

movement configurations, during the early stage, specifically when moving from Stage A to Stage B.

The greatest implication for teaching in this study was demonstrated by the effect that direct teaching using demonstration, manual directions of the movement, and corrective feedback, produced on two girls in the setting. These two girls showed rapid progress from Stage A to Stage C without passing through the transitions. Thus, this shows the importance of demonstration using children and teacher, and also the importance of the teacher's knowledge of what is the focus of the particular activity in the development of children's movement. Likewise, this issue showed the importance of providing sensory cues or perceptual cues as she did when she touched the girl's leg and arms and the importance of following up with corrective feedback, allowing the girl the opportunity to reorganize her movement. The clarity of explanation similarly seemed to help the movements of the next girl in line who also performed the movement with the characteristics of Stage C in the ABC striking sequence. This second girl may have benefited from all the demonstrations given to her friend or benefited from seeing her friend's movement. She then invited her friend as a response to their learning style and willingness of being alike. In any case, the demonstrations, explanations, sensory cueing, and corrective feedback were beneficial and speeded up the progress of these two girls in the ABC striking sequence. Since boys like to show their abilities, teaching others indirectly and girls like to learn from each other, teaching others directly, demonstration among them may be a very useful resource for learning and progression along the sequence. This demonstration can be expanded, monitored, and guided by the teachers, adults, or parents interested in helping their children to learn motor skills.

Implications for Further Research

The findings from this study offer new avenues for research in motor development and the art of teaching movement to young children. In the case of motor development, this research study offered a new insight to the understanding of the developmental sequence of striking, clarifying the complex and difficult process of the development of this skill. This allowed one to see, as demonstrated by these children's movements on a daily basis, similarities and differences with the hypothesized developmental striking sequence developed by Seefeldt and Haubenstricker in 1974. Particularities in the stages, as well as transitions, added new knowledge to our understanding. This research does not invalidate the hypothesized developmental sequence. Instead this study enriches previous knowledge, providing light and explanation to questions and concerns on how progress occurs in the sequence. The explanations offered in this study responded to the characteristics of this population. Furthermore this research provides a rich picture of how children learn movement in their continuous interaction and by using different gender styles of interaction in their daily learning. Further research needs to be conducted in order to develop generalizations. Generalizability, however, is up to the readers considering the common characteristics of the population represented in this study and the similarities with their setting. The explicit and descriptive characteristics of this methodology allow anyone interested to analyze how children's movement in this setting occurred in a vivid real life experience. From this analysis each person can obtain the most useful aspect that best applies to their teaching or research situation. More specific implications for future research are the following. In this type of research there are many decisions that need to be made during the data collection process. It is very important to transcribe the notes continuously and, periodically, to have an overall analysis of what is there, what it

means, and what direction should the researcher follow. This procedure releases tension and provides direction in the study. More than one observer/researcher in the field at the same time will enhance this type of research, because even in just one area of focus, more than one event can simultaneously occurs. The single researcher has to choose which one to follow knowing they both are equally important. This research required a great deal of time, not only to collect the data and transcribe it, but to reflect continuously on it. Being in the setting collecting data and distancing from it are equally important. Likewise, it is better to have a small population than a large population. Furthermore, it is highly recommended to use devices that enhance human senses, such as video and audiotape, pictures, or microphones. Human limitations need to be considered when collecting the data. Using these devices can enhance analysis and recall of situations in the setting.

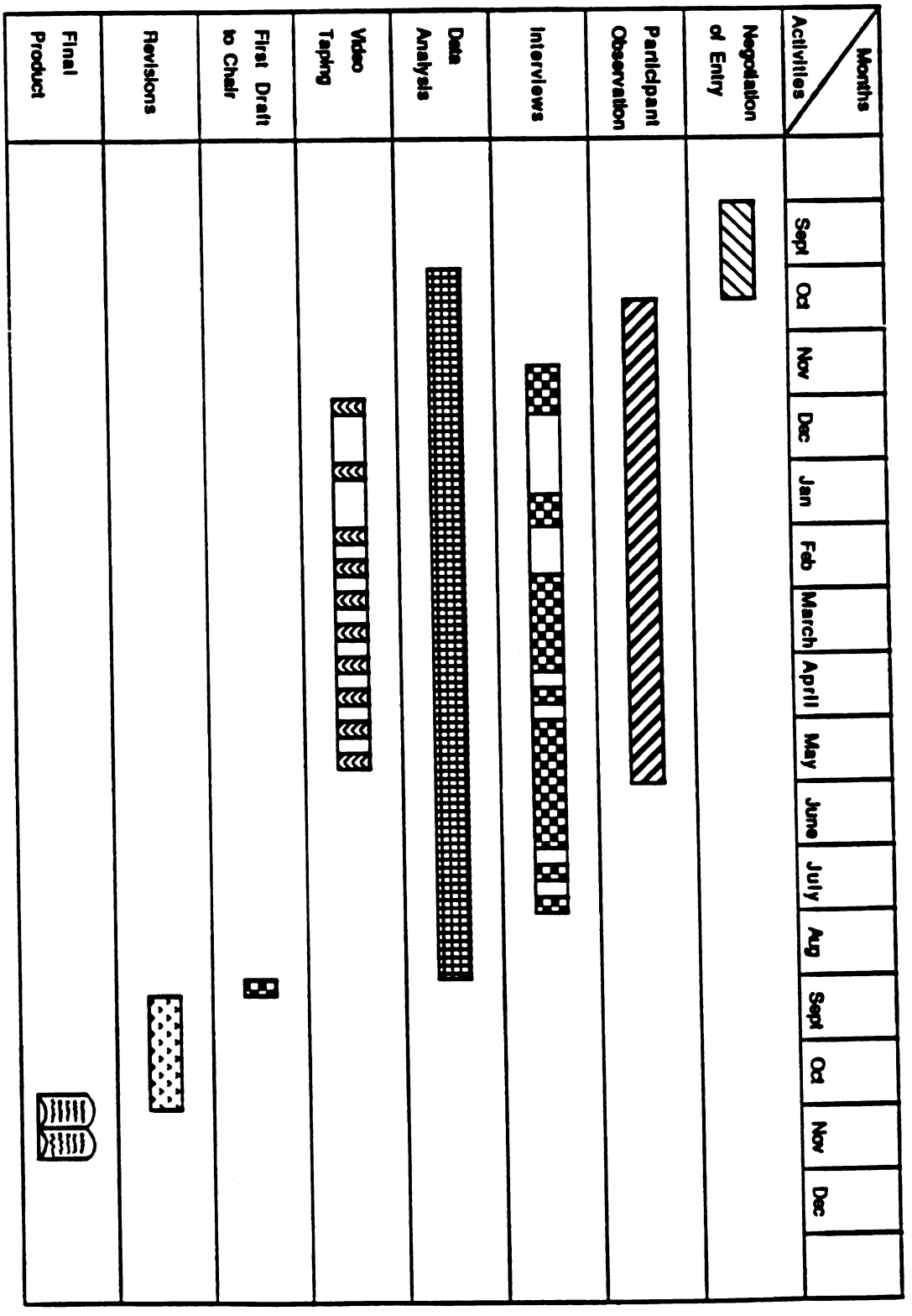
To this researcher's knowledge, this study is the first of its kind in the field of motor development. The research experience was marvelous, exhaustive, overwhelming, and exciting because of all the factors that were interacting in the every day activities of these children. Although overwhelming, this study allowed the researcher to see movement progress as it occurred in the natural setting of their preschool gymnasium activity with all the children's interactions while learning. The insightful, fulfilling richness this research gave to the researcher cannot be expressed in writing. However the benefit that this type of research can offer to the field is invaluable. Fieldwork research offers a new era to the field of motor development. All the fundamental motor skills should be studied using this research methodology in order to enhance our understanding of how movement develops during continued observation over time. The life span approach to motor development must use this perspective as an alternative avenue to find answers to the questions that are without answer in the field.

Understanding movement development will impact our knowledge on learning and the art of teaching. Learning can become more accessible for all groups if we really know how it can occur and what we, as teachers, do to help the process of learning.

APPENDICES

APPENDIX A

Dissertation Research Time Line



APPENDIX B

Term Plan, Fall 1990

WK 1

Introduction Week

- ST- Balance (boards, benches, vault)
- OC- Striking (balloons, paddles)
- OC- Kicking
- OC- Eye/Hand Coordination (hula hoops)

WK 2

- ST- Balance, Tumbling
- PF- Animal Walks, Exercises
- OC- Overhand Throw
- PF- Strength (scooters)

WK 3

Testing Week

- ST- Balance, Tumbling
- OC- Striking (balloons, paddles)
- OC- Kicking (bowling pins)
- PF- Strength (scooters)

WK 4

- ST/PF-Balance/Strength (ladders)
- LO- Jumping
- OC- Catching
- OC- Ball Bouncing/Dribble

WK 5

- ST- Dynamic Balance (beam and board circuit)
- LO- Leaping
- OC- Striking (suspended balls, paddles)
- RH- Creative Movement (streamers)

WK 6

- ST- Dynamic Balance(vaulting)
- LO/PF-Jumping/Strength
- OC- Overhand Throw
- LO- Galloping/Skipping

WK 7

- LO- Hopping
- OC- Catching
- OC- Kick/Punt
- NU-Ident. Nutritional Foods (clown bags)

WK 8

- ST- Balance (can stilts)
- LO- Leaping (hurdles)
- OC- Tossing/Catching (scoops)
- OC- Catching (scarves)

WK 9

- ST/PF-Balance/Strength (ladders)
- PF- Strength (scooters)
- OC- Striking (balloons and paddles)
- RH-Creative Movement (streamers)

LO = Locomotor Skills
NU = Nutritional Awareness
OC = Object Control
PF = Physical Fitness
RH = Rhythmic Fundamentals
ST = Stability

APPENDIX C

Term Plan, Winter 1991

WK 1 (January 7-10)
- ST- Balance (obstacle course)
- LO- Jumping (frog feet)
- OC- Kicking (tunnel)
- RH- Rhythms (sticks)

WK 2 (January 14-17)
- ST- Balance (bean bags)
- PF- Aerobic Endurance (jump ropes)
- OC- Striking (paddles)
- OC- Catching (scarves)

WK 3 (January 21-24)
- ST- Balance (tumbling)
- OC-Eye/Hand Coordination (hoops)
- OC- Striking (baseball)
- OC- Throwing (rainbow sheet)

WK 4 (January 28-31)
- ST- Balance (hollow blocks)
- OC- Moving with an implement (tubes)
- OC- Underhand Striking (hockey)
- LO- Hopping (hop scotch)

WK 5 (February 4-7)
- ST/PF-Balance/Strength (ladders)
- OC- Underhand Ball Rolling (bowling)
- OC- Catching (scoops)
- NU-Food Ident./Gallop (giddy up go)

WK 6 (February 11-14)
- ST/PF-Balance/Strength (ladders)
- LO- Leaping (hurdles)
- OC- Striking (foam bats, balloons)
- LO- Running (bottle topple)

WK 7 (February 18-21)
- LO- Balance (foam vault sect.)
- OC- Throwing
- OC- Kicking
- LO- Galloping

WK 8 (February 25-28)
- ST- Balance (hand stands)
- OC- Catching (hot ball)
- OC- Striking (repeat WK 4)
- LO- Hop/Skip

WK 9 (March 4-7)
- ST- Balance (repeat WK 1)
- PF- Strength (scooters)
- NU-Food Ident. (twister game)
- RH-Rhythms (sticks)

LO = Locomotor Skills
OC = Object Control
NU = Nutritional Awareness
PF = Physical Fitness
RH = Rhythmic Fundamentals
ST = Stability

APPENDIX D

Term Plan, Spring 1991

WK 1 (April 1-4)
ST-Forward Rolls
OC-Kicking
OC-Striking
PF-Flexibility (golf tubes)

WK 2 (April 8-11)
ST-Balanced Landings
PF-Endurance/Agility (hoops)
OC-Catching
NU-Health Benefits (hi-dee-ho)

WK 3 (April 15-18)
ST/PF- Balance/Strength (ladders)
LO/PF- Jumping/Leg Strength
OC-Striking (baseball)
LO-Hop/Skip

WK 4 (April 22-25)
ST-Tumbling (cartwheels)
OC-Throwing (dragon sheet)
OC-Striking
RH-Rhythm Sticks

WK 5 (April 29 - May 2)
ST-Balance Beam
PF-Strength-Arm/Leg (scooters)
OC-Kicking (bowling)
LO-Galloping

WK 6 Testing Week (May 6-9)
ST-Balance (can stilts)
OC-Striking (hockey)
OC-Catching
LO-Hop/Skip

WK 7 Student Plans (May 13-16)
LO-Hopping
OC-Throwing
OC-Catching
LO-Gallop/Skip

WK 8 Student Plans (May 20-23)
LO- Leap/Jump/Hop
OC- Striking
OC-Kick/Punt
LO- Running

WK 9 Three days (May 28-30)
ST- Balance (twister)
PF- Strength-Arm/Leg (scooters)
OC- Toss/Catch (scoops)
OC- Bounce/Dribble

LO = Locomotor Skills
NU = Nutritional Awareness
OC = Object Control
PF = Physical Fitness
RH = Rhythmic Fundamentals
ST = Stability

APPENDIX E

Opening and Closing Activities
Fall 1990

		OPENING		CLOSING
WK 1	M =	"What a Miracle"	M =	"An elephant goes like this and that"
	T =	" " "	T =	" " " " "
	W =	"Kids in Motion"	W =	"Leaves are floating softly down"
	Th =	" " "	Th =	" " " " "
WK 2	M =	"Wake up, Warm up"	M =	"I clap my hands"
	T =	" " "	T =	" " " " "
	W =	"Hot Diggity"	W =	"If you are happy and you know it"
	Th =	" " "	Th =	" " " " "
WK 3	M =	"Shake my sillies out"	M =	"Open, shut them...."
	T =	" " "	T =	" " " "
	W =	"Turn Around"	W =	"Here we go up, up, up...."
	Th =	" " "	Th =	" " " "
WK 4	M =	"Shake Something"	M =	"On my head my hands I place"
	T =	" " "	Tu =	" " " " "
	W =	Warm-up with one rhythm stick	W =	"We are riding up the hill"
	Th =	" " "	Th =	" " " " "
WK 5	M =	"So early in the morning"	M =	"Head, shoulders, knees and toes"
	T =	" " " "	T =	" " " " "
	W =	"Wiggy, wiggy, wiggles"	W =	"Stirring and stirring the brew"
	Th =	" " " "	Th =	" " " " "
WK 6	M =	"Kids in Motion"	M =	"If I were a Dog"
	T =	" " "	T =	" " "
	W =	"Warm up Time"	W =	"Jack in the Box"
	Th =	" " "	Th =	" " "
WK 7	M =	Body Talk	M =	Shake them, give a little clap
	T =	" "	T =	" " " " "
	W =	Silent exercises	W =	"I like to walk....."
	Th =	" " "	Th =	" " "
WK 8	M =	Warmin' up	M =	"Stretch, stretch, way up high"
	T =	" "	T =	" " " " "
	W =	"Shake my sillies out"	W =	Jack in the Box
	Th =	Thanksgiving	Th =	" " "
WK 9	M =	Knees up Mother Brown	M =	"Show is floating softly down"
	T =	" " " "	T =	" " " " "
	W =	Parachute-signals, waves, popcorn	W =	"Open them, Shut them"
	Th =	Parachute-signals, locomotors "Boa constrictor"	Th =	" " " "

APPENDIX F

Opening and Closing Activities
Winter 1991

		OPENING		CLOSING
WK 1	M =	"What a Miracle"	M =	"Stretch, stretch way up high"
	T =	" " "	T =	" " " " "
	W =	"Turn Around"	W =	"Little Huey Dragon"
	Th =	" " "	Th =	" " "
WK 2	M =	"Kids in Motion"	M =	"I clap my hands"
	T =	" " "	T =	" " " " "
	W =	"Shake my sillies out"	W =	"We're riding up the hill"
	Th =	" " "	Th =	" " " "
WK 3	M =	"Wake up, warm up"	M =	"On my head"
	T =	" " "	T =	" "
	W =	"Shake something"	W =	"If you're happy and you know it"
	Th =	" " "	Th =	" " " " "
WK 4	M =	"Warmin' Up"	M =	"Chubby little snowman"
	T =	" " "	Tu =	" " " "
	W =	"Hot Diggity"	W =	"Head, shoulders, knees and toes"
	Th =	" "	Th =	" " " " "
WK 5	M =	"Simon Says Jog Along"	M =	"Make your Arms Go Up and Down"
	T =	" " " "	T =	" " " " "
	W =	"Wiggy, wiggy, wiggles"	W =	"Stand up and Stretch"
	Th =	" " " "	Th =	" " " "
WK 6	M =	"Body Talk"	M =	"Shake Them, Shake Them"
	T =	" " "	T =	" " " "
	W =	"Run In place"	W =	"Two little feet go tap, tap, tap"
	Th =	" " "	Th =	" " " " "
WK 7	M =	"Silent Exercises"	M =	"Finger Poppin"
	T =	" " "	T =	" " "
	W =	"Body Rock"	W =	"Jack in the Box"
	Th =	" "	Th =	" " "
WK 8	M =	"So early in the morning"	M =	"Head and shoulders Baby 1, 2, 3"
	T =	" " " "	T =	" " " " "
	W =	"Rag Doll Rag"	W =	Jack in the Box
	Th =	" " "	Th =	" " "
WK 9	M =	"Sally the Swinging Snake"	M =	"Children work with one hammer"
	T =	" " " "	T =	" " " " "
	W =	Parachute Activities	W =	"Chug-a-long Choo Choo"
	Th =	" " "	Th =	" " " "

APPENDIX G

Opening and Closing Activities
Spring 1991

		OPENING	CLOSING
WK 1	M =	Locomotors and Freeze with Direction/Level/Speed	M = "Stretch way up high"
	T =	" " " "	T = " " " "
	W =	Balloon Exploration/Balloon Relays	W = "I dig, dig, dig"
	Th =	" " " " "	Th = " " "
WK 2	M =	Huff and Puff Game	M = Trees
	T =	" " "	T = " "
	W =	Back to Back using same body parts	W = The Tree
	Th =	" " different body parts	Th = " "
WK 3	M =	"Stretching Song"	M = "Two little feet go tap, tap"
	T =	" " "	T = " " " "
	W =	"Brothers and Sisters game"	W = "Little Turtle"
	Th =	" " " "	Th = " " "
WK 4	M =	"Sky Writing with Streamers"	M = "We're Riding Up the Hill"
	T =	Listen and Move	Tu = " " " "
	W =	Silly Relays/Scooter Relays	W = "Here we go up, up, up"
	Th =	" " " "	Th = " " " "
WK 5	M =	Parachute Activities	M = "Stand Up and Stretch Your Body"
	T =	" " "	T = " " " "
	W =	"Late Last Night"	W = "Touch Your Ears"
	Th =	" " "	Th = " " "
WK 6	M =	"Shake My Sillies Out"	M = "Open, Shut Them"
	T =	" " " "	T = " " "
	W =	"Kids in Motion"	W = "Clap, clap, clap your hands"
	Th =	" " "	Th = " " " "
WK 7	M =	"Baby Birdies"	M = "Here's A Birdie Hatching"
	T =	Nest Game	T = " " " "
	W =	Rhythm Sticks	W = "Rain Storm"
	Th =	" "	Th = " " "
WK 8	M =	"The Farmer in the Dell"	M = Circle to the left
	T =	" " " "	T = " " "
	W =	Puddles Game	W = Bow to your partner
	Th =	" " "	Th = " " "
WK 9	M =	The favorite of the year	M = The favorite of the year
	T =	" " " "	T = " " " "
	W =	" " " "	W = " " " "
	Th =	" " " "	Th = " " " "

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