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THE EFFECT OF A MOTOR SKILL INTERVENTION ON THE
FUNDAMENTAL MOTOR SKILLS AND SUSTAINED ACTIVITY
OF AFRICAN-AMERICAN PRESCHOOLERS WHO ARE AT-RISK.

By

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ABSTRACT

THE EFFECT OF A MOTOR SKILL INTERVENTION ON THE FUNDAMENTAL MOTOR SKILLS AND SUSTAINED ACTIVITY OF AFRICAN-AMERICAN PRESCHOOLERS WHO ARE AT-RISK.

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This study examined the effect of a motor skill intervention on the fundamental motor skills (FMS), sustained activity, perceived competence and social acceptance of African-American preschool children who are at-risk. The experimental (E) group (n=31) participated in 24, 45-minute motor skill sessions over 12 weeks during the regular prekindergarten program time. The control (C) group (n=28) participated in only the regular prekindergarten program.

Qualitative data documented that the typical "at-risk" subject was a developmentally immature child from a low income, unemployed, single-parent family who had at least one other risk factor.

Pretest-posttest measures of the Test of Gross Motor Development, the half-mile walk-run, and the Pictorial Scale of Perceived Competence and Social Acceptance (PSPCSA) were obtained. Qualitative methodologies included implementation of the Home Inventory, demographic questionnaire, caregiver interview, and child interview to determine the impact of contextual variables on motor performance. A 2 group (E, C) x 2 Time (pretest,posttest) MANOVA was applied to all dependent variables, with follow-up using Tukey HSD.

The E and C subjects were delayed in locomotor and object-control skills prior to the motor skill intervention. Both E and C subjects reported feeling competent and accepted on pretest measures of the PSPCSA. The E group demonstrated significant improvements in locomotor and object-control skills as a direct result of the motor skill intervention. The C group showed no pretest-posttest differences. Both E and C groups significantly improved their times on the half-mile walk-run from pretest to posttest. The E group alone revealed a significant gain on perceived physical competence, a finding attributed to improved motor performance. Measures of peer acceptance resulted in significant improvements for both groups. Number of risk factors, preschool readiness score, and maternal education were contextual variables that significantly predicted the variance of motor performance measures. Qualitative findings indicated that children (a) participated in sedentary, inside activities; (b) had little exposure to sustained activity; (c) found music motivating for sustained activity; (d) received positive affect from exercising; and (e) had caregivers who did not value physical activity.

The findings from this study support the need to provide professional physical education services to African-American preschoolers who are at-risk and to develop urban physical education curricula. These data also have implications for preservice and inservice teacher education.

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1994

DEDICATION

To the DuBois Family
Who gave me a place in America to call home

To my parents
Who never doubted me
Who had the courage to set me free to achieve my dreams
and always...

To Chuck
My friend, my love, and my companion
I dedicate the song:
"You are the wind beneath my wings"

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CHAPTER ONE

INTRODUCTION

In the last decade concern has been expressed about urban decay and the state of education in the inner cities, particularly for minority youth (Hoffman, 1992; Kozol, 1991). A federal report has documented that one in five of America's children live in poverty, and every year approximately 10,000 American children die from the effects of poverty (First for Woman, 1992). Fifteen percent of children in America never graduate from high school, and many (18%) who do graduate are functionally illiterate (First for Woman, 1992). The statistics of poverty, school failure, and unequal life opportunities are heavily weighted toward minority children living in the inner cities (Kozol, 1991).

This study evolved from a personal philosophy about education and well-being. Children have the right to feel healthy and good about themselves. They also have the right to a healthy, productive, and active future. Physical competence and well-being may contribute to attaining this goal. However, welfare reports on children have documented the poor living conditions in which many children who are at-risk exist (Hoffman, 1992). In addition, pilot studies have documented low levels of fundamental motor skills, and inability to engage in sustained activity, of preschool children who are at-risk (Goodway & Branta, 1992a). In order to break the cycle of poverty and failure associated with many children who are at-risk, it is important to intervene early in these children's lives. Thus, a preschool intervention program was the focus of this study.

Purpose of the Study

This study aimed to investigate the motor performances of preschool children at-risk of educational failure and developmental delay. The objectives of the study were to obtain data on preschool children who are at-risk related to: (a) baseline information on fundamental motor skill performance; (b) the ability to engage in sustained activity; (c) the impact of a twelve-week motor skill intervention program on fundamental motor skill performance and ability to engage in sustained activity; (d) the relationship of contextual variables such as maternal education, home environment, and number of risk factors, to motor performance; and (e) the relationship between changes in motor performance and changes in perceived competence and social acceptance. The objectives of the study were important to examine because a delay in motor development may contribute to or result from educational failure.

Need for the Study

This study was significant in that it aimed to provide motor development data about a population of children whose physical activity has not been studied before. The study used both qualitative and quantitative methodologies to document the effect of a motor skill intervention on the motor performances of children who are at-risk. Specifically, a contextual theoretical framework was used to investigate the impact of the environment on the motor performance of preschool children. The need for this study was based on: (a) a concern regarding the physical status of children who are at-risk; (b) the relevance of

physical status to at-risk prekindergarten program objectives; (c) the potential impact of context on motor performance; and (d) the implications of an educational model of intervention to meet the needs of an at-risk preschool population.

Concern About the Physical Status of Children Who Are At-Risk

Concern has been expressed regarding the physical status of children who are at-risk. In particular, the State of Michigan ranked 39th in the Nation in a study on child well-being (Hoffman, 1992). In Michigan, one in every four children has lived in a single-parent home, and the number of births to single teenagers has increased 25% since 1980 (Hoffman, 1992). The number of children living in poverty in Michigan has also increased 49% since 1979 (Hoffman, 1992). Of particular concern was African-American children living in Michigan, 46% of whom grow up in poverty as compared to 12 percent for white children. Poverty is considered to be an overriding issue affecting the potential for children to be identified at-risk. Additionally, poverty often results in, or is associated with, decreased parental supervision, poor nutrition, inadequate health care, and an increase in the possibility for school failure for children (Kozol, 1991).

Parents and teachers of children in urban environments have stated that there are few safe places for their children to play outdoors (Goodway and Branta, 1992a; Kozol, 1991). Anecdotal evidence from parents has suggested that their children are far more sedentary than they were as children. The

parents cited unsafe outdoor playing environments and an increase in television and video games as reasons for their children's inactive lifestyles. Thus, many children who are at-risk do not seem to engage in sustained physical activity on a regular basis because they spend most of their free-time indoors. In addition, many urban school districts have reduced professional physical education services to elementary schools. Physical inactivity is a risk behavior associated with coronary heart disease (CHD). Also signs of coronary risk factors have been reported in young children (Wheeler, Marcus, Cullen, & Konugres, 1983; Williams, Carter, Wynder & Blummenfield, 1979). Thus concern may be raised for the future health status of young children who are at-risk.

Preschool children who are at-risk for school failure have suggested that the children have inadequate fundamental motor skill performance and a limited ability to engage in sustained activity (Goodway & Branta, 1992a). Pilot data on the physical education needs of preschoolers who are at-risk ($n=17$) revealed that young children (Mean=4.80 years, $SD=0.35$) were unable to sustain moderately intense activity for more than three minutes (Goodway & Branta, 1992a). Typical physical reactions to activity included breathlessness, wheezing, and coughing. Along with deficiencies in physical fitness, the preschool children who are at-risk did not appear to exhibit age-appropriate fundamental motor skills. No empirical data were available on this population, as the study was qualitative in nature. However, a case study of a 4.17 year-old-male subject yielded scores on the Test of Gross Motor Development

(TGMD) (Ulrich, 1985) below the first percentile for locomotor skills and at the sixteenth percentile for manipulative skills (Goodway & Branta, 1992a).

Children who are at-risk have few skills to organize physical activity. Teachers of upper-elementary children who are at-risk have observed that upper-elementary-aged children have difficulty in engaging in self-directed sport and physical activities in the community as compared to children of a decade ago (Goodway & Branta, 1992b). Teachers and professionals in motor development reported that the children had poor fundamental skills, inadequate stamina, and few opportunities to engage in physical activity (Goodway & Branta, 1992b). Teachers and professionals in motor development expressed concern about the ability and motivation of these children to engage in life-long physical activity, and, thereby to maintain a healthy body that could resist the impact of contextual and physical risk factors on their physical and motor development.

Relevance to Prekindergarten Objectives

This study had significance for the objectives of a compensatory prekindergarten program for preschool children who are at-risk. A typical curriculum for prekindergarten programs consists of objectives in the domains of language, cognitive, physical, social, emotional and creative-art domains (Fisher, Hansberry, Murtaugh, & Burtley, 1991). The philosophy of the prekindergarten programs was to encourage the children's natural curiosity, to facilitate their exploration of new things, to develop problem solving strategies,

and above all to develop positive feelings about themselves and others. This study endeavored to reflect the objectives and philosophies of a compensatory prekindergarten curriculum. Hypotheses generated for this study aimed to relate to the following objectives taken from an urban compensatory at-risk prekindergarten curriculum (Fisher et al., 1991): (a) develop strength and stamina from sustained activity; (b) improve basic motor skills; (c) help children feel good about themselves; and (d) develop a sense of self-awareness. The data from this study have the potential to contribute to future curriculum design in the motor skill area, and to the development of curricular materials for preschool teachers.

Impact of the Context on Motor Performance

Children who are at-risk typically come from family and home environments that may potentially have an impact their motor development. Poor nutrition, parental stress, high family density, poverty, and lack of opportunity to be active are among some of the contextual factors and definitions of risk that may impact the motor performances of the children. This study was unique in that it aimed to investigate the impact of contextual variables on motor performance.

Educational Intervention

This study was also significant in that an educational model was at the core of the intervention. Previous work had typically used a medical model with motor interventions for children (Haley, 1988; Johnson, Jens, & Attermeirs,

1986). An intervention that utilizes an educational model has the potential to provide data that are applicable to a larger population of children than a model using medical personnel as the intervention agents. More data are needed in the area of educationally-based motor skill interventions for children who are at-risk.

Finally, this study reflected the national focus on educational reform. The Holmes report (Holmes Group, 1990), a report of the status of education in the USA, suggested that schools were not meeting the needs of the children; and educators needed to "re-think" the way school was taught. Educators involved in these educational reform activities suggested that schools should reflect the needs and characteristics of children in the community rather than require children to fit into a general school model. Thus, teachers and administrators need up-to-date, precise information on the characteristics of urban children who are at-risk. Specifically, in the area of PE, information is needed on the motor performance of preschool children who are at-risk. These data are important to design developmentally appropriate PE curricula and objectives that reflect the characteristics and needs of this population. In order to determine the children's needs, documentation of the children's activities at home was necessary along with a description of the children's motor performance. Moreover, it was important to determine whether PE, within the constraints of a regular school setting, will bring about significant changes in the motor performance and self-esteem of preschool children.

Scope/Overview of Methods

Data were collected within the motor performance, self-esteem, and contextual areas (Table 1). Data on several subscales and/or specific variables were obtained within each category in order to obtain relevant information on the children.

Variables Measured

Two categories of instruments (motor performance, self-esteem) were administered prior to (pretest) and after (posttest) the motor skill intervention. The Test of Gross Motor Development (Ulrich, 1985) provides information on fundamental motor skills (FMS) related to locomotor and object-control skills. The half-mile walk/run, taken from the Physical Best Test (McSwegin, Pemberton, Petray, & Going, 1989), is a measure of the ability to engage in sustained activity. The Pictorial Scale of Perceived Competence and Social Acceptance (PSPCSA) (Harter & Pike, 1984) measures self-esteem via questions divided into four subscales.

The contextual data were taken only once during the intervention. Measurement of specific variables in the context included information on the physical environment of the house, number of people in the house, and types of toys available to the children in the home. Data were also obtained via administration of the HOME inventory (Bradley & Caldwell, 1979, 1981), a Demographic Questionnaire, and an interview of the caregiver and child. The contextual measures were assessed during a visit to the child's home at some

point during the intervention period and with interviews at school during the posttest period.

Table 1

Measures of Motor Performance, Self-Esteem, and the Context

Motor Performance Measures

- TGMD
 - Locomotor Subscale
 - Object Control Subscale
- Half-mile walk/run

Self-Esteem Measure

- Pictorial Scale of Perceived Competence and Social Acceptance
 - Cognitive Competence
 - Peer Acceptance
 - Physical Competence
 - Maternal Acceptance

Contextual Measures

- HOME Inventory
 - Demographic Questionnaire
 - Caregiver Interview
 - Child Interview
-

Individuals Involved in the Study

The experimental (E) group consisted of one prekindergarten class from School A (class 1) and one prekindergarten class from School B (class 2); while the control (C) group consisted of two prekindergarten classes from School C (class 3 and 4). Each classroom had a female teacher and a female paraprofessional. Class 1 had 15 children, class 2 had 16 children, and classes 3 and 4 had 14 children each. A female investigator educated in motor development served as the lead teacher for the motor skill intervention

administered to the E group. Two female graduate students who were teacher certified in PE assisted the investigator during data collection.

Hypotheses

The following hypotheses were developed for the study:

1. Pretest scores of the E group will be equal to pretest scores of the C group for the four subscales of the PSPCSA.
2. Pretest scores of the E group will be equal to pretest scores of the C group for the half-mile walk-run and the locomotor and object-control subscales of the TGMD.
3. Subjects in the E group will demonstrate greater improvements in the locomotor and object-control subscales of the TGMD than subjects who are in the C group from pretest to posttest.
4. Subjects in the E group will demonstrate greater improvements in the half-mile walk-run time than subjects who are in the C group from pretest to posttest.
5. Subjects in the E group will demonstrate greater improvements in the four subscales of the PSPCSA than subjects who are in the C group from pretest to posttest.
6. Variance in motor performance among individuals of the E & C group will be accounted for by HOME scores, maternal education, number of risk factors, and school readiness scores in the pretest and posttest.

7. For the E & C groups, perceived physical competence will be moderately correlated ($r^2=0.4$ to 0.6) with motor performance for the pretest and posttest.
8. Subjects with high posttest motor performance scores will have higher perceived physical competence and perceived peer acceptance scores than subjects with low posttest motor performance scores.

Scope of the Study

Delimitations

This study is delimited to a group of African American four-and five-year-old children who are at-risk of educational failure. The definition of risk, specific individual risk characteristics of each subject, and the context of the family, classroom, school, and city, delimit the findings of this study. The children lived in predominantly single-parent families with the majority of the primary caregivers being female and unemployed. The classrooms included a teacher, a paraprofessional, and 14 to 16 children. The school was situated in a very low socioeconomic area of a city which had experienced a large percentage of job loss in the auto industry in the last decade. In addition, the teachers' involvement in educational reform activities as part of a Professional Development School, specifically involvement in a group of teachers investigating in the area of motor skills, may also delimit the findings of the study.

Limitations

The following factors were limitations to this study:

1. The sample selected for this study was not a random sample. Intact classes were selected from four classes in three schools.
2. The two classes that make up the E group had different teachers and paraprofessionals and, hence, may exhibit different characteristics, thus limiting the results.
3. The maintenance of an appropriate C group that was comparable to the E group may limit the findings of the study.
4. Factors such as the time of testing, the type of clothing and shoes worn during testing, and the experience and personality of the testing assistant may have affected the test performance of the subjects.
5. The researcher taught all intervention sessions from written lesson plans. However, differences in intervention presentation may have occurred across the two E classes.
6. The E group had prior experience with the researcher and motor skill activities amounting to approximately 6 hours of motor skill instruction over 9 weeks for each E class. Both E classes experienced the same motor skill instruction. The C group had received the same amount of time with the researcher, but over 1 week prior to testing. This differential exposure may have impacted performance on the pretest.

7. The intervention was implemented during the spring term to accommodate a period of 12 weeks (24 sessions) of motor skill activity without interruptions from other prekindergarten requirements.
8. The study was completed with a small number of subjects, limiting the type and extent of multivariate statistical analysis.

Definition of Terms

The following definitions will aid the understanding of this study. Those terms marked with an asterisk (*) are specific to the educational system in the urban school district in which this study was undertaken.

Compensatory prekindergarten* - The compensatory prekindergarten program in the school district was an early intervention program that aimed to improve the readiness skills and subsequent achievement of children who were at-risk of becoming educationally disadvantaged and developmentally immature/delayed. Participants in the program were four-year-old children who were defined as at-risk of school failure. Parents were identified as being essential to the success of the program and were thought to be partners in the learning process.

Professional Development School - The Professional Development School (PDS) is a school where educational reform takes place with research, and development of the teaching profession as a whole, inherent in the school system. A PDS is a collaborative partnership between the public schools, university, business, and community who all try and support the work of the school and address and meet the needs of the children in their community.

Motor Development Inquiry Group - The Motor Development Inquiry Group is part of the PDS initiative, and is made up of a group of teachers in School A and School B, from which the E subjects are drawn. The teachers in this group have committed to inquiry in the motor skill area and have a desire to learn more about the motoric needs of the children in their classrooms. In addition, the teachers are engaged in trying to change their teaching practice in motor skills in collaboration with university faculty and graduate students.

At-Risk - At-risk refers to a set of existing conditions that places a child in a situation where the probability of failure in school is very high. There are many possible types of conditions (e.g. teenage parent or low family income) that increase the probability of failure in school. The compensatory prekindergarten program identifies a total of 24 risk factors which might predispose a child to failure in school. Children are assessed for all possible risk factors, and the number of risk factors a child exhibits is considered when determining the child's eligibility for the program. Children with a higher number of risk factors are selected for inclusion in the program over children with a lesser number of risk factors.

Caregiver - The caregiver is the adult/s with whom the child lives and who provides the majority of child care services. In many instances this is the biological mother of the child; however, grandparents, aunts, uncles, older siblings, and foster parents also may have acted as caregiver for the subjects in this study.

Contextual Features - Contextual features refer to variables in the environment that may influence the development of motor skills and perceived competence in the child. Although there are an infinite number of contextual features possible, specific areas were identified as a result of a contextual theoretical framework and review of the literature. Contextual features included family variables such as single parent families and number of siblings, along with sociodemographic factors such as caregiver employment status, income, and level of education. Physical factors such as the maintenance of the child's house, upkeep of the surrounding neighborhood, and size of the house relative to the number of inhabitants represented other contextual features.

Gym - "Gym" is the colloquial term used by the subjects to represent PE. This term was used in this study to show sensitivity to the subjects in the setting and facilitate understanding for the children in the prekindergarten program.

Developmentally Immature Child - a child who exhibits one or more of the following characteristics as reported from a subjective assessment by a teacher during a parent-child observation: (a) poor language skills such as limited or lack of verbalization; or some type of speech impediment; (b) inadequate social skills including fear of interacting with a stranger (teacher) and inappropriate social responses; (c) limited cognitive knowledge such as names of shapes and colors, and recognition of numbers and the alphabet; and (d) poor motor skills such as inability to cut with scissors, difficulties in balance and difficulties in pincer opposition.

CHAPTER TWO

LITERATURE REVIEW

Theories of Child Development

Two major theories in child development will provide a theoretical framework for the study. Contextual theory will be discussed to understand better the importance of investigating the context in assessing any factor of human development. Then, dynamical systems theory will be reviewed to understand the dynamic and environmentally-sensitive nature of motor skill development. Both theories will be examined for implications to this study.

Contextualism and the Lifespan View of Human Development

Developmental contextualism, or the lifespan perspective, is a theory that outlines a set of ideas about child development and ontogeny. These ideas represent a more soft-wired, contextual approach to child development than previous mechanistic theories, and thus constitute a theoretical framework that reflects the dynamic nature of intervening with children in an urban at-risk environment.

The lifespan perspective identifies a "set of interrelated ideas about the nature of human movement and change" (Lerner, 1984). This perspective aims to understand systematic, reciprocal relationships across the lifespan between a structured and active organism operating in an organized and active context (Lerner, 1984). It believes that the organism and context interface to form a single life process (Gollin, 1981), a process in which biocultural, historical, and

evolutionary changes must be considered. Lifespan proponents emphasize a reciprocal model of organism-context relations. In addition, lifespan proponents suggest that the organism should be studied in a collective manner rather than the reductive manner implemented in the past.

Lifespan theory was driven by research that countered prevailing theories of the time reporting findings (such as data on aging) that were more individualistic than was once believed (Brim & Kagan, 1980). As a result, researchers adopted a more contextually-sensitive approach to the study of human development in order to interpret the variance reported in empirical studies. For example, lifespan proponents found that birth cohorts appeared to account for more variance in behavior with respect to adult intelligence than did influences associated with age.

Embeddedness and dynamic interactionism. The key concepts of embeddedness and dynamic interactionism (Lerner, Skinner, & Sorrell, 1980) are central to the lifespan perspective. The concept of embeddedness suggests that human functioning is inherent at multiple levels of being, such as biological, psychological, social, community, cultural, and historical. These levels are inextricably intertwined, with change at one level conceptualized within the context of change at other levels. Thus change in one domain may have an impact on all other levels of being. This relationship is referred to as "dynamic interactionism." That is, it is reciprocally influential. The concept of dynamic interactionism is not unique to the lifespan approach but is analogous

to the probabilistic, epigenetic view of development (Gottlieb, 1970; Lerner, 1978, 1980). Child development is conceptualized at many levels of being; for example, most children are directly embedded in the family context. In turn, the family is embedded in the social, community, and historical context. Thus, the family directly influences child development, but additionally, the child will be influenced by historical factors and characteristics of the community and society including organizations such as the school. It is all of these contextual features interacting together that will ultimately impact on child development and, hence, motor development. The lifespan concept of embeddedness acknowledges the possibility of intergenerational transmission of failure (e.g. school drop out and unemployment) and poverty among families and communities such as the data reported for low income African-American families (Kozol, 1991). Hence, lifespan theory suggests that it is critical to examine contextual features of the family, community, and history when investigating developmental change in children. More specifically, contextual theory suggests that it is particularly important to identify and examine contextual variables for children who are at-risk.

Plasticity. The lifespan approach suggests that the characteristics of development are never uniform or predetermined. In contrast to other theories of development, such as mechanistic theories or Developmental Stage Theory, lifespan theorists do not delineate a series of end-states. Thus, human development is seen as a "flux" process. Individual flexibility or plasticity

develops because a change in one level affects multiple interrelated levels resulting in multilevel embedded plastic processes (Lerner, 1984). This means that the system is always capable of change and is never totally restrained, thereby indicating the relevance of interventions in bringing about change in some aspect of development. Thus, human development is potentially multidirectional, and research necessarily should be multidimensional and multivariate.

Despite the inherent plasticity within a system, plasticity is not equipotential over life. Factors such as the maturing central nervous system or the long-term effect of inadequate nutrition and inactivity may act as constraints on future plasticity. This results in "sensitive periods" for specific developmental change (Lerner, 1984) with the potential for change operating in an increasingly narrower range of structures and functions over time (Baltes & Baltes, 1980). These concepts have significant implications for the timing and efficacy of intervention programs. In light of these data, motor skill interventions may be most beneficial early in life before the impact of poor nutrition and habitual inactivity take effect. Early childhood has been identified as a good time for a motor skill intervention. It is a time in a child's life when many of the FMS are emerging and maturing (Seefeldt & Haubenstricker, 1982). Furthermore, many of the cognitive goals of early intervention programs may be integrated and taught in the physical domain thereby integrating cognitive and physical objectives for children of a young age.

Bidirectional relations. The lifespan perspective emphasizes a bidirectional relationship in human development. Prior models of child development have emphasized unidirectional relationships, such as a mother influencing her child. In contrast, bidirectional relationships would suggest that the child's motor responses impact on the mother's parenting as much as the mother's parenting style and stimulation impact on the child's motor development. In this manner, the context plays an active role in human development. Thus, some features of human development, such as temperament, may be both a "product" and "producer" of social and cultural change (Scarr, 1982).

Circular reactions. The "child effect" process where the child is both a producer and product of his/her own development (Lerner, 1982) is deemed a circular reaction (Schneirla, 1957). Circular reactions involve the child and the context acting and reacting to each other as follows: (a) child acts on context; (b) context reacts to child action; (c) context acts on the child; and (d) the child reacts to the feedback. This process is termed circular as the child's reaction may return the interchange back to the beginning of the process. Research data such as that on physical attractiveness have supported the nature of circular reactions (Berscheid & Walster, 1974). For example, a physically attractive child provides a positive stimulus to the context (a person). The context (a person) reacts to the child providing positive feedback, plenty of attention, and a high value placed on the child. The child reacts to the feedback

by internalizing the information further reinforcing the child's individuality and future development . However, an important aspect of this interaction to child development is how the behaviors in the interchange are perceived by the actors in the context, that is the valence of the behaviors. The same interchange may result in a differential effect on child development due to interpretation of the actions by the individuals involved.

Goodness of Fit Model. The Goodness of Fit Model reflects one way in which children are producers of their own development. Children bring individual behavioral and physical characteristics to a setting. As a result of these individual characteristics, children promote differential reactions in their socializing of others. These reactions feed back to the child and increase his/her individuality thus influencing the development of the child. In addition to the individual characteristics of the child, the context places demands on the child. These demands may take the form of: (a) attitudes, values or stereotypes; (b) the attributes of others in the setting with whom the child must "fit"; and (c) the actual physical environment of the setting. If individual characteristics and contextual demands are very different there typically will be a poor "fit" and lack of adaptation will occur to the context (Lerner, 1984). If there is a good match between characteristics of the child and positive contextual demands, evidence suggests that positive behaviors occur and adaptive behavior results. However, a good fit between the child and the context does not necessarily result in healthy functioning. For example, if

academic expectations for children are low, the children may not show effort in school and thus "fit" with this view of themselves. In this example, children reflect "fit" with the context that results in negative behavior and adaptation. It is important to break the cycle associated with a negative goodness of fit and develop a positive fit. The Goodness of Fit Model has obvious implications to designing an intervention, and understanding the context, particularly in a volatile environmental context such as an urban at-risk community.

Dynamical Systems Theory

Dynamical Systems Theory (DST) is a theory that is complementary to the lifespan view of child development and has been used by several researchers in motor development (Thelen & Ulrich, 1991). It moves away from more previously hard-wired notions of skill acquisition to a more flexible context-specific view of the processes involved in learning new motor skills. DST is based on the work of Bernstein (1967), a movement physiologist who applied the principles of complex and non-linear, self-organizing systems to the development of psychomotor skills. Movement in DST is not considered to be hard-wired and prescriptive; rather, movement is made up of many cooperating subsystems that interact with the organism, task, and context to produce movement. That is, movement is softly-assembled and self-organizing. Thelen and Ulrich (1991) identified that some of the many subsystems consist of elements within the general areas of morphology, motivation, task context, and environmental context. Each subsystem has its own path and rate of

development. The cooperating subsystems are free to assemble many possible configurations of movement expression and thus multiple degrees of freedom.

Research in motor development has illustrated that human beings tend to exhibit common patterns of movement (Bayley, 1935; Seefeldt & Haubenstricker, 1976; Robertson, 1977). It is evident from this work that the many degrees of movement possible under a DST perspective do not in fact emerge in the development of motor skills. Rather, the degrees of freedom available in a system are compressed to produce a more typical common pattern of motor behavior such as the alternate gait pattern of walking. The pattern that individuals tend to exhibit is termed a dynamical attractor state. For example, walking is an attractor state as is a contralateral pattern in throwing. However, attractor states are not stable phenomena and may change if the parameters in the system change. A variable that engenders a compression of the degrees of freedom and may cause changes in the attractor state is called a collective variable. The collective variable results from the interaction of the underlying patterns of the cooperating subsystems acting together (Thelen & Ulrich, 1991).

One of the most important concepts in DST is that of self-organization. Movement systems autonomously seek stable new solutions in relation to the demands of the task and the environment. The many cooperating subsystems are driven to self-organize, and perturbations cause the system to move from old forms of movement to new stable, efficient forms of movement. This

process is known as a "phase shift". Moving from an ipsilateral to a contralateral pattern of stepping in throwing is an example of a phase shift. The phase shift is driven by a control parameter, a variable to which the system is very sensitive. When the control parameter reaches a threshold level the cohesion of the system is lost and the system seeks a more stable form of behavior, and hence a qualitative change in observed motor performance, by undergoing a phase shift. During this time there is a great deal of variability in observable motor behavior. For example, as a child moves from a ipsilateral (stage 3) to a contralateral (stage 4) throwing pattern (Haubenstricker, Branta, & Seefeldt, 1983) the child may exhibit a range of qualitative patterns from the "sling shot" pattern (stage 2) to the contralateral stepping pattern (stage 4) on a trial to trial basis. Thus, the child is exhibiting great trial to trial variability.

During a phase shift the movement system unlocks the degrees of freedom previously constrained, and the "noise" (variance) of the movement system is apparent. With the degrees of freedom unconstrained, the system is "open" and free to reform in any configuration. Observation of a phase shift may lead to a greater understanding of the subsystems that are important in skill acquisition. Thus, from a DST perspective the process of motor skill development is the stabilization and destabilization of many cooperating subsystems that result in motor patterns. These systems that make up the motor pattern are "softly assembled" and "self-organizing".

A rate limiter may retard the rate of development of a motor system. A rate limiter is the slowest maturing subsystem; and until critical levels of the rate limiter have been reached, the subsystem is unable to reassemble to new forms of behavior. For example, balance may be a subsystem that acts as a rate limiter on a child's ability to be able to kick. This concept has critical implications for teaching motor skills.

The DST is a complementary theory to the contextual lifespan approach. Both theories emphasize the influence of the context in which the organism is interacting, and both theories advocate a sensitivity to and focus on the variance of variables in the context which may act as rate limiters or control parameters.

Application of DST and Contextual Theory to This Study.

Researching in the natural ecology is difficult. The investigator is typically unable to control and measure the many factors interplaying in the environment. It is difficult to determine which variables should be examined in the child's context. Contextual theory and DST provide a theoretical, developmental perspective that emphasizes the importance of contextual sensitivity. Specifically, contextual theory provides a framework or model by which the researcher can make methodological choices about which dimensions and factors may be examined in a study. Contextual developmentalists and DST theorists emphasize the importance of understanding the development of children who live in such environmentally-volatile situations as do children who

are at-risk. The environmental aspects of the children's lives are seen as critical in explaining motor performance. Both theories would postulate that in order to intervene successfully with developmental problems, researchers must be aware of the variables interacting in the natural context in which people live and develop.

On the basis of a review of contextual theory and DST the following methodological recommendations were made: (a) use of a multivariate, collective approach; (b) identification and measurement of variables in other domains interacting with motor development; (c) investigation of environmental/family factors potentially influencing motor development; (d) investigation of why motor performances changes may be exhibited; (e) an intervention with young children during early childhood; and (f) understanding the goodness of fit of a motor skill intervention relative to subjects who are at-risk.

Examination of the Potential Subsystems Interacting with Motor Skill Development

Contextual theory and DST recognize the plasticity of motor skill acquisition and the importance of investigating the many other domains and contributing subsystems that may influence development. It seems appropriate, then, to examine other factors that may potentially influence motor skill development and likewise the effectiveness of a motor skill intervention.

Cognitive and Motor Development

Changes in one domain are believed to be impacted by, and impact, changes in other domains (Lerner, 1982). For example, the sensorimotor stage of Piaget's theory of cognitive development indicates the interrelatedness of cognitive and motor development. Payne and Isaacs (1991) support this relationship by stating that "cognitive development strongly depends on the movement capabilities the individual has acquired; similarly, motor development depends on intellectual capabilities." (page 21).

The interrelatedness of motor and cognitive factors has implications for education. It is the traditionally held view that physical education just develops the "physical" and perhaps a little of the "social" self. Yet, it is important to recognize that physical experiences in the gymnasium may be as valuable as activities in the classroom in teaching cognitive concepts. Tomorrow's Schools, a publication of the Holmes group (1990), identified "teaching and learning for understanding for everybody's children" as one of the six guiding principles of educational reform and organization of a Professional Development School. One application of this principle is the idea of children understanding knowledge and utilizing it in different environments. Physical education is an excellent arena in which subject knowledge may be applied and integrated to benefit the children in more than one domain. For example, an objective for prekindergarten programs is to teach colors, numbers, and shapes. The children can be asked to "throw at the red square," "stand on the blue number

two," or "get into groups of three". Children may be able to identify numbers, colors, and shapes in a classroom situation but be unable to apply and use these concepts in the gymnasium. This is an excellent example of children not having learned for understanding with these concepts. Thus, a carefully planned physical activity program, as part of an early intervention, may bring about simultaneous learning in both the motor and cognitive domains. Most importantly, time taken to execute a motor skill intervention should not detract from the cognitive and academic achievement of children who are already at-risk of school failure.

Social and Motor Development

Contextual theory also highlights the interaction between the social and motor domains. Historically, one way in which sport and physical activity have been used is to build the character of young people. Gruber (1985) undertook a meta-analysis of the literature on self-esteem and motor performance. Gruber's (1985) analysis included 84 studies, 27 of which possessed enough data to warrant analysis. Gruber reported that 18 of the 27 studies documented a significant effect on self-esteem or self-concept as a result of physical activity. Gruber found that 66 percent of the children in physical education or directed-play conditions had higher self-esteem or self-concept scores than children who were in non-active conditions. Specifically, children with impairments and disadvantaged children who were physically active had higher mean scores on

self-concept than scores of all other groups. Gruber concluded that motor enrichment fostered feelings of importance in these subjects.

Self-Concept. Young children typically have positive or exaggerated views of their self-worth or abilities (Stipek, 1981). Children in early childhood who are at the preoperational stage of cognitive development may confuse their desire to be competent with the reality of being competent in different skills. For example, preschool-aged children will often say that they are the "best" at a given task. This natural tendency of young children to view themselves as highly skilled may be founded on parental, teacher, and peer feedback or lack of such feedback (Bullock & Pennington, 1989). However, research has supported the relationship between perceived competence and actual competence in young children. Correlations between teacher's ratings of academic achievement or actual academic test scores are positively correlated ($r=0.37$) with the perceived competence of children (Anderson & Adams, 1985; Harter & Pike, 1984).

Research has shown that it is possible to measure the self-concept of young children in separate domains. A profile of self-perceptions across different domains, such as cognitive and social, may be obtained for young children (Harter, 1982; Harter, 1988; Harter & Pike, 1984). Even preschool-aged children are believed to be capable of making meaningful judgments between different domains (Harter & Pike, 1984). Reflecting this belief, the Pictorial Scale of Perceived Competence and Social Acceptance (PSPCSA;

Harter & Pike, 1984) was developed for children between four and five years of age. The scale measures the two general constructs of perceived competence and perceived acceptance. Each construct contains two subscales with perceived competence being made up of physical competence and cognitive competence; while perceived acceptance is composed of peer acceptance and maternal acceptance. However, even though this scale measures perceptions of "self," it does not measure a single notion of "self-concept" per se, but rather measures perceived competence and acceptance.

There has been some controversy regarding ethnic-group membership and self-concept scores. Research has suggested that African-American children have significantly lower scores than Caucasian children (Williams & Byars, 1968); whereas, other studies have suggested that there are no differences between the two groups (Douglas, 1970; Gibby & Gabler, 1967). Other studies have suggested that African-American children have higher self-concepts than Caucasian children (Soares & Soares, 1969; Trowbridge, 1970). However, the generalization of these findings to this study was limited because the previously mentioned studies were old, had been conducted using instruments designed for white, middle-class children, and were founded on a deficit model for minority children. Current instruments should reflect sensitivity to cultural diversity and account for the fact that children are more likely to associate themselves with members of their own ethnic group. Thus, an African-American version of Harter & Pike's PSPCSA (unpublished) with all

pictures depicting children of African-American origin was selected for use in this study.

Research has indicated that children decrease their perceived competence and acceptance over time. A study by Overby, Branta, Goodway, and Smith (1994) found that the perceived competence and acceptance of African-American kindergarten (K, n=16) and third grade (3rd, n=13) children decreased from K to 3rd grade. Significant differences were reported between the two groups on cognitive/scholastic competence (K, M=3.6; 3rd, M=3.0), peer/social acceptance (K,M=3.7; 3rd,M=3.0), and physical/athletic competence (K,M=3.7; 3rd,M=2.9). Maternal acceptance for the kindergarten group (M=3.4) had no comparative subscale for the third grade version of the perceived competence scale for children (Harter, 1982).

Context of the Environment and Motor Development

The context in which a child develops will impact on his/her motor development. There is little current literature on this relationship; however, research undertaken in the 1930's and 1960's serves to illustrate how the environment may impact on motor development.

Environmental deprivation. Studies of deprived environments demonstrate the importance of the environment on motor development. Dennis (1960), Dennis and Najarian (1957), and Yarrow (1961) studied the motor development of institutionalized children to ascertain the impact of a deprived environment on motor skill acquisition. These studies concluded motor development was

delayed due to the restricted environments in which the children lived.

Questions were asked as to the permanency of this retardation, and Dennis and Najarian (1957) concluded that the effects of early environmental deprivation were not irreversible, but subject to modification. The implication of these studies for children who are at-risk suggests that environmental deprivation of a child, such as that represented by some of the factors included in the "at-risk definition" (Michigan Department of Education, 1991), may potentially result in motor delay.

Modification of the environment. Studies comparing the motor performance of twin children indicate that early intervention may produce long-term benefit. Research by Gesell and Thompson (1929), McGraw (1935), and Mirenva (1935) examined the modification of the environment with twins to understand better the environmental impact on motor skill development. Mirenva (1935) found that for experimental twins, training markedly increased the height of jumping and accuracy of throwing as compared to the other untrained twins. In the study by Gesell and Thompson (1929), one twin received stair climbing and cube manipulation treatments while the other twin was deprived of this exposure. After a six-week period, the performance of the treatment twin was superior to that of the control twin. The control twin demonstrated "catch up" after two weeks of training at 52 weeks of age. However, the trained twin demonstrated more agility and less fear of failing throughout the experiment, characteristics that were still evident at 94 weeks of age. McGraw (1935)

demonstrated similar results in a follow up study with twin boys. The trained twin demonstrated superior abilities in the skills in which he had received intervention and practice.

These studies suggest that early intervention programs may produce long term advantages in motor skill performance. Despite the age of the studies related to deprivation and modification of the environment, these classic studies were well-controlled but involved procedures that may not pass Institutional Review Boards today. Thus, this body of work still has much to offer the investigator interested in the impact of the environment on the development of children and should not be discounted based on the time period in which they were conducted.

Family Influences on Child Outcome

The child is embedded in the context of the family. A child cannot be singled out for intervention without affecting or involving the family in some way. This section of the review will examine the types of family variables (contextual variables) which may have impact on child outcome.

Race and maternal educational status have been reported as being most predictive of school failure while other factors reported as significant include poverty, maternal history of drug abuse, and single parent family status (Ramey, Stedman, Bordes-Patterson, & Megel (1978). Lennon (1989) investigated the relationship between school failure and socioeconomic status and found that the income of the family accounted for much of the variance in

school achievement tests. Lennon emphasized the strong relationship between poverty and school failure and reported that multiple risk factors significantly increased the chance of failure. Hutliner (1988) concluded from a review of the literature that stress in the family is an inevitable condition in at-risk environments. Cambell, Goldstein, Schaefer, and Ramey (1991) studied the relationship between parental beliefs and values and early intervention for children who were at-risk. The authors found that a child-centered, rather than parent-centered, intervention program resulted in change of parent beliefs and values. The change in parental attitudes was attributed to child change that was positive. However, an interesting finding of the study was that parental education was significantly related to all other variables when used as a covariate in statistical analysis.

Sociodemographic variables were correlated with school achievement for school-aged children who had been born with low birth-weight. The literature identified sociodemographic variables that influenced the behavior of low birth-weight children who were experiencing behavior problems in school (McCormick, Gortmaker, & Sobol, 1990). Maternal education, poverty status, maternal age at birth of child, presence of both biologic parents in the home, number of siblings, and maternal ratings of health were variables reported to correlate with school difficulty. Thus, greater school difficulty was associated with older children, boys, black children, children of mothers with low educational attainment, children in single parent or poor families, children

whose mothers were adolescents at the birth of their child, children with two or more siblings, and children whose mothers rated their own current health as fair or poor (McCormick et al., 1990). These authors emphasized the association between socioeconomic disadvantage and academic problems.

Overall, the literature indicates that the context of the family has a large influence on the school achievement of the child. This study aims to assess the supportiveness of the home environment to child learning and development in the motor domain by using the HOME inventory (Bradley & Caldwell, 1979).

Early Intervention Programs for Cognitive Development

The literature related to early intervention was reviewed to determine if early intervention programs had been documented as being effective in improving developmental variables. An analysis of the literature indicated that a preponderance of the studies relative to the effect of an early intervention program assessed cognitive development. Thus, the discussion in this section will focus on the literature in the cognitive domain to provide a basis for understanding the efficacy of early intervention and the methodological problems associated with early intervention studies. The limited research in the motor domain (Connor, 1993; Halverson & Robertson, 1979; Kelly, Dagger, & Walkley, 1989; Miller, 1978; and Werner, 1974) will be discussed more specifically in the section entitled "Educational Models of Motor Intervention".

Efficacy of Early Intervention on Child Development

The body of literature on early intervention is vast and diverse. However, many studies have been criticized for having poor designs (Stedman, 1988), small or mixed-subject groups (Guralnick, 1989, 1991; Stedman, 1988), or poorly documented intervention programs (Guralnick, 1991). Specifically, White and Casto (1985) reported in their review of 316 articles on early intervention that there was a diversity and/or lack of information on: (a) the type of services provided in the interventions; (b) the duration and intensity of the interventions; (c) the objectives of the interventions; and (d) the target populations of the interventions. In many cases, empirical approaches were not taken; and where they were, frequent methodological inadequacies were apparent (Guralnick, 1991; Stedman, 1988; White & Casto, 1985). Contextual factors were rarely accounted for in the literature and findings were overgeneralized to populations and subjects from very different backgrounds (Guralnick, 1991; Stedman, 1988).

Despite these problematic studies, overall the body of literature on the efficacy of early intervention programs is irrefutable. The literature has clearly established the positive benefits of early intervention programs for children with developmental delay or for those who are at-risk of such problems (Casto & White, 1984; Guralnick, 1991; Gardner, 1984; Haley, 1988; Komer, 1989; Odom, 1988; Orr 1990; Stedman, 1988; White & Casto, 1985). Moreover, the literature has concluded that early intervention is a cost-effective way to meet

the needs of children who are at-risk and to counter the detrimental impact of the environments from which they come (Casto & Mastropeiri, 1986; Guralnick, 1991; Feldman, 1988; Shonkoff & Hauser-Cram, 1987; Stedman, 1988; White & Casto, 1985).

In order to summarize the literature on the efficacy of early intervention, a discussion of review studies documenting the broad array of literature will be undertaken. White and Casto (1985) undertook a review of the results of 162 early intervention efficacy studies (involving 316 research articles) with children who were disadvantaged, at-risk, or handicapped. Despite the fact that many other authors had undertaken reviews of the intervention literature, White and Casto criticized these reviews based for the following reasons. The 64 previous reviews had cited only a median of 16.5 studies per review despite the hundreds of studies conducted. Few reviewers (15%) had determined the methodological quality of the studies; and, few reviewers (10%) had analyzed how subject and study characteristics had covaried with outcome.

White and Casto (1985) undertook a meta-analysis of the data on intervention. The magnitude of the effect attributed to each intervention was estimated using a standardized mean difference effect size, calculated as $(\bar{X}_E - \bar{X}_C) / SD_C$ (White & Casto, 1985). This "effect size" measure was considered to be a Z score which described the impact of the intervention as compared to a control group. The average effect size for all intervention populations was half a standard deviation. For disadvantaged children this effect size was slightly

smaller at 0.42 standard deviation. White and Casto divided the effect size based on the quality of the study. Looking at the data for disadvantaged subjects only, effect sizes for "good quality studies" as deemed by Casto, White, and Taylor (1983) was 0.41 standard deviation. Examining quality studies that utilized an outcome measure less than one month after the intervention, an effect size of 0.51 standard deviation was found.

Factors Influencing the Success of Early Intervention

White and Casto (1985) identified five potential covariates in the analysis of early intervention research with respect to efficacy. These factors are: (a) the degree of the structure of the intervention; (b) involvement of parents; (c) training of the primary intervenor; (d) age at the start of intervention; and (e) maintenance of benefits. A more structured intervention was found to elicit greater effect sizes (0.47 SD) when compared to less structured (0.41 SD) and little or no structure (0.30 SD) for disadvantaged children. A total of 70 studies and 639 effect sizes were used in this analysis. Studies using professional (certified) intervenors as opposed to paraprofessional (non-certified) intervenors reported greater gains in the outcome measure. The effect size difference was one-third of a standard deviation, with the advantage to certified intervenors (SD=0.63, n=51) as compared to non-certified intervenors (SD=0.33, n=44).

In contrast to quantitative meta-analyses, qualitative reviews of the literature were performed. Stedman (1988) undertook a qualitative review of 40 longitudinal studies involving children who were at-risk. Stedman developed ten

major assertions from the literature he reviewed. How a child is raised and where a child is raised were considered to have a major impact on child outcome. Moreover, race and gender did not appear to be related to the child's ability to benefit from intervention programs. Home-based early interventions in the first two years of life appear to be most effective in contributing to the outcome of children. Likewise, the quality and motivation of the staff relate directly to the program's success and outcome of children. However, Stedman concluded that these studies were difficult to replicate and that it is still only possible to describe in general terms the program conditions that lead to a child's success.

The 1980's work on early intervention for children at-risk of developmental delay was summarized in the literature. Gurlanick (1991) documented an emphasis on implementation of early intervention programs and research identifying the positive and important effects that such interventions have on the children and their families. Studies significant in contributing to these data, such as those by Casto and Mastropieri (1986) and Shonkoff and Hauser-Cram (1987), reported effect sizes between 0.05 and 0.75 standard deviation in cognitive interventions. In real terms, this amounts to gains of 8 to 12 IQ points. Guralnick (1991) cited two program features, age of start and family involvement, as important in the early intervention literature.

Age at start of intervention. Research on the relationship between the age at which interventions begin and the effectiveness of such programs is

equivocal. White and Casto (1985), in their review of 162 studies, found that there was little support for the traditional view that the earlier an intervention starts in a child's life, the more effective it is. Effect sizes for all intervention programs starting at 0-6 months or 43-66 months were very similar. However, when only the studies of perceived quality were reviewed, the effect size was 0.5 SD for children starting before 18 months, 0.37 SD for programs starting between 18-48 months, and 0.26 SD for interventions starting between 48 and 66 months. White and Casto concluded that there may be a slight advantage for children starting earlier, but not to the extent that people had previously thought. Casto & Mastropieri's (1986) meta-analysis also found no evidence for the "earlier is better" rationale in early intervention. White (1990) was in agreement reporting that age of start had no impact on academic success of children with disabilities.

In contrast, Shonkoff and Hauser-Cram's (1987) meta-analysis of children from birth to three years of age reported significant effect sizes for age. In support of this view was Stedman's (1988) qualitative analysis of 40 longitudinal studies. This work reported that home-based intervention in the first two years of life was thought to be most beneficial when compared to interventions that started later in life. However, by the ages of four to six years, systematic organized programs were most beneficial to a child's social and intellectual development.

Family involvement in intervention programs. The literature on the impact of family involvement in the intervention is contradictory. Some studies indicate greater gains with family involvement while other studies report greater gains without involving the family. Stedman (1988) believed the effects of early intervention were strengthened by involvement of the family. He reported that the literature suggested the family context had a significant impact on child development, and where families were very disorganized, external support was effective in contributing to child development. Trout and Foley (1989) also emphasized the family as the ecological system that is most critical to the child's optimal development. They recommended family involvement in early intervention programs. Seligman (1988) and Williams (1987) also supported this view and highlighted the child-parent relationship as central to success in remediation programs for "at-risk" infant populations. Anderson and Fenichel (1989) in a report on the early intervention program "Project Zero to Three", discussed family involvement as one of the successful strategies utilized in this project. Bryant and Ramey (1984) cited parental involvement as having positive effects on child development, but also reported the extent of program contact time to impact on the success of the program.

Parental involvement is cited as important for both cognitive development and school readiness. Reynold's (1990) study of minority children who were at-risk in Chicago found parental involvement in a prekindergarten program a positive benefit on child readiness for school. A similar study by

Waxler, Thompson, and Poblete (1990) used parents as educators in the transition of children from Head Start to kindergarten. The investigators educated parents about the school transition process and gave parents written activities for the children for the summer. A four-week summer program discussing kindergarten readiness and involving the parents was also implemented. The descriptive results reported that kindergarten teachers ranked Head Start children more ready for school than other low income children. In their review of the literature, Shankoff and Hauser-Cram (1987) also supported the positive effect of parental involvement with empirical evidence. They reported significant differences in effect sizes based degree of parental involvement. With no parental involvement, a 0.3 SD effect size was found on cognitive development, however, if parents were involved this rose to 0.7 SD; and, if both parents and children were involved this rose even higher to 0.74. Other work with children with disabilities (Palmer, Shapiro, Wachtel, Allen, Hiller, Harryman, Mosher, Meinert & Capute, 1988; White, 1990) has also documented greater effect sizes with parental involvement.

Maintenance of Benefits Resulting From Early Intervention

Little data are available on the long-term effects of early intervention studies. White and Casto (1985) published data on the long-term benefits of studies that were considered quality with disadvantaged children. They reported that effect size immediately after the intervention was 0.51 SD (n=131 studies), 36 months after the intervention the effect size was 0.27 SD (n=54

studies), and after 36 months benefits averaged 0.10 SD (n=25 studies). The authors concluded that a small residual effect was left in the long-term when studies of quality were considered. However, they also expressed concern about the few number of follow-up studies available in the literature.

Longitudinal and follow-up studies indicate the potential for sustained benefit from an intervention program. Feldman (1988) undertook a 17-year descriptive follow-up study of 17 prekindergarten subjects who were disadvantaged. Achievement in the children who were involved in this intervention was greater relative to comparable students not involved in the intervention. Both students and parents reported benefitting from the intervention, with students more able to meet the demands of school and parents better equipped to provide support to their children. A longitudinal study of a Head Start program also reported sustained positive benefits from enrollment in the program (Consortium for Longitudinal Studies, 1983). The results of the consortium confirmed the maintenance of cognitive (increase in IQ) and social benefits for several years following participation in an intervention program. However, longitudinal assessment reported that these benefits eventually faded (typically by sixth grade). The consortium concluded that preschool, rather than Head Start per se was the main cause of the beneficial effects.

Early Intervention and Children At-Risk

The term at-risk has had multiple meanings and has been widely used in the literature. The definition has ranged from children whose lives are threatened by biological disease, to children who live in abusive homes, to children who are unlikely to graduate from high school. Before this reviewer examines the impact of interventions on children who are at-risk, it is important first to clarify exactly what is meant by the term "at-risk."

Federal and State Definitions of Risk

Federal law authorizes the State to provide for the education of preschool-aged children. Public Law (PL) 99-457-Oct. 8, 1986, was the federal law that provided funding for early intervention programs for preschool children. The part of PL 99-457 entitled "Title II-HANDICAPPED CHILDREN AGED 3 TO 5" identified preschool grants that were available to a State which (a) had met eligibility requirements; (b) had an approved State plan; and (c) provided special education services to children aged three to five years (Section 619). In Michigan the lead agency for this law is the Michigan Department of Education. As a result of funding from PL 99-457, the Office of Compensatory Programs in the large urban school district in which this study took place obtained funding from the Michigan Department of Education. The funding was used to develop and implement a compensatory prekindergarten program for children who are at-risk of school failure and/or developmental delay. Subjects in this study were selected from this program.

The new law PL 102-119-Oct. 7, 1991, "Individuals with Disabilities Education Acts Amendments of 1991" re-authorizes, amends, and strengthens PL 99-457. Section 7 of this law identifies preschool grants relating to Section 619 of the previous PL99-457. Section 8 of PL 102-119 incorporates into the definition of individuals who are to be served by special education services, not only "children with disabilities" but also "individuals who are at risk of having substantial developmental delays if early intervention services are not provided". Specifically, PL 102-119 adds the following subparagraphs to the law, "To facilitate and improve outreach to low-income, minority, rural, and other undeserved populations eligible for assistance under parts B and H."

PL 102-119 allows each state to create its own definition of risk. Nine categories of conditions that place a child at-risk of a developmental delay have been established by the State of Michigan. In order for a child to be identified for services under PL 102-119, a developmental history, observational assessment, health appraisal, and appropriate formal assessment must be undertaken (Michigan Department of Education, 1991). The State of Michigan specifically describes the label "at-risk" as children who may incur significant developmental delay as a result of biological and/or environmental risk if early intervention services are not provided (Michigan Department of Education, 1991). The Michigan Department of Education identified twenty-seven risk factors that include both environmental and biologic factors (see Table 2). They range in apparent severity and focus from concern expressed by a parent about

the development of a child to maternal substance abuse. State guidelines require that a child should demonstrate four or more risk factors in order to be eligible for special education services with respect to early intervention.

Table 2

Michigan Department of Education Risk Factors

1. Serious concern expressed by a parent, primary caregiver, or professional regarding a child's development, parenting style or parent-child interaction.
 2. Parent or primary caregiver with chronic or acute mental illness/developmental disability/mental retardation.
 3. Parent or primary caregiver with drug or alcohol dependence.
 4. Parent/primary caregiver with a developmental history of loss and/or abuse.
 5. Family medical/genetic history characteristics.
 6. Parent or primary caregiver with severe chronic physical illness
 7. Acute family crisis.
 8. Chronically disturbed family interaction.
 9. Parent-child or primary caregiver-child separation.
 10. Adolescent mother.
 11. Parent has four or more preschool children.
 12. Family income up to 200% of federal poverty guidelines.
 13. Presence of one of the following:
 - parent education is less than ninth grade.
 - neither parent is employed
 - single parent
 14. Physical or social isolation and/or lack of adequate social support
 15. Lack of stable residence, homelessness, or dangerous living conditions.
 16. Family has inadequate health care or no health insurance.
 17. Limited prenatal care.
 18. Maternal prenatal substance abuse.
 19. Severe prenatal complications.
 20. Severe perinatal complications.
 21. Asphyxia.
 22. Very low birth weight
 23. Small for gestational age
 24. Bronchopulmonary dysplasia.
 25. Excessive irritability, crying, or tremulousness on the part of the infant.
 26. Atypical or recurrent accidents involving the child.
 27. Chronic otitis media (inflammation or infection of the middle ear).
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Compensatory Prekindergarten Definition of At-Risk

The prekindergarten program in which the subjects in this study were enrolled had their own list of 25 at-risk factors (see Table 3). These risk factors were very similar to the ones specified by the State of Michigan, but focus more heavily on the impact of environmental factors on the child rather than biological ones. Eighteen of the 25 (72%) risk factors used in the prekindergarten program are environmentally based, whereas 15 of the 27 (55%) Michigan risk factors are environmentally based.

Table 3

Prekindergarten Student Risk Identification Criteria.

1. Low birth weight
 2. Developmentally Immature
 3. Physical and/or sexual abuse
 4. Nutritionally deficient
 5. Long-term or chronic illness
 6. Diagnosed handicapping condition (mainstreamed)
 7. Lack of stable support system of residence
 8. Destructive or violent temper
 9. Substance abuse or addiction
 10. Language deficiency or immaturity
 11. Non-English or limited English speaking household
 12. Family history of low school achievement
 13. Family history of delinquency
 14. Family history of diagnosed family problems
 15. Low parental/sibling educational attainment or illiteracy
 16. Single parent
 17. Unemployed parent/parents
 18. Low family income
-

Environmental and Biological Nature of Risk

The literature pertaining to at-risk can be divided into biological and environmental components (Cowden & Eason, 1991). Factors identified under the biological component include low birth weight, prematurity, central nervous system (CNS) involvement, respiratory difficulties, and prenatal exposure to drugs or other substances. The environmental component contains factors of poverty, low maternal education, low maternal age, low social support system, and weak parent-infant bonding (Cowden & Eason, 1991).

"Risk" is a probabilistic concept relating to an empirically established relationship between two variables (Stedman, 1988) and is a fluid phenomenon (Hrncir & Eisenhart, 1991). Stedman further reported that one variable should be able to provide predictions about some measure of child outcome. As a result of this belief, Stedman cautioned against viewing predictive variables as the etiology of risk and child outcome. Hrncir and Eisenhart (1991) also cautioned against irresponsible use of the term risk. These researchers emphasized that risk was not a static phenomenon but rather a fluid factor that changed relative to the context. Moreover, Hrncir & Eisenhart (1991) highlighted that children develop in an environmental context and that standardized test scores are not good predictors of risk. Thus, researchers must exercise caution in using the term at-risk and be sure to define exactly what defines risk for the subjects in their study. In light of these findings, the current study selected qualitative research methodologies to supplement

quantitative methods in order to describe better what constituted risk for the subjects in the study. These findings also motivated the use of qualitative methodologies to assemble a picture of the context in which the child developed.

Intergenerational transmission of failure. Risk is often a cyclic phenomenon that intensifies over generations. For example, stress in a family as a result of environmental or biological reasons places a child at-risk of educational failure. This at-risk child often fails in school and grows up with few or no life goals except to survive. This individual often has children at a young age and lives in poverty. Therefore, the cycle continues. As generations pass, the risk factors often become more numerous and more intense resulting in a greater probability of risk and failure (Lennon, 1989; Ramey & Ramey, 1990). Over time a devastating cycle of intergenerational failure and poverty are constructed (Ramey & Ramey, 1990; Schorr, 1989).

Outside influences are typically necessary to enable a family to be able to escape from the pressures that place them at-risk. Thus, external influences such as early intervention programs are essential in breaking the cyclic nature of risk and providing an opportunity to succeed for children at-risk of educational failure (Ramey & Ramey, 1990). This study aimed to provide children who were at-risk with instruction in motor skills so that could may be successful in motor performance and acquired skills that would allow them to lead more active lifestyles. However, it is not within the confines of this study

to determine the impact of a motor skill intervention on the future risk status or educational achievement of these children.

Relationship of Children Identified as At-Risk and Motor Development

No literature was found pertinent to the relationship between children who were legally labelled as at-risk and their motor skill development, except for the pilot data cited earlier (Goodway & Branta, 1992a). However, literature which has examined children who are exposed to risk factors such as poor nutrition, low birth weight, or potential drug exposure, may provide insight into the potential influence of risk on motor development. For example, the literature has documented motor delays and CNS damage in infants prenatally exposed to crack-cocaine (Besharov, 1989; Chasnoff, Griffith, MacGregor, Dirkes, & Burns, 1989; Petitti & Coleman, 1990; & Schneider, Griffith, & Chasnoff, 1989). This is particularly worrisome when statistics from the Michigan Department of Public Health report that 447,000 woman of child-bearing age annually use illegal drugs, with 16,000 children born addicted to drugs every year (Hoffman, 1992). Crack cocaine has been a high-use illegal drug since 1985. Therefore, there are approximately 112,000 children living in Michigan born with prenatal drug-exposure. A large number of these children (32,000) would now be 5- or 6-years-of-age and entering the school system in 1993 (Hoffman, 1992).

Researchers (Eilers, Desai, Wilson, & Cunningham, 1986) have found that children with low birth weight (< 1500 grams) experienced motor and other

developmental delays. They also investigated the impact of low birth weight on later school performance and concluded that of the children born with low birth weight, those who performed better at school were the ones who had received quality stimulation from older mothers and/or lived in a higher socioeconomic environment. Eilers et al. (1986) identified a need for early intervention programs for children from low income families who had low birth weight children and/or have young drug-abusing mothers.

Given the above types of risk factors, many of the children entering school may be predisposed to motor delays. Yet, in the urban school system where this study took place, children do not receive regular physical education from an educated professional until they attend middle-school. Thus, it is important to document the motor performance of children who are at-risk and determine the impact of a motor skill intervention on the children's motor performance.

The Importance of Proficiency in Motor Performance for Children At-Risk

Much of the literature has focused on the importance of school achievement for children who are at-risk. This investigator believes that proficiency in the motor domain is as critical to the children's overall development and well-being as scholastic achievement. This section identifies the potential importance of proficiency in motor skills for children who are at-risk.

The Importance of Proficiency in FMS

A child's physical ability transcends the motor realm and impacts other cognitive, social, and affective abilities. Motor activity provides opportunities for children to learn about the environment, initiate social relationships, and explore affective relations. The school-aged child who has poor motor ability often has difficulty interacting with his or her peers and adjusting to school life. Thus, it is important that children are given the opportunity to develop their physical abilities at a young age. Cratty (1982) supported this view by suggesting that exposure to structured and planned programs of motor intervention will influence the motor patterns of the preschool child in a positive manner. Schiller and Schiller (1990) also expressed the importance of early intervention motor programs in assisting children to move through the sequential stages of motor development.

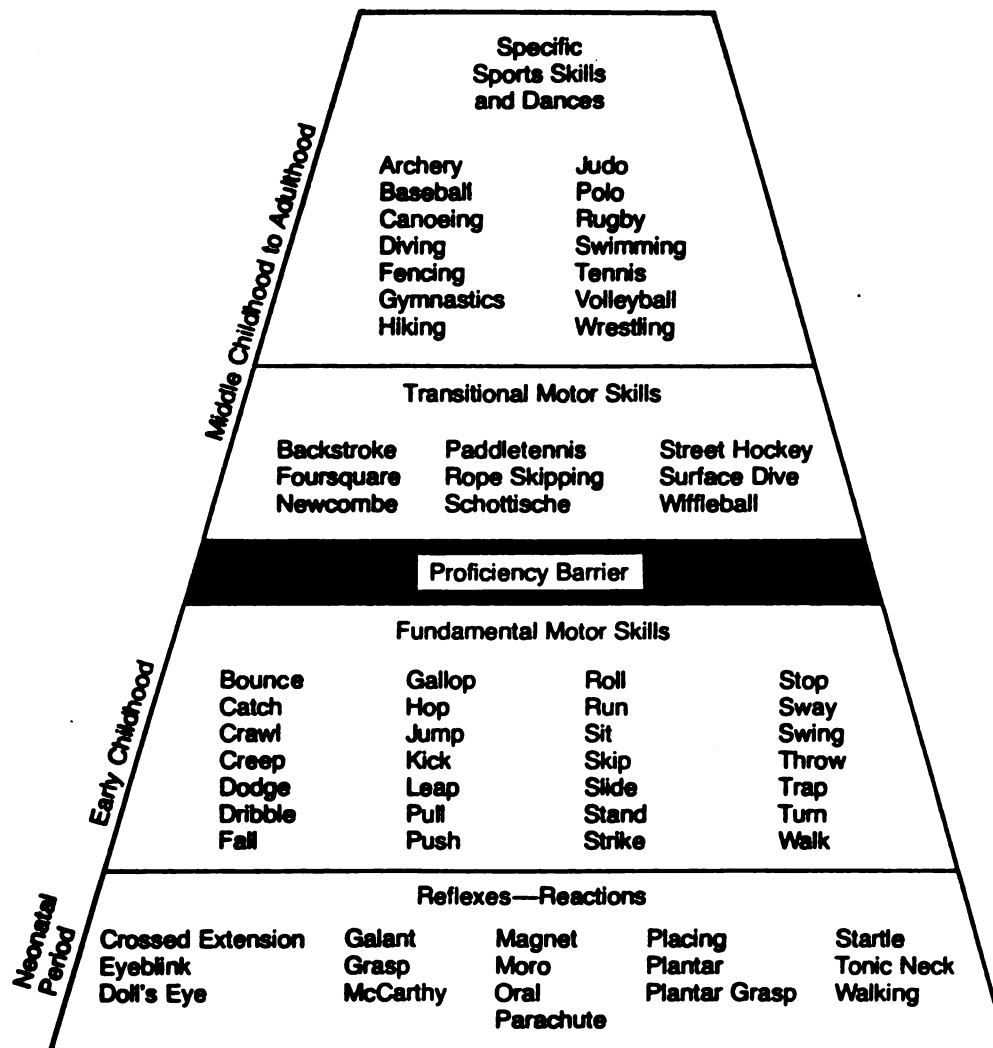
FMS in the physical domain are analogous to the alphabet in the language domain and provide a role in the development of life-long activity patterns. A wealth of recreational, sport, and leisure opportunities develop from proficiency in FMS. Early childhood is commonly believed to be a period for the acquisition of FMS (Gallahue, 1989). Readiness periods for learning emphasize the role of experience and the environment in learning motor skills (Seefeldt, 1975). This change in focus from a predominantly maturational view to an environmental perspective has shifted the burden of learning away from the learner alone to challenging professionals in charge of children's activity programs. A model

depicting sequential progression in the achievement of motor proficiency (Seefeldt, 1980) illustrates this relationship by showing how FMS develop after reflexes and reactions and before transitional motor skills (see Figure 1). In order to pass onto the higher level of motor proficiency (transitional and sports skills), the child must pass through the "proficiency barrier" by obtaining a basic grasp of FMS. Thus, mastery of FMS is the primary goal of physical education during early to middle childhood and provides a challenge to all educators of young children to render developmentally appropriate services. If FMS are not mastered during early to middle childhood, children may experience failure and frustration in subsequent physical activities which in turn may lower perceived physical competence and may foster an inactive lifestyle. In particular, this concern has been documented for African American girls who have reported cultural expectations that oppose their participation in physical activity as an adolescent and adult (Goodway & Branta, 1992a). Hence, exposure to FMS in order to achieve mastery by middle childhood is critical to the ability to continue life-long physical activity.

The Importance of Physical Activity to Health and Wellness

There is a well-accepted relationship between physical fitness/physical activity and the reduction of health risks (Blair, Kohl, Paffenbarger, Clark, Cooper, & Gibbons, 1989; Caspersen, 1987). A review of 43 epidemiological studies has suggested that physical inactivity is casually related to coronary heart disease (CHD) (Caspersen, 1987). More specifically, inadequate levels of

Figure 1. Progression of Motor Proficiency Skill Levels (from Seefeldt, 1980, p.317)



aerobic endurance have been linked to heart disease such as hypertension, myocardial infarction, and hyperlipidemia (Pemberton & McSwegin, 1993).

Other research has reported that many children do not exhibit the fitness levels associated with enhanced health (Ross, Dotson, Katz, Errecart & Gaines, 1985; Ross & Pate, 1987). Research has also suggested that the level of fitness needed to benefit health status is much lower than was once believed, with moderate levels of fitness/activity (e.g. walking) having positive health benefits (Caspersen, 1987; Powell, Thompson, Caspersen, & Kendrick, 1987).

There is a relationship between the lifestyles of children who are at-risk and their future health consequences. Early signs of risk factors associated with coronary heart disease such as high levels of obesity, serum cholesterol, and blood pressure have been reported in elementary school-aged children (Wheeler, Marcus, Cullen, & Konugres, 1983; Williams, Carter, Wynder, & Blummenfield, 1979). Dotson (1988) illustrated the relationship between manifesting risk behaviors in childhood and CHD in middle to old age. Dotson showed how risk behaviors in childhood (such as poor nutrition, inappropriate eating habits, poor sleeping habits, physical inactivity, and negative coping behaviors) lead to manifesting risk factors in young adulthood. The risk factors led to manifesting CHD in middle age and the potential for health consequences in subsequent years. The risk behaviors reported in childhood by Dotson are behaviors that have been documented in children who are at-risk (Goodway & Branta, 1992a). Moreover these behaviors actually constitute part of the

definition of risk (Michigan Department of Education, 1991; Office of Compensatory Programs, Flint, 1991b). The relationship between childhood risk behaviors and adult health has implications to educators. Because risk factor levels in childhood predict risk factor levels in young adulthood (Cresanta, Burke, Downey, Freedman, & Berenson, 1986), decreasing risk factors in childhood is an important consideration for health. Today's children must be provided with the capacity to engage in an active and healthy lifestyle. School physical education is the only major institution that can address health-related physical activity needs for all children (Sallis & McKenzie, 1991). Therefore, planned activities that involve sustained physical activity should be considered an important part of any early intervention program. This study aimed to advance knowledge in this area.

In view of the concerns raised in the literature on CHD, it was important to obtain a measure of cardiovascular fitness for the subjects in this study (Dotson, 1988; Goodway & Branta, 1992a). However, there was little literature on the cardiovascular fitness of preschool children. A pilot study of four-year-old children reported that 21 of 22 children completed a 9-minute walk-run (Branta, 1992). This study indicated that the scores for the children were around the 25th percentile with respect to standards reported for children aged between 5 and 6 years (McSwegin et al., 1989). This study indicates it is possible to obtain sustained activity data on preschool children. The current study aimed to contribute knowledge to this area.

Motor Skill Interventions

The literature has adequately reported the effectiveness of early intervention programs. However, in almost all cases this literature was concerned with the development of cognitive and social factors, while the motoric aspects of child development have been largely ignored. The literature concerning early motor skill intervention is scant and that which has been documented comes from a medical model of intervention, not from an educational process.

Medical Models of Motor Intervention

Motor intervention programs based on a medical model have been documented as effective. One study (Haley, 1988) found significant increases in the motor skill acquisition of 43 motor-delayed infants as a result of a therapeutical, medically-based early intervention program. This study reported that family variables such as size of family unit impacted the efficacy of the intervention remediating the motor delay. Palmer et al. (1988) also reported that a parent-centered, in contrast to a physical therapist-centered, motor intervention had a greater impact on the achievement of motor skills in children with cerebral palsy. Another study used the "Carolina Curriculum for Handicapped Infants and Infants At-Risk" which included a focus on gross motor activities for the stomach, back, and upright locomotion, as well as development of manipulation and perceptual-motor abilities (Johnson, Jens, & Attermeirs, 1986). This curriculum reinforced the importance of an early

intervention motor skills program as part of early intervention services to children who were at-risk, but again had a medical model as its base.

This limited review of the literature supports the effectiveness of medical approaches to intervening with the motor skills of children who are motorically delayed. However, medical models to interventions are limited by: (a) high financial cost; (b) a low children-to-therapist ratio; (c) difficulty in identifying subjects; and (d) subjects who are typically low functioning. Hence, an educational model to motor intervention may more adequately meet the needs of the large number of children who are at-risk of a developmental delay.

Educational Models of Motor Intervention

Older studies have documented that motor development advances as a result of training. Dusenberry (1952) reported that a trained group of children made significant gains ($p < .01$) in throwing distance from pretest to posttest as compared to a control group of children ($p < .10$). Gains in throwing distance resulted from six unspecified training sessions with children aged three to six years. Hilgard (1932) assessed the influence on two fine motor skills and one gross skill with children aged 24 to 36 months. Hilgard reported that after 12 weeks of practice, the practice group exceeded the performance of the control group on skills of buttoning, cutting with scissors, and climbing. These fore-mentioned studies have little relevance to this investigation as they assess either fine motor skills or quantitative outcomes of gross motor skills in lab settings. In addition, although unspecified, the race of the subjects was

presumably white. However, these studies do indicate training may increase the performance of motor skills.

There was limited contemporary literature on educationally-based intervention programs for motor skill development of young children and/or children who were at-risk (Connor, 1993; Halverson & Robertson, 1979; Kelly, Dagger, & Walkley, 1989; Miller, 1978; and Werner, 1974). The study by Kelly et al. investigated the effects of an instructional program on the fundamental motor skills of regular preschool-aged children. The 21 experimental subjects (mean age 53.2 months, $SD=8.85$) engaged in a 12-week intervention program. The intervention program was composed of two, 5-week instructional units, each focusing on three fundamental motor skills. The children were taught for a period of 50 minutes twice a week with a teacher to student ratio of 1:5. The control group ($n=26$) had a mean age of 50.4 months ($SD=7.92$) and received daily periods of supervised free play on a well-equipped playground. The study reported significant qualitative gains on the six fundamental motor skills taught to the experimental group as opposed to the control group who showed no significant gains in performance. This study supported the use of a structured physical education program in order to develop fundamental motor skills for the preschool child. However, this study is methodically weak in that the research protocols for the control and experimental groups were different, and contextual factors impacting on a child's life were not studied. For example, no attempt

had been made to determine if the children were engaging in structured physical activity outside of the preschool program.

A study that taught language concepts and labels to preschool children in Head Start and special education elicited some relevant findings for this study. The study by Connor (1993) involved 72 children aged between three and six years of age who were assigned to one of five groups. The three experimental groups received instruction in motor skills and language concepts for three, 30-minute lessons per week over eight weeks. The study reported significant pretest-posttest gains in FMS (among other motor measures such as balance) as a result of the motor skill intervention that took place during the regular preschool program time frame. Despite significant gains in motor scores, Connor identified that the children in Head Start (in addition to the children in special education) demonstrated motor skills that were below expected standard scores for their age. This study showed that all preschoolers were able to benefit from instruction in physical education. This study included subjects who were typical preschoolers, preschoolers in a head start program (hence classified as coming from a low income family) and preschoolers with disabilities. All groups of preschoolers made pretest-posttest gains in motor skills indicating that a structured approach to teaching for all preschoolers is beneficial in developing motor skills.

Instruction provided to young children may affect developmental movement patterns. A study of throwing with kindergarten children by

Halverson and Robertson (1979) indicated that the experimental group differed significantly from the control group in four of the seven components of throwing. This difference occurred as a result of 12 sessions over 8 weeks totalling 120 minutes of instruction per child. Werner (1974) reported that a group of preschool children involved in an eight-week program of instruction exhibited superior performance in locomotor, stability, and manipulative skills as compared to a control group. Both studies indicate that instruction positively affects motor skill development.

The study by Miller (1978) involved 38 children (n=38, 17 male and 21 female) in a direct instruction group. These children received instruction twice a week for one hour each session over a 27-week period in the areas of body management, FMS, rhythms, and simple games. The children were instructed in groups of four ranging in age from three to four years. All subjects were from middle to upper-middle socioeconomic status with parents who indicated their commitment to providing their children with excellent educational experiences. Miller found that the group which received direct instruction increased its performance of FMS to a greater extent than a comparison group of children (n= 18) in a specialized (well equipped) motor environment designed to develop the children's FMS through independent play. Additionally, the children in the "well equipped free play" group did not exhibit greater gains in FMS than a group of control children (n= 23) who had only played at home and at nursery school. More specifically, Miller's study suggested that children

in a free play environment only engage in the locomotor patterns of walking and running and did not exhibit other locomotor patterns such as galloping and skipping. Miller's study supports the need for a structured motor skill intervention during early childhood in order to elicit improvements in FMS.

The motor interventions reviewed in the literature had some relevance to this study. The above studies reflect data on motor development for preschool-aged children. All studies support the notion that preschool-aged children may significantly improve motor performance as a result of a formal, structured motor skill intervention. Additionally, Connor (1993) reported that children who have risk characteristics such as low income are delayed in their motor skills, yet are still able to benefit from a motor skill intervention. Other work (Kelly et al., 1989) highlighted the need to standardize experimental and control testing protocols, as well as documenting contextual variables that may have accounted for the research findings. However, none of the studies identified above include African-American preschoolers, or children legally labelled as at-risk. Thus, application of the above studies' findings to this study must be undertaken with caution.

Relevance to Compensatory Prekindergarten Program

Subjects for this study were drawn from intact classrooms in a compensatory prekindergarten program. The purpose of the compensatory prekindergarten program was to "improve the readiness skills, and subsequent achievement of children who are at-risk of becoming educationally

disadvantaged and who may have a need for special assistance" (Office of Compensatory Programs, 1991c). The program provides services to four-year-old-children who are defined as at-risk of school failure. Parents are considered to be essential to the success of this program and thought to be partners in the learning process. Thus, it is expected that the participation of parents should be planned and encouraged by the teachers.

The curriculum for the prekindergarten program consists of objectives and activities in the domains of language, cognitive, physical, social, emotional, and creative arts areas. The program also provides related health services and a daily nutritious snack for the children. The prekindergarten philosophy is to encourage the children's natural curiosity, to facilitate their exploring new things and problem solving, and above all to develop positive feelings of themselves and others. The intent of this study was to reflect the objectives and philosophies of the compensatory prekindergarten curriculum. Hypotheses generated from this study directly related to the following objectives taken from the prekindergarten curriculum guide (Fisher, Hansberry, Murtaugh, & Burtley, 1991):

1. Develop strength and stamina from sustained activity.
2. Develop basic motor skills.
3. Help them feel good about themselves.
4. Develop a sense of self-awareness.

Moreover, inclusion of additional instruments of assessment and the design of the study sought to reflect the philosophy of the prekindergarten program with sensitivity to the contextual features of each child.

Summary of the Literature and Implications for this Study

In summary, an assessment of the early intervention literature shows that positive benefits are to be gained by intervening in the life of a child identified as at-risk. The evidence is contradictory on the influence of parental involvement and the children's age at the start of the intervention. However, early childhood is a good time to intervene because it is a time when developmental sequences of FMS are emerging. Additionally, early childhood is a time in children's lives when they typically communicate and learn through the physical domain. Finally, early childhood is a time when children are not exposed to academic pressures.

Children involved in an educational intervention before kindergarten have incurred gains in academic and social skills as opposed to children not involved in an intervention. Caution must be exerted in applying the findings from one study to another population. In much of the literature, risk has been differentially defined; and the findings reported in a study are very dependent on the population being studied and the context in which this population is living.

Contextual factors in the family and environment , specifically poverty and maternal education, were highly correlated with child outcome. Early

childhood was considered a readiness period for motor skill acquisition and children who are at-risk were reported as deficient in their fundamental motor skills and cardiovascular fitness. The contextual and dynamical systems theories provide pertinent theoretical frameworks for the study. A paucity of literature in the area of motor skill intervention for children who are at-risk and the apparent deficiencies in the children's motor development support the need for this study. Development of the children's motor skills has implications for the children's well-being as well as education outside of the physical domain.

CHAPTER THREE

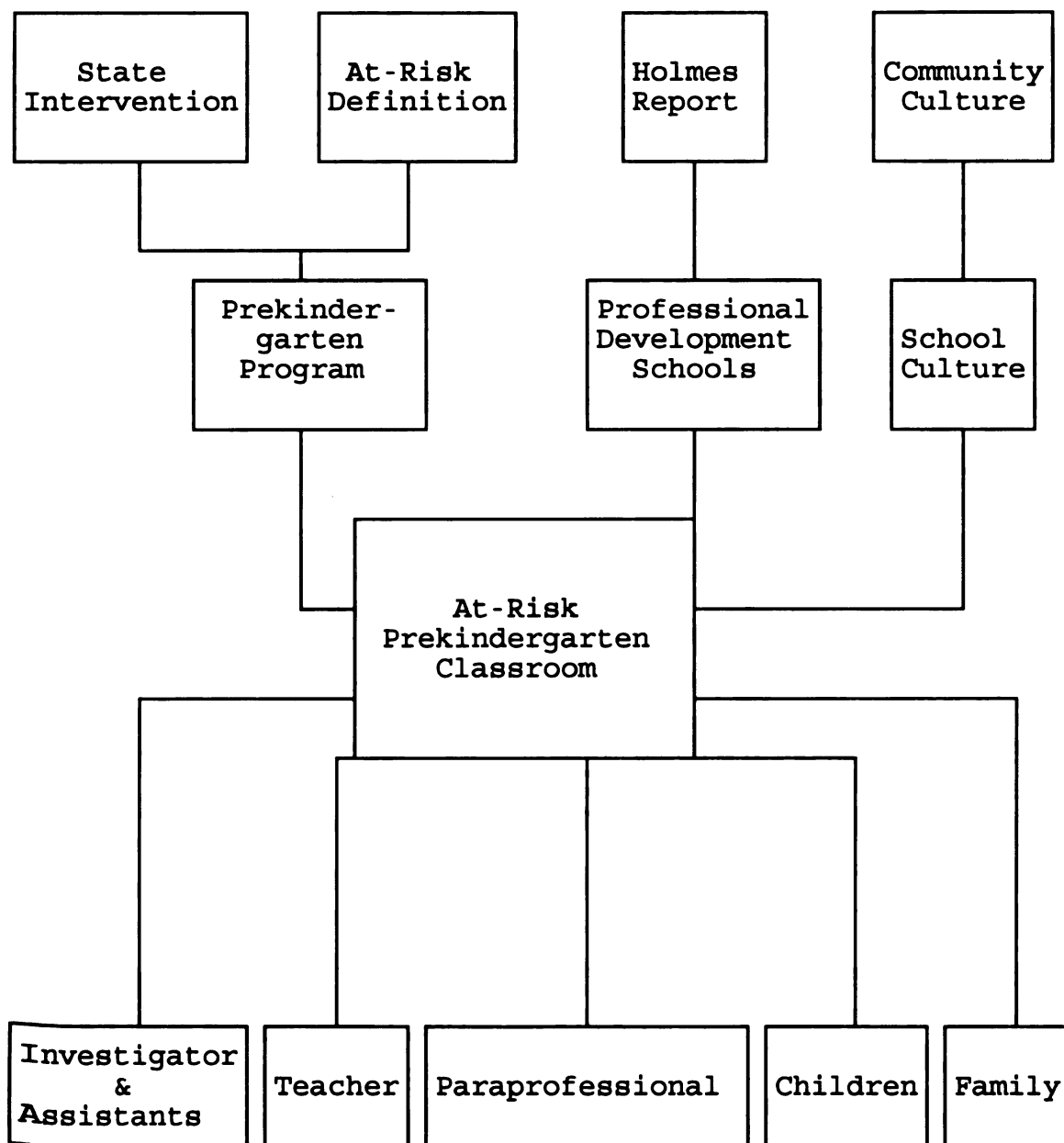
METHODS

This study used a pretest-posttest design with an experimental (E) group drawn from schools A and B and a control (C) group drawn from school C. The E group received a physical activity intervention consisting of twenty-four, 45-minute sessions over twelve consecutive weeks. The C group received the regular prekindergarten intervention. All subjects were enrolled in a compensatory prekindergarten program for children who are at-risk.

Setting of the Study

A review of the setting in which this study was undertaken will be described in order to understand the potential factors influencing the children's motor performance. Figure 2 illustrates the structures/organizations in which the subjects selected for this study were embedded. All structures were relevant for the subjects in the E group. For subjects in the C group, the Holmes report and PDS structures were not relevant. Using a theoretical contextual framework, it is possible that the structures identified in Figure 2 may have influenced in some manner the development of the subjects. Thus, it is important to examine each of these factors in order to understand their potential impact on the child and hence the child's motor development.

Figure 2. Contextual Structures in Which the Subjects are Embedded



Community Culture

The subjects for this study were selected from three schools in an urban school district. The school district was situated in an industrial city historically in which the primary source of income for its inhabitants was the automobile industry. The decline of the automobile industry over the last decade has severely affected many of the communities in this urban city. As auto plants closed, large amounts of unemployment and poverty occurred, and crime rates increased. Currently, nearly half of the children attending this city's schools will spend part of their life prior to age eighteen living with only one biological parent and in poverty. The zone of the city in which schools A, B and C are situated is an area where there is a high rate of unemployment and poverty.

School Culture

The three schools involved in this study serve a predominantly (99.9%) African-American population. These schools are fully aware of the problems and challenges of urban education. All three schools aim to provide stable, nurturing environments in which children may learn. In School A and B teachers were rarely absent from school and have been at the same school for many years. None of the teachers involved in this study were absent during the course of motor skill intervention.

The children come to school with many problems which need to be addressed before education can begin to occur. The overriding concern in these communities is poverty. The socioeconomic status of the children in the

schools is revealed by the fact that 51.9% of students (school A), 62.7% of students (school B) and 76.3% of students (school C) qualify for the free or reduced lunch program. In addition, the mean income for the three schools is \$23,694. Just less than half (44%) of the children in the three schools are members of households headed by females, and the percent of female-headed households in poverty is 68%. These data illustrate that the three schools are similar in many of their demographic characteristics and serve an African-American community with a high percent of low income, single parent families.

The schools from which the subjects were selected had statistics that were of concern from an educational point of view also. For example, in 1992 only 13.8% of students from School A, 18.3% of students from School B, and 13.3% of students in school C achieved a passing level in the reading portion of the Michigan Educational Assessment Program (MEAP). The scores for math were a little higher with 17.2% of school A students, 21.8% of school B students, and 7.1% of School C students passing the MEAP standards. Science proved to be the highest of all MEAP scores with 29.8% (school A), 39.7% (school B) and 13.1% (school C) of students passing this test. This suggests that the majority of children in the three schools involved in this study are at-risk of school failure.

Holmes Report and Professional Development Schools

One of the major differences between the three schools involved in this study was that the schools from which the E group was selected were involved

in Professional Development School (PDS) activities with a major Midwestern university. As a result of the Holmes report (Holmes Group, 1990), an alliance had been formed between the university and the urban school district to identify and work on issues of educational concern. A PDS is envisioned to be a school where the development of novice teachers takes place along with the continued development of experienced teachers. It is also a place where research, and development of the teaching profession as a whole, is inherent in the school system. The PDS initiative is an institutional coalition or partnership between the public schools, university, business, and community. Moreover, it is a committed long-term initiative to meet the needs of the children and to reform the educational system.

The PDS has six organizing principles (Holmes Group, 1990): (a) teaching and learning for understanding; (b) creating a learning community; (c) teaching and learning for understanding for everybody's children; (d) continuing learning by teachers, teacher educators, and administrators; (e) thoughtful long-term inquiry into teaching and learning; and (f) inventing a new institution. Based on these guiding principles, universities and schools endeavor to determine the needs of the school, its students, and its teachers.

As part of PDS activities in School A and School B, university faculty, teachers, and administrators had identified inquiry into one of three subject matter areas (math, literacy, or motor skills) in order to facilitate the change of teaching practice in the classrooms. The teachers of the classrooms from

which the E subjects were drawn had identified motor skills as the area in which the children in their classroom had needs and also an area that required further research. At the beginning of data collection procedures, educational reform work had been in progress for slightly over one year in School A (Class 1) and three months in School B (Class 2). The teacher of Class 1 had worked with the investigator for over one year; whereas the teacher of Class 2 had only worked with the investigator for 3 months. However, the E subjects from Class 1 and Class 2 had received the same contact time with the investigator. The school from which the C group was selected was not involved in reform activities with a university partner and was not a PDS.

State Intervention and Compensatory Prekindergarten Program

All subjects were enrolled in classrooms that were part of a State initiative to fund urban, at-risk prekindergarten programs. The prekindergarten programs were designed to assist four-year-old children in being more developmentally ready for kindergarten. The prekindergarten program aimed to improve the children's cognitive abilities, social skills, emotional control, and physical skills. In addition, the program considered parents to be central to this mission and identified them as the primary teachers of their children at this point in their lives. The program tested children from the community with an objective-referenced test (Office of Compensatory Programs, 1991a) to identify each child's needs. The test included cognitive objectives, such as language development and counting, affective objectives such as trust and self-concept,

and psychomotor objectives such as running and cutting with scissors. In addition to obtaining the test scores, risk factors (Table 3) were also identified for each child.

Relevance of Examining the Educational Setting

The characteristics of the program and the definition of at-risk may have impacted the nature of the prekindergarten classrooms. In addition, the culture of the community and the school may have influenced the subjects' interactions and behavior in the prekindergarten classes. In particular, the characteristics of the teacher, paraprofessional, children, and children's families (and potentially the investigator) may have influenced the prekindergarten classroom culture and potentially the children's motor performance. Subjects in classrooms 1 and 2 may have also been influenced by PDS activities in their schools which were guided by the principles of the Holmes report. Subjects in classrooms 3 and 4 were not exposed to the PDS influences. All of the factors identified in Figure 2 provide a contextual framework within which to consider the motor development of the subjects in the study. These factors will be considered when interpreting the findings from this study.

Subjects

Subjects for the E (n=31) and C (n=28) groups were selected from children enrolled in an urban compensatory prekindergarten program. The prekindergarten program is part of a joint initiative between an urban Community School District and the Office of Compensatory Programs. The

prekindergarten program serves predominantly African-American, four-year-old children who are at-risk of becoming educationally disadvantaged. Children are recommended for the program by parents, social workers, physicians, nurses, and other members of the community. Eligibility for the program is based on pretest scores on an objective-referenced test (Office of Compensatory Programs, 1991a) and identification of risk factors per Michigan Board of Education guidelines (Office of Compensatory Programs, 1991b) (Table 3). A teacher and paraprofessional in each classroom administered a pretest to all eligible children (approximately 55) and then select the 32 children most in need of the program. The children selected for the program were identified by a combination of the lowest test-score and the greatest number of risk factors. Children were placed in a morning prekindergarten class (n=16) or an afternoon prekindergarten class (n=16). Placement in either session was based on request by the caregiver or by random assignment.

Experimental Subjects

Subjects for the E group were drawn from two prekindergarten classrooms in two urban elementary schools (Schools A and B). Intact classrooms of 16 children from each school, one morning class and one afternoon class were used. In Class 1, one child who was enrolled in the program dropped out due to the caregiver being arrested by the police, leaving a class of 15 children. Both schools had a prior association with the

investigator via the PDS initiative. The teachers of these classrooms were committed to a Motor Development Inquiry Group as part of the PDS initiative.

The two classes in the E group were in schools 1.5 miles apart. The children were believed to be drawn from essentially the same community as reported by teachers who lived close to the schools. It was not considered necessary to compare the two classes that made up the E group as the unit of analysis for this study was the group, not class.

Experimental subject demographics The mean age of the E subjects was 4.74 years ($SD=0.29$). There was approximately an even split between boys ($n=15$) and girls ($n=16$) in the E group. The mean preschool readiness pretest score for the E group was 6.03 ($SD=4.05$) out of 20. The E group had on average 5.29 risk factors ranging from 2 to 10. Specific information on the type of risk factors may be found in the Qualitative Results section. Most of the children in the E group ($n=21$) were born full term. The children who were born prematurely ($n=10$) were on average 3.8 weeks premature ($SD=2.10$). The mean birth weight of all E children was 6.56 pounds ($SD=1.74$). Other demographic information for the E group may be found in the Qualitative Results section.

Control Subjects

Subjects from the C group were drawn from the same urban compensatory prekindergarten program as subjects in the E group. The subjects for the C group were selected from two classes (Class 3 and Class 4)

in an urban elementary school (School C). School C is 2.1 miles from School A and 0.75 miles from School B. The subjects in the C group were considered to represent a suitable control group for the E group because: (a) the eligibility requirements for the prekindergarten program were the same for all children in both the C and E groups (Office of Compensatory Programs, 1991b); (b) the children in the C group were selected from the same African-American community as were the children in the E group; and (c) teachers and paraprofessionals at the three schools involved in the study reported that all subjects came from the same community with the same types of risk factors and family demographics.

Control subject demographics and family data . The mean age of the C subjects was 4.74 years ($SD=0.33$). There were equal numbers of girls ($n=14$) and boys ($n=14$) in the C group. The mean preschool readiness pretest score for the C group was 4.18 ($SD=2.16$) out of 20. The C subjects had on average 5.79 risk factors ($SD=2.13$) ranging from 2 to 11. This was similar to the E subjects. Most of the C children ($n=22$) were born full term. The children who were born prematurely ($n=6$) were on average 3 weeks premature ($SD=2.76$). The mean birth weight of all C children was 7.15 pounds ($SD=1.23$). Other demographic information on the C group may be found in the Qualitative Results section.

Comparison of the Control and Experimental Groups

Three one-way analysis of variance (ANOVA) were undertaken on the pretest scores of the two subscales of the TGMD and half-mile walk-run. A multivariate analysis of variance (MANOVA) was performed on PSPCSA between the C group and E group (Table 8). This analysis was performed to determine if there were significant differences between the C group and E group on pre-test measures.

Subject Consent Procedures

Informed consent was obtained from the custodial caregiver(s) of each child participating in the study. A letter describing the study, the child's involvement in the study, and the caregiver's involvement in the study were handed to each caregiver(s) (Appendix A). Assent was sought from each child. The children were asked whether they would like to make a film of running, jumping, kicking, catching, etc., with the investigator. Also, the children were asked whether they would like to talk to the investigator and tell the investigator about some pictures. If a child could have said "no", or showed non-verbal signs (e.g., looking away and refusing to give eye contact, walking away from the investigator) of not wanting to participate in the study, that child would have been removed from the study. However, children exhibited these behaviors and all children assented to the study. Verbal consent also was obtained from the school principal and administrators of the school district involved in the study and from the administrators of the compensatory prekindergarten

program. Approval was also obtained by the Institutional Review Board of the University for research involving human subjects (Appendix B).

Individuals Involved in the Study

The primary investigator in the motor skill intervention was a white female. She was the lead teacher for the E group during the motor skill intervention and the primary test administrator in the collection of pretest and posttest data. The investigator was assisted by two white, female graduate student assistants during pre and posttest data collection procedures. Table 4 illustrates the gender and ethnicity of all individuals involved in this study. The teachers responsible for the C and E groups exhibited the same gender and ethnic characteristics. However, the paraprofessionals in the C and E groups did not exhibit the same ethnic characteristics. Thus, it was not possible to control for the ethnicity of the paraprofessionals within the context of this study. It also was not possible to control for the gender of the subjects within the context of the study, although the ratio of boys to girls between the E and C group was very close.

Table 4

Gender and Ethnicity of the Personnel and Subjects Involved in the Study

	<u>Experimental Group</u>		<u>Control Group</u>	
School:	A	B	C	C
Class:	1	2	3	4
Teacher:	AA ¹ female	White female	AA female	White female
Paraprofessional:	White female	AA female	AA female	AA female
Subjects:				
N:	15	16	14	14
Boys:	9 AA	7 AA	7 AA	7 AA
Girls:	6 AA	9 AA	7 AA	7 AA
Investigator:	White female			
Assistant 1:	White female			
Assistant 2:	White female			

Note: ¹: AA = African-American

Development of the Motor Skill Intervention

The motor skill intervention was developed from a preschool physical education curriculum designed for all preschool students (Dummer, Connor, & Goodway, In press) (Appendix C). The preschool curriculum was used to assist in the design of developmentally and functionally appropriate goals for this study's motor skill intervention. The Dummer, et al. (In press) curriculum consists of 160 program objectives in 6 goal areas: (a) body management, (b)

fundamental motor skills, (c) games, sports, and dance skills, (d) physical fitness, (e) activity-related cognitive knowledge, and (f) activity-related personal-social skills. The preschool curriculum (Dummer, et al., In press) in a given school district should reflect a number of objectives representing community values.

Two main program goals were identified for the motor skill intervention in this study. The first goal was to demonstrate improvements in the ability to perform fundamental motor skills. The second goal was to demonstrate improvements in the ability to engage in sustained activity. Fundamental motor skills represented goal area two in the preschool curriculum, and physical fitness represented goal area four in the preschool curriculum. A specific fitness goal was selected because subjects in the study were not considered typical preschoolers and concern had been raised by teachers as well as experts in motor development about the children's levels of physical fitness (Goodway & Branta, 1992a).

Development and Justification of Intervention Program Goals

The two main program goals were developed via a formal and informal process of program design that took place over the period of one school year. First, teachers, paraprofessionals, and administrators of children in prekindergarten through 6th grade who were involved in a Motor Development Inquiry Group as part of PDS staff development considered the importance of physical activity to well-being. Second, the teachers discussed their observations of the children at school and in the community. Several major

concerns arose from these discussions. The teachers were disturbed by the children's inability to engage in sustained activity during physical education sessions and at recess. The teachers reported that children sat down or leaned against a wall after a short period of physical activity (approximately three minutes). They also reported that children appeared to become very tired towards the end of the school day, and teaching was negatively affected as a result of the children's fatigue. In addition, many of the teachers who live in the community around the school reported that the children did not seem to engage in much physical activity after school.

The teachers, paraprofessionals, and administrators also were concerned about the inability of upper elementary-aged children to initiate sports and games by themselves. The teachers thought this was an important skill for the children in their school, as the children had little or no access to organized sport and recreational activities outside of school. Further discussion took place about why they thought the children were experiencing difficulty in organizing sports and games. The teachers believed that the children's poor skill level in FMS was the most important factor impacting the children's behavior. The teachers believed that if the children experienced success in performing FMS the children would be more motivated and more able to play sports and games by themselves at school and in the community. Also, the teachers believed that if the children worked on developing FMS in the early elementary years, then the upper elementary years could be structured towards teaching games and sports.

In addition, intervention goals and objectives were discussed with the curriculum and staff specialist for the compensatory prekindergarten program. The staff specialist raised concerns similar to those of the teachers about the children in the prekindergarten programs across the urban school district. She supported the proposed goals of the motor skill intervention as being developmentally appropriate and reflecting community values and needs. Thus, the goals of the motor skill intervention were thought to be both developmental and functional for the children involved in the intervention.

Development and Justification of Intervention Program Objectives

Program objectives in the fundamental motor skill area were selected based on data about the age at which 60% of children were able to perform a specific developmental level for FMS (Seefeldt & Haubenstricker, 1982). Eight FMS skills (galloping, hopping, jumping, striking, bouncing, catching, kicking, and throwing) were selected for instruction. The number of skills that were selected was based upon the philosophy of exposing the children to introductory experiences in skills that were considered most critical to their ability to engage in games and sports in the upper-elementary years. The mastery approach to teaching the children was not chosen as data by Seefeldt and Haubenstricker (1982) suggest that mature performance of FMS is not typical for a prekindergarten-aged child. Their data report that at age 48 months 60% of boys are able to perform running at a mature level. In contrast, by 60 months of age, 60% of boys are just beginning to exhibit mature throwing

patterns; whereas for 60% of girls, running is the only mature pattern exhibited. Thus, Seefeldt and Haubenstricker's data support the concept of introductory experiences for this age group. Additionally, the National Association for the Education of Young Children (NAEYC) suggests that a wide range of activities that expose children to different skills is developmentally most appropriate at the prekindergarten age (NAEYC, 1990).

Allocation of Intervention Instructional Time

Instructional time was allocated to the fundamental motor skills based on the functional importance of the skill to future performance of sports and games as judged by the investigator. Table 5 reports the instructional time given to each skill and the session of the intervention in which the skill was taught during this study. As the table shows, galloping and hopping were considered less functional skills and thus only received 50 minutes of total instructional time. Catching and throwing were considered more functional skills and received 120 minutes of instructional time.

The instructional time allocated to the skills was considered adequate to produce significant change, but not necessarily mastery. Kelly, Dagger, and Walkley (1989) reported that 90 minutes of instructional time per skill over a 4.5 week period resulted in significant gains at the 0.05 level of significance. The only two skills that did not have 90 minutes of instructional time were galloping and hopping. However, it was thought to be important to expose the subjects to these skills, especially in relation to developing the ability to engage in sustained activity.

Table 5
Allotment of Instructional Time For Motor Skill Intervention

Session	Gallop	Hop	Jump	Strike	Bounce	Catch	Kick	Throw
1	10					10	10	
2	10					10	10	
3		10				10	10	
4		10			10		10	
5			10		10			10
6			10		10			10
7	10			10				10
8		10		10		10		
9			10	10		10		
10					10	10	10	
11		10			10		10	
12				10			10	10
13			10	10				10
14					10	10		10
15			10			10		10
16				10		10	10	
17	10			10			10	
18			10		10			10
19			10		10			10
20						10	10	10
21		10				10	10	
22			10	10		10		
23	10			10				10
24				10	10			10
Total	50	50	80	100	90	120	110	120

Lesson Plans for the Intervention

Each lesson plan, designed for a 45-minute period, was comprised of: (a) a ten-minute opening activity; (b) three, ten-minute periods of skill instruction; and (c) a three-minute closure of the lesson plan. Two minutes were allowed for transition time from one skill area to another skill area. The following is a description of the three phases of a typical lesson plan.

Introductory activity. The introductory activities consisted of ten minutes of sustained activity. The goal of the introductory activity was to keep the children moving throughout the ten-minute period. A variety of approaches were utilized in order to achieve this. For example, continuous activity was achieved by moving to preschool movement tapes, moving to contemporary music, and/or by low-organized games such as "Run-Freeze". During this time, the children also engaged in locomotor skills such as running, galloping, skipping, hopping, sliding, and leaping. However, the children were not formally taught these skills during the introductory activity. The investigator, teacher, and paraprofessional modeled the actions and encouraged the children to keep moving.

Skill instruction. The children were divided into three groups. The investigator, teacher, and paraprofessional each taught an assigned skill. The children rotated through each skill section, thus receiving instruction in all three skill areas and from all three teachers. Each skill segment lasted ten minutes with a total skill instruction time of 30 minutes. The teacher and paraprofessional selected their preferred skill activity the week prior to the

lesson. The teachers carefully monitored the progress of each child in the group in order to ensure a success-oriented, yet developmentally appropriate, environment for the child.

Closure. The investigator brought the whole group together at the end of the skill instruction time. The investigator reviewed the three skills that the children had performed during the lesson and provided developmentally appropriate feedback on each skill. For example, after a lesson involving throwing, the investigator might say at the closure "look how I step and throw" emphasizing "step and throw" and modeling the behavior as she said it. The children also received positive, contingent feedback at this time. For example, "I liked the way you all listened today," or "Everyone worked very hard today, I'm very proud of you."

Sample lesson plan. A sample lesson plan illustrates the first session of the motor skill intervention. All other intervention lesson plans are in Appendix D.

Lesson Plan Objectives:

- (1) To improve the ability to engage in sustained activity.
- (2) To develop beginning-level skill in catching a tossed ball.
- (3) To develop beginning-level skill in kicking.
- (4) To develop beginning-level skill in galloping.

Time	Activity	Organization	Comments Cues
10 mins	Objective 1 - RUN AND FREEZE Children running/galloping /skipping. Blow whistle and children stop quickly and do not move (freeze). Vary position of freeze.	Go over with children that they freeze when whistle is blown. Children run/gallop /skip until whistle blows, then freeze. Each time demonstrate the new freeze position and have children perform it before they continue to move. Make freeze position momentary.	Encourage children to keep moving around the gym. Assist where necessary to keep children moving. Join in to keep children motivated.
10 mins	Objective 2 - CATCHING 1. Catching a balloon 2. Catching a scarf 3. Catching a bean bag 4. Catching a pillow ball with a partner	1. Children in own space. Tap balloon in air and catch. 2. In own space throw scarf in air and catch with two hands 3. Small toss in air, catch bean bag. Increase height of toss with success. 4. Stand opposite a partner (5 feet away). Toss ball to partner. Take a step back if successful.	Get your hands on balloon. Reach for the ball Hug the ball

10 mins	Objective 3 - KICKING 1. Pendulum leg swing 2. Kick imaginary ball 3. Kick stationary ball 4. Kick a balloon	1. Children stand in circle, hold hands and swing leg like a grandfather clock. 2. Have the children kick an imaginary ball around the room. Use a drum beat to get "step-kick". 3. Place pillow ball on a polyspot 8 feet from a pin. Step-kick ball to knock pin over. 4. Kick a balloon around gym. Encourage a step into the ball & keep moving.	Swing leg from hip Emphasize step & kick throughout kicking activities Kick hard Reward pattern of kick, not pins knocked over.
10 mins	Objective 4 - GALLOPING 1. Step-together-step-together slowly 2. Step-together-step-together quickly 3. Galloping with a scarf tied to the lead leg 4. Galloping after hoops	1. Place colored star on each foot. Red on right foot, blue on left foot. Put right foot in front. Slowly step-together down the gym. Repeat with left foot in front. 2. Repeat activity above, but try and make the movement faster than in 1. 3. Teacher ties a scarf on lead leg. Child holds onto the scarf "reins of horse" & gallops to music. Scarf is switched to other leg & activity repeated. 4. Roll a hoop for the child, have the child gallop and get it. Vary speed of hoop based on child's abilities. Have child gallop with both legs leading.	1. Keep red/blue star in front all of the time. Let us all say "step-together" 2. Try and move faster keep red/blue star in front. 3. "Pull on the reins/ scarf" to keep one leg in front. Look out for other "horses" 4. Relax back leg. Keep one foot in front. Positively reinforce effort
3 mins	CLOSURE	Talk to children about what they liked to do best. Reiterate key focus of activities eg pump arms on running.	

Implementation of the Motor Skill Intervention

The intervention, consisting of 24 instructional sessions during a 12-week period, was included in the regular scheduled time for the compensatory prekindergarten program. Each motor skill session lasted for 45 minutes as this was the time allocated in the school schedule to physical education. The primary investigator was the lead teacher for the motor skill intervention; the classroom teacher and the paraprofessional assisted in teaching the instructional activities. The teacher to child ratio was 1 to 5 for Class 1 and 1-to-5.33 for Class 2. Each lesson plan for the intervention was provided to the teacher and paraprofessional one week in advance of the teaching date. The plan was discussed and any questions or concerns addressed at this time. The investigator discussed ways in which the assistant could provide a success-oriented environment that included positive, appropriate feedback. The teachers selected the skill they wished to teach at this time. After the lesson had been implemented, the teacher, paraprofessional, and investigator evaluated the lesson plan and made decisions relevant to future lesson planning.

The children in the E group attended on average 82.60 percent of all intervention sessions ($SD=14.68$). The children's attendance at the intervention ranged between 37.50% and 100%. A Pearson Product Correlation was performed to examine the relationship between measures of motor performance and percent attendance at the motor skill intervention. No significant correlations were reported for this analysis. Correlation coefficients ranged

between $r=0.02$ (weakest correlation) and $r=0.22$ (strongest correlation). Thus, none of the children's data was discarded from this study due to low attendance at the intervention. Additionally, this decision was made because the investigator believed the data from this study should reflect a real-world situation where some preschool children who are at-risk do not attend school on a regular basis, and thereby are limited in the instruction they receive.

Control Condition

The subjects in the C group received only the regular prekindergarten program. In this program, the time given to physical activity sessions was unstructured and left to the discretion of the classroom teacher. At the beginning of the intervention the teachers of the C subjects reported that gross motor activity did not occur on a regular basis and was not organized. However, half-way through the motor skill intervention the teachers of the C group classes were exposed to an inservice on motor skills. After this inservice the two control teachers arranged combined gymnasium time for the children in their classes on a weekly basis for a period of 45 minutes. Class 3 (am class) and Class 4 (pm class) received the same PE schedule and organization so the data were the same for both classes.

The children in the C group received seven, 45-minute periods of motor skill activity during the intervention period. The classes took the form of a 10- to 15- minute physical activity session of running, skipping, galloping and hopping around the gymnasium. For the remaining 30 minutes the children were allowed to free play with motor skill equipment that included, playground

balls, hoops, small balls, roller skates, bats, and bean bags. The children were allowed to move between the equipment that was available at will, and for as long as they wanted to play with each piece of equipment. The investigator was present for all of the seven motor skill activity sessions (both am and pm) for the C group. During the session the investigator assisted the teachers in supervising the children and ensuring the play was safe and the children were behaving. The investigator was careful to ensure that no instruction took place during this time as a result of her presence. The seven, 45-minute activity sessions were the only form of physical activity in which the C group engaged. Severe winter weather and concern for the safety of the children prevented the children from having recess time.

The investigator spent six hours in the classroom with the C subjects prior to pretesting these subjects. The investigator calculated that she had spent 6 hours with the E group prior to pretesting the E subjects. The investigator also spent 1.5 hours per week with each control class assisting in classroom activities such as free play with the children, reading a book, painting, and desk work. The weekly time that the investigator spent with the control group equaled the time that the investigator spent with the experimental group. It was anticipated that experimenter effects were minimized by this protocol.

Instrumentation

Table 6 illustrates the instruments utilized in this study, the individuals who administered the instruments, and the individuals tested with instruments.

Quantitative data were collected prior to the motor skill intervention (pretest) and after the intervention (posttest) for both the E and C groups. The HOME inventory, Demographic Questionnaire, and Caregiver Interview were administered during a home visit. Home visits took place throughout the intervention period on Fridays. This was the only day the children did not come to school, and thus, this was the day assigned to completing the home visit. Subjects were assigned to home visit dates based on availability and proximity of home. Caregivers visited at the beginning of the intervention period were questioned at the end of the intervention to determine if significant life changes had taken place since the first visit.

Table 6

Summary of Research Instruments

Test Instrument	Pre	Assessors Int Post	Individuals Tested
<u>Quantitative Instruments</u>			
TGMD	I A1	I A2	All subjects Individually during classroom instruction time
Half-mile Walk-Run	I,T,P	I,T,P	Randomized selected groups of 8 subjects
PSPCSA	I,A1	I,A2	All subjects individually during classroom instruction
<u>Qualitative Instruments</u>			
HOME Inventory		I,T,P	Subject and primary caregiver at home during intervention period
Demographic during Questionnaire		I,T,P	Primary caregiver at home intervention period
Caregiver Interview during		I,T,P	Primary caregiver at home intervention period
Child Interview (n=22)		I,A1	Selected subjects, individually during classroom instruction

Note: I = Investigator, T = Teacher, P = Paraprofessional
 A1 = Test Assistant 1, A2 = Test Assistant 2
 Pre = Pretest, Int = Intervention, Post = Posttest

Test of Gross Motor Development

The Test of Gross Motor Development (Ulrich, 1985) is a quantitative and qualitative measure of fundamental motor skills in children aged 3- to 10-years. The 12-item test includes 7 locomotor skills and 5 object-control skills. Test administration took approximately 15 minutes per child and provided norm-referenced and criterion-referenced data.

Mean test-retest reliability coefficients were reported to be 0.96 for locomotor items and 0.97 for manipulative items. Inter-rater reliability coefficients were comparable to the reliability coefficients (Ulrich, 1985). Content validity had been established via an assessment of the appropriateness of the items for preschool- and elementary-aged children by three experts. Construct validity was established via factor analysis methodologies.

The investigator removed subjects from their regular prekindergarten classroom instruction and administered the TGMD on an individual basis in an empty classroom. Equipment and assessment protocols were standardized for all children (Ulrich, 1985).

Half-Mile Walk-Run

The half-mile walk-run was selected as a measure of cardiovascular fitness because it was a simple field test and more appropriate for young subjects than the mile run/walk (McSwegin, Pemberton, Petray, & Going, 1989). Subjects in the study walked or ran at the fastest possible pace they could sustain for the distance of 0.5 mile as per the protocol outlined by the Physical Best Test (McSwegin et al. 1989). The half-mile course was marked out on a

square circuit in the gymnasium of each school. The children in each class were randomly selected into groups of eight to perform the task. Each prekindergarten subject was assigned a third-grade or fourth-grade child to act as a cheerleader and motivator who would run with the subject around the gymnasium. In addition, motivating techniques were utilized to facilitate optimal performance of the subjects including balloons and cheerleaders at the corners of the course (Branta, 1992).

The subjects and their motivator were instructed to run around the course a given number of times in order to complete half-a-mile. The teacher stood on one corner of the course and kept track of the children's progress making sure they performed the correct number of laps around the gymnasium. The paraprofessional and investigator encouraged the children and made sure the children performed the task properly.

No standardized data were available for prekindergarten-aged children on this test. However, 5-year-old boys had a criterion standard time of 6 minutes, and 5-year-old girls had a criterion standard time of 6 minutes 20 seconds. These times were considered to represent satisfactory cardiovascular fitness for 5-year-old children (McSwegin et al., 1989).

Pictorial Scale of Perceived Competence and Social Acceptance

An African-American version of the PSPCSA for young children was used with the subjects in this study (Harter & Pike, unpublished). The African-American scale is identical to the regular scale (Harter & Pike, 1984), except that the children depicted in the picture plates are African-American children

rather than White children. The African-American version of this scale was considered to be most reliable for the subjects in the study because the subjects were more likely to identify with children of the same ethnicity than other ethnicities.

The PSPCSA contains four separate subscales (cognitive competence, physical competence, peer acceptance, and maternal acceptance). The first two subscales make up a perceived competence construct, and the last two subscales make up a social acceptance construct. Each subscale consists of six items. The version of the scale used in this study was the preschool-kindergarten scale. Items in the scale occur in the order of cognitive competence, social acceptance, physical competence, and maternal acceptance. The original preschool-kindergarten scale was tested on 90 preschool and 56 kindergarten children (Harter & Pike, 1984). In terms of the total sample, 96% were Caucasian, with the remaining 4% being African-American, Hispanic, and Oriental. The reported means for the four subscales of the PSPCSA for the preschool sample were: cognitive competence ($M=3.4$, $SD=0.45$), physical competence ($M=3.2$, $SD=0.49$), peer acceptance ($M=3.0$, $SD=0.56$), and maternal acceptance ($M=3.1$, $SD=0.59$). The means for the current study ranged between 3.0 and 3.4.

Harter and Pike (1984) reported that mean data for the individual items on the scale ranged from 3.0 to 3.6, and the standard deviation ranged from 0.60 to 1.12 (Harter & Pike, 1984). Reliabilities for internal consistency of the individual subscales ranged from 0.65 to 0.89, with a reliability of 0.86 for the

combined subscale measure. The reliability of the total scale was 0.89. Data on the validity of the scale were obtained for the first and second grade version of the scale via interview but were not available for the preschool-kindergarten scale. Harter and Pike (1984) concluded that the ratings were valid because children's self-perceptions were based on behavioral referents, and that scores on the subscales discriminated between groups of children predicted to differ in a domain. In this study the scale was individually administered by the investigator to each subject in a quiet room away from distractions. A standardized test protocol was used to administer the PSPCSA (Harter & Pike, 1984).

Qualitative Methodology

Qualitative methods were used to supplement the quantitative data obtained. Qualitative research methodologies underscore the importance of understanding the meaning of actions and movements in a social context (Bogdan & Biklen, 1982). Data were collected via formal and informal interviews, videotaping, audiotaping, fieldnotes, and document collection. The HOME inventory (Bradley & Cadwell, 1979, 1981) was included in this section because the inventory involved observation of the home environment and caretaker, and an interview with the caregiver and child. All of which are forms of qualitative methodology.

The original intent of this study had been to collect participant-observation field notes during the intervention sessions. This was not possible as the investigator was too involved in teaching and organizing the intervention.

However, for the three sessions when another person was available to videotape the session, fieldnotes were made from the tapes after these sessions. This information was used in the development of assertions in the qualitative data analysis and are reported in the Qualitative Results section.

HOME Inventory. The HOME inventory (Bradley & Caldwell, 1981) is a measure of the quality and quantity of stimulation and support for cognitive, social, and emotional development available to the child in the home environment. Scoring was based on a combination of the observation of and interview with the child's primary caregiver and the child during a visit to the house. The early childhood version of the HOME inventory was used. The early childhood version consists of 55 items clustered into 8 subscales as indicated in Table 7. Caldwell and Bradley (1984) reported stability and internal consistency coefficients for the preschool HOME inventory as acceptable (Table 7).

Table 7

Stability and Internal Consistency Coefficients for the HOME Inventory for
Families with Preschool Age Children

Subscale		Internal Consistency	Stability (3 years vs 4.5 years)
I	Learning Stimulation	.88	.70
II	Language Stimulation	.65	.37
III	Physical Environment	.83	.21
IV	Warmth & Acceptance	.75	.44
V	Academic Stimulation	.60	.26
VI	Modeling	.53	.29
VII	Variety In Experience	.69	.48
VIII	Physical Punishment	.59	.05
TOTAL		.93	.70

Bradley and Caldwell (1981) validated the preschool HOME inventory on 30 male and 30 female African-American children between the age of 3 and 5 years. The children came from a range of socioeconomic status, with a disproportionate number from the lower and lower middle-class homes. The father was absent in 42% of the homes, and 40% had received some type of preschool experience. The HOME inventory was reported as a useful instrument in screening African-American children for risk and potential failure in school (Bradley & Caldwell, 1981).

The HOME inventory was administered by the investigator, teacher, and paraprofessional to the primary caregiver of the subject at a home visit during

the period of the intervention. The caregiver was contacted in advance to arrange the visit. A home visit was part of the requirements for the children's enrollment in the prekindergarten program, and all caregivers had been exposed to one home visit from the teacher and paraprofessional three months prior to the study. Implementation of the HOME inventory involved observing the child and caregiver at home and engaging the caregiver in an informal dialogue as to what his or her child did at home (Caldwell & Bradley, 1984). This procedure lasted approximately one hour per visit.

Demographic Questionnaire. The Demographic Questionnaire was administered to the caregiver during the home visit by the investigator, teacher, or paraprofessional (Appendix E). The questionnaire was developed from the Family Statistics Questionnaire (Lerner, 1987). The Demographic Questionnaire included information on sociodemographic status, caregiver educational attainment, caregiver employment, maternal age at birth of child, current marital status, and age and gender of children.

Interview format. The interview techniques employed in this study were a semi-structured, subject-directed method (Hammersley & Atkinson, 1983). This type of interview technique starts with a set of predetermined questions, but the responses from the subject may direct further probing and the generation of additional questions during the interview.

Interview of Subjects. The subjects in the E group were formally interviewed about their perceptions of participation in motor skill activities. The questions for this study were developed from a previous questionnaire, orally

administered to 35 children between prekindergarten (n=17) and sixth grade in an urban elementary school (Goodway & Branta, 1992a). The questionnaire (Appendix F) included questions on the skills the children most-liked to do in gym, the skill at which they were best, and the skill they least-liked to do. Equipment such as bats and balls and pictures of children performing fundamental motor skill were utilized to facilitate understanding of the questions and to demonstrate movement actions to the children. The children were asked about physical activity outside of school such as what types of activities they did at home, how often they engaged in physical activity at home, and whom did they play with at home. Throughout the interview, children were prompted where necessary and allowed to expand their answers. Interviews (n=22) took place during the posttest data collection period and children were removed from their regular class for this procedure. All children in the E group were not interviewed because they were not present, or could not be released from the classroom due to other prekindergarten responsibilities. Informal interview also took place spontaneously while the children were engaged in motor skill activity and during the time the investigator observed the regular classroom activities.

Interview of Caregivers. The child's primary caregiver was interviewed during the home visit by the investigator, teacher, or paraprofessional about his or her perceptions of the child's physical competence. The caregiver was asked the same questions as the child about favorite activities undertaken by the child at home (Appendix E). The caregiver was also asked about his or her perceptions of the importance of physical activity experiences for children and

the types of experiences and feelings he or she had in physical education as a child.

Document collection. Data were collected by the investigator from the children's school files. These data included information on the children's test scores, health status, size of family, and child care provision. Other documents were also collected such as caregiver newsletters, child pictures, and written comments of child verbalizations during "show and tell" or "my favorite thing to do is..." The documents were collected for later triangulation with other data sources.

Audiotaping and videotaping. Formal interviews of the children were audiotaped. The investigator attempted to audiotape the caregiver interview; however, the caregivers were not comfortable with this procedure and requested that the investigator not tape the interview. Videotape procedures were also used. Three intervention sessions for each class were videotaped. Classes that were videotaped were observed in detail and field notes made of the activities observed. This material was used for triangulation of data sources. It was not possible to videotape all classes due to personnel limitations.

Qualitative research questions. The following set of questions and sub-questions were formulated to initiate the procedures for collection of qualitative data collection procedures:

1. Who are the children in the E and C groups?
 - a. From what type of family does the child come?

- b. Who is the primary caregiver for the child?
 - c. How many siblings does the child have?
 - d. What type of risk factors does the child have?
 - e. Who does the child talk about at home when asked?
- 2. What activities do the children engage in at home?
 - a. With whom does the child play?
 - b. What does the child do at home?
 - c. How much time does the child spend outside the home with others?
 - d. How many and which adults interact with the child?
 - e. What does the child like to do at home?
 - f. What types of activities do the caregiver and child do together at home, and how often?
 - g. What type of activities are available for the child to engage in at home?
- 3. What do the children think about motor skill activity?
 - a. What does the child like to do?
 - b. What does the child least like to do?
 - c. What does the child think about ..(describe a specific activity)
 - d. How good is the child at ..(describe a specific skill)?
 - e. How does the child behave in the gym?
 - f. What types of interactions take place in the gym?

- g. How do the children respond to a successful motor performance (e.g. knocking over some pins)?
- h. What is the relationship between the skills the child like to do and the child's ability to do them?
- i. What makes a child concentrate in the gym?
- j. What equipment does the child like to play with and why?
- h. What does the child think of sustained activity?
- 4. Who is the caregiver of the child?
 - a. What education does the caregiver have?
 - b. How satisfied with his/her life is the caregiver?
 - c. What does the caregiver think of physical activity?
 - d. What does the caregiver like to do with the child?
 - e. How much time does the caregiver spend with the child?
 - f. What does the caregiver try to teach the child at home?
 - g. What does the caregiver think of the compensatory program in which his/her child is enrolled?
 - f. What type of interactions do the caregiver and child exhibit?

The above questions were identified to begin examination of the subjects and the context of the subject's environment.

Qualitative data analysis. Data analysis was an ongoing process during the fieldwork. After completion of the intervention, the data were analyzed to

determine emerging patterns. Assertions were developed and all data sources were searched to establish confirming and disconfirming evidence for the assertions. Further refinement of the assertions occurred after this process. Data were compared from one data source to another to determine the reliability of emerging patterns (Hammersley & Atkinson, 1983). These patterns were assessed to discern if and how the qualitative patterns might support and assist in the interpretation of quantitative findings.

Independent, Dependent, and Confounding Variables

The independent variable was the motor skill intervention administered to the E group. The primary dependent variable was motor skill performance, including both the performance of fundamental motor skills and sustained physical activity. Perceived competence and acceptance were of secondary interest as dependant variables.

Many factors in this study may have acted as potentially confounding variables. The author was interested in factors such as family demographics, maternal education, the supportiveness of the home environment (HOME measure), the number of risk factors, and how these factors related to motor performance. Other factors such as teacher characteristics and gender characteristics of subjects were not controlled for in this study and thus are potentially confounding variables.

Data Analysis

Table 8 illustrates the statistical analysis undertaken for each of the hypotheses.

Table 8

Statistical Procedures Used in Analysis of the Hypotheses

Hypothesis	Independent Variable (IV)	Dependant Variable(DV)	Statistical Analysis
1. Pretest scores of the E group will equal pretest scores of the C group for the PSPCSA.			
	Group (C,E)	4 subscales of PSPCSA	One-way MANOVA
2. Pretest scores of the E group will equal pretest scores of the C group for the TGMD and half-mile walk-run.			
	Group (C,E)	Locomotor Object-control Half-mile walk-run time	Correlation coefficient of DV's .07 shared variance so 3 separate ANOVAs
3. E Subjects will demonstrate greater improvements in the locomotor and object-control subscales of the TGMD than C subjects from pre- to-posttest.			
	Group(C,E) Time (Pre, Post)	Locomotor Object-control	2x2 MANOVA Post-hoc Tukey HSD Analysis
4. E Subjects will demonstrate greater improvements in the half-mile walk-run than C subjects from pre- to-posttest.			
	Group(C,E) Time (Pre,Post)	Half-mile walk-run time	2x2 MANOVA Post-hoc Tukey HSD Analysis

Table 8 - continued

Hypothesis	Independent Variable (IV)	Dependant Variable (DV)	Statistical Analysis
5. E Subjects will demonstrate greater improvements in the four subscales of the PSPCSA than C subjects from pre- to-posttest.			
	Group(C,E) Time (Pre,Post)	Four subscales of PSPCSA	2x2 MANOVA (x4) Post-hoc Tukey HSD
6. Variance in motor performance among individuals of the E and C groups will be accounted for by HOME scores, maternal education, # risk factors and school readiness pretest scores in the pretest and posttest.			
	<u>Criterion</u> 1) Total TGMD 2) Locomotor SS 3) Object-control SS 4) ½ walk-run	<u>Predictor</u> HOME Inventory Maternal Educ # risk factors Preschool readiness score	2 Separate (pre/post) Regression Analyses for each Criterion variable
7. For the E and C groups perceived physical competence will be moderately correlated ($r=0.4$ to 0.6) with motor performance for the pretest and posttest.			
	TGMD -Locomotor -Object control	Physical Competence subscale	Pearson Correlation
	½ mile walk-run	Physical competence subscale	Pearson Correlation
8. Subjects with high posttest motor performance scores will have higher perceived physical competence and peer acceptance scores than subjects with low posttest motor performance scores.			
	Motor Performance Group (high, low) 1) Total TGMD 2) Locomotor SS 3) Object-control SS 4) Half-mile walk-run	Perceived physical competence posttest & perceived peer acceptance posttest	MANOVA with post-hoc Tukey HSD analysis Separate MANOVA per IV

Statistical Procedures

Both descriptive and inferential statistical procedures were used in this study. Descriptive statistics were calculated for all of the variables measured in this study.

Hypothesis 1. A one-way MANOVA was used to test hypotheses 1. This analysis assumed significant relationships existed between the four subscales that make up the PSPCSA (Harter and Pike, 1984).

Hypothesis 2. The locomotor subscale, object-control subscale, and the half-mile walk-run scores were correlated via the Pearson Product Moment Correlation procedure in order to determine correlation for hypothesis 2. The resulting correlation matrix reported coefficients below $r=0.26$. Despite such low correlations, the half-mile walk-run time and the locomotor standard score were significantly ($p < .05$) related, but only shared 7% of variance. Thus, three separate one-way ANOVAs were performed (locomotor subscale, object-control subscale, and half-mile walk-run time) to test hypothesis 2.

Hypotheses 3. Two separate 2 group (E,C) x 2 time (pretest, posttest) MANOVA's were performed on the locomotor standard score and object-control standard scores to test hypothesis 3. A post-hoc Tukey HSD test was performed if significance was reported ($p < .05$) with the MANOVA in order to determine where the differences lay. The MANOVA tested the group effect, time effect, and a group by time interaction. A MANOVA analysis, rather than an ANCOVA analysis, was performed on the locomotor standard score despite

significant pretest scores between the E and C groups. This decision was made as the investigator did not want to forfeit the time effect. Additionally, a MANOVA analysis was more stringent than an ANCOVA analysis because the C group mean was higher than the E group mean on the pretest.

Hypothesis 4. A 2 group (E,C) x 2 time (pretest, posttest) MANOVA was performed on the half-mile walk-run time to test hypothesis 4. A post-hoc Tukey HSD test was undertaken if significance was reported ($p < .05$) with the MANOVA. The MANOVA tested the group effect, time effect, and a group by time interaction.

Hypothesis 5. Separate MANOVA analyses were performed on each of the four subscales of the PSPCSA. These analyses made sense relative to interpretation and discussion of the findings as each subscale would be examined separately relative to a group and time effect. A 2 group (E, C) x 2 time (pretest, posttest) MANOVA was performed on each of the four subscales of the PSPCSA to test hypothesis 5. A post-hoc Tukey HSD test was performed if significance was reported ($p < .05$) with the MANOVAs. The MANOVA tested the group effect, time effect, and a group by time interaction for each subscale.

Hypothesis 6. A stepwise multiple regression analysis was used to test hypothesis 6. Separate regression equations were calculated for each of the criterion variables. The criterion variables were the locomotor standard score, object-control standard score, half-mile walk-run time and total TGMD score.

Regression equations were calculated for both the E and C groups, with pretest and posttest measures as a contrast. The predictor variables were HOME inventory score, maternal education, number of risk factors and preschool readiness pretest score. The predictor variables were entered into the regression equation based on the magnitude of their correlation with the criterion variable and contribution to explaining the variance of the criterion measure. If the predictor variable did not significantly contribute to an explanation of the variance, then the regression analysis was terminated.

Hypothesis 7. Hypothesis 7 was tested via two separate Pearson Product Moment analysis coefficients between perceived physical competence and (a) the object-control standard score and locomotor standard score and (b) the half-mile walk-run time. This analysis was undertaken on both pretest measures and posttest measures of all of these variables for the E and C groups.

Hypothesis 8. Hypothesis 8 was tested by a MANOVA procedure. For the analysis by MANOVA, groups were identified by subjects who scored "high" on the motor performance measures and those subjects who scored "low" on the motor performance measures, respectively (as opposed to E and C groups). High or low status was identified from four different ways involving four measures of motor performance; namely, locomotor percentile, object-control percentile, half-mile walk-run and total TGMD score. For each measure of motor performance a MANOVA analysis was performed.

First, the posttest locomotor percentile scores were used to determine high/low groups. All subjects who were at the 25th percentile or lower for this measure made up the low group ($n=18$) and all subjects who were at the 75th percentile or higher made up the high group ($n=29$). A MANOVA by group was performed on posttest measures of perceived physical competence and perceived peer acceptance. Second, the same procedure was applied to the posttest object-control percentile scores, resulting in a high ($n=16$) and a low ($n=29$) group. The third analysis involved using the posttest half-mile walk-run time to determine high and low groupings. The top 25% times were selected for the high group ($n=14$) and the lowest 25% times were selected for the low group ($n=14$). Again a MANOVA analysis was performed. Finally, the posttest total TGMD score was used to divide the groups into high and low. No percentile scores were available to divide the data into high and low groups. The frequency table for this variable showed that it was not possible to separate these data into the top 25% and bottom 25% scores because of an uneven frequency distribution. Thus, the top 21 scores and bottom 21 scores were selected to make up the groups. As before, a MANOVA analysis was performed. Post-hoc Tukey HSD tests were undertaken if significance ($p<.05$) was obtained for the MANOVA.

CHAPTER FOUR

QUANTITATIVE RESULTS

The quantitative results encompassed both descriptive and inferential statistics. The descriptive results are reported first. Then, the inferential statistics are presented by order of hypotheses tested.

Descriptive Statistics

The mean locomotor pretest total for the experimental (E) group was lower than that of the control (C) group (Table 9). When the locomotor percentiles for the two groups were compared, the E group had a mean percentile rank of 14.87; whereas the C group had a mean percentile rank of 25.64. The pretest locomotor percentiles for the C group ranged between the 2nd and 75th percentile, with 85.7% of all control subjects at or below the 50th percentile on the locomotor subscale. The E group ranged between 0 and the 50th percentile on the locomotor subscale, with 100% of the E group at or below the 50th percentile on the locomotor subtest.

The pretest object-control total for the E group was slightly lower than that of the C group (Table 9). The mean pretest object-control percentile was 16.90 (E) and 18.14 (C). The C group ranged between the 1st and 75th percentiles on object-control skills, with 89.3% of all control subjects at or below the 50th percentile. The E group ranged between 0 and the 75th percentiles, with 90.3% of all E subjects at or below the 50th percentile for the object-control total. For the pretest the C group had a higher Total TGMD Score than

the E group. Thus, overall, the C group performed at a higher level than the E group prior to the onset of the motor skill intervention for both locomotor and object-control measures.

Posttest measures of the locomotor total show that the E group scores were higher than the C group scores. When the locomotor percentiles for the two groups were compared, large differences were found. The E group had a mean percentile rank of 80.16; whereas, the C group had a mean percentile rank of only 26.04 (Table 9). The E group had a large range of scores, from the 37th to the 95th percentile, but had only 3.2% of all the experimental subjects at or below the 50th percentile on the locomotor subtest. In contrast, the C group had changed little from pretest measures, with the locomotor percentiles ranging from 5% to 84% with 92.9% of all control subjects still at or below the 50th percentile on the locomotor total.

The posttest object-control total (Table 9) for the E group was higher than that of the C group. The mean posttest object-control percentile for the E group was 79.90, for the C group 24.32. The E group scores ranged between the 37th and 75th percentiles on object-control skills with only 6.5% of all the experimental subjects at or below the 50th percentile. In contrast, the C group measures ranged between the 1st and 75th percentiles with 89.3% of all control subjects at or below the 50th percentile for the object-control subtest. As would be expected, the E group had a higher Total TGMD score than the C group (E=31.50, C=18.00).

Table 9

Pretest Posttest Scores of the Control and Experimental Groups for the TGMD

Measure		Pretest		Posttest	
		M	SD	M	SD
Locomotor Total	E	10.32	2.85	20.03	1.94
	C	11.54	2.22	13.58	1.86
Locomotor Percentile	E	14.87	14.88	80.16	11.41
	C	25.64	21.87	26.04	19.08
Object-Control Total	E	3.07	2.24	11.74	2.79
	C	3.14	2.00	4.46	2.49
Object-Control Percentile	E	16.90	21.59	79.90	13.31
	C	18.14	21.57	24.32	21.91
Total TGMD Score	E	13.39	4.05	31.58	4.17
	C	14.57	3.21	18.00	3.36

Note: E=Experimental group (n=31), C=Control group (n=28)

Inferential StatisticsHypothesis 1

It was hypothesized that at the beginning of the intervention the E and C groups would have similar pretest scores on the four subscales of the Pictorial Scale of Perceived Competence and Social Acceptance (PSPCSA). A multivariate analysis of variance (MANOVA) was performed to determine if there were any pretest differences between the E and C groups on the four subscales of the PSPCSA. Table 10 contains the means and standard deviations for subscales of the PSPCSA (by group). The MANOVA score was $F(1,57) = 0.52$ and $p = 0.72$. Thus, it was found that mean scores of the four subscales of the PSPCSA between the E and C groups were not significantly different.

Table 10

Pretest Posttest Subscale Mean Scores of the PSPCSA by Group

PSPCSA Pretest Subscale		Pretest M	SD	Posttest M	SD
Cognitive Competence	E	3.31	0.49	3.51	0.32
	C	3.35	0.46	3.37	0.30
Peer Acceptance	E	3.37	0.50	3.54	0.66
	C	3.37	0.57	3.51	0.42
Physical Competence	E	3.21	0.41	3.51	0.40
	C	3.35	0.46	3.38	0.33
Maternal Acceptance	E	3.25	0.47	3.43	0.46
	C	3.30	0.58	3.36	0.46

Note: E=Experimental group (n=31), C=Control group (n=28)

Hypothesis 2

The second hypothesis stated that the pretest scores on the locomotor subscale, object-control subscale, and half-mile walk-run were similar for both groups. A correlation matrix (Table 11) was calculated for the pretest scores on the half-mile walk-run, locomotor standard score, and object-control standard score to determine if significant correlations existed. Pearson Product Correlation analysis yielded low correlations among three motor performance

measures, but a significant ($p < 0.05$) correlation between the half-mile walk-run and locomotor standard score. However, as correlations were low, three separate ANOVAs were performed instead of a MANOVA to test for significant pretest differences between the groups on the three measures of motor performance.

Table 11

Correlation Matrix of the Half-Mile Walk-Run Time, Locomotor, and Object-Control Standard Scores

Pretest Control Scores	Half-mile Walk-run	Locomotor Subscale	Object-Subscale
Half-mile Walk-run	1.00		
Locomotor Standard Score	-0.26*	1.00	
Object-Control Standard Score	0.16	0.00	1.00

Note: * significance at $p < 0.05$

Group means and standard deviations for the pretest motor performance measures are reported in Table 12. The ANOVA procedure for the pretest locomotor standard scores yielded a significant difference between the E and C groups $F(1,57) = 6.15$ and $p = 0.02$. On this pretest measure, the E group

had lower scores than the C group. However, no significant differences between the groups were found for the pretest object-control standard scores, $F(1,57) = 0.47$ and $p = 0.50$, or for the pretest half-mile walk-run times, $F(1,54) = 0.06$ and $p = 0.82$.

Table 12

Pretest Posttest Motor Performance Measures by Group

Measure	n		M	SD	M	SD
Locomotor Standard Score	31	E	6.16	2.15	12.71	1.19
	28	C	7.57	2.22	7.79	1.87
Object-Control Standard Score	31	E	6.10	2.74	12.77	1.45
	28	C	6.60	13.01	7.29	2.49
Half-mile Walk-Run Time (seconds)	28	E	510.50*	59.66	443.30*	42.57
	28	C	514.14	56.35	447.50	42.10

Note: E=Experimental group, C=Control group

Hypothesis 3

According to Hypothesis 3, the E group would demonstrate greater improvements in the locomotor and object-control subscales of the TGMD than the C group after the intervention period. For each subscale (locomotor and object-control) a 2 group (E,C) x 2 time (Pre,Post) MANOVA was performed

using the locomotor and object-control standard scores, respectively, as dependent variables. The pretest/posttest means and standard deviations of the standard scores for the two groups are presented in Table 12. Table 13 indicates the F and p values for each of the measures of motor performance.

A significant Group effect, Time effect, and Group by Time interaction ($df=1,57$) was obtained for the locomotor standard scores. The Tukey HSD post-hoc analysis required a critical score of 3.79 for significance at $p < .05$ and 4.70 for significance at $p < .01$. The posttest mean was significantly greater than the pretest mean ($p < .01$) for the E group with a score of 22.03. Post-hoc analysis also showed that the posttest mean of the E group was significantly ($p < .01$) greater than the posttest mean of the C group with a score of 18.27. Significance was not reported for the pretest-posttest comparison of the C group means. Thus, the E group had greater improvements in locomotor scores from pretest to posttest than the C group.

The results of the MANOVA for the object-control standard scores showed that there was a significant Group effect, Time effect, and Group by Time interaction ($df=1,57$). The critical values for the post-hoc analysis using the Tukey HSD were the same as those for the locomotor subscale. The posttest mean was significantly ($p < .01$) greater than the pretest mean for the E group with a score of 21.52. Also, the posttest mean of the E group was significantly ($p < .01$) greater than the posttest mean of the C group. As with the locomotor subscale no significant difference was reported for the C group from pretest to

posttest. Therefore the E group showed greater improvements in the object-control subscale from pretest to posttest than the C group.

Table 13

Group, Time, and Group by Time Interactions on Measures of Motor Performance for the Experimental and Control Groups

Variable	<u>F</u>	<u>p</u>
Locomotor		
Group	20.39	0.00
Time	124.36	0.00
Group x Time	109.10	0.00
Object-control		
Group	19.35	0.00
Time	138.81	0.00
Group x Time	92.32	0.00
Half-mile walk-run		
Group	0.03	0.86
Time	54.65	0.00
Group x Time	0.01	0.91

Hypothesis 4

The fourth hypothesis suggested that the E group would demonstrate greater improvements in the half-mile walk-run than the C group. A 2 group (E,C) x 2 time (Pre,Post) MANOVA was performed on the half-mile walk-run time. Table 12 contains the pretest/posttest means and standard deviations of the scores by group. The F and p values for the half-mile walk-run time indicated a significant Time Effect with (1,51) degrees of freedom (see Table

13). However, there was no significant Group effect or Group by Time interaction. The Tukey HSD post-hoc test required critical values of 3.85 for significance at $p < .05$ and 4.80 for significance at $p < .01$. Post-hoc analyses indicated that the posttest means were significantly ($p < .01$) greater than the pretest means for both the E and C groups with scores of -8.07 and -8.00, respectively. However, post-hoc analysis did not reveal a significant difference between the E and C groups. Thus, both the E and C group improved their times on the half-mile walk-run from pretest to posttest.

Hypothesis 5

It was hypothesized that the E group would demonstrate greater improvements on the four subscales of the PSPCSA than the C group from pretest to posttest. A 2 group (E,C) x 2 time (Pre,Post) MANOVA was performed on each of the four subscale measures. Table 10 contains the pretest/posttest means and standard deviations for each of the subscale scores by group. The F and p values for the four subscales of the PSPCSA with (1,57) degrees of freedom are located in Table 14. Post-hoc analysis using a Tukey HSD test required critical values of 3.85 for significance at $p < .05$ and 4.80 for significance at $p < .01$.

No significant effects were found on the cognitive competence subscale. However, there was a trend towards a Time effect with $F = 3.74$ and $p = 0.06$. On the peer acceptance subscale there were no significant Group effect or Group by Time interactions. However, a significant Time effect was obtained

with $F = 4.99$ and $p = .05$. Post-hoc analysis showed that it was only the combined posttest means of the E and C groups that were significantly ($p < .05$) greater than the combined pretest means. Separate pretest-posttest analysis by group did not yield significance. Thus, over time all subjects together as a group improved their scores on perceived peer acceptance.

A significant Time effect ($F = 8.80$, $p = 0.00$) and Group by Time interaction ($F = 5.49$, $p = 0.02$) were found for the physical competence subscale. No significant Group effect was obtained. Post-hoc analysis of all the means in the MANOVA demonstrated that the only significant ($p < .01$) comparison was the greater posttest mean than pretest mean for the E group. Thus, it appeared the significant interaction effect was a result of the pretest-posttest differences in the E group. No significant effects were reported for the maternal acceptance subscale. However, there was a trend towards a Time effect, with $F = 3.10$ and $p = 0.08$.

Table 14

Group, Time, and Group by Time Interactions on the Pictorial Scale of Perceived Competence and Social Acceptance for the Experimental and Control Groups

Variable	F	p
Cognitive Competence		
Group	0.35	0.56
Time	3.74	0.06
Group x Time	2.37	0.13
Peer Acceptance		
Group	0.01	0.91
Time	4.99	0.03
Group x Time	0.03	0.86
Physical Competence		
Group	0.00	0.98
Time	8.80	0.00
Group x Time	5.49	0.02
Maternal Acceptance		
Group	0.01	0.90
Time	3.10	0.08
Group x Time	0.76	0.39

Hypothesis 6

This hypothesis postulated that variance in motor performance among subjects in the E group would be accounted for by HOME scores, maternal education, number of risk factors, and school readiness pretest scores. Separate stepwise multiple regression analyses were performed for pretest and posttest measures for the total TGMD, locomotor standard, object-control standard, and half-mile walk-run scores.

The means and standard deviations of the predictor and criterion variables involved in the regression analysis by group are shown in Table 15. The E group had a lower HOME score than the C group (further analysis of these data will be presented in Chapter 5). Both groups averaged a 12th grade maternal education with the E group being slightly higher than the C group. The number of risk factors between groups was comparable with 5.29 for the E group and 5.73 for the C group. There was a difference in the preschool readiness score, with E subjects scoring 6.03 out of 20 and C subjects scoring only 4.15 out of 20. Pretest measures of the criterion variables were very similar between groups. However, posttest measures of the criterion variables were dramatically different, with the E group superior to the C group. The only variable that was similar on the posttest for the two groups was the half-mile walk-run.

Tables 16 and 17 report the pre-and posttest results of the regression analyses. The predictor variables for all regression analyses were the HOME

score, level of maternal education, number of risk factors, and preschool readiness score. Predictor variables were entered into the analysis by a stepwise procedure using SPSS-X. This procedure resulted in the regression analysis being terminated if the variable entered into the equation did not contribute a significant amount of variance to the regression equation. If none of the predictor variables contributed a significant amount of variance to the criterion variable, then no regression statistics were generated for that analysis.

Table 15

Means and Standard Deviations of the Criterion and Predictor Variables for Regression Analysis with the Experimental Group

Variable	Experimental		Control	
	Mean	SD	Mean	SD
Predictor Variables				
Home score	34.45	10.42	38.42	5.72
Maternal education	12.16	1.21	11.54	1.14
Number of risk factors	5.29	1.92	5.73	1.80
Preschool readiness score	6.03	4.05	4.15	2.04
Criterion Variables				
Pretest Total TGMD	13.39	4.05	14.46	3.11
Pretest Locomotor	6.16	2.15	7.69	2.26
Pretest Object-control	6.10	2.74	6.54	2.85
Pretest ½mile walk-run	510.50	59.66	509.96	56.29
Posttest Total TGMD	31.58	10.42	17.84	3.39
Posttest Locomotor	12.71	1.19	7.73	1.93
Posttest Object-control	12.77	1.45	7.19	2.47
Posttest ½mile walk-run	443.30	42.57	444.96	42.87

Regression on pretest measures of motor performance. The regression analyses for the E group using locomotor standard scores, object-control standard scores, and half-mile walk-run times as the criterion variables terminated at the first step before any predictor variables were entered into the respective equations. This indicated that none of the predictor variables contributed significantly to the variance of these criterion variable. However, the regression analysis for the total TGMD score showed that the preschool readiness score accounted for 33.68% of the variance among the scores ($p < .01$). The only regression analysis for the C group that yielded a significant predictor variable was for the half-mile walk-run time. The number of risk factors accounted for 25.19% of the variance for this criterion variable ($p < .01$). All other regression analyses for the C group did not identify any predictor variables that significantly contributed to the variance of the criterion variable.

Regression on posttest measures of motor performance. The stepwise regression analysis completed for the E group using the posttest locomotor score as the criterion variable indicated that the preschool readiness score accounted for 17.98% of the variance, with significance at $p < .05$. For the analysis of the E group using the object-control standard score as the criterion variable, two steps of the regression analysis were reported. On step one, number of risk factors was entered into the equation and accounted for 17.47% ($p < .05$). In step two of the regression analysis, maternal education was entered into the equation with risk factors and jointly accounted for 31.50% of

the variance. In this second step number of risk factors was significant at $p < .01$ and maternal education showed significance at $p < .05$. The regression analysis of the total TGMD score showed that risk factors accounted for 12.61% of the variance ($p < .05$). The regression analysis on the half-mile walk-run time did not enter any predictor variables into the equation because they did not contribute significantly to the variance of the criterion variable. For the C group the regression analysis of the locomotor standard score resulted in a two-step analysis. On step one, number of risk factors was entered into the equation accounting for 37.35% of the variance ($p < .01$). On step two the preschool readiness score was entered into the equation along with risk factors and accounted for a total of 47.21% of the variance. In step two, the significance level was $p < .01$ for number of risk factors and $p < 0.05$ for the preschool readiness score. No other regression analyses for the C group yielded significant predictor variables.

Table 16

Stepwise Regression Coefficients for Pretest Measures of Motor Performance in
the Experimental and Control Groups

	R^2	b	beta	Significance of T
Experimental Group				
Locomotor Standard Score 1. No variables entered				
Object-Control Standard Score 1. No variables entered				
Half-Mile Walk-Run Time 1. No variables entered				
TGMD Total Score 1. Preschool Readiness Score	33.68	0.58	0.58	0.006
Control Group				
Locomotor Standard Score 1. No variables entered				
Object-Control Standard Score 1. No variables entered				
Half-Mile Walk-Run Time 1. Number of Risk Factors	25.19	15.68	-0.50	0.009
TGMD Total Score 1. No variables entered				

Table 17

Stepwise Regression Coefficients for Posttest Measures of Motor Performance
in the Experimental and Control Groups

	R ²	b	beta of T	Significance of T
Experimental Group				
Locomotor Standard Score				
1. Preschool Readiness Score	17.98	0.12	0.05	0.017
Object-Control Standard score				
1. Number of Risk Factors	17.47	-0.32	-0.42	0.019
2. Number of Risk Factors		-0.51	-0.67	0.001
Maternal Education	31.50	-0.54	-0.45	0.024
Half-Mile Walk-Run Time				
1. No variables entered				
TGMD Total Score				
1. Number of Risk Factors	12.61	-0.77	-0.36	0.050
Control Group				
Locomotor Standard Score				
1. Number of Risk Factors	37.35	0.66	0.61	0.001
2. Number of Risk Factor		0.85	0.79	0.000
Preschool Readiness Score	47.21	0.35	0.36	0.050
Object-Control Standard score				
1. No variables entered				
Half-Mile Walk-Run Time				
1. No variables entered				
TGMD Total Score				
1. No variables entered				

Hypothesis 7

According to hypothesis 7, changes in physical competence would be correlated with changes in motor performance. Table 18 displays the correlation coefficients for all measures of motor performance with the perceived physical competence score. Both the E and C group scores for the pretest and posttest measures of motor performance show there were no significant correlations using Pearson Product Correlation Coefficients. All correlations were weak, ranging from -0.04 to 0.28. The only trend of interest was the valence of the locomotor score which changed from a negative relationship to a positive relationship from pretest to posttest for both groups.

Table 18

Correlation Matrix of Pretest and Posttest Measures of Motor Performance and Perceived Physical Competence

Test		Half-mile Walk-run	Locomotor Standard score	Object-Control Standard Score
Pretest				
Perceived Physical Competence	E:	0.08	-0.21	0.23
	C:	0.18	-0.04	0.16
Posttest				
Perceived Physical Competence	E:	0.13	0.19	0.13
	C:	0.13	0.15	0.28

Note: E=Experimental group, C=Control group

Hypothesis 8

The last hypothesis predicted that subjects with high posttest scores in motor performance would have higher physical competence and social acceptance scores than subjects with low posttest scores. A MANOVA was performed on posttest measures of perceived physical competence and perceived peer acceptance by group (high/low in motor performance). This analysis was performed separately for the four measures of motor performance, namely, total TGMD score, locomotor standard score, object-control standard score, and walk-run time. Table 19 illustrates the F and p values for these analyses. No significant levels were obtained for any variable.

Table 19

F and p Values of an Assessment of the Relationship Between Perceived Peer Acceptance and Physical Competence and Posttest Measures of Motor Performance

Variable	F	p
Total TGMD	1.29	0.29
Locomotor SS	1.21	0.31
Object-control SS	1.65	0.20
Half-mile walk-run	0.36	0.70

CHAPTER FIVE

QUALITATIVE RESULTS

The purpose of this chapter was to "tell the story" of the subjects in this study via qualitative methodologies. Previous studies of early intervention with children (Feldman, 1988; Guralnick, 1989; White & Casto, 1985) who are at-risk have been criticized for the lack of clarification of exactly what constitutes "risk." One way in "risk" can be understood is to examine the contextual environment and to "hear the voices" of the participants in the study. Standard demographic data such as number of risk factors, maternal age, maternal education, and other similar variables describe the subjects in some ways, but do little to help the reader understand the subjects, the lives they lead, and the perceptions of the subjects relative to issues impacting on this study. Thus, the purpose of this chapter was to provide an "insider perspective" of the children involved in this study and the families with which they live.

This chapter is separated into three sections reflecting the following questions (a) who are the children in the study and from what type of families do they come; (b) what types of activities do the children engage in at home; and (c) what attitudes do the children and caregivers have regarding physical activity? Within each of the three sections assertions are developed and evidence presented in the form of vignettes, quotes, tables, and other relevant means. Assertions are presented as bolded, italicized, indented statements around which evidence is presented. Woven into the body of this chapter is

evidence in support of assertions collected from qualitative data including (a) the HOME inventory, (b) the demographic questionnaire, (c) caregiver interviews, (d) child interviews, (e) videotape analysis, (f) document collection, and (g) a limited range of field notes. In order to concur with standard qualitative style, the investigator wrote the vignettes in the present tense and referred to herself and the subjects in the personal form.

Who are the Children in the Study? And
From What Type of Families Do They Come?

From the beginning of this work I was determined to really learn about the subjects in my study. I did not want my subjects to just be represented by a series of numbers depicting some type of achievement or lack of there. Thus, I sought to use qualitative methodologies to get a better understanding of who my subjects really were, what types of lives they lead, and hence a better understanding of the nature of risk. As I spent much of my time at the schools from which my experimental subjects were drawn, I came to know these children and their caregivers more intimately than my control subjects. However, data from the control subjects is also represented in this section, specifically with regard to demographic information, the HOME inventory, and caregiver interviews.

The Local Community

The three schools in my study are situated in what appears to be a low income housing area. This is supported by the fact that the mean annual family

income in the school community is \$23,695.00 (Nicholoff, 1993). The schools are geographically located in the "North End" of the city. Both the schools and the "North End" have a reputation among people in the city as being a "rough place" where there is a lot of poverty and crime, and a "no-go" area.

The area in which the children live and the schools are located appears to be an impoverished, low-income community. The main road leading to the three schools winds through residential areas. Many of the homes are small, single-story, wooden houses that are built close together and have little or no yards. Most of the houses have iron bars on the windows and in front of their main door. On several blocks around the three schools, there are decrepit houses with all of the windows broken, doors boarded up or ripped out, and graffiti sprayed all over. Signs of rival gang insignias ("forks-up" and "forks-down") may be found sprayed all over the area on street signs, bus shelters, school walls, empty houses, and occupied homes. Many of the houses around the schools have peeled paint, broken windows, boarded-up windows, and tiles missing from their roofs. Outside on the sidewalk there is often broken glass, graffiti, and crushed beer cans. The streets are frequently full of trash, with broken furniture, old carpets, and boxes of junk strewn over the sidewalks as a result of people being evicted from their homes. However, within the same block, are other houses that are small but nicely maintained with tidy, well-trimmed yards. Caregivers of the subjects in the study would say, "you can tell the old folks, they have the pretty houses and fenced in yards."

What is the Nature of "At-Risk" for the Children in this Study?

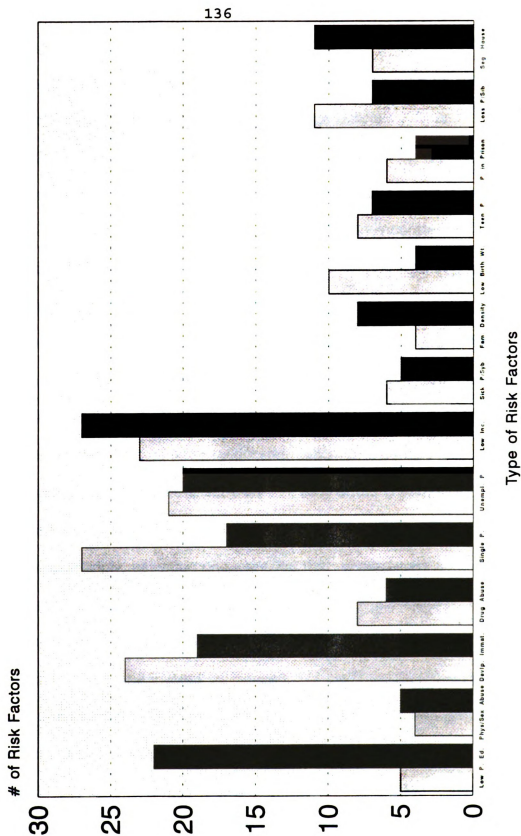
The 59 children in this study are four-year-old, African-American children defined as at-risk for school failure and/or experiencing a developmental delay. Yet, what is risk? And what does this mean to the children in this study? For some subjects, the number of risk factors was low and the potential severity of the impact of risk on the children's lifestyle very minimal. However, for many other cases, the number of risk factors was far greater, and the children lived in environments that did little to support their growth and development, with little day-to-day stability or routine.

Assertion One. *The typical subject who was "at-risk" in this study was a developmentally immature child from a low income, unemployed single parent family with one additional risk factor.*

On average the children in the experimental (E) group had 5.29 risk factors (SD=1.92) with a range from two to ten. The control (C) group subjects were similar, with an average of 5.79 risk factors (SD=2.13) per child and a range from two to eleven. However, the types of risk factors to which children are exposed range in severity from having a single parent, to being physically and/or sexually abused, or being exposed to some type of drugs.

Figure 3 shows the incidence of risk factors by group. In some cases risk headings were collapsed together in order to reduce the total number of

Figure 3. The Incidence and Type of Risk Factors by Group.



risk factor categories. For example "segregated housing" (housing in an isolated area) and "lack of a stable residence" (constant moving from house to house) were combined into one group. Also, "language deficiency" was collapsed into the risk heading of "developmentally immature." The operational definition of developmentally immature is reported on page 15 in Chapter 1). The two cases of "sibling delinquency" were placed in the "incarcerated parent" category as the children were older teenagers who were serving time in juvenile detention centers.

Figure 3 illustrates some similar trends in the incidence and type of risk factors for both the C and E groups. As indicated by assertion one, low income was an overriding risk factor for the typical child and for many subjects in both groups. This assertion was supported by documentation and caregiver response that indicated 71% of the E subjects and 89% of the C subjects received Aid for Families with Dependent Children (AFDC) and/or welfare support. Correspondingly, assertion one identified that unemployed parent/s was another risk factor for the typical child and had a high incidence of occurrence in both groups (E=68% and C=71%). More specifically, 29% of the E group had parents with one income as compared to the C group which had 22% of one-parent-incomes. Only 3% of the E group and 7% of the C group had two parent figures in the house earning an income. All caregivers who were employed had jobs in a factory requiring unskilled labor or jobs in the service industry. No caregiver was professionally qualified. It must be

indicated that in this study a broad definition was given to two-parent families and was based on the definition used by the at-risk prekindergarten program guidelines. A two-parent family constituted a unit in which two adults lived in a house as partners and had been living together for a period greater than three months. There was no requirement for the adults to be married.

The typical child in the study also was raised in a single parent family. Both the E and C groups showed a high incidence of children living in single parent families. However, the E group had a higher incidence (87%) of single parent families in contrast to the C group 61%.

The final risk factor for the typical child was that the child was developmentally immature. Both groups reported a large number of children identified as developmentally immature (E=77.4% and C=67.9%). This designation typically referred to children who had low scores on the pretest prekindergarten readiness test (approximately below a score of 7 out of 20). Furthermore, the label "developmentally immature" was a subjective reflection of the teachers' opinion of the child's cognitive, social, and motor skills (refer to page 15 for operational definition). This test is used to identify children who do not have some of the requisite skills for kindergarten, hence potentially placing them at-risk for school failure. Further evidence to support this part of assertion one is found in the data for the pretest prekindergarten readiness test scores. The mean score for the E group on the prekindergarten readiness test was 6.03 out of 20 (SD=4.05), while that for the C group was 4.20 out of 20 (SD=2.16).

The E group had a large range of scores from 0 to 19, whereas the C group had a much smaller range of scores from 1 to 8.

The following vignettes give examples of children who reflect the "typical" child (5 risk factors) identified in assertion one:

Kenda and her mother live with Kenda's grandmother in an attractive, well-maintained house with a fenced in front yard, barred windows, and a wrought iron security door in front of the regular door. Kenda's mother is unemployed and has been for Kenda's entire life. As a result they have a meager income living from AFDC assistance and whatever Kenda's grandmother can afford to give them, which is not very much according to Kenda's mother. Kenda's mother became pregnant (teenage parent) when she was 17 years old and has had no contact with Kenda's father since before Kenda was born. Kenda and her mother spend a lot of time together. Kenda will come to school and excitedly tell us of the games she has played with her mother and the places they have visited together. Kenda is a cheerful little child who is always smiling, singing to her herself, and telling everyone how nice they are. She always comes to school clean and tidy, dressed in new and fashionable clothes. However, Kenda is delayed in her school readiness skills, scoring 5 out of 20 on the prekindergarten readiness test. Kenda works well at school: she always tries hard, follow directions, and is often the first one to finish a given task.

Dondi lives with his two older brothers and his mother in an old house that is poorly kept. Many shingles are falling off the roof of Dondi's house; two of the windows are boarded with plywood; and there is graffiti painted over the side of the house. The wooden steps leading up to the house are rotted out and the rails on the front porch are broken and falling off the porch. Dondi's mother is unemployed, and hence, the family has a low income living off AFDC and welfare. Dondi has never known his dad. His mother has no idea of his father's whereabouts. Dondi is very developmentally delayed with problems in speech and little or no competence in school readiness skills. Dondi scored 0 in the preschool readiness test at the beginning of the year and was unable to identify colors, letters, or shapes. Dondi's situation has been reported to protective services on several occasions. He had an infected tooth for 2 months that his mother neglected to deal with despite having a social worker take care of all expenses and arrangements. Dondi frequently comes to school in filthy clothes with shoes and pants that are either too large or too small for him. Sometimes Dondi comes to school with

bruises on his body. By the end of the school year he had still not had his vaccinations for school, even though his mother could get them done at the school health clinic down the hallway from Dondi's classroom. Dondi's mom frequently reports to us that she "cannot cope" with her children and will drop them off at her mother's for several days at a time during which time the children will not see her. At school Dondi is a very introverted little boy who plays in isolation and has little interaction with other children, although he has become more social over the school year.

Both of the children described above had five risk factors each, the four identified in assertion one, and one other. For Kenda the additional risk factor was a teenage parent and for Dondi it was physical abuse/neglect. As can be determined from the scenario's described above, these children lead two very different lives and have different types of support systems that may facilitate/impede their progress through school. It is important that we not only identify how many risk factors the children have, but also look at the type of risk factors to which they are exposed.

Figure 3 illustrates another risk factor (low parental educational attainment) to which a large number of C subjects are exposed. By definition low educational attainment refers to a parent who did not graduate from high school or has not passed the GED (a high school equivalency degree). The mean grade level for maternal educational attainment was slightly less than 12th grade ($M=11.57$, $SD=1.14$) for the C group as compared to the E group whose mean maternal educational attainment was slightly more than twelfth grade ($M=12.16$, $SD=1.21$). This means, 93.3% of the E mothers, yet only 67.9% of the C mothers, had passed a 12th grade education at the time of the

motor skill intervention. However, it was interesting to note that only 9.7% of the E parents graduated from high school with their peer group with the remaining parents acquiring a GED later in life. Additionally, a large number (64.3%) of the C mothers were enrolled in a GED class during the motor skill intervention time period. For both groups, the lowest educational attainment of an individual mother was passing school as far as ninth-grade (that is the caregivers were held back in so many grades that when they left school they were in ninth grade). The highest educational achievement for a mother was one E mother completing a four-year college degree and one C mother completing one year of a four-year college degree program.

Paternal educational attainment showed similar results to maternal trends. However, complete data were not available for paternal educational attainment, with 4 (13%) of the 31 cases missing for the E fathers and 7 (25%) of the 28 cases missing for the C fathers. The mean paternal educational attainment was slightly less than twelfth grade for the E fathers ($M=11.74$, $SD=1.83$) and the C fathers ($M=11.62$, $SD=1.20$). The E fathers' educational attainment ranged between 5th grade to completion of a four-year college degree. The C fathers' educational attainment ranged from 8th grade to completion of two years of a four-year college degree. A small percent (14.3) of the E fathers and a slightly higher percent (28.6) of the C fathers had not graduated from high school.

Other risk factors that were of note for the E and C subjects were loss of a parent, unstable residency, incarcerated parents, and teenage pregnancy. Six of the E group cases and four of the C group cases in this category were children who had lost a parent by violent death, such as shooting. The remaining cases in this category were children who had lost a parent as a result of divorce. Another risk factor was a segregated or unstable residence. A number of children reported parents (typically fathers) who were incarcerated and a number of mothers reported teenage pregnancy. However, the latter category was small in light of the data on maternal age. The mean maternal age for the E group was 27.83 years ($SD=5.18$) and ranged between 21.33 and 40.66 years. The mean maternal age for the C group was 29.13 years ($SD=6.30$) and ranged between 21.00 and 43.33 years.

Other more severe risk factors to which the children were exposed included abuse, addiction, low birth weight, and family density. Some children were exposed to some type of physical and/or sexual abuse and a few children had parents who were abusive or addicted to some type of drug. In several cases, this drug was known to be crack-cocaine. A chronically-ill parent or sibling and low birth weight were risk factors of note for subjects in the investigation. One of the other risk factors reported was high family density (i.e. a large number of people living in the same residence). Often, these residents were not members of the immediate family. In many incidences during the home visit, it was apparent that several families lived in the same residence.

However, the mean number of siblings for the E group subjects was 1.71 (SD=1.55) and for the C subjects, 1.79 siblings (SD=1.02). The subjects ranged from being an only child to having six (E) and five (C) siblings respectively.

The range and diversity of risk factors (Figure 3) will have differential impact on children. For example, the effect of having a single parent family cannot be equated to the effects of prenatal exposure to a drug such as crack cocaine. Some children in the E and C groups have a low number of risk factors and appear to live in an environment that is typically stable and nurturing of their development. Other children, who have a higher number of risk factors or are exposed to a more severe set of risk factors live in environments that are constantly changing and do not meet the developmental needs of the children. The following vignettes attempt to reflect the diversity of the at-risk definition, from children such as Deon, Nina, and Kendra who have three risk factors to children such Daquire and Rico who have seven and ten risk factors, respectively.

Children with a low number of risk factors.

Deon lives with his mother and little sister who is two-years-old. His mother has graduated from high school and has had two years of community college education, although she has stopped going as she could not afford it any longer. Deon's mother is unemployed and the family has a low income living off AFDC and welfare support. For a while they all lived with Deon's grandmother, but now they live in their own small, one-bedroom apartment in an apartment complex with graffiti sprayed on the walls, burnt out cars in the parking lots, and bars on the windows. Deon's mother is a single parent who has had no contact with Deon's father since she became pregnant. Deon and his mother spend

a lot of time playing together; and they have many educational toys such as puzzles, books, and games. Deon loves to come to school, is always very involved in the activities he does, and is proud of the work that he does at school.

Nina lives in a brightly-painted, well-maintained three-bedroom house with her older brother and mother. The house contains furniture that appears to be new and has mirrored walls in the living and dining rooms. The kitchen has been newly remodeled, and Nina's mom proudly showed us around the house on the home visit. The two children each have their own bedroom, painted in primary colors, a television, and games and toys over the floor. Nina's mother works at GM on the factory line, sells Avon products in the evening, and is raising the children alone. Nina never sees her father who has moved away and does not keep in touch with the children (loss of a parent by divorce). Nina is a well-adjusted, happy child who loves to come to school. She is a very talkative, social child at school and constantly interacts with all the children. She always tries to please the teacher by following directions and working hard.

Kendra lives with her older brother and her mother in a house on a somewhat deserted dead-end street that has been segregated from the other houses in the community by a highway. Of the ten houses around Kendra's house, seven are boarded up and/or burnt out with roofs caving in and trash in the front yard. Only two other families live in this deserted dead-end road by the highway. Kendra has no contact with her father and the family manages on a low income from a part-time position her mother has in a plastics factory. Inside, the house is clean and the children have books, games, and puzzles with which they play. The mother spends much time with Kendra working on school-related concepts as is evident by Kendra's work being displayed on the walls, the descriptions of the types of things they do, and Kendra's demonstration of some of their games and learning activities. Kendra's mom admits to us that she worries about their safety in this house as gang members "hang-out" in their street in the evenings. She will not let Kendra play outside of the house. Kendra is doing fairly well in school; she loves to be creative, always tries her best, and follows directions.

Children with a high number of risk factors.

Daquire lives with her little sister, baby brother, and her mother. Daquire's parents are young. Her mother was 16-years-old when she became pregnant and her father was 17-years-old. Although Daquire's mother and father are separated, her father stays in the same house

several nights a week and, thus, Daquire sees her father also. However, Daquire spends time in a lot of different houses. Her mother frequently takes her to stay at Daquire's grandmother's house; whereas, her father takes her to stay with his friends. The family home is a large, three-story home surrounded by homes with barred or boarded-up windows. Burned houses and cars are prevalent on this street. Daquire is not allowed to play outside unless her mother or father are closely supervising her. Both parents have a 12th-grade education, although Daquire's mother obtained her diploma through GED classes. Neither parent is employed and the family lives off AFDC and welfare. During the intervention period Daquire's mom went back to school. Therefore, Daquire started to see less of her mother and she spent more time rotating between her father and grandmother.

Daquire has a difficult time in school. Her prekindergarten readiness score was five. She has difficulty following directions and is considered developmentally immature by her teachers. Daquire does not know how to share with other children and will kick, bite, hit, and swear to get her own way. She is a child who needs constant attention in the classroom, will frequently call out in class for someone to watch her, and will swear and fight if she does not get picked to be first in line or to demonstrate an activity. If she does not get her own way she will lie on the floor and scream and cry. One week Georgia, the classroom teacher, became so frustrated with Daquire's behavior that she took her to the principal's office. Over the course of the school year, Daquire was sent to the principal's office four times, and the principal called her parents in to talk to them on all occasions.

Daquire sucks her thumb and has difficulty being understood when she talks. Daquire would often fall asleep during circle time at school. At first we thought this was "attention-getting" behavior, but later at a home visit her father told us that he plays his stereo very loud into the early hours of the morning while his friends come over to "drink, jam, and party." Daquire is very scared of the dark and will start screaming hysterically if we turn off the lights in the classroom. Throughout the year Daquire would tell us stories of staying up all night with her father and playing with his friends. Towards the end of the year Daquire's father was arrested on suspicion of selling drugs. Despite this, Daquire is a "daddy's girl." She talks mainly of her father and her face lights up into a big smile and squeal of excitement when he comes to pick her up from school.

Rico is a quiet little boy who has little stability or consistency in his life as a result of the ten risk factors to which he is exposed. Depending on what is happening in this mother's life, he lives with either his grandmother, godmother, or his mother. Rico has experienced many

stressful life events in the year prior to prekindergarten and also the year of prekindergarten. Prior to prekindergarten when Rico was three-years-old, his father was shot in a bar over an argument about drugs. Rico's mom then moved out of State with another man taking Rico with her, and leaving Rico's older sister with her paternal grandmother. The family subsequently moved back to Michigan at the beginning of the school year just prior to the pretest for the motor skill intervention. The mother's boyfriend was arrested and imprisoned for dealing drugs as Rico started prekindergarten. Rico's mom told Jeanette (the aide in the prekindergarten classroom) that she married her boyfriend so that she could not be made to testify in court against him. During his year in prekindergarten Rico has lived in ten different houses with his mother. Three of the houses were "torched" (set on fire) while Rico was in the house. Rico and his mother were evicted from the other seven for suspicion of his mother dealing drugs. Thus, Rico has had no stability in his place of residence.

Rico's mom is unemployed and claims AFDC and welfare support. She never graduated from high school, only completing ninth grade. In addition to the ten houses in which he lived with his mother, Rico also moved in and out of his grandmother's and godmother's houses during the school year. At least once every two weeks Rico's mother would drop him off at these two homes for several days while she disappeared or was arranging for new accommodations. The grandmother, was fighting for custody of Rico trying to prove that Rico's mother was an unfit mother. In addition, the grandmother and godmother would fight for care of Rico throughout the year. Often, one would come to pick him up from school when the other one was supposed to be looking after him. Rico's mom seemed to vary in who she favored as caretaker of her child. Consequently Rico was confused from all this instability. When at school we would ask Rico where he was staying, he would reply, "I don't know."

On the day that we planned to interview Rico and his mother at her home, we received a telephone call from Rico's mother saying that she had changed the location of her interview. We were to meet her at a specific address at which Rico was currently being housed. Sarah (the teacher), Jeanette (the aide), and I drove to this location together. As we drove down the road to the house, we passed several burnt-out houses and many run-down houses with spray paint all over them showing that this was "forks-up" gang territory. We passed at least six rusted, wheel-less cars with glass missing or no seats inside them. Three young men sat on a burned-out car passing a bottle of liquor around and staring at us as we drove past them looking for the house. As we pulled up in front of Rico's house, I saw several police cars drive away down the end of the road. We climbed up the rotted-out, wooden

steps to a large poorly-kept house with boarded windows and shutters hanging half-off the window frames. We were greeted at the top of the steps by Rico's godmother, who was shaking and stuttering. She invited us into the house where Rico was sitting on the floor playing intently with a Nintendo game. He did not even look up when we came in. His godmother informed us that Rico's mother had just been arrested by the police for suspicion of selling drugs from their current home. The godmother told us that Rico's mother had run from her home after she suspected the police were watching her and brought Rico to stay with his godmother.

Later that week Rico's mother was out on bail, although she was arrested again later on that year. Rico continued to be taken from home to home by his mother and deposited at his godmother's or grandmother's when his mother was not able to care for him. The only time he saw his sister was when he spent time at his grandmother's house. Rico's godmother told us that Rico was easy to care for, rarely spoke, and was content to watch television and play Nintendo games.

Rico has frequent problems in the classroom relative to learning and behavior. He is very delayed in his readiness skills for school, scoring five on the prekindergarten readiness test, and is not able to name colors, shapes, and letters. At school he has difficulty focusing in on the task at hand. He frequently is off-task and wanders around the classroom or gymnasium when the children are working. A typical example of this behavior is illustrated during the opening activity of lesson plan five (March 16th).

All of the children were in the gymnasium dancing and moving to the "body rock" song and "kids in motion" song. All children in attendance that day were dancing, jumping, and swinging their arms to the music showing positive affect by smiling, laughing, and squealing. Rico was walking slowly around the group scratching his head and looking around the gym. Jeanette held his hands on four separate occasions during the eight-minute period, yet was unable to get Rico to perform any of the movements being demonstrated by myself who was leading the class. Each time, Rico snatched his hands from Jeannette and walked off continuing to look around the gym.

Rico rarely interacts with his classmates, he prefers to play by himself in the classroom. He likes to do creative things and enjoys painting or building things with blocks. Rico seldom speaks in school and it is hard to elicit a response from him. He almost never initiated a conversation with another child through the year. Most of the other children seemed to ignore Rico and pretend that he was not there.

The above vignettes of children in the study demonstrate the complexity of identifying and measuring "at-risk." As can be determined from the above scenarios, risk is very much an individual concept. Children with the same number (and even type) of risk factors may respond very differently to a given situation depending on their characteristics and support networks in their lives. However, risk appears to be an indicator of how supportive the home environment is in facilitating/impeding child learning.

How Supportive is the Home Environment for Child Learning?

The next section of this chapter will provide information on the HOME inventory results. The HOME inventory is another measure of how supportive the home environment is for learning. The HOME inventory was administered during a visit to the primary caretaker's home. Information for this qualitative inventory was obtained via a process of observation and interview during which time the caretaker and child interacted. Table 20 illustrates the data obtained by the HOME inventory for both the E and C groups.

Table 20 shows that the total score for the HOME inventory for the E group was 34.45 as compared to 38.42 for the C group. An ANOVA of the HOME total score by group reported $F=3.08$ and $p = 0.09$ showing that there were no significant differences between the two groups. Both the E and C group total HOME scores fall into the "middle-half" of the standard scores reported by Bradley and Caldwell (1979). The individual scores for the E group ranged from 10 to 52, while that for the C group ranged from 26 to 48.

Table 20

Mean HOME Inventory Scores for the Control and Experimental Groups

Subscale	Experimental		Control		Standard data for 48-57 month child ¹	
	Mean	SD	Mean	SD	Mean	SD
Learning Materials	5.16	2.67	6.96	1.48	6.0	3.60
Language Stimulation	5.55	1.48	5.85	1.22	6.08	1.02
Physical Environment	3.74*	2.44	4.42	1.45	5.64	1.44
Responsivity	5.80	1.66	5.46	1.84	5.59	1.58
Academic Stimulation	2.55	1.79	3.08	1.06	3.90	1.19
Modeling	3.94	1.12	3.85	0.97	2.67	1.37
Variety	4.87*	1.54	5.39	1.24	7.95	2.28
Acceptance	3.00	1.44	3.19	1.13	3.39	1.06
N	31		26		60	
Total	34.45	10.42	38.42	5.72	41.85	9.95

Note: 1 Data taken from Bradley and Caldwell (1979)

* Represents a score that falls into the lower fourth of the scores identified by Bradley and Caldwell (1979)

All scores fall within the 25th to 75th percentile range of scores for children

Learning Materials, Language Stimulation, and Responsivity are three of the eight subscales in the HOME inventory. Learning Materials refers to the presence of toys and games that teach educational concepts in the home. The C group had a higher score (6.96) than the E group (5.16) with the standard score (6.0) being in the middle of the two scores. Language Stimulation included items such as the presence of toys that teach the names of animals and a parent who encourages the child to verbalize and corrects the child's attempts in a positive manner. The E (5.55) and C (5.85) group had similar scores for this subscale with both scores being slightly lower than the standard score for 48 to 57 month children (6.08). The subscale, Physical Environment, refers to the actual environment in the home and around the home. Items included, "the house is clean and minimally cluttered" and the "building appears to be safe and free of hazards." On this subscale the E group had a lower score (3.74) than the C group (4.42), and the means of both groups were lower than the standard score (5.64). For this particular subscale, the E group score fell into the "lower-fourth" of standard scores reported for children (Bradley & Caldwell, 1979); whereas, the C group score fell into the "middle-half" of those scores.

Differences were reported between the E and C groups in the remaining five subscales of the HOME inventory. The Responsivity subscale is a score of interaction behaviors, such as talking and caressing, of the parent with the child. The E group (5.80) and C group (5.46) had similar scores with regard to

this subscale. Academic Stimulation is a subscale that indicates if the child is encouraged to learn academic tasks such as counting and color recognition. The E group was lower (2.55) than the C group (3.08) and both scores were lower than the standard score (3.90). Modeling included items such as parental modelling of appropriate behavior with regard to social interactions and parental reinforcement of appropriate use of the television. The scores for the E (3.94) and C (3.85) groups were similar and also were higher than the standard score (2.67). The Variety subscale referred to the presence of different experiences in the child's life such as a "visit to a museum" or an "outing with a family member." The C group (5.35) scored higher than the E group (4.87) on this subscale. Moreover, the E group score fell into the lower-fourth of the movement scores while the C group scores were among the middle-half of scores for children (Bradley and Caldwell, 1979). The last subscale, Acceptance, represents the type of parenting behavior (e.g. spanking, yelling, and physical restraint) used with the child. The E (3.00) and C (3.19) groups had similar scores which were slightly below the standard score (3.39) for that subscale.

In order to investigate the relationship between risk factors and scores on the HOME inventory, the HOME inventory data of the children identified in the vignettes were selected (Table 21) and, hence, reflect HOME scores for children with a range of risk status. There appears to be a relationship between the number of risk factors and scores on the HOME inventory. With

respect to these subjects, the higher the number of risk factors the lower the total score on the HOME inventory. For example, Nina has three risk factors and a score of 46 on the HOME inventory indicating a score in the "upper-fourth" of the standard scores for children. Conversely, Rico, who has ten risk factors, has a HOME inventory score of 15, which is among the "lower-fourth" of standard scores for children. This relationship is supported statistically because the correlation coefficients between HOME scores and the number of risk factors is -0.38 ($p \leq .01.$).

Table 21

HOME Inventory Scores for Selected Subjects

Child's Name	HOME Subscale Score								Number of Risk Tot Factors	
	1	2	3	4	5	6	7	8		
Nina	8	7	7	7	3	5	5	4	46	3
Deon	8	7	6	7	4	5	7	4	48	3
Kendra	7	6	4	6	5	3	5	4	40	3
Kenda	2	5	7	7	0	5	5	4	35	5
Dondi	5	6	1	7	4	5	4	3	35	5
Daquire	2	4	1	7	0	4	5	4	27	7
Rico	1	4	0	3	1	2	4	0	15	10

Note: 1=learning material, 2=language stimulation, 3=physical environment, 4=responsivity, 5=academic stimulation, 6=modeling, 7=variety, and 8=acceptance.

The above section sought to answer questions pertaining to "Who are the children in the study" and "From what types of families do they come?" In this section, the types and incidences of risk were identified and vignettes were presented to support them. The "typical" child for this study was identified in assertion one by triangulating data sources from parents, children, document collection, teacher reports, and home visits. This assertion reported that the "typical child in the study was a developmentally immature child from a low income, single parent, unemployed family with one additional risk factor." Having obtained a greater knowledge of what constituted risk for the children in this study and what types of lives the children led, the next question that needed to be addressed was, "In what types of activities are the children involved in at home?".

In What Type of Activities Are the Children Involved at Home?

It is important to understand what types of activities the children engage in at home, as this information assists in interpreting the quantitative data in this study. By understanding the experiences the children have at home, the investigator can better determine the influence of contextual variables on the outcomes of the motor skill intervention. Moreover, this knowledge is useful in developing other interventions and scaffolding cognitive and motor skills to the current experiences the children have had. Two major assertions were developed with regard to this question and each assertion was

supported by triangulating data from interviews of caregivers and children, document collection, and participant-observation notes.

Assertion Two: *At home the children participate in predominantly sedentary, inside activities that require little or no parental involvement.*

Both the children and caregivers were independently asked what types of activities the children engage in while at home. Similar responses were obtained from both groups. The caregiver's response of child activities included playing video-games, drawing, looking at books, playing with dolls, playing school, playing house, listening to music, playing with building blocks, playing with toy-cars, watching television, riding a bike, and playing basketball. The children responded in a similar manner but did not mention building with blocks, looking at books, or drawing. After learning what types of things the children did at home, I then asked the caregiver, (a) "what was the favorite thing the child liked to do?" and (b) "what did the child do most often?"

It was with these questions that I found an interesting discrepancy in the way parents interpreted the word "activity." Few parents had mentioned television as an activity the children did at home, yet when prompted to tell of their child's favorite activity, and most frequently-performed activity, the caregivers overwhelmingly replied television and/or video-games. Further questioning of the caregivers relative to this discrepancy prompted some of the following responses:

"TV is just being there, it's not doing, I guess I didn't think of it as an activity."

"Yes, definitely...the thing my kids do most is watch TV and play on that damm little video machine thing, but they're not really doing anything. It's not playing really so I didn't mention it."

It seemed that although the children spent a large amount of time watching television, the parents appeared to discount this time as an activity and thus did not mention it in the initial response. Further questioning elicited the large amount of time spent watching television or playing video-games. Another parent said,

"they love that nintendo thing, they play on it for hours at a time. It keeps'em quiet and they don't get in my face. When I'm tired I just tell them to play with that and I know I'll be left alone."

Many (n=42) other caregivers reported similar responses with respect to video-games and only one of 57 caregiver homes did not have a video-game machine of some type in the house.

The children similarly reported that playing video-games was their favorite activity and the activity they played most often. An equal number of children also said playing with dolls. Further evidence to support the large amount of time spent playing video-games was collected across the school year. Everyday in the classroom I would overhear some child talking about a character in a video-game, and the children seemed to know the names of newly released games and their characters. At Christmas, 19 of the 31 children in the E group wanted some type of video-game from Santa Claus (although no data were available to indicate how many children actually received a video-

game). One of the things the children most commonly wanted to demonstrate to us on the home visit was playing their video-games. The following vignette was a typical scenario during a home visit.

As we walked into Kenady's grandmother's house, where Kenady was living at the time, his grandmother invited us to sit in the living room. Kenady came running into the room and excitedly said, "I'm playing with my Nintendo; you have to see it; it's really cool and I'm really good." His grandmother replied we would come in a minute. As she continued to talk, Kenady kept interrupting her and asking us to see his Nintendo. Finally she said, "Let's get this over with. He has been talking about showing you his Nintendo all week. If we don't see it, I will never be forgiven." Kenady was excited as we entered his bedroom and proceeded to give us a long explanation of the game, its characters, and how it is played. We watched him play for approximately three minutes, and left. He seemed sad that we were not going to stay and said, "but don't you want to play?"

In addition to playing video-games the children also seemed to spend a large amount of time watching television at home. In 28 of the 31 E homes and 21 of 25 C homes the television was on when we visited the home. In only 5 of these cases did the caregiver turn off the television when we arrived, although many of the others left it on but turned the sound down. Throughout the year the children would tell us of the shows and movies they watched at home. This ranged from Barney, Mr Rodgers, and Big Bird to Freddie Kreuger and other adult-rated movies. Many caregivers were puzzled by a question asked about restricting the amount of television-related activities, two mothers said:

"Why would you do that? They love it and it keeps them quiet."
"But TV is so good for them. It helps them in school, and they can learn from it."

I asked both these mothers whether they monitored the type of television their children watched and they replied, "no." In contrast, a few parents from both the C and E groups said that they limited the amount of time the children had playing video-games with parents saying:

"It is not good for my child's eyes."

"It is important that they do other things than just stare at the television all day."

Thus, it seemed that in general the children spent a large part of their day at home watching television and/or playing video-games.

The children described several other popular activities they liked to play at home. Playing with dolls was reported by both the children and the adults as a favorite and commonly undertaken activity. The Barbie and Jewell dolls were played with most often by the girls; whereas, the boys played with Ninja Turtle dolls. Several of the boys would come to school dressed in Ninja Turtle clothes and sneakers. They also had Ninja Turtle backpacks, stickers, pencils, and erasers. Some of the children talked about how they liked to color and would bring in pictures for us that they had drawn at home. Other children talked about playing with blocks and looking at books; however, this response was limited to a few children. Despite the range in activities that the children and caregivers identified, almost all activities were sedentary and completed indoors. The only exceptions were two boys who played basketball in the basement and three children who were allowed to play outside.

Physical activity was actively discouraged by the caregivers. As I visited many of the houses I began to realize that there was little room for activity inside the house. Often there were a large number of children and adults living in or visiting the house. The following vignette of a home visit to Carlos' house illustrates how parents frequently handled physical activity in the home.

As I entered Carlos's house, Carlos and his three little cousins were running around the small three-room house playing chase. They ran past three adults who were in the kitchen and knocked a cup out of one of the adults hand. This behavior continued as we began to interview Carlos's mother. His mother yelled to him, "I've told you before, quit running, you ain't outside. Just sit down and be still boy." The children continued to play chase and Carlos's mother stood up, grabbed the children, slapped them and forced them to sit on the floor.

In Carimica's house, her mother explained to us that the children were not allowed to move actively around the house as there were six children under the age of five and three adults in a three-room house. She stated she hated to do this to the children but it was just a question of survival. At Shaquandra's house, her mom informed us that her children could not move around their apartment as the people below would complain and they would be evicted. One might think that this problem could be easily rectified by letting the children outside to play; however, this was not the case as will be identified in assertion three.

There appeared to be little parental involvement in the children's play activities at home. The children and caregivers reported a wide range of playmates for the children, but the extended family network seemed to be the most common peer group with which to play. Almost all mothers (except three)

said they went to their own mother's house with the children several times a week where the children would play with their cousins. When I asked the caretakers if they got the opportunity to play with their child they typically replied:

"Too tired."
 "Too busy."
 "My child does not want to play with me."
 "He's happy, why disturb him."

The words of the children were most poignant with respect to this issue:

"My mom never does anything with me. She just takes me places and leaves me there."
 "Mom has to go to school so she can't play with me like she used to."
 "My mom forgot how to play so she won't play with me."
 "Mom is always talking to other people, she doesn't play with me much."
 "My mom broke with my dad so she don't want to do things that are fun."
 "My mom's sick all the time so she just stays in bed."
 "My mom plays with my little sister all the time, they won't play with me."
 "My mom says that she's a grown-up and grown-ups don't play so leave her alone and quit being a pest."

Despite the overwhelming comments from the children about the lack of parent involvement in their play, there were some children who talked about the things their parents did with them:

"Me and my mom, we're best-est friends, we play dolls and dress up and school and house together"
 "I like to go home after school cuz I know me and my mom are going to have fun, we paint, play lego, cook and play games"

The one activity that many of the children and caregivers did appear to do together was 'playing house'. This activity often took the form of allowing the child to help-out with the necessary housework. At least 15 of the 31 E group caregivers identified playing house with their child. This seemed to be

one activity that allowed the caretaker to do what he/she needed to but also allowed for caregiver-child interaction.

"Sometimes I let her play house with me, yes that's how we play together."

"It takes me so much longer. But I let her help me in the kitchen sometimes. She loves to play house with me. It's a treat for her."

Other family members appeared to be filling in the role of the parent.

The children frequently would talk about these individuals:

"My mom, she's having a crisis. But me and my grandpa, we're buddies. We play together all day. He's my friend."

"My mom don't do much. But me and my grandma play ball together. She's teaching me, but I'm better than her on the Nintendo. We play together all the time at home."

"I don't see much of my dad and my mom works the whole time, but my big brother, he's great. He comes to visit me and buys me things and takes me to the park. We play together."

"Mom works a lot. So I go around to my Grandpa's. He takes me places, reads to me. He even taught me to ride my bike."

The involvement of another family member in a child's life was not unusual.

Specifically, grandparents seemed to take a lot of responsibility for child rearing and child care. Often, grandparents were the ones who played with the children and spent a lot of time with them.

The parents lack of exposure to playing children's games was evident during the parent workshops that were held during the school year and subsequent home visits. In one "make-it-take-it" workshop for children's game's, Lewanda's mom proudly showed me the board game she had made, and exclaimed, "Pretty ain't it?". She looked around several times then lowered her voice and said, "What do you do with it? How do you play it?". As we

visited houses after the workshop, we asked the parents whether they played the game they had made with their children. The answer was mostly "no" and many admitted to not knowing how. Also, when parents attended the classroom for their required visits, many would ask what to do with the children during free play. When told to play with the children during free play, the parents would often ask more questions about exactly what they were supposed to do.

From the evidence presented it appears there is a trend for children in this study to engage in predominantly sedentary, inside activities with little or no parental involvement in the play. Despite the presence of some discrepant cases, the data corpus seems to support this assertion. The next question that arose from searching the data pertained to the type and amount of outside play to which the children in this study were exposed. Assertion three identifies and discusses issues relative to this question.

Assertion Three: *Children in the study have little opportunity to play outside and thus have little exposure to sustained activity.*

Children in this study often were not allowed to play outside by themselves. Only three of the children in the study were allowed to play outside without adult supervision. The caregivers were very firm and consistent in their beliefs and actions regarding this issue. Many went to great lengths to impress on me that this was the reality in which their children lived, and they sought verbal assent from any other adult in the room at the time. Other

parents used their children to get this point across. A vignette of a home visit to Tarina's house reflects a way in which the parent used the children to reinforce their beliefs about playing outside.

Tarina's mom called the children from another room in which they were playing to have the children tell me about playing outside. "Are you allowed to play outside" she asked Tarina and her older brother. They both solemnly shook their heads. "Why" she questioned them. Tarina said "Because you said mom." Her brother added, "There are bad people outside, it's no place for kids."

Another mother said to me:

"Our kids are inside kids not outside kids like we used to be. It's sad but there's no way I would let them out."

When I questioned why she turned her head and said:

"Look outside, would you let your children out in that?"

As I looked outside I saw a burnt-out car on the side of the street. The house across the road was deserted; its windows were boarded. Down the street on the corner was a group of teenagers smoking and "hanging out." A large, new Cadillac car with tinted windows came up to the street corner. The car windows were rolled down and something was passed out to the teenagers. Then the car left. This was the context in which the children lived.

Parents identified four factors, namely gangs, drugs, guns, and broken glass on the streets as to why their children could not play outside. Parents stated:

"It's not safe outside, they only go out when I'm with them.
"They don't get out much, I just don't have the time to be out with them."

The children's comments supported their parent's view of outside play:

"It's bad out there. My mamma says that she shuts the curtains to keep out the bad. That's why we can't go outside."

"I got whooped bad cuz I played outside. I'm not allowed out there. There's bad men out there."

"We stay in cause they have guns and drugs on the street. It's no place for kids."

The children had a limited attention span and were not able to occupy themselves for a very long period of time playing outside. For example, if the children played with balls they quickly dropped them and moved onto something else. It seemed that the children did not have the skills or experience to play simple games or creatively play with balls and jump ropes. One parent commented:

"I have a fourth grader and she doesn't know how to play kickball. I mean how can you get to fourth grade and not know how to play kickball?"

Of all the caregivers interviewed only four of them mentioned that their children played any type of game such as 'chase'.

The major activity the children seemed to engage in while outside was riding their bikes. The children would excitedly tell me about their bikes.

"I have this purple bike and it's so pretty, I love to ride it."

"I have this little baby bike. It's pink and looks like Barbie's bike."

The children rode a range of bikes from two-wheelers with training wheels to bikes without training wheels, big-wheels, and even tricycles. Many of the children kept their bikes at their grandparents and only rode them while they were there. Several parents said that the neighborhoods of their parents were

better than theirs and thus they felt comfortable letting their children out. Moreover, there were typically several adults around to help supervise the children.

The final evidence presented in relation to assertion three relates to the children's responses to physical exertion. A vignette of the first day of the motor skill intervention shows how children responded to exercise.

As we entered the gym the children stopped at the door. Levar looked around and exclaimed, "Wow, it's so big." Other children started jumping up and down and said, "Can we go in, can we go in?" I said, "yes," and they ran in as fast as they could screaming loudly. They ran around the gym once and came back to me excited and squealing. During the sustained activity part of this first lesson plan I was interested to see how the children responded to physical exertion. As we neared the end of the 10 minute sustained activity (a game of run and freeze) the children were breathing very heavily, many were coughing, several children had sat down, and all children were visibly sweating. At the end of the sustained activity session we got together in a circle. Nina yelled to me, "come here, look Mrs. Goodway, look." She sounded very alarmed and was pointing to her forehead, "There's beads on my head, am I going to die?" At first I was confused, but then I realized that she was referring to the sweat on her forehead. In the same session Mario said, "damm me, there's something beating real hard in my tummy." Other children expressed surprise and concern at their accelerated heart rate and sweat response. Throughout the 45-minute lesson plan children could be heard coughing and breathing heavily. Also, many children could be heard complaining that they were tired and wanted to sit down.

For at least the first twelve lesson plans, I noticed the majority of children experiencing difficulties with sustaining activity over a ten-minute period. Children would say, "Can we stop Mrs Goodway? I'm pooped," other children would lie down on the floor and say, "I can't go on."

The children appeared to improve their ability to sustain activity over the second-half of the intervention. As the next twelve lesson plans progressed, I began to notice more children managing to maintain activity over the whole period, a noticeable decrease in the coughing response from exercising, as well as less heavy breathing. There were less complaints about sustained physical activity and the children would request their favorite sustained activity and show positive affect such as smiles and laughing.

In conclusion, the children in the study have little opportunity to play outside as the neighborhoods are not safe places. This lack of exposure to physical activity was apparent during the motor skill intervention on the basis of the children's physical, verbal, and behavioral responses. The qualitative data identified to date have attempted to define what constitutes risk for the children in the study and what this means to the children's lives. This analysis has also sought to understand what types of activities the children engage in at home, while the final section to be addressed in this chapter relates to attitudes about physical activity.

What Attitudes Do the Children and Caregivers Have Regarding Physical Activity?

This section discusses fully the children's perceptions of the motor skill intervention and their caregiver's attitudes about physical activity. Ten boys and twelve girls in the E group were interviewed at the end of the motor skill intervention to determine their perceptions of the intervention. Field notes were

examined to provide confirming or disconfirming evidence. In addition, caregivers were interviewed at the home visit.

Children's Attitudes toward Physical Activity

Overall, the children liked the activities provided in the motor skill intervention. Running and "playing basketball" (bouncing) were the activities the children most liked. Running was also mentioned as the main skill that the children said that they could do best. In contrast when the children were asked what they least liked to do in the gymnasium a large number of children (n=6) said that they liked to do everything, or that he/she, "Hated to sit down when I've been bad" (n=5). In other words, they liked all other activities in the motor skill intervention. Other children said they did not like to skip (n=4). For example, Tequilla said "I hate to skip, it's hard and you can't go fast." Other children said that they did not like to kick balls (n=2) and that they did not like to run (n=3). One child said, "I don't like to run as I don't do it at home." The final child said that she "hated to play with kids what are bad."

Assertion Four: *Music is motivating for the children during sustained activity.*

Music was a central part of the lives of the children in both the E and C groups. All 51 children responded that they liked to move to music with an emphatic "yes," and proceeded to tell me what music they listened to at home. Many of the children could name groups such as 'Chris-X', 'Boys to Men,' and singers like Michael Jackson and MC Hammer. Many of the children could sing

a verse or two of their favorite songs from these groups. The children would say to me, "I likes hip-hop and rap," and then proceed to tell me who was their favorite artist. When I asked the children where they heard this music the children frequently replied:

"All the time"

"At home"

"We be jamming in my mamma's car everyday to school."

"My daddy, he has this big stereo and he cranks the music all-night."

Caregiver interviews reinforced the extent to which children were exposed to music in the home environment. The caregivers would report that they would always play music in their car and would often have music playing in other rooms of the house where there was not a television. Many of the houses we visited had expensive stereo systems and large speakers in several of the rooms. In addition to the noise of the television, music could be heard playing in other parts of the house. Additionally, in the mornings as the cars pulled up in front of the school, music could be heard blaring from the car as the children opened the door.

Music was used in the classroom to help teach the children. In all four of the classrooms used in this study, the teacher would use music and rhythms to teach the children language and to label concepts. The children sang their alphabet, their numbers, the months of the year, and songs about the weather. Other songs were learned about animals, emotions, respect for others, and loving each other, to name a few of the topics taught over the intervention period.

In the gymnasium, I learned that music was a fun and productive way to motivate the children to work on sustained activity. A vignette of lesson plan three as opposed to lesson plan four shows how music motivates the children.

In lesson plan three I used a "Run-Freeze" game for the sustained activity part of the lesson. The children started excited and ran fast. However, they tired quickly, began to sit down, complained they were tired, and asked whether they could stop. By the end of five minutes, I was having a hard time keeping everyone moving. In one class, three of the girls were walking and breathing heavily; one boy had stopped, sat down, and refused to move; and at least six other children were using a slow jog to walking speed. At least half of the children were shuffling their feet, frowning, and muttering the word "stupid." To enable the children to make it through the whole ten minute period, I had to decrease the intensity of the activity.

In lesson plan four I decided to use a preschool music tape as a different approach to the sustained activity component of the lesson plan. In this particular lesson, almost all children were engaged in the music and movement activity throughout the period. The children were moving vigorously, swinging their arms, and jumping and moving their feet as I instructed. After four minutes of the movement activity the children had beads of perspiration on their forehead and were breathing heavily. However, for the remainder of the ten minutes all children (except for three children) continued to move vigorously. This was true not only for this lesson plan but also for other lesson plans incorporating music.

As the intervention progressed the children would request specific songs that they liked. In addition, the children would ask if they could dance to a specific group that they liked and on three occasions I brought in some music requested by a child.

When the children moved to music they showed positive affect by smiling, laughing, and demonstrating large, energetic movements of the arms and legs. There were fewer behavior problems as the children were centered on themselves and their own bodies rather than interfering with others. In fact,

many of the children would call out and say, "Look, look at me doing....," and name what they were doing. The movements ranged from jumping and kicking to hip-hop and other dance moves. When the children were allowed to move in any way they wanted to they continued to move vigorously and dance in many different creative ways. A vignette developed from lesson plan five reflects a typical sustained activity period using music and the children's motivation to move to music.

As I plugged the tape player in Tyron said, "Yeah, we're going to dance again, I love to dance." The children and I spread out in our own space in front of the tape player. The first song was 'Kids in Motion' and several of the children cheered as it started. The children followed my movements such as jogging on the spot, jumping in different directions and leg kicks. In the first chorus of the song, I had the children follow me but informed them that the next time we heard this music and words they could do their own dance. In the second chorus, all children except Rico kept on moving. Shamika kicked her legs up in the air and was smiling and laughing. Mario performed a cartwheel. Deonte, Dondi, Kenady, Tyron, Carimica, and Tequilla danced a rap dance where their legs jumped in a pattern of together and apart. Many of the other girls were kicking their legs in movements similar to the ones I had performed in the previous chorus. However, all children were moving vigorously and smiling and laughing.

The second song was the "Freeze" and the children continued to move in an energized and vigorous manner. They executed large limb movements with lots of force and flight. By the third song (Body Rock) the children were visibly beginning to tire. They had perspiration beads on their forehead, were breathing heavily, and approximately six of the children were coughing. During this song the children did not move as vigorously as in the other two songs. But all children except Rico and Tania kept moving throughout the song. All of the children continued to show positive affect throughout the 10-minutes. Behavior problems were limited to one incident. Over the course of the ten-minute period I counted at least 17 incidences where children called out for someone to watch a dance move. At the end of the ten-minute period I asked the children whether they enjoyed dancing to music and they screamed back, "yes" and jumped up and down. Later in the classroom Tyron, Carimica,

Mario and Tequilla came up to me to ask if we could dance again as they had really enjoyed it.

The evidence presented above suggests that the children like to move to music and that by using music for sustained activity the children are more motivated to exercise vigorously. Additionally, there are fewer behavioral problems when using music as compared to running games, and the children are more centered on themselves rather than on others.

One of the questions that was of interest to me was how children feel when they exercise. I was unsure what type of data I could obtain from four-year-old children with respect to this question, but I developed a tentative assertion and provided some limited evidence to support this assertion.

Assertion Five: *The children receive positive affect when they exercise.*

During the interview at the end of the motor skill intervention many of the children talked about how exercise made them feel. All children except two expressed positive feelings about exercising. Some of the children were limited in their ability to be able to express themselves just stating words such as "Good," "Well," and "Happy," and "Great," while others were more articulate. More articulate responses included:

"I love to exercise. It makes me feel happy and makes me smile."

"Gym makes me feel happy and big and strong. It makes me happy cus I'm ready for kindergarten now."

"I feel great and I get big so that makes me happy."

Other children said physical activity was fun and they liked to do it as they were not allowed to do it at home.

"I love to run and run and run as fast as I can and far as I can. It's so much fun. I'm not allowed to do it at home."

"We aren't allowed to move at home, we just have to sit still. My Mom says that there isn't enough room. I love to run and jump and kick. It makes me happy. It's me best thing in school."

Positive affect was an observable phenomenon in the gym as children frequently smiled, laughed, shrieked, and used large open body movements. The children showed lots of energy and excitement. The vignettes presented for assertion four have identified positive affect in the gymnasium and support the interview data.

The children reported that exercising made them feel better and helped them to focus on school-related activities. Four children who were interviewed identified how exercise helped to improve their mental state from being sad/angry to happier.

"Sometimes I come to school sad, but then I run and it makes me happy."

"Better," (smiling) he continued, "I feel better when I run."

"Some mornings my aunt is mean to me. She says I'm no good.

When I go to the gym I feel happy and good and it makes me better."

"Some mornings I is sad as my mom and dad fight. But going to the gym makes me feel better, but it makes me hot."

Throughout the intervention period, I observed occasions when the children came to school sad, angry, or upset as a result of an incident at home. It typically was apparent from the moment they walked into the classroom that there was something wrong. This incident would carry over into the classroom

resulting in poor, inappropriate (pushing, shoving, hitting, talking out of turn, and swearing), and distracted behavior by the child who had a difficult time focusing on the task at hand. Many times, when the children got into the gym their distracted behavior would lessen and after the sustained activity part of the lesson they were able to listen and follow directions in the with regards to FMS instruction. Upon returning to the classroom, the child typically would have settled down and be able to act appropriately in classroom activities.

Throughout the intervention period, there were many such incidents.

Specifically, Carlos, Mario, Dondi, Levar, Daquire, and LeRoy had occasions when they came to school in a disturbed emotional state, yet appeared to develop more positive feelings during the gym sessions which carried over into classroom behavior. The following vignette reflects one such incident where a child came to school hurt and angry, yet seemed to use the gym as a place to regain control of his emotions.

Levar stomped into the classroom with his face screwed up in a big scowl, muttering under his breath. I said, "good morning" to him. He ignored me and stomped over to his locker. He pushed Shaquandra out of his way, took off his coat, put it in his locker, and stomped back to the middle of the classroom still scowling and muttering. It was apparent that he was not his normal cheery self so I bent down and asked him what was the matter. He looked at me and said, "some boy f.... my mother this morning." Taken back by his response, I did not reply immediately, and Levar repeated the same statement. His voice was a loud monotone. His body was rigid, and his face was still scowled. It was clear he was very angry and upset about this incident. As the children sat down in the circle to start class, I took Levar to the back of the classroom to talk some more and find out what happened. According to Levar, his mother had a new boyfriend who stayed overnight in their one-room apartment. In the morning, while his mother and her boyfriend were having sex, Levar was told to go to the other side of the room and play

with his toy cars. Levar kept saying to me, "She promised me she would never do this again," and, "I don't like no boy in my house." The teacher walked over and talked to Levar and got the same story from him. (This story was later corroborated by Levar's mother who was told that the teacher was concerned about Levar. Levar's mother said he was just jealous of her new boyfriend and did not like to share her with anyone else.) During free play Levar had difficulty sharing toys with the other children. He pushed Shaquandra into the block cupboard, hit Daquire who had something he wanted, swore at several children, and threw sand over Antwon. The teacher talked to him again, but to no avail.

We went to the gym and started by playing the run and freeze game. The children started to run. I blew my whistle, and all of the children stopped in their freeze position. However, Levar kept on running and running. The teacher and I called his name but he just kept on running. The teacher went over and stopped him. We repeated this procedure with a different freeze position and Levar repeated his behavior. This time I grabbed Levar as he ran by and forced him to stop. As the teacher continued with the game, I talked to Levar and asked him why he did not listen. He replied, "running makes me feel good, I just want to run and run and run." Levar promised me that he would listen and freeze. He did as he said, but in between he ran fast passing the other children who were moving much slower.

In the skill section, Levar continued to use a great deal of excessive force in his motor patterns. He did not interact with any other children in the beginning, and contrary to his typical behavior he was quiet. He threw with great force and grunted as he threw. The bouncing and jumping skills also exhibited motor patterns in which much force was used. However, as the session proceeded he began to interact with the other children in the group and started to talk to the teachers and call attention to his work. By the time we returned to the classroom Levar was able to participate in the remaining classroom activities without any behavior problems. His affect had become more positive and he was no longer scowling nor had a rigid body. In fact he even played and laughed with his friend Domminque.

Although the evidence presented was limited, there appears to be some support for the assertion that the children in this study received positive affect from participating in a motor skill session. Not only did motor activity make

them feel good, it appeared to help some children regain their composure and happiness when they were upset. This assertion warrants further analysis.

Parental Attitudes toward Physical Activity

The data for this section of the chapter were taken from the caregiver interview in the home.

Assertion Six: *Parents and caregivers valued their physical education experiences at school, yet did not learn lifelong skills.*

The parents and caregivers were asked three main questions relative to their physical activity, (a) What did you most like about gym in school?; (b) What did you least like about gym in school?; and (c) Do you think physical activity is important to you and your child's health? There was a range of responses for all three questions ranging from a few parents who appeared knowledgeable about health and fitness to the majority of parents who had little understanding of health-related fitness.

Caregivers reported that they had been exposed to a wide range of physical education (PE) experiences in school. Regardless of their view of physical activity the parents talked about how lucky they were to have been exposed to such a diverse range of experiences. These activities included basketball, track and field, volleyball, football, soccer, gymnastics, weight training, fitness, baseball, softball, swimming, ice-skating and many others. Most parents with whom I talked, said that they liked PE in school and showed positive affect while they recounted stories of their time in PE. Basketball and

track were the most popular sports reported by the caregivers. One mother said:

"It was OK if you ran track or played basketball, but if you played softball you were.....you know...weird".

The Caregivers talked about how track and basketball were the acceptable sports for black females to compete in at school. They talked with pride of their high school teams and how well their schools did in State competitions. One mother said, "I was on the track team in high school. I was good. That made me something pretty damm hot at school." Other parents specifically mentioned gymnastics, volleyball, kickball, and weight training as other sports they did at school that they liked.

Caregivers indicated that they did not like swimming and fitness. Many of the caregivers believed fitness classes in PE were:

"meaningless"
"useless"
"just plain boring"

They believed school fitness classes were developed so that teachers did not have to do anything. Swimming was also not popular among the caregivers who stated that they could not swim. Nor did they ever swim outside of school. Additionally, all (but three) caregivers said that they never took their children swimming. The three parents who took their children to the YMCA for swimming lessons did so because they had never learned to swim as children and thought it important.

A large number of the caregivers liked all of the activities they did in gym. The overwhelming response was that PE was "excellent." The caregivers reminisced about the many sports offered, and the opportunities to participate in after-school recreational and competitive physical activity programs. Each school had a community director who was responsible for providing and coordinating these activities. The schools were open late into the night, sometimes as late as midnight, and were a central focus of the community. Caregivers believed they received "good grounding" and were "lucky" to have received such a "great PE program in their schools."

Caregivers indicated the poor state of their children's physical fitness status. They said:

"Our kids do nothing."

"Our children are fat."

"All they do is sit in front of the TV and stare. It's not like it used to be."

The parents believed that the schools were to blame for this inactive lifestyle. Several parents remarked, "Those teachers don't do nothing with our kids." Almost all parents were aware that their children had little or no time in PE at school and had no professional physical education services available to them. The caregivers complained that there were few opportunities for their children to participate in after-school sports. Sports were restricted to basketball and kickball for fourth grade children. One mother said:

"I have young kids. What are they supposed to do? Wait until they reach fourth grade. How do you explain that to a first and second grader?"

The caregivers indicated that PE was not important to their health or their children's health and well being. Only two mothers reported engaging in any type of aerobic exercise.

"I used to be so fit at school. I ran track. Now three kids later I have this big belly that sticks out so I go to aerobics with my friend. It's fun and it gets us out of the house."

Four other mothers attended a bowling league once a week. Several other mothers reported walking on a regular basis. However, one mother's response reflected the view of this group of individuals. She said:

"I walk cuz I have to. I don't have no car. If I had a car I would never walk again."

All of the other caregivers said they did not undertake any type of exercise now indicating:

"I used to do a lot when I was young, now nothing."
 "No time to exercise."
 "No where to do it."
 "Too expensive."
 "No-one to look after the kids."
 "It's just not right."

The perception of some mothers that exercising as an adult African-America female was not appropriate was reinforced by many of the mothers and also by comments from the children in school. For example, upon asking Nina if she was good at gym, she replied, "I'm real good." I asked her whether she would be active when she was a grown-up, she then replied:

"Don't be dumb, girls don't do gym when they're grown-ups. They just have babies and if they're really lucky get married."

To many caregivers physical activity was just something that you did at school. The caregivers suggested that physical activity was just needed "to get rid of some energy," "have fun," and "make noise." No caregiver offered any health-related fitness responses.

Thus, it appeared that caregivers typically enjoyed their PE experiences in school, yet did not maintain an active lifestyle as an adult. No parents could offer any health-related reasons for being active, nor were many of the caregivers physically active by choice. This evidence and the evidence presented earlier relative to assertion three supports the assertion that caregivers enjoyed their PE experiences at school, but did not learn lifelong skills from the program in which they participated.

Through this Qualitative Results section, it was hoped that the reader developed a better understanding of who are children at-risk, and from what type of families they come. Additionally, it was hoped to develop an understanding of the types of activities the children engaged in at home and what types of attitudes they and their parents had relative to physical activity. This knowledge will be used in interpreting and discussing the findings of this study.

CHAPTER SIX

DISCUSSION AND EDUCATIONAL IMPLICATIONS

Eight hypotheses were proposed in this study: (a) two hypotheses relating to baseline data on measures of motor performance and self esteem; (b) three hypotheses with respect to the impact of a twelve-week motor skill intervention on motor performance and perceived competence and acceptance; (c) one hypothesis relating to the relationship of contextual variables on motor performance; and (d) two hypotheses investigating the relationship between motor performance measures and perceived physical competence and peer acceptance. The succeeding discussion is organized by the hypothesis groups presented above. The six qualitative assertions relating to the nature of risk, the type of activities in which the children participated, and the attitudes of the children and caregivers to physical activity will be included with the discussion of the hypotheses where appropriate.

Baseline Data on Motor Performance and Self-Esteem of Children Who are At-Risk

One of the purposes of this study was to acquire baseline (pretest) data on measures of motor performance and the PSPCSA for preschool children at-risk. Additionally, pretest measures of the dependent variables were statistically examined to determine if there were pretest differences between the E and C groups. The data were also assessed relative to documented

standards to determine how the performance of children in this study compared to the performance of other children reported in the literature.

Pictorial Scale of Perceived Competence and Social Acceptance

The PSPCSA was undertaken to ascertain the perceptions of preschool children who are at-risk relative to cognitive competence, peer acceptance, physical competence, and maternal acceptance. There were no significant pretest differences between the E and C group with respect to these variables. Given that the children in this study were drawn from essentially the same community, it was not surprising to find these results. Thus, it was concluded that children in the E and C groups started the intervention period with the same perceptions of their competence and acceptance as measured by the PSPCSA.

Preschool children who were at-risk exhibited positive perceptions of competence and acceptance. The pretest mean scores of the PSPCSA for the subjects in this study ranged from 3.21 to 3.37 and concurred with the findings of Harter and Pike (1984) who reported that preschool children in their study had subscale means ranging between 3.00 and 3.40. This study supports Harter and Pike's findings and suggests that young children (including preschool children at-risk) tend to report positive feelings of competence and acceptance, reflecting their wish to be competent or accepted. For example, a score of 3.0 on one of the questions relative to physical competence reflects a child indicating that he/she was "pretty fast" at running. These data are

interesting, given that the literature (Williams & Byars, 1968) and the school district have documented concern about the self-concept and self-esteem of African-American children. In fact, this concern is so great that prekindergarten curriculum goals (Fisher, Hansberry, Murtaugh & Burtley, 1991), elementary school goals, and PDS goals specifically cite the need to address improvement of self-esteem for all children in the urban elementary schools involved in this study. Yet, the findings from this study show that in three of the PSPCSA subscales (physical competence, peer acceptance, and maternal acceptance) the mean scores for the subjects in this study were higher than the mean scores reported by Harter and Pike (1984) for a sample of predominantly white middle-class preschool children. Qualitative data also suggest that E children had perceptions of their physical competence indicating they were "best at" or "good at" running. Other research data (Overby, Branta, Goodway, & Smith, 1994) provide a wider context to this study's findings relative to perceptions of competence and acceptance. These data suggested that by third-grade African-American children who are at-risk had lower perceived competence and acceptance scores than kindergarten children (Overby et al., 1994). The data reported from this study also show that preschool children had higher scores on perceived competence and acceptance than the third grade children in the Overby et al. (1994) study.

Two of the subscale findings, peer acceptance and maternal acceptance, may be interpreted in relation to the context of the family and the African-

American community in which this study took place. Traditional white stereotypes might suggest that single parent, poor families result in a child who has low maternal acceptance. However, despite the large amount of poor, single-parent units, families in the community still appeared to place great value on the extended family network. Many caregivers talked about the support they received from siblings and parents in raising their own children, and in some cases several siblings and their families lived together in the same house. All of the caregivers except two talked about how the extended family got together at least once a week at a parent's or other sibling's house. This strong family network was evidenced on many occasions throughout the intervention period when aunts, uncles, older cousins, and grandparents took over the caregiver role for one of the subjects. For example, when one mother was sick for six weeks, her sister drove from the other side of town every day to ensure that the child was still able to attend prekindergarten. The higher scores on maternal acceptance may be accounted for by the strong sense of family and the fact that many mothers were around all day because they were unemployed. High peer acceptance scores may result from the fact that 'peer' to most of the subjects in this context was represented by cousins with whom they played at their grandparent's.

In this study, preschool children who are at-risk had lower perceived cognitive competence than standards for preschoolers reported by Harter and Pike (1984). The lower score on cognitive competence was not surprising in

light of the data reported by caregivers on the types of activities (mostly non-academic play) the children undertook at home. Additionally, the children had received three months of school prior to the pretest and were aware of many concepts such as colors, numbers, and alphabet which they were still trying to master. It may be that their perceptions of cognitive competence were impacted by the knowledge of the many concepts they still had to learn.

These findings raise interesting issues for educating children in an urban environment. First, they suggest hope for children who are at-risk, in that by the age of four years the children had not yet been negatively impacted seriously by the environment in which they live. They maintained a healthy and positive perceived competence and acceptance. Second, the data raise issues regarding what happens to children as they progress through school, and why their perceptions of self seem to suffer as indicated by Overby et al. (1994). Further study is necessary using both qualitative and quantitative methodologies in order to understand how teachers and schools can support the maintenance of a healthy self-concept throughout school for children who are at-risk.

Motor Performance

Baseline data obtained prior to the motor skill intervention document that the children in this study were delayed in their locomotor skills, with the C group having higher skills than the E group. The E group children were at the 14th percentile for pretest performance of locomotor skills relative to same-aged peers. In contrast, the C group was at the 25th percentile. On locomotor skills,

all of the E subjects and 85.7% of the C subjects performed at or below the 50th percentile. The developmental delay in motor skills reported in this study reflects findings in the literature (Connor, 1993) for preschool-aged children in a Head Start program. The developmental delay reported is not surprising given that the children in this study had little exposure to physical activity at home and that physical activity was not valued by the caregivers of the children. Thus, as physical activity was not valued by the caregivers, the children were not encouraged to participate in locomotor skills. Lack of practice resulted in poor locomotor skill performance which reinforced the children's and caregiver's value of the skills. This process can be deemed a circular reaction using a contextual theoretical framework and supports the need to intervene in the developmental process (Ramey & Ramey, 1990). Additionally, Miller's (1978) work suggests that children do not naturally engage in locomotor skills such as galloping and skipping in a play situation. There is a need to intervene directly by instructing children in the fundamental locomotor skills.

Significant differences were found on the pretest between the E and C groups ($p \leq 0.05$) with respect to locomotor skills. It was unclear to the investigator why this finding may have occurred. The E and C group teachers were asked for their interpretation of this finding relative to specific knowledge of the children and the community. Both E and C group teachers reported that the school from which the C subjects were selected had a large playground that was positioned well away from any streets. As a result, the principal allowed

the teachers to take their children out for recess as often as they desired. The prekindergarten teachers of the C group reported that during the months of September and October, they went outdoors as often as the weather permitted (at least twice a week). In contrast, the schools from which the E subjects were selected had playgrounds close to the road and the principals were more reluctant for their children to play outdoors on a regular basis due to the position of the playground and the amount of glass and other debris covering the playground.

Another factor that may have influenced the difference between groups was that the score for the E group was 3.74 for the "Physical Environment" subscale of the HOME inventory as compared to 4.42 for the C group. The E group mean fell into the lower-fourth of scores for children on the HOME inventory as compared to the C group mean which was in the middle-half of scores as determined by Bradley & Caldwell (1979). The Physical Environment subscale contains seven items concerning the size and upkeep of the house and the safety of the neighborhood. The findings on this subscale may represent the opportunity, or the lack of, that the children had in the home and outside of the home to be physically active. The higher C group score suggested an environment that was more conducive to physical activity. However, no data emerged from caregiver interviews to support this supposition. The interpretation of these data provide an example of the complexity of embeddedness of developmental variables, with changes in one

level (outside environment of the playground and HOME score) potentially resulting in changes in another level (locomotor skill performance).

Object-control skills for both groups were also developmentally delayed. The E group achieved a pretest object-control percentile of 16.90, whereas the C group achieved a percentile of 18.14. Approximately 90% of E and C subjects were at or below the 50th percentile for object-control skills. No statistical differences on the pretest were reported between the E and C groups for object-control skills. These data were not surprising in that children from both groups had little or no exposure to object-control skills prior to the motor skill intervention. The lack of exposure to object-control skills was confirmed by caregiver and child interviews, the children's responses to the testing situation, and the first few lesson plans of the motor skill intervention. During the pretest for the object-control skill part of the TGMD many of the subjects had to watch a demonstration before they were able to understand what was asked of them. The first four intervention lesson plans further highlighted the children's lack of familiarity with PE equipment and activities, as specific verbal instruction, demonstration, and manual guidance were needed to enable the children to complete the requested activities. Also, caregivers (E, n=23) reported that the children did not own a ball or bat, and almost all (E, n=29; C, n=25) of them said that the children did not engage in object-control activities at home.

The children in the E and C groups were delayed in their locomotor and object-control skills as a result of their context. Given the qualitative data about

the little exposure to motor skills the children had received, the developmental delay in locomotor and object-control skills was not surprising. More specifically, the evidence indicates that the children spent much of their time at home engaged in sedentary activities such as playing games and watching television. These data support the rationale that children who are at-risk may be delayed in their motor skills partially as a result of their environment.

The context of the home environment and caretaker attitudes may have influenced the children's motor delay. Few children in the study were able to play safely outdoors and thereby did not engage in sustained physical activity. These data reflect literature reported in the 1950's and 1960's which suggest that children who were exposed to restricted environments in institutions were retarded in their motor development (Dennis, 1960; Dennis & Najarian, 1957; & Yarrow, 1961). Parallels may be drawn between those institutionalized children who were restricted to their cots, and the children in this study who were confined to their sedentary lifestyles in houses as a result of the violence and danger on the streets. Additionally, caregivers reported that they did not value physical activity and did not consider it important to their child's overall growth and development. Few caregivers served as appropriate role models for their children with respect to being physically active themselves. As a result, the children were not exposed to regular physical activity and remained in the house engaged in sedentary play. Another factor that may have influenced why children remained in the house is that the caregivers and children did not

have the skills to organize outdoor physical activities. All of these factors together resulted in a child who engaged in a sedentary lifestyle and was developmentally delayed in FMS performance. The developmental delay reported by this study agrees with the data reported by Connor (1993) for children identified as at-risk of a developmental delay.

This study also undertook to examine the ability of children at-risk to engage in sustained activity. It was thought critical to undertake some measure of sustained activity as pilot data (Goodway & Branta, 1992a) had suggested that preschool children who are at-risk were limited in this capacity. Prior to the motor skill intervention, the E group completed a half-mile walk-run test protocol in an average of eight minutes and thirty seconds, as opposed to the C group whose mean score was eight minutes and thirty-four seconds. Although standardized data were not available for four-year-old preschool children with respect to this test, data were available for five-year-old kindergarten children (McSwegin et al., 1989). As the mean age of the subjects in this study for both groups was 4.74 years it was considered meaningful to use the half-mile walk-run times for kindergartners as a comparison. The mean kindergarten score for the half-mile walk-run was six minutes and ten seconds (McSwegin et al., 1989). Thus, the E group mean was two minutes and twenty seconds slower than the standard time for a kindergarten child, and the mean of the C group was two minutes and twenty-four seconds slower than the standard time. There appears to be a substantial difference between the time the children in

this study reported for the half-mile walk-run test and the time documented for kindergartners. The Physical Best norms reflect the minimum level for basic health standards.

The subjects' deficit in sustained activity probably results from the context in which they live. Therefore, the data reported for the half-mile walk-run were not surprising given the limited exposure the children had to sustained activity in their lives. However, these data raise some major concerns for parents, educators, and health professionals about the potential health status of children who are at-risk. There is a well-documented body of literature that supports the relationship between physical activity and the reduction of health risks, particularly with respect to CHD (Blair et al., 1989; and Caspersen, 1987). The concern is not so much for physical activity levels that increase physical fitness per se, but more that physical activity reaches a minimum standard to maintain positive health benefits (Caspersen, 1987; & Powell et al., 1987). Given that preschool children who are at-risk were at least two minutes and thirty seconds slower than baseline standards for health for kindergarten children, it appears that these children do not in fact engage in activity levels necessary to acquire positive health benefits.

Further concern may be expressed about other risk factors the subjects in this study had that may compound the impact of little physical activity. For example, poor nutrition, inappropriate eating habits, poor sleeping habits, and negative coping behaviors were reported during the caregiver interviews and by

field notes over the intervention period. These manifesting risk behaviors compound the effect of little physical activity and may predispose preschool children who are at-risk to CHD later in life. This finding is in stark contrast to the stereotype among the preschool teachers prior to the intervention that preschool children were "naturally fit and active" and that minimal sustained activity was needed only to "let off steam."

Educational Implications

The finding that living in an urban at-risk environment may result in placing a preschool child at greater risk of motor delay and deficient physical activity for health has important implications to teachers, administrators, parents, and university faculty. The concern is not only for the immediate developmental delay documented in this study, but also for intergenerational transmission of motor delay and physical inactivity. The literature (Lennon, 1989; Ramey & Ramey, 1990; & Scorr, 1989) suggests that risk may be passed from generation to generation as a result of contextual factors that continue to oppose the development of the child. In this study, it was apparent that caregiver attitudes toward physical activity influenced the children's participation in physical activity, thereby limiting exposure to FMS and sustained activity. In turn, lack of exposure to physical activity resulted in delayed FMS and levels of sustained activity which themselves may impact on future attitudes toward physical activity. It is evident that such a cyclical phenomenon may pass from generation to generation.

All of the classroom teachers involved in this study and the parents believed that preschool children would "naturally" develop FMS and fitness without any instruction or exposure to physical activity. In fact, the data support the need for professional physical education services to be provided for these children in order to remediate their developmental delays. Therefore, university faculty in PE should advocate that all preservice regular educators receive education in implementing developmentally-appropriate PE practice. Inservice teachers should also receive this education. Administrators of urban school districts need to be informed of the findings of this study and there needs to be an emphasis on providing professional PE services in urban elementary schools. Administrators of preschool at-risk programs must prioritize and support motor objectives in their curriculum in order to meet the needs of their children.

Parent involvement in PE should be encouraged at school. It must be remembered that children spend much of their time at home and the types of activities in which the children participate have an important impact on their overall motor development. Compensatory programs should involve parents and should educate parents as to the importance of physical activity for preschool children. Also, parents should be educated as to the types of motor activities they and their children can engage in at home. Qualitative findings provide data that may assist teachers and parents in instructing preschool children who are at-risk in the motor domain. The children's motivation and

excitement with respect to movement is a natural resource that should be utilized. More specifically, concerns regarding the children's deficient ability to engage in sustained activity may be addressed by using music as a means of encouraging moderately-intense, continuous activity.

The Impact of a Motor Skill Intervention on Motor Performance
and Perceived Competence and Acceptance

Hypotheses in this study suggested that the E group would demonstrate greater improvements in motor skill performance than the C group from pretest to posttest on measures of motor performance and perceived competence and acceptance. Each of these areas will be discussed, followed by implications for education of both children and adults. However, one extenuating circumstance occurred with respect to the C group.

Difficulty occurred in maintaining an appropriate control group. The C subjects in this study were exposed to seven, 45-minute sessions of physical activities. The physical activity session was separated into two sections. A 15-minute sustained activity section, during which time the C subjects performed locomotor skills around the gym, was used to begin the session. After that, the children were allowed to play freely for 30 minutes with bats, balls hoops, and roller skates. No instruction was given and the children engaged in predominantly object-control skills. Furthermore, no skill specific feedback was provided at any time. Children were frequently off-task during the C group motor sessions and the teachers allowed the children to do what they wanted

as long as they did not endanger other children. The motivation for the teachers to acquire gym time was as a direct result of the investigator providing a two-hour prekindergarten inservice for all prekindergarten teachers in the school district. It is important to note that the C group teachers had received no training in physical education and openly said that they had no idea what to do in the gym.

Locomotor Skills

The E group made greater pretest to posttest gains in locomotor skills than the C group. Prior to the motor skill intervention the E group performed at the 15th percentile; whereas, the C group performed at the 26th percentile for locomotor skills. However, after the motor skill intervention had been implemented the findings were drastically different. The E group demonstrated a mean posttest percentile rank of 80.16, the C group's mean posttest percentile rank was only 26.04. Additionally, only 3.2% of E subjects were at or below the 50th percentile in comparison to 92.9% of C subjects. Statistical analysis yielded significant effects for Group, Time, and Group by Time interaction, for the locomotor score ($p \leq 0.01$). Post-hoc analyses indicated there were significant pretest-posttest differences for the E group, also having significantly higher posttest locomotor scores than the C group ($p \leq 0.01$). These findings were consistent with the literature (Connor, 1993; Kelly et al., 1989; & Miller 1978) that reported significant motor performance gains could be obtained as a result of a structured intervention in a motor skill intervention.

The exceptionally large gains made by the E group with regards to locomotor skills were surprising. The E group had received only 180 minutes of instructional time on three locomotor skills (gallop, hop, and jump) over the twelve-week motor skill intervention. The children in the E group were also exposed to locomotor skills during the ten-minute sustained activity part of the lesson plan. But during this time no instruction, per se, took place. Qualitative data documented the lack of physical activity at home. Therefore, the gains that were made in locomotor skills by the E group were considered to be a direct result of the motor skill intervention. What is interesting to note is that even though the C group received seven, 15-minute locomotor experiences as part of the time the C group spent in the gymnasium, the C group subjects made barely any gain (0.4%) in their locomotor percentile score. The investigator believes that this may be due to the lack of feedback provided to the C group. This finding parallels work by Miller (1978) which documented that children in a direct instruction group increased their performance of FMS to a greater extent than children in a well-equipped play group. This finding also attests to the plasticity of development in locomotor skills.

Object-Control Skills

Findings for the object-control skills were similar to those reported for locomotor skills. Prior to the motor skill intervention the E group had a mean percentile rank of 16.90 while that for the C group was 18.14. However, after the intervention, posttest object-control scores for the E group jumped to a

percentile rank of 79.90. In contrast, the C group only improved to a mean percentile rank of 24.32. Only 65% of E subjects exhibited object-control scores at or below the 50th percentile, as opposed to 89.3% of the C subjects. Statistical analyses also revealed significant Time, Group, and Group by Time interaction effects suggesting that the E group scored better than the C group from pretest to posttest on object-control skills. Post-hoc analyses revealed that for the E group posttest object-control scores were significantly ($p \leq 0.01$) higher than pretest scores. Also, the E group had significantly higher ($p \leq 0.01$) posttest object-control scores than the C group.

This study documented that the E group made substantial and significant ($p \leq 0.01$) gains in their object-control skills as a direct result of 540 minutes of motor skill instruction. The improvement in object-control skills may be attributed to the motor skill intervention as caregivers of the children reported that little, if any, time was spent at home participating in any type of object-control activity. Moreover, many of the children did not possess the equipment (balls, bats) to engage in such activity. It is interesting to note that the C group improved their object-control skills a total of 6.18% from pretest to posttest. The slight increase in object-control skills may be attributed to maturation or to the practice the C children had received during their gymnasium time, or may in fact be due to random error. The C group subjects had been exposed to seven, 30-minute object control experiences in which they were allowed to "free play" with a range of equipment such as balls, hoops, paddles, and bats. No

instruction was given during this time as the teachers were not knowledgeable enough to set up developmentally-appropriate object-control activities. Even though the C group subjects improved their object-control scores, significant differences were not reported from pretest to posttest for the C group, concurrent with the findings in the literature (Miller, 1978).

Ability to Engage in Sustained Activity

The E and C groups reported significant pretest to posttest gains in their ability to engage in sustained activity. Prior to the motor skill intervention, the E group managed to complete the half-mile course in 8 minutes and 30 seconds; whereas, the C group managed to complete the same course in 8 minutes and 34 seconds. After the motor skill intervention, the E group reduced its mean time to 7 minutes and 23 seconds. Similarly, the C group reduced its half-mile time to 7 minutes and 28 seconds. Statistical analyses yielded significant ($p \leq 0.01$) Time effect, but no Group effect or Group by Time interaction. Hence, both the E and C groups demonstrated a significant ($p \leq 0.01$) improvement in their half-mile walk-run times from pretest to posttest. However, contrary to what was hypothesized, the E group did not demonstrate greater improvements in sustained activity than the C group.

The findings from this study suggest that it is possible to develop the ability to engage in sustained activity as a result of limited exposure to physical activity. The E group data indicate that sustained activity can be developed with a preschool at-risk population in a relatively short period of 10-minutes,

twice a week, over 12 weeks. However, when the data for the C group are considered, it may be suggested that improvements in sustained activity can result from as little as 105 minutes (seven, 15-minute sessions) of sustained activity instruction. Qualitative data support this finding in that children in both the E and C groups did not participate in sustained activity outside of school. Qualitative data also suggested that one of the most effective, culturally relevant, and motivating ways in which to engage preschool children in sustained activity is to use music. The use of music reflects a goodness of fit between the characteristics and culture of the children, and the goals and instructional activities of the motor skill intervention. The children in this study reported that they often listened to music at home and loved to move to music. This was confirmed by observation of positive affective behaviors, and fewer occurrences of behavior problems, than during traditional running games.

Conversely, improvement in the ability to engage in sustained activity may have resulted from psycho-social influences acting on the children. The teachers of the E group valued physical activity and talked about its value to the children. Therefore, the children in the E group may have tried harder in the posttest accounting for the gains in ability to engage in sustained activity. However, this argument loses strength when the data for the C group are considered. The teachers of the C group did not talk to their children about physical activity, yet these children also made significant gains in their half-mile walk-run times.

Improvements in sustained activity were not attributed to factors outside of the motor skill intervention as the children were not participating in outside recess due to winter weather or engaging in sustained activity at home. However, it is important to consider the potential impact of maturation on ability to engage in sustained activity. The three-months over which the motor skill intervention took place may have resulted in an increase in maturation thereby potentially influencing data for sustained activity. However, this investigator believes that maturation over a three-month period would not cause such a great pretest-posttest difference in the data as to account for a 19% improvement in scores. Therefore, improvements in sustained activity were attributed to both activities in the gymnasium and possibly to maturation.

Despite, significant improvements in half-mile walk-run times the children were still deficient in their ability to engage in sustained activity. It is important to note that after the motor skill intervention children in both the E and C groups were over one-minute slower than minimum standards necessary to maintain positive health (McSwegin et al., 1989). Thus, a 12-week motor skill intervention was not sufficient to bring about changes toward positive health. Concern should be expressed at these findings given that children who are at-risk exhibit many risk behaviors associated with manifesting risk factors and future CHD. Furthermore, it may be suggested that children who are at-risk need to demonstrate more than just the minimum standards for sustained activity because of their exposure to other risk factors that predisposed them to

CHD. Further work needs to examine the duration, frequency, and intensity of sustained activity needed to enable children who are at-risk to not only meet, but also exceed minimum health standards necessary for positive health.

The Time effect reported regarding sustained activity for both groups also may have been influenced by other contextual factors interplaying with these data. For example, the subjects in this study had not previously been exposed to the half-mile walk-run test prior to the pretest. Thus, improvement in half-mile walk-run times may have resulted from understanding the demands of the test itself. In addition, it was not expected that the C group would make significant gains in its ability to engage in sustained activity, yet such gains were reported. This highlights the importance of collecting contextual data on both the E and C groups. As the investigator had spent time in the C group classrooms, she was aware that the C group had received exposure to sustained physical activity. Additionally, the investigator was aware that the prekindergarten teachers had acquired gymnasium time during the motor skill intervention, contrary to previous patterns in these and other prekindergarten classes.

This study also raised some contextual concerns about the half-mile walk-run test protocol for preschool children at-risk. Even though this test was supposed to reflect a measure of cardiovascular fitness (McSwegin et al., 1989), the investigator chose to use the term "sustained activity" as she believes that the test results were influenced by factors other than just

cardiovascular fitness. Motivation played a large role in the children's ability to sustain movement for the half-mile distance. For example, one male subject who recorded one of the fastest pretest times at 7 minutes and 22 seconds had a posttest time of 7 minutes and 56 seconds. Throughout the intervention period, this child was one of the fastest children in running activities and was able to sustain activity of a high intensity throughout the ten-minute lesson plan periods. However, at the posttest measurement, he was having a "bad day" and was not being cooperative with any activity in the classroom. During the test, he ran for a short time, complained that this was "stupid," and then slowed to a walk, even though he was not breathing hard. His posttest time was 34 seconds slower than his pretest time. In the four cases where E subjects reported a slower posttest than pretest time, three of the subjects appeared to have little motivation to complete the test as indicated by their verbal comments and non-verbal behaviors. It is thus important to observe and document the children's performance to obtain a basic knowledge of their motivation and willingness to complete the test at maximum effort/ability. Even though three of the subjects did not appear to be giving the half-mile walk-run test their "maximum effort," the investigator decided to analyze all data. The unmotivated responses by the children were considered typical of an at-risk preschool population, and thereby the data were believed to be educationally relevant.

The findings from this study relative to sustained activity have exciting and significant educational implications for the future health and well-being of

children who are at-risk. Schools have the responsibility for the health and wellness of children who are at-risk. By using an educational model in addressing health and wellness, a systemic approach can be utilized that reaches all children (Sallis & McKenzie, 1991). Research (Blair et al., 1989; & Caspersen, 1987) has documented the link between physical activity and health, while other work (Powell et al., 1987; & Caspersen, 1987) has reported the minimal intensity of physical activity required to attain health benefits. If preschool children who are at-risk can obtain significant gains as a result of sustained activity instruction, then prekindergarten teachers should be able to engage preschool children in the frequency and intensity of activity necessary to facilitate positive health. Given the many manifesting risk behaviors that preschool children who are at-risk exhibit, increasing physical activity should assist in the reduction of health risks (Blair et al., 1989; Caspersen et al., 1987) in this population.

Implications of Motor Performance Gains

The findings from this study relative to measures of motor performance provide hope for and insight into the motor development of preschool children who are at-risk. The environment in which the children lived appeared to have impacted on their motor development, resulting in developmental delay in levels of FMS and a lack of ability to engage in sustained activity necessary to maintain positive health. Yet after a twelve-week motor skill intervention, subjects had made significant gains in FMS and in the ability to engage in

sustained activity. This finding is in concert with the literature (Connor, 1993; Cratty, 1982; Kelly et al., 1989; & Miller, 1978) which suggests that exposure to a planned program of motor instruction will result in significant improvements in FMS performance. It also supports the work of Schiller and Schiller (1990) who suggested that a motor skill intervention assists the children in moving through the developmental sequences of motor skill acquisition. If children develop competence in their FMS, then they may break through the proficiency barrier outlined in Seefeldt's (1980) sequential model of motor skill acquisition and move on to learning transitional and sport skills in the upper elementary years. As a result, the children will be able to organize their own games outside of school and potentially develop lifestyle patterns of physical activity.

The increase in FMS performance by the E group may have resulted from the stable and nurturing environment provided by the school, not necessarily the effect of the motor skill intervention. However, if this rationale were true, then the children in the C group would also have made significant gains in their FMS. Thus, gains in FMS exhibited by the E group can be attributed to the structured intervention provided in the study.

The findings on sustained activity not only highlight the potential health benefits of such activity, but also indicate a possible impact on academic performance. The children's motivation to move to music as a form of sustained physical activity make it possible for teachers to provide daily sustained activity within the context of the classroom. Prekindergarten

programs should educate inservice teachers in how to provide sustained physical activities in the classroom. Also teachers should be alerted to the data that as children improve their ability to sustain physical activity, they may be more able to maintain their energy and concentration throughout the whole school day. Informal interviews with teachers previously conducting power-walking sessions with their prekindergarten classes indicated that the children were more focused on their classroom work and activities after the exercise session (Goodway & Branta, 1993b). Therefore improving sustained activity may result in more productive use of school time and have positive effects on academic performance.

These data support both (a) the need for teachers to intervene in the motor development of preschool children at-risk and (b) the substantial motor benefits that may be obtained by investing instructional time with such a population. The children's ability to benefit from instruction was not severely affected by their risk status. Children in the E group were able to benefit significantly from 720 minutes of instruction in FMS performance. Such a finding reflects the literature in which children in Head Start made significant improvements in their FMS as a result of 720 minutes (Connor, 1993) of instruction and preschool children after 1000 minutes (Kelly et al., 1989) of instruction. These findings of this study contribute to the literature on the efficacy of early intervention and support the need for motor goals and objectives to be emphasized with an at-risk preschool population.

The findings from this study with respect to dynamical systems theory (DST) and motor performance gains suggest that the context in which the children lived acted as a rate limiter to motor skill development. Prior to the motor skill intervention, the children in the E group were very delayed in their FMS. Yet, after 12-weeks of instruction, the E group subjects had above average motor skills with a mean percentile rank of 80.16. It seems that the children's subsystems under the areas of morphology, motivation, and cognitive development were already developed prior to the motor skill intervention, and that it was the deprived environmental context and lack of exposure to motor skill experiences that was acting as a rate limiter to FMS development. Therefore, when instruction was provided, a new form of motor performance was exhibited that reflected the combination of all new cooperating subsystems. However, this study also suggests that motivation may be the central parameter for sustained activity. Future research should investigate this relationship and identify ways in which children were or were not motivated during sustained activity.

Perceived Competence and Social Acceptance

One hypothesis of this study was that the subjects in the E group would exhibit greater improvements on the four subscales of the PSPCSA than the C group from pretest to posttest. Each of the four subscales of the PSPCSA will be discussed separately.

Perceived cognitive competence. There were no statistically significant effects reported for the cognitive subscale; however, there was a trend towards a Time effect with $p = 0.058$. The investigator predicted that changes may have occurred from pretest to posttest based on the assumption that towards the end of the year, the children appeared to be able to use cognitive knowledge that they had learned on a particular problem or in a specific situation. That is, the children's conceptual understanding of information seemed to develop to a level so that they could relate it to other areas by the end of the school year. Observations from previous years indicated that students verbalized their cognitive abilities more frequently at the end of the year than earlier in the year. This prediction was supported by teacher reports as well. Despite this hypothesis, the investigator was not entirely surprised that a twelve-week intervention period did not elicit pretest-posttest differences on the perceived cognitive competence subscale. The investigator believes that the time period of the intervention was too short to observe any significant gains in this measure and recommends longer interventions in future work.

When the data between the E and C groups were examined, some interesting trends were found. Both the E and the C group had similar pretest means with respect to perceived cognitive competence, 3.31 and 3.35, respectively. However at the posttest, the E group mean was 3.51 with a 0.20 difference between pretest and posttest. In comparison, the C group posttest mean was 3.37, a 0.02 difference between pretest and posttest. These data

suggest a trend that children in the E group had greater gains in their perceived cognitive competence than children in the C group. This trend may be accounted for by the fact that the E group children started out the school year more cognitively advanced (mean=6.03) than the C group children (mean=4.13) as determined by the prekindergarten preschool readiness test (maximum score=20).

It may be that the type of gymnasium activities in which the E group children were involved also impacted on their perceptions of cognitive competence. Cognitive concepts such as shapes, sizes, numbers, colors, directional positioning, and spatial awareness were included in fun, success-oriented motor skill activities as part of the motor skill intervention. For example, if the children were told to tap a specific color balloon, they were not penalized for tapping the wrong color, just informed of their mistake and told the color of the balloon with which they were playing. So, even with limited cognitive knowledge, children were still able to participate and enjoy the motor activity. The children seemed to get really excited during activities combining both cognitive and motor skills. In lesson plan six, the children threw at colored shapes on the wall. The teacher pointed to a shape and asked what shape it was before letting the children throw. The children excitedly screamed out the color of the shape and then threw at the shape. While they were picking up the balls they would be asked at which color they had thrown. It may have been the connection between cognitive knowledge and fun, success-oriented

activities that facilitated the children's perceptions of their cognitive competence. Another important factor that may have accounted for these data is that the subjects and teachers from the E group were part of a Professional Development School (PDS). PDS emphasizes teaching for conceptual understanding and challenges the teachers to re-think traditional teaching strategies. Such an environment may have impacted the children's perceived cognitive competence.

This study supported the literature (Overby et al., 1994) that suggests children's perceptions of self deteriorate as they progress through school. The Overby et al. (1994) study provided an appropriate comparison as it was performed at the same two schools from which the E subjects were selected for this investigation. The posttest measure of perceived cognitive competence from this study was used for comparison as the Overby et al. (1994) data were collected at the end of the school year. The E group elicited a slightly lower group mean (3.51) than the group mean reported by Overby et al. (1994) for kindergarten children (3.60), with the C group being lower than both the E and kindergarten data. However, both E and C groups reported higher group means than the group mean (3.0) for third grade children (Overby et al., 1994). The instrument used to assess the third grade (Harter, 1982) was different than the one used for kindergarten and preschool, but it was developed by the same author, and measured similar constructs at a developmentally-appropriate level. Hence, the perceived cognitive competence construct of preschool and

kindergarten was compared to the scholastic competence construct of third grade. The trend of older children to feel less cognitively competent is of concern to educators and parents. Further research should examine this area more closely. Specifically, further work should be undertaken to determine if a physical education curriculum incorporating cognitive concepts impacts children's perceptions of their cognitive competence.

Perceived maternal acceptance. Analysis of the perceived maternal acceptance subscale revealed there were no Time, Group, or Group by Time interaction effects. There was a small trend towards significance for Time with $F = 3.10$ and $p = 0.08$. This may be attributed to the fact that towards the end of the year, the parents were required to attend field trips and help out in the classroom if they had not done so over the year. However, most likely the trend across time was accounted for by factors outside the prekindergarten program and motor skill intervention.

On a case-by-case level, the data for maternal acceptance were interesting, with family circumstances a good predictor of the children's score on perceived maternal acceptance. Using family circumstance as the primary clue, the teachers and investigators were fairly accurate in their informal (and unrecorded) predictions of how the children would score on the posttest measure of this subscale. Several examples illustrate this direct relationship. Daquire had a pretest score of 2.83 on maternal acceptance. Yet at the posttest her score had dropped to 2.67, a trend predicted by the fact that her parents had separated and were fighting. Daquire was living with her mother, but expressed a desire to live with her father and was frequently angry at her mother. Deon's mother had returned to school to complete her GED during the intervention period, a fact that may have influenced Deon's drop in perceived maternal acceptance from 4.00 to 3.33. He said that his mother did not have time to play with him anymore. Nina was used to having her mother around. However, during the intervention period her

mother started selling door-to-door products in the evenings, perhaps accounting for Nina's drop in score from 3.33 to 2.50. In contrast, Kenady's mother had personal problems with which she was unable to cope at the beginning of the year. By the end of the intervention period she had found some help and was able to spend more time with her children. Kenady's perceived maternal acceptance score improved from 3.00 to 3.83. At the beginning of the intervention period Kenda's mother was spending much of her time looking after her one-month old baby who was sick. By the end of the intervention period, the baby was much better and Kenda reported that she and her mother played with her baby sister all the time. Kenda's maternal acceptance score improved from 3.17 to 3.83. The teacher and investigator predicted the direction of these changes for all of these children.

These scenarios illustrate that it is important to know what is happening in the lives of the subjects in order to account for any trends in the data. This is specifically true for children who are at-risk, as their lifestyle patterns are typically not as stable as those in other populations of children.

Perceived physical competence. The E group made significantly greater gains in its perceived physical competence than the C group. The E group mean for perceived physical competence increased 0.3 from 3.21 to 3.51. In comparison, the C group mean only increased 0.03, from 3.35 to 3.38.

However, all group means reflected children who believed they were competent in the physical domain. Statistical analysis for perceived physical competence reported a significant Time effect ($p \leq 0.01$) and Group by Time interaction effect ($p \leq 0.05$). Post-hoc analyses revealed that the only significant difference between the means was the pretest-posttest means for the E group ($p \leq 0.01$). Thus, the significant interaction effect seemed to be a result of the pretest-posttest differences in the E group means.

The data reported for this subscale suggest that the E group's perceptions of physical competence were directly impacted by participation in the motor skill intervention. Qualitative findings discount the theory that such gains in perceived physical competence occurred as a result of activities in the home. Both the children and the caregivers reported that physical activities in the home were minimal. Thus, the children in the E group seemed to have made attributions about their perceived physical competence based on actual improvements in motor skills from pretest to posttest. Research in the literature (Anderson & Adams, 1985; & Hater and Pike, 1984) reflects this finding supporting the relationship between actual and perceived competence.

The data from the study also seem to suggest that physical competence attributions were made based on motor skill performance, not sustained activity performance. If improvement in sustained activity had affected the children's perceived physical competence, then the C subjects should also have demonstrated significant differences in perceived physical competence from pretest to posttest as they also made significant gains in sustained activity. As this was not the case, then it may be concluded that gains in motor skill performance resulted in significant improvement in perceived physical competence. Such a finding makes sense from the standpoint that both intrinsic and extrinsic feedback (and hence perceptions of self) are more available during motor skill performance than during sustained activity. Also, this finding is in opposition to Gruber's (1985) results which suggested that,

with a group of children who were disadvantaged and disabled, a higher self-esteem was correlated with physical activity and not skill improvement.

The data reported by Overby et al. (1994) for kindergarten children with respect to perceived physical competence was higher (3.70) than that reported for preschool children in this study (E=3.51 and C=3.38). However, the Overby et al. data must be viewed with caution because it may not represent typical data for kindergarten children who are at-risk. Many of the subjects in the Overby et al. sample had been exposed to regular motor skill activities during prekindergarten the previous year. The data reported by Overby et al. for the third grade children on the construct of "athletic competence" was much lower (2.90) than that found for the preschool and kindergarten children. As with the cognitive competence subscale, concern was expressed at the trend for children to feel less physically competent as they get older. Further work needs to be undertaken looking at the relationship between actual and physical competence, and how physical activities can be used to help develop children's positive perceptions of self.

Perceived peer acceptance. Participation in a prekindergarten program appears to enhance perceptions of peer acceptance for all subjects. Statistical analyses of the perceived peer acceptance subscale revealed that the only significant effect was a Time effect ($p \leq 0.05$). That is, both the E and C group together improved their scores on perceived peer acceptance. Post-hoc analysis supported this hypothesis. When the group means for peer

acceptance were considered, it was apparent that the E and C group made similar gains from pretest to posttest. The E group improved from 3.37 to 3.54, whereas the C group improved from 3.37 to 3.51. As both groups had similar pretest-posttest scores, participation in a motor skill intervention does not seem to impact on the child's perceived peer acceptance. Rather, these data support the benefit of participation in a prekindergarten program for the social development of preschool children. However, the perceived peer acceptance data may also have been impacted by other factors in the context. Qualitative data indicate that the extended family network may have impacted peer acceptance. Most of the subject's families reported that they spent time with the extended family network. That is, grandparents, parents, and children would all meet up at someone's house on a regular basis. For many of the subjects, peer actually translated into cousin as this was the child with whom the subject typically socialized. Therefore, it may be the interaction between school and family that resulted in significant gains in perceived peer acceptance.

The data reported in this study were comparable to those reported by Overby et al. (1994) for kindergarten children. Both this study's preschool children and the Overby's et al. kindergarten subjects had peer acceptance measures in the 3.5 range. Again, by third grade, the score had declined to 3.0 (Overby et al., 1994). It is exciting to know that children seem to start school with good perceptions of their peer acceptance. Further work needs to identify

the factors influencing the decline in perceived peer acceptance and examine what educators can do to help children feel accepted by their peer group.

Furthermore, research needs to investigate if perceived peer acceptance is correlated with actual peer acceptance. It is important to determine if declines in perceived peer acceptance reflect real declines in actual peer acceptance.

Implications of Perceived Competence and Social Acceptance Findings

This study suggests that prekindergarten children who are at-risk feel competent in the physical and cognitive domains and accepted by their peers and mothers. This finding agrees with previous findings (Douglas, 1970; Gibley & Gabler, 1967; Harter & Pike, 1984; Soares & Soares, 1969; Stipek, 1981; & Trowbridge, 1970) that indicate that African-American children have the same or higher perceived competence and acceptance as white children. This finding is of particular note for educators of children who should be aware that when young children who are at-risk start school, they feel good about themselves. Yet, data have shown that by the later grades these feelings of competence and acceptance have declined (Overby et al., 1994). Decline in perceived competence and acceptance as children become older may be attributed to an increase in cognitive ability enabling children to make more realistic judgements of their abilities and social interactions. However, it is still critical for educators to understand what is happening in this area. More specifically, further work needs to address the features of the school environment, educational process, and home environment which may influence children's perceptions of self.

Subsequent investigation should involve large sample sizes and a longer period of study than was possible in this field setting.

This study suggested that there may be connections between cognitive activities in the gym and perceived cognitive competence. The Professional Development School principle, "Teaching for Understanding" implies abilities to functionally apply knowledge. It may be that transfer of cognitive concepts from one area (classroom) to another (gymnasium) assists the children in truly learning and internalizing these concepts and, hence, facilitates improved perceived cognitive competence. Further work should attempt to determine if such a relationship exists as it has important educational implications for early childhood practice and teacher preparation.

The relationship between perceived physical competence and actual physical competence is an important one. Given that many individuals are concerned about the self-esteem of African-American children who are at-risk, success-oriented physical education curricula can be used to help build the self-esteem of this population. Specifically, improvements in perceived competence and acceptance as a result of the motor skill intervention directly relate to compensatory prekindergarten objectives which state that the program should develop positive feelings of self. Future research should attempt to establish if improving motor skills in older children will impact on the children's global self-worth, rather than just on their perceived athletic competence.

Methodological concerns were expressed about the instrument used to measure perceived competence and acceptance in this study. Although the investigator considered the PSPCSA to be the most appropriate instrument available for this population of children, several recommendations were made to make the instrument more meaningful to African-American preschool children who are at-risk. First, the assumption that the mother was the primary caregiver for all children was incorrect. In this study, four aunts, five grandmothers, and two fathers were primary caregivers of the children. Therefore, in order to obtain accurate data from the children, the investigator should have the option to select picture plates that represent the most appropriate character for the caregiver, that is, male, female, and older or younger. The literature suggests that when the pictures are most representative of a children's environment, then the children are most likely to associate closely with the child in the picture and hence respond accurately (Harter and Pike, 1984). Second, the picture plates of the African-American children needed to be drawn in a more contemporary manner. Items such as hairstyle and clothing did not reflect sensitivity to contemporary African-American culture. Many of the children laughed at the pictures and would say that the child in the picture looked funny. Also, the language used in some of the questions was not culturally meaningful or relevant and needed to be changed to reflect words to which the children had been exposed.

The Relationship of Contextual Variables to Motor Performance

One of the goals of this study was to understand more fully the relationship between contextual variables and motor performance. This relationship was investigated via stepwise regression analysis and qualitative methodologies. The investigator considered that four contextual variables (predictor variables) were of particular importance to motor skill performance based on findings from the literature and personal judgement. The contextual variables identified were the score on the HOME inventory (Bradley & Caldwell, 1981), maternal education, number of risk factors, and preschool readiness scores. Four separate criterion variables were used to run each of the regression analyses (a) Total TGMD score, (b) Locomotor standard score, (c) Object-control standard score, and (d) Half-mile walk-run score. Regression analyses were run for both the pretest and posttest measures of each of the criterion variables, and for each group.

Relationship of Contextual Variables to Pretest Motor Performance Measures

There seemed to be little relationship between contextual variables and pretest scores on motor performance. None of the contextual variables used as predictor variables in the regression analysis significantly predicted the variance of locomotor and object-control skills for the E and C groups. This was not surprising as the variance in locomotor scores for the E ($SD=2.15$) and C ($SD=2.22$) groups was small. There was also little variance in the object-control scores ($SD=2.74$) for the E group, but a much larger variance for the C group

(SD=13.01). Contextual variables did not significantly predict the variance for either the half-mile walk-run time for the E group or the total TGMD score for the C group. It appears from these data that other factors, or most likely a combination of factors, influenced the children's ability with respect to motor performance.

In two of the criterion variables, total TGMD score for the E group and half-mile walk-run time for the C group, the variance of the criterion measure was significantly predicted by contextual variables. The pretest preschool readiness score significantly ($p \leq 0.01$) predicted 33.68% of the variance of the total TGMD performance for the E group. The preschool readiness score is a composite score that represents abilities in the cognitive, social, and motor areas that the children possess entering prekindergarten. This score reflects the types of exposure the children have had previously and, thus, it is not surprising that this variable was predictive in accounting for the variance in the total TGMD. These findings speak to the strength of the preschool readiness test in accounting for the variance of a developmental variable. With respect to the C group, the number of risk factors significantly ($p \leq 0.01$) accounted for 25.19% of the variance in the half-mile walk-run time. This finding was particularly interesting as previous literature had hypothesized a relationship between physical activity and cardiovascular fitness (Caspersen, 1987). This finding also highlights the concern for the physical status of preschool children who are at-risk. Dotson (1988) has indicated the relationship between

manifesting risk behaviors in childhood (as in those identified by risk factors) and CHD later in life. Given that this study reports a relationship between sustained activity and the number of risk factors, and that the literature has documented the relationship between sustained physical activity and health risks (Caspersen, 1987), it appears that the preschool children in this study are particularly at-risk for future health concerns specifically related to CHD. Such data have significant implications to the development of PE curriculum for this population. Urban PE curricula should involve a health-related fitness focus for African-American preschool children who are at-risk. Also PE and classroom teachers should be aware of the importance of daily sustained activity, and they should teach conceptual understanding to the children related to the fitness of their body.

Relationship of Contextual Variables to Posttest Motor Performance Measures

The number of risk factors, the preschool readiness score, and maternal education significantly predicted variance for measures of motor performance for the E and C groups.

Locomotor Skills. The preschool readiness score predicted 17.90% of the variance for locomotor skills for the E group. In contrast, in step one of the regression analysis, the number of risk factors significantly predicted 37.35% of the variance for locomotor skills for the C group. In step two of the regression analysis, the number of risk factors and the preschool readiness score together accounted for 47.21% of the variance of locomotor skills. The C group had a

slightly larger variance in scores at the posttest ($SD=1.87$) than the E group ($SD=1.19$) which may account for why the C group had two variables that significantly accounted for the variance in locomotor skills as compared to one for the E group.

The stepwise regression analysis for the E group suggested that the skills with which the children came into the intervention, influenced their ability to benefit from the motor skill intervention. The relationship between the posttest locomotor standard score and preschool readiness score was a positive one ($r=0.42$). Therefore, children with higher preschool readiness scores also scored higher on locomotor scores. A theoretical contextual framework might explain this finding from the standpoint of dynamic interactionism, skills in one domain (predominantly cognitive) as indicated by the preschool readiness score influenced skills in another domain (motor). Perhaps, the children with superior cognitive abilities were able better to evaluate feedback provided during the motor skill intervention, and thus improve their motor skills more than children with lesser cognitive abilities.

The stepwise regression analysis for the C group suggested that a combination of the children's environment (number of risk factors) and skills (preschool readiness score) influenced the C group's posttest locomotor standard score. However, the direction of the relationship of the independent variables was surprising and contrary to what was predicted. The correlation between locomotor skills and risk factors was a positive moderate correlation

($r=0.61$). This suggested that children with a higher number of risk factors had a higher score on locomotor skills, a finding in complete contrast to the conclusions drawn from the literature. The investigator could not account for this finding. It may be that the type of risk factors is more crucial than the actual number of factors. The contribution of the preschool readiness score to the variance of the locomotor skill standard score was significant at the $p \leq 0.05$ level despite a low correlation ($r=-0.03$). Again, the sign of the correlation was unexpected with a lower preschool readiness score linked to a higher locomotor score. It appeared that for the C group, other factors in the environment may have influenced the data.

Object-Control Skills. No dependent variables were significantly predictive in accounting for the variance of the object-control skills for the C group. In contrast, risk factors and maternal education were predictive in accounting for the variance of object-control skills in the E group. At step one of the stepwise multiple regression analysis, risk factors accounted for 17.47% of the variance ($p \leq 0.01$) of object-control skills for the E group. The direction of this relationship was negative ($r=-0.42$) suggesting that the greater the number of risk factors, the lower the score on object-control skills. When one considers that risk factors reflect an environment in which a child has little routine in his/her life and a parent who has difficulty dealing with life's problems, it is not surprising that children who have more risk factors do not benefit so greatly from a motor skill intervention. For these children, instructional time in

the gymnasium is lost because of misbehavior, poor attention span, and an overall difficulty with coping with social interactions in a structured setting. This finding was reinforced by qualitative field observations during the intervention instructional time. Children such as Rico, with a high number of risk factors, had greater difficulty following directions and staying on task than children with a fewer number of risk factors. The qualitative data indicated above represent a circular reaction between the child, performance of the task, and the teacher. For example, a high number of risk factors is linked to poor behavior and poor skill level. In turn, these are linked to less time on task, low skill level, and thus increasing degrees of inappropriate behavior. This reaction becomes circular, and the child who most needs time on task ends up becoming the child with least time on task. Hence, little or no benefits result from the motor skill intervention.

In step two of the regression analysis, maternal education significantly accounted for more variance of the object-control skills, with both risk factors and maternal education accounting for 31.50% of the variance. It may be suggested that maternal education is reflective of more than just the educational achievement of the mother. Rather, it suggests that life events such as teenage pregnancy, delinquency, or an unstable home environment may have prevented the mother from graduating from high school. The mother may not be in a position to provide a nurturing environment for the child. This pattern speaks to intergenerational transmission of risk with a parent's present

environment impacting the development of the child and thus later life potential for that child. This finding is also in concurrence with the literature which indicates that maternal education was predictive of school failure and school difficulty (Ramey et al., 1978; & McCormick et al., (1990).

Sustained Activity. No variables were entered into the equation for the C and E groups with respect to accounting for the variance of the half-mile walk-run time. This suggests that no one single variable was predictive in accounting for sustained activity, rather that a combination of many variables may influence these data. The criterion variable with the highest correlation to sustained activity for the E group was maternal education ($r=0.22$) indicating that a higher education was associated with a slower time. For the C group, risk factors were correlated ($r=-0.19$) with sustained activity indicating that a faster time was associated with a greater number of risk factors. Neither of the reported correlations were high.

The direction of the relationship between risk factors and sustained activity was surprising. It would be predicted that the greater the number of the risk factors, the slower the time, because the literature indicates risk has a negative impact on the health status of the child. Yet, this study found the greater the number of risk factors, the faster the time. There appears to be no strong rational why this finding occurred. Perhaps, a greater number of risk factors indicates a child with less caregiver supervision and subsequently a greater likelihood that the child may play outdoors or be active indoors.

However, contextual data do not support such a supposition. Further work needs to examine the relationship between number and type of risk factors and the ability to engage in sustained activity.

Another surprising finding was that higher maternal education was associated with slower half-mile walk-run times. Given the strength of the relationship and the little deviation in the range of education amongst the mothers, such an unusual finding may not be surprising. Also, it is not necessarily appropriate to draw a relationship between maternal education and sustained activity. A mother with a higher educational status is not necessarily one who is knowledgeable about physical activity or who exhibits appropriate physical activity patterns.

Total TGMD Score. No single variable was predictive in accounting for the variance in the total TGMD score for the C group. Yet for the E group the number of risk factors was predictive in accounting for 12.61% of the variance. There was a negative correlation between the total TGMD score and the number of risk factors ($r=-0.36$) suggesting that the greater the number of risk factors the lower the total TGMD score. The number of risk factors to which a child is exposed is indicative of the stability and supportiveness of the home environment, in general, and thereby may influence the child's ability to be able to benefit from a motor skill intervention.

Implications of the Context for Motor Performance

The analyses related to the impact of contextual variables on motor performance indicate that the child's skills (preschool readiness score) entering into the preschool program influenced the child's achievement in motor performance prior to and after the motor skill intervention. This suggests that early intervention programs prior to prekindergarten would be beneficial in facilitating a child's development in the motor domain. Thus, future work should examine parent and child programs that not only educate the child but also have an impact on the parent.

These data suggest that the number of risk factors (family context) a child has impacts the child's ability to benefit from a motor skill intervention. The finding is in agreement with the literature (Stedman, 1988; & Trout & Foley, 1989) which reports that the family context has impact on child development. It may be, from a dynamical systems perspective, that risk factors (environment of the child) act as a rate limiter to a child's development in the motor domain. In other words, the subsystems necessary for more mature movement patterns such as maturation, strength, and coordination are developed enough to elicit a more mature level of performance. However, the subsystem related to amount of or type of practice/exposure is not developed enough, and thereby limits the rate of development of the child's motor performance. For example, at the beginning of the motor skill intervention, previous practice with motor skills had been limited for most of the children. Thus motor performance was delayed and

immature relative to age. After the motor skill intervention, the subsystem of practice/exposure was more developed and, therefore, motor skill performance was able to undergo a phase shift and rapidly improve to more mature forms of movement.

This study attempted to define what constitutes risk for the children in this study via qualitative methodologies in order to understand the differential definition of risk. However, these data also support the need to weight the risk factors relative to their impact on motor development. It is common sense that one risk factor such as substance abuse may have a far greater impact on a family's life than a risk factor such as residing with a single parent. Specifically, future research should investigate the influence of combinations of risk factors and how they influence a child's environment and potential in the motor and other areas.

The Relationship between Motor Performance and Perceived Physical Competence and Peer Acceptance

The last two hypotheses investigated the relationship between motor performance and perceived physical competence and social acceptance. The first hypothesis suggested that changes in perceived physical competence would be moderately correlated with changes in motor performance. In general, the correlations between the locomotor score, object-control score, half-mile walk-run time and perceived physical competence were weak and inconsistent. The E group reported the strongest pretest correlation ($r=0.23$)

with object-control skills and locomotor skills ($r=-0.21$). The direction of these relationships were of most interest in these data. As would be expected, the E group reported that the higher a child's perceived physical competence the higher the child's object-control score. Yet for the locomotor scores, both the E and C group reported a negative correlation, suggesting that a child with lower perceived physical competence had a higher score on locomotor skills. It may be argued that the children had received little exposure to motor skills and, thus, had no referent upon which to make judgements about their abilities in the motor domain. Additionally, those children who had received some exposure to motor skills had not received any valiative judgements about their ability and, therefore, were also unable to make valid judgements about their abilities. Furthermore, young children tend to overstate their ability level confusing their desire to be competent with their ability to be competent.

The second hypothesis suggested that children with high posttest scores in motor performance would have higher posttest scores in physical competence as compared to children with low posttest scores in motor performance. No such relationship was found. Thus, it appeared that the children who were better in motor performance did not differ from any of the other children relative to their perceptions of physical competence and peer acceptance. This is in contrast to the literature (Gruber, 1985) which indicated that more physically-active children (of a group of disadvantaged and disabled children) had higher self-esteem scores than less physically-active children. In

actuality, the lack of significance reported for this analysis has positive educational implications. It suggests that even children who have poor motor performance perceive themselves as somewhat competent in motor skills. If a child has a positive view of himself/herself in motor skills, he/she is more likely to continue to attempt skills in this area and thus expand his/her opportunities to succeed and actually become competent.

These data provided little evidence to verify a relationship between perceived physical competence and peer acceptance and motor performance. It may be that the children in this study were unable to identify accurately their abilities in the motor domain. As a group, the children in this study spent little time playing with their parents, and the parents reported that little skill/ability-related feedback was provided to the children at home. Thus, the main source of feedback the children received was in school. This has serious educational implications to preschool children who are at-risk. If this is indeed so, then teachers must specifically address the issue of providing feedback to children relative to their performance in different areas. However, in light of the concern for these children's self-concept, the feedback must take the form of positive, contingent feedback. In other words rather than just saying "good job", say "Good job, I liked the way you pumped your arms when running." As time progresses, children will not only feel good about their ability, they will have a reference of their ability relative to the desired outcome.

CHAPTER SEVEN

SUMMARY AND RECOMMENDATIONS

The purpose of this study was to provide data on the motor performance of African-American children who are at-risk. The objectives of the study were to obtain data on African-American preschool children who are at-risk related to (a) baseline information on fundamental motor skill (FMS) performance and perceived competence and acceptance; (b) the ability to engage in sustained activity; (c) the impact of a twelve-week motor skill intervention program on FMS performance and ability to engage in sustained activity; (d) the relationship between contextual variables such as maternal education, the home environment, and number of risk factors with motor performance; and (e) the relationship between changes in motor performance and changes in perceived competence and acceptance. The study was significant in that it was designed to provide motor development information about a population of children whose physical activity had not previously been studied. Specifically, both quantitative and qualitative methodologies were used to document the effect of a motor skill intervention on the motor performance of children at-risk. A contextual theoretical framework was used to investigate the impact of contextual variables on motor performance.

Subjects for the study were African-American preschoolers enrolled in an urban compensatory prekindergarten program. The children were selected for the program based on the combination of a prekindergarten readiness test score and the number of risk factors to which children were exposed. The children with the lowest

prekindergarten readiness score and highest number of risk factors were chosen to participate in the program. The experimental (E) subjects ($n=31$) had a mean age of 4.74 years ($SD=0.29$). The control (C) subjects ($n=28$) also had a mean age of 4.74 years ($SD=0.33$). The E group had an average of 5.29 risk factors as opposed to the C group which had an average of 5.79.

The motor skill intervention implemented in this study was developed from a preschool physical education curriculum designed for all preschoolers (Dummer, Connor, & Goodway, in press). The motor skill intervention consisted of twenty-four, 45-minute instructional sessions during a 12-week period. Each lesson was comprised of (a) a ten-minute sustained activity opening; (b) three, ten-minute skill instruction sessions; and (c) a three-minute closure. The children attended on average 86.60 percent of the sessions ranging from 37.50 to 100 percent. The motor skill intervention took place during the regular prekindergarten program.

The subjects in the C group received only the regular prekindergarten program. Prior to the motor skill intervention the subjects in the C group had not received motor skill instruction, nor did the children have time allocated for physical activity in the gymnasium. However, difficulties were experienced in maintaining an appropriate control group. As a result of the investigator providing an inservice to all compensatory prekindergarten teachers in the school district, the teachers of the C group were motivated to obtain gymnasium time for their classes. Therefore, the children in the C group received seven, 45-minute physical activity experiences in the gymnasium. Each session consisted of a 15-minute sustained activity involving

locomotor skills and a 30-minute free-play experience with bats, balls, hoops and roller skates. No instruction was provided during this time.

Data on two measures of motor performance and one measure of perceived competence and acceptance were obtained at the pretest and posttest. The Test of Gross Motor Development (TGMD) provided information on FMS related to locomotor development and object-control skills. The half-mile walk-run provided a measure of the child's ability to engage in sustained activity. The Pictorial Scale of Perceived Competence and Social Acceptance (PSPCSA) provided measures of perceived cognitive and physical competence and perceived maternal and peer acceptance. Qualitative data were also obtained through a caregiver interview, a child interview, a demographic questionnaire, and the HOME inventory. These contextual measures were obtained only once during the motor skill intervention. Descriptive statistics included means and standard deviations for all motor performance and perceived competence and social acceptance variables. Also, means and standard deviations were calculated for demographic variables where possible and for the HOME inventory. A 2 (E, C) x 2 (pretest, posttest) MANOVA procedure was applied to all dependent variables. The MANOVA design specified through SPSS-X tested the main effects of Group, Time, and a Group by Time interaction. A follow-up using Tukey HSD was undertaken if significant differences were detected.

Baseline data on the subjects reported that all subjects were delayed in their locomotor and object control skills. Pretest measures of locomotor development indicated that the E group was at the 14th percentile and the C group was at the 25th

percentile. Significant differences were reported between the E and C group for this measure. Differences between the two groups were attributed to contextual variables at school and home, or factors outside of the scope of the investigation. The E group reported a mean percentile of 16.90, whereas, the C group reported a percentile of 18.14 for object-control skills. No pretest differences were found between the groups. Sedentary lifestyles, caregiver attitudes to physical activity, and the limited knowledge on how to engage in physical activity were contextual factors believed to account for the developmental delay in FMS performance.

The children in this study were also deficient in their ability to engage in sustained activity. Both E and C groups were at least two minutes and twenty seconds slower than norms reflecting minimal standards for health for five-to-six year old children. The literature documented the relationship between physical activity and reduction of health risks (Blair et al., 1989; Caspersen, 1987), therefore concern was expressed that preschool children who are at-risk did not engage in sufficient physical activity to maintain positive health benefits.

Pretest measures on the PSPCSA revealed that the subjects in this study exhibited positive perceptions of competence and acceptance. In three of the PSPCSA subscales (physical competence, peer acceptance and maternal acceptance) the mean scores for the subjects in this study were higher than the mean scores reported by Harter and Pike (1984) for a sample of predominantly white, middle-class, preschool children. These findings were surprising given the concern expressed by the urban school district about the self-esteem of preschool children who are at-risk.

The motor skill intervention brought about significant ($p < 0.01$) Time, Group, and Group by Time interactions for locomotor and object-control skills, with the E group having greater pretest-posttest gains in FMS than the C group. Improvement in FMS performance was directly credited to the motor skill intervention because qualitative data indicated that these were the only motor experiences the children had received. The C group did not make significant gains in FMS. These findings were consistent with the literature (Connor, 1993; Kelly et al., 1989; & Miller, 1978) which indicated that a structured intervention resulted in improvements in FMS performance.

The E and C groups significantly ($p < 0.01$) improved their times on the half-mile walk-run from pretest to posttest. Contrary to what was hypothesized, the E group did not demonstrate greater improvements in sustained activity than the C group. The absence of a group effect was attributed to the teachers of the C group taking their children to the gymnasium for seven, 45-minute activity sessions involving sustained activity and FMS experiences. These findings indicate that sustained activity may be developed with a preschool at-risk population as a result of a structured intervention or limited exposure to sustained activity. Qualitative findings documented that the children did not engage in sustained activity outside of school. Also, that children liked to move to music and this was a motivating way in which to engage the children in sustained activity.

Performance on two of the subscales of the PSPCSA did not change significantly by the end of the intervention; but indicated some interesting trends in the data. The data for perceived cognitive competence suggested a trend towards a Time

effect for both the E and C group. The prekindergarten program, rather than the motor skill intervention, was believed to account for this trend. However, the potential of the motor domain to facilitate conceptual understanding of cognitive concepts was discussed. Maternal acceptance scores demonstrated some interesting results on a case-by-case level. The family context, including the number of risk factors, appeared to be a good predictor of maternal acceptance scores from pretest to posttest.

Statistically significant changes occurred in performance on the remaining two subscales of the PSPCSA. The E group alone made significant pretest-posttest improvements on perceived physical competence. It appeared that the E groups perceptions of physical competence were directly impacted by participation in a motor skill intervention and the subsequent improvement in actual physical competence. Peer acceptance scores were significantly improved for both groups. This finding suggested the benefit of participation in a prekindergarten program for the social development of preschool children who are at-risk.

The contextual variables, number of risk factors, preschool readiness score, and maternal education significantly predicted variance on some of the pretest and posttest motor performance measures. The preschool readiness score reflects the types of experiences the children have had previously and therefore may account for some of the variance in measures of motor performance. Number of risk factors also indicated the type of context in which the children lived. Additionally, maternal education may be representative of factors other than educational attainment. It may suggest the type of environment that either supported or impeded the mother in obtaining a

twelfth-grade education and, thereby, a context which may also impact on child development.

Six assertions were developed from triangulation of the qualitative data.

Qualitative findings indicated that children (a) were typically developmentally immature, from a low-income, unemployed, single-parent family with one additional risk factor; (b) participated in sedentary, inside activities; (c) had little exposure to sustained activity; (d) found music motivating for sustained activity; (e) received positive affect from exercising; and (f) had caregivers who did not value physical activity. The data from these assertions assisted in the interpretation of research findings. Implications were reported for the education of inservice and preservice teachers, parents, and administrators involved with urban education.

Summary of Educational Implications

The findings from this study have implications for the instruction of children and the education of adults. There are many implications for the education of preservice and inservice teachers, along with implications for university faculty involved in teacher education. Additionally, this study provided recommendations relative to caregiver education. Finally, this study had findings of importance to administrators of any type of urban education for young children. In some manner, all findings are relevant to all groups. However, for the purposes of organization, implications from this study will be identified under the most appropriate heading.

Educational Implications for Teachers and Teacher Education

1. Children are delayed in their FMS and deficient in their ability to engage in sustained activity. Therefore developmentally-appropriate PE instruction is necessary.
2. The children exhibit excitement and motivation to be physically active. This energy should be utilized as a resource in developing the children's motor performance and sustained activity.
3. Moving to music is a stimulating and culturally relevant way in which to improve the children's ability to engage in sustained activity. This activity can be undertaken in the classroom and thus may be performed when desired as it does not require gymnasium time.
4. For teachers to develop FMS in preschool children who are at-risk, direct instruction should be provided, not free play experiences with equipment.
5. Physical education must be taught for conceptual understanding in order to develop life-long physical activity patterns.
6. Physical education homework should be sent home on a regular basis.
7. Regular sustained activity such as power walking may be helpful in allowing the children to focus more readily on academic work.
8. Teaching academic concepts in the gymnasium provides another environment in which to reinforce conceptual understanding of academic concepts.

9. Teaching academic concepts in the gymnasium is a stimulating and developmentally-appropriate context in which to teach these concepts.
10. Preschool children who are at-risk start school feeling competent and accepted. Teachers need to know this and work on maintaining these perceptions of self.
11. Improvement in motor performance increases perceived physical competence and positive perceptions of self.
12. Preservice teachers in Early Childhood programs should be educated on the importance of physical activity and developmentally-appropriate practice in physical education.
13. Preservice teachers in physical education should be informed of the impact of an urban at-risk environment on the motor development of preschool children in order to design appropriate instructional activities.
14. Physical education curricula should be designed that reflect the needs and characteristics of children living in an urban at-risk environment.

Educational Implications for the Education of Caregivers

1. Caregivers must be educated about the importance of physical activity and the health risks of a sedentary lifestyle for their children and themselves.
2. Caregivers should be instructed in the types of activities in which they and their child could engage at home.

3. Physical activity programs must be established in the community that target African-American woman and provide a safe place to exercise.
4. The lack of value with respect to physical activity reported by the caregiver must be challenged by education of both adults and children.
5. Make-it-take-it workshops should be provided with respect to making equipment for physical activity.

Educational Implications for Administrators of Urban Education

1. Schools must undertake the challenge of providing for the needs of the children with respect to health and wellbeing because they are the only institution that systematically services all children.
2. Professional physical education services must be provided to preschool children who are at-risk in order to meet their needs. At the very least, physical education consultants should be available to assist teachers in designing developmentally- and contextually-appropriate instructional activities.
3. School principals should be educated as to the value of physical education.
4. Principals should ensure that all teachers develop objectives and instructional materials in physical education and use physical education time in a productive manner.
5. Schools should develop programs that provide safe places for children to be physically active after school and on the weekends.

6. Administrators of preschool at-risk programs should ensure that all teachers are educated in the importance of physical activity and that curricula reflect developmentally, contextually-appropriate, motor skill objectives.

Recommendations for Further Research

Further study should attempt to implement a motor skill intervention with children across all elementary grades. Specifically, a larger sample size and longer length of intervention should be undertaken. Also, issues relating to maintenance of an appropriate control group should be examined. Children should be followed longitudinally to determine the long-term benefits of intervening early in a child's life.

This study suggested that caregivers' values influence the context in which children live and subsequently had an impact on the children's motor performance. Further research should investigate the relationship between caregivers' values and attitudes relative to physical activity. Furthermore, a motor skill intervention involving (a) caregivers and children, (b) just children, and (c) a control group should be implemented to establish if involving caregivers in the intervention process would bring about greater improvements in motor performance than direct instruction alone.

Methodological concerns identified in this study should be addressed in future work. Instruments must be contextually-and-culturally sensitive, reflecting the culture and environment in which children live. The picture plates of the Pictorial Scale of Perceived Competence and Social Acceptance need to be redrawn to reflect contemporary clothing and hairstyles. Also, the language used in the instrument

needs to be more culturally representative of the way in which children speak. Issues relative to motivation and performance on the half-mile walk-run should be examined and other ways of measuring the ability to engage in sustained activity should be explored.

The concept of risk needs further study. Future longitudinal research should investigate the impact of different risk factors. It would be beneficial to examine the relationship between type of risk factors and motor development to determine if particular risk factors are correlated with delay of motor skills. Additionally, further study should investigate the long-term effect of being exposed to risk factors with respect to physical growth and development and future health status. Ultimately, it would be most beneficial to weight risk factors by their potential to impede child development.

Finally, the findings from this study raised some potential research questions relating to the interaction between motor skill performance, perceived competence and acceptance, and academic achievement. The questions are as follows (a) What is the relationship between sustained activity and academic achievement?; (b) How do improvements in perceived physical competence impact overall self-esteem?; (c) What is the relationship between perceived physical competence and actual motor performance?; (d) How does engaging in regular sustained activity as a child impact the long-term health status of adults?; and (e) What factors influence children's feelings of competence and acceptance as they become older.

Most importantly this study advocated the use of a contextual theoretical perspective in investigating the motor development of preschool children who are at-risk. It suggested that a multivariate and multidimensional approach must be used in order to understand the complexities of the context in which the child develops. Additionally, qualitative methodologies were recommended in order to understand the subjects and their context. If such an approach were achieved the investigator would be able to interpret findings in a way that is of great benefit to teachers, teacher educators, and administrators and, ultimately, to the children themselves.

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APPENDIX A
Informed Consent

Dear _____

We are writing to tell you about some exciting things that are happening in your child's classroom. Mrs ____ and myself have been working together for over a year to better understand how children approach the learning of motor skills. Last year we became concerned about the fitness of the children in the classroom and the little opportunity the children had to be physically active. This year many teachers at both School A and School B are investigating what we can do to improve your child's fitness level and motor skill ability. I have been coming to your child's classroom and teaching motor skills since the beginning of the school year. Starting in the new year we want to examine how effective our teaching of physical activity is for the children. We aim to look at how your child performs motor skills, how fit he/she is, and what he/she likes and does not like about physical activity. Most importantly, we want to see if our teaching helps improve your child's fitness and motor skills.

Mrs ____ and myself know that you are the most important teacher of your child. We are interested in how your child likes to occupy his/her time at home, what he/she likes to play with, and who she likes to play with. We intend like to visit you and your child at home.

As part of this investigation your child will be involved in the following activities:

- 1) **Interview** - We would like to talk to your child about what your child likes and thinks about physical activity. For example does she like to play sport or watch sport. These talks will take place in the classroom during the free time period. We would like to audiotape these talks. Your child would not have to talk to us and could leave the interview anytime she wanted to during the talk.
- 2) **Assessment of motor skills** - We would like to observe your child performing different motor skills such as running, kicking and catching. This session may be videotaped if you and your child consent.
- 3) **Assessment of fitness** - We would like to determine how fit your child is by having them walk or run for half-a-mile. All class members will do this activity at the same time during the gym period. Your child will be allowed to complete the walk/run at her own pace.
- 4) **Assessment of Perceived Abilities** - We would like to show your child some pictures of children. We will ask him/her if he/she feels competent at these activities.

You and your child's involvement in this investigation is a voluntary decision. If you agree to be involved you may still withdraw from the investigation at anytime without any penalty. Any child who is not part of the investigation will still be a full member of class. You can ask to talk to us about what we have observed at anytime. For any audio or videotaping, your child has the right to stop me recording at any time. Any videotape of children not in the investigation will be erased immediately.

All of the information we collect will be treated in confidence. Your child's name will not be used in any report or presentation. Your child's video material will not be seen by anyone other than people involved in this investigation. Videotape material will only be shown for purposes of presentations if I have your permission. You may restrict the use of different information on your child at any time. You can agree for your child to be involved in the investigation in a number of different ways. Please ask us questions about those activities you are not sure about. We hope you will allow your child to be part of this investigation.

We feel that the information is very important to your child's future wellbeing. We are working with the Prekindergarten program and Michigan State University to make sure that what we learn from working with your child helps other teachers teach your child more effectively. We also hope to use this information to help fight for better resources in the community. If you have any questions please talk to any of us at school. Thank you for your time with this investigation.

CONSENT FORM FOR CHILD AND PARENT PARTICIPATION

The goals of this investigation and the nature of my child's involvement in it have been explained to me. I understand that the investigators may hold the information she obtained on my child and use it to document the investigation.

I understand that data might be used in published reports about the investigation, presentations, and in educational classes at the university. I know that my child will not be identified by name in reports. I understand that in any video in which my child appears and in which my child is recognizable, no names will be used. Also, I understand that the investigators will abide my wishes that any segment of video tape that my child is in that I do not want to be used, will not be used in presentations.

I have been told that I can refuse permission for my child's participation in any of the activities listed below without penalty. I know that I can withdraw my child from the investigation at any time.

.....

I give permission for my child to participate in the activities below (please check a box):

- YES ☐ NO ☐ * talk to my child about what he/she thinks of physical activity
- YES ☐ NO ☐ * audio tape my child's talk with you about physical activity
- YES ☐ NO ☐ * assess my child's motor skills
- YES ☐ NO ☐ * videotape the assessment of my child's motor skills
- YES ☐ NO ☐ * use the video tape material that identifies my child in presentations as long as you do not identify my child by name
- YES ☐ NO ☐ * assess my child's fitness level
- YES ☐ NO ☐ * assess my child's view of their perceived abilities
- YES ☐ NO ☐ * visit me at home and talk to me about physical activity and what my child likes to do at home

Child's
Name: _____

Print Parent's/
Guardian's Name: _____

Date: _____

Signature: _____

APPENDIX B

Human Subjects Approval Letter

MICHIGAN STATE UNIVERSITY

OFFICE OF VICE PRESIDENT FOR RESEARCH
AND DEAN OF THE GRADUATE SCHOOL

EAST LANSING • MICHIGAN • 48824-1046

February 10, 1993

TO: Ms. Jackie Goodway
39 I.M. Sports Circle

RE: IRB #: 92-605
TITLE: THE EFFECT OF A MOTOR SKILL INTERVENTION ON THE
FUNDAMENTAL MOTOR SKILLS AND PHYSICAL FITNESS OF
AFRICAN-AMERICAN PRESCHOOLERS WHO ARE AT RISK
REVISION REQUESTED: February 8, 1993
CATEGORY: 1-A
APPROVAL DATE: 01/05/1993

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project including any revision listed above.

UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must seek updated certification. Request for renewed approval must be accompanied by all four of the following mandatory assurances.

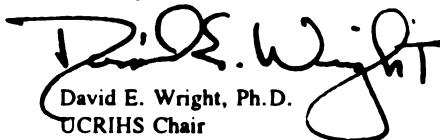
1. The human subjects protocol is the same as in previous studies.
2. There have been no ill effects suffered by the subjects due to their participation in the study.
3. There have been no complaints by the subjects or their representatives related to their participation in the study.
4. There has not been a change in the research environment nor new information which would indicate greater risk to human subjects than that assumed when the protocol was initially reviewed and approved.

There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. Investigators must notify UCRIHS promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

If we can be of any future help, please do not hesitate to contact us at (517) 355-2180 or FAX (517) 336-1171.

Sincerely,



David E. Wright, Ph.D.
UCRIHS Chair

DEW:pjm

cc: Dr. Crystal Branta

APPENDIX C

A Physical Education Curriculum for all Preschool Students

Program Goals and Objectives in Physical Education for All Preschool Students

Goal #1: To demonstrate competence in selected body management skills.

*Priority
Rating*

Program Objectives:

- | | | |
|------|----|--|
| | 1. | To demonstrate the ability to <u>move</u> selected body parts |
| 3.33 | a. | head |
| 3.22 | b. | shoulders |
| 3.44 | c. | back |
| 3.58 | d. | elbow |
| 4.33 | e. | hands |
| 3.33 | f. | hips |
| 4.22 | g. | knees |
| 4.22 | h. | feet |
| | 2. | To demonstrate the ability to perform selected movements of the torso, arms (shoulder and elbow joints), and legs (hip and knee joints). |
| 4.44 | a. | flexion |
| 4.22 | b. | extension |
| 3.33 | c. | abduction |
| 3.33 | d. | adduction |
| 3.00 | e. | rotation |
| 3.00 | f. | swinging movements |
| | 3. | To demonstrate the ability to move the whole body or parts of the body in directional space. |
| 4.67 | a. | forward |
| 4.33 | b. | backward |
| 3.56 | c. | sideways |
| 3.89 | d. | over obstacles |
| 3.89 | e. | under obstacles |
| 3.44 | f. | between obstacles |
| 3.67 | g. | around obstacles |
| 3.00 | h. | through an opening (e.g., tunnel) |
| | 4. | To demonstrate the ability to move the body into different shapes and sizes. |
| 2.67 | a. | big-little |
| 2.33 | b. | short-tall |
| 1.89 | c. | fat-thin |
| 2.00 | d. | straight-bent |
| | 5. | To demonstrate the ability to move objects. |
| 3.44 | a. | carry-hold |
| 3.67 | b. | lift-lower |
| 3.00 | c. | pull-push |

- | | | |
|------|----|---|
| | 6. | To demonstrate the ability to perform selected static balance skills. |
| 3.67 | a. | efficient sitting posture |
| 3.67 | b. | efficient standing posture |
| 3.11 | c. | stand on one leg |
| 3.11 | d. | stand on toes |
| 2.78 | e. | four-point balance facing the floor (e.g., "bear" position) |
| 2.44 | f. | four-point balance facing the ceiling (e.g., "crab" position) |
| | 7. | To demonstrate the ability to perform selected dynamic balance skills. |
| 3.22 | a. | walk forward on a line |
| 3.22 | b. | walk sideways on a line |
| 2.85 | c. | walk backward on a line |
| 2.22 | d. | walk forward heel-toe |
| 2.56 | e. | walk forward on a curved line |
| 3.00 | f. | walk forward on a 4-inch, floor-level balance beam |
| 2.44 | g. | walk sideways on a 4-inch, floor-level balance beam |
| 1.98 | h. | walk backward on a 4-inch, floor-level balance beam |
| | 8. | To demonstrate <u>beginning-level skill</u> on selected stunts and tumbling skills. |
| 2.11 | a. | forward roll |
| 4.22 | b. | log roll |
| 1.78 | c. | side/egg roll |
| 2.56 | d. | animal walks |

Goal #2: To demonstrate competence in selected fundamental motor skills.

*Priority
Rating*

Program Objectives:

- | | | |
|------|----|--|
| | 1. | To demonstrate <u>beginning-level skill</u> in selected object-control skills. |
| 4.56 | a. | roll a ball |
| 4.56 | b. | underhand throw/toss |
| 4.33 | c. | overhand throw |
| 4.78 | d. | catch a rolling ball |
| 3.78 | e. | catch a tossed ball |
| 4.67 | f. | kick |
| 4.00 | g. | bounce a ball |
| 3.44 | h. | one-hand strike (e.g., using a paddle or racket) |
| 3.78 | i. | two-hand strike (e.g., using a bat) |
| | 2. | To demonstrate <u>beginning-level skill</u> in selected locomotor skills. |
| 4.89 | a. | walk |
| 4.56 | b. | run |
| 3.29 | c. | walk upstairs |
| 3.29 | d. | walk downstairs |
| 3.78 | e. | climb up |
| 3.78 | f. | climb down |
| 3.56 | g. | gallop |
| 3.78 | h. | hop |
| 3.89 | i. | vertical jump |
| 3.44 | j. | horizontal jump |
| 2.89 | k. | leap |

2.78 l. skip
2.58 m. slide

Goal #3: To demonstrate competence in selected games, sports, and dance skills.
--

*Priority
Rating*

Program Objectives:

- | | |
|------|--|
| | 1. To demonstrate the ability to follow the rules in low-organized games. |
| 3.67 | a. imitate the movements of the leader in follow-the-leader type games |
| 3.67 | b. follow the rules in low-organized games and activities (e.g., run the bases or participate in partner games) |
| | 2. To demonstrate the ability to "play one's position" in low-organized games and activities. |
| 3.11 | a. stay within assigned territory (e.g., behind the line) during games |
| 2.89 | b. participate in different roles (e.g., leader, player) within a game or activity |
| | 3. To demonstrate ability to use selected equipment during games and movement activities. |
| 3.56 | a. soft sponge balls |
| 3.00 | b. playground balls |
| 2.11 | c. sport-like balls (e.g., mini-basketballs, whiffle balls) |
| 2.22 | d. lightweight, short bats, paddles, or rackets |
| 2.78 | e. scooter boards |
| 3.78 | f. tricycles |
| 3.78 | g. playground equipment (e.g., swings, slides, climbing apparatus) |
| | 4. To demonstrate competence in selected aquatic skills. |
| 2.56 | a. water adjustment |
| 2.44 | b. float with or without assistance |
| 2.22 | c. flutter kick |
| | 5. To demonstrate ability to imitate or create movements during dance activities. |
| 3.33 | a. animal walks to music |
| 3.78 | b. imitate movements in dance activities |
| 2.22 | c. create movements in dance activities |
| | 6. To demonstrate the ability to move the whole body or parts of the body to simple rhythms or music with <u>even</u> beats. |
| 3.67 | a. walk to simple rhythms or music with even beats |
| 2.82 | b. march to simple rhythms or music with even beats |
| 2.33 | c. run to simple rhythms or music with even beats |
| 3.44 | d. move the arms to simple rhythms or music with even beats |
| | 7. To demonstrate the ability to move the whole body or parts of the body to simple rhythms or music with <u>uneven</u> beats. |
| 1.56 | a. move to simple rhythms or music with uneven beats |

Goal #4: To demonstrate competence on selected indicators of physical fitness.

Indicators of physical fitness include: (a) ability of the various energy systems to do work; (b) flexibility of the major joints; (c) strength, endurance, and power in the large muscle groups; and (d) body composition.

This curriculum does not include specific physical fitness objectives because most preschool-aged children possess sufficient physical fitness to support participation in their daily living and play activities. Furthermore, the available instructional time in most physical education programs for preschool-aged children is so limited that defining physical fitness as a goal separate from the development of fundamental movement skills, such as those defined in Goals 1, 2, and 3, is not advised.

Preschool-aged children who have insufficient physical fitness for activities of daily living should be referred for physical therapy services as a supplement to instruction in physical education. Examples of inadequate fitness among children of preschool age include: (a) insufficient joint mobility to reach objects on the floor or overhead, (b) insufficient energy to participate with peers in active play, (c) insufficient muscular strength and power for the maintenance of sitting and standing posture or to enable the development of body management and fundamental motor skills.

Goal #5: To demonstrate knowledge of selected activity-related cognitive concepts.

*Priority
Rating*

Program Objectives:

1. To demonstrate the ability to name and identify (touch) selected body parts.

2.89	a. head
2.25	b. eyes
1.88	c. ears
2.51	d. shoulders
2.78	e. back
2.67	f. abdomen
3.41	g. arms
3.00	h. elbows
3.67	i. hands
2.78	j. hips
3.33	k. legs
2.99	l. knees
3.44	m. feet
2. To demonstrate knowledge of simple movement terminology.

3.44	a. bend
2.89	b. straighten
3.22	c. stretch
3.33	d. twist
2.22	e. swing
1.78	f. sway
1.57	g. shake
3.29	h. clap
3. To demonstrate knowledge of directions and positions in space.

3.44	a. forward-backward-sideways
2.22	b. near-far
2.22	c. together-apart
2.00	d. beside

- 2.22 e. right-left
 2.67 f. up-down
 2.89 g. high-low

4. To demonstrate knowledge of different body shapes and sizes.

- 2.22 a. big-little
 2.00 b. short-tall
 1.22 c. fat-thin
 1.67 d. straight-bent

5. To demonstrate ability to follow directions in the physical education environment.

- 4.33 a. follow one-part directions
 2.89 b. follow two-part directions
 3.33 c. imitate simple movements that are demonstrated

6. To demonstrate knowledge about safety in the physical education environment.

- 4.44 a. follow simple safety rules (e.g., stay in the fenced playground area, walk on the pool deck)
 3.22 b. recognize and report safety hazards (e.g., broken equipment, slippery surfaces, sharp objects)
 2.67 c. recognize and report suspected injuries (e.g., cuts, bruises, pain)

7. To demonstrate basic knowledge about a healthy lifestyle.

- 2.44 a. importance of exercise (e.g., makes me strong, helps me grow, fun)

Goal #6: To demonstrate competence in selected activity-related personal-social skills.

*Priority
 Rating*

Program Objectives:

1. To demonstrate enjoyment of physical activity.
- 3.22 a. show positive affect (e.g., smiling, laughing) during physical activity
 3.44 b. participate willingly in physical education activities
 1.78 c. indicate physical activity preferences
2. To demonstrate a positive self-concept in the physical education environment.
- 3.78 a. attempt most physical education activities suggested by the teacher
 2.00 b. perform familiar physical education activities with confidence
 1.89 c. communicate satisfaction with one's abilities in physical education activities (e.g., "I am good at catching the ball")
 1.33 d. communicate satisfaction with one's body (e.g., "I am healthy" or "I look good")
3. To demonstrate effort in games and physical activities.
- 2.56 a. follow directions related to intensity of physical effort (e.g., "run as fast as you can" or "throw as far as you can")
 2.00 b. follow directions related to accuracy of physical effort (e.g., "walk on the line" or "roll the ball toward the target")

4. To demonstrate ability to communicate with others in the physical education environment.

 - 2.78 a. communicate needs (e.g., teacher attention, water, equipment, toilet)
 - 1.89 b. communicate choices (e.g., preferences for activities, equipment, or activity partners)
 - 2.11 c. communicate feelings (e.g., happy, proud, sad, angry)
 - 1.33 d. communicate refusals (e.g., inability or unwillingness to perform skill)
5. To demonstrate ability to cooperate with others during low-organized games and activities.

 - 3.11 a. share or exchange equipment when requested
 - 2.78 b. take turns when requested
 - 2.22 c. hold hands in a circle game
 - 2.22 d. participate with a partner on a task requiring cooperative effort (e.g., push partner on scooter, stand back-to-back)
6. To demonstrate courage in movement activities which involve reasonable and safe physical or social risks.

 - 2.22 a. participate in balance activities
 - 2.00 b. participate in climbing activities
 - 1.67 c. participate in aquatic activities
 - 2.78 d. participate in games such as tag
 - 2.00 e. participate in activities previously associated with perceived or real failure
7. To demonstrate respect for others in the physical education environment.

 - 3.67 a. appropriate use of personal and general space
 - 3.11 b. courtesy (e.g., appropriate use of phrases such as "please" and "thank you")
 - 1.44 c. support other students by offering physical assistance or verbal/nonverbal encouragement
8. To demonstrate respect for equipment.

 - 2.67 a. use equipment as directed by the teacher
 - 2.78 b. return equipment to storage area upon request
9. To demonstrate self-control and personal responsibility.

 - 3.78 a. listen to teacher directions
 - 3.00 b. wait for turn
 - 3.69 c. wait in line

APPENDIX D

Motor Skill Intervention Lesson Plans

OPENING ACTIVITIES

Lesson Plan #1,2,3,9,22

Time	Activity	Organization	Comments
10 mins	RUN & FREEZE Children running/ galloping/skipping. Blow whistle & children stop quickly & do not move (freeze). Vary Position of freeze.	Explain to children that they freeze when whistle is blown. Children run/gallop/skip until whistle is blown, then freeze. Each time demonstrate new freeze position & have children perform it before they continue to move. Make freeze position momentary.	Encourage children to keep moving around the gym Keep children moving Join in to keep children motivated

Lesson Plan #4,5,18,24

Time	Activity	Organization	Comments
10 mins	MOVEMENT TO MUSIC 1. Kids in Motion 2. Body Rock 3. Freeze (from "Kids in Motion" tape)	Children in their own space in front of instructor. Copy the instructors movements. Instructor follows the movements & words of the tape. Allow time for individual creativity.	Keep moving Swing your arms hard Kick your legs high

Lesson Plan # 8,19

Time	Activity	Organization	Comments
10 mins	MOVEMENT TO MUSIC 1. Body Rock 2. Freeze 3. Animal Action (from "Kids in Motion" tape)	Children in their own space in front of instructor. Copy the instructors movements. Instructor follows the movements & words of the tape. Allow time for individual creativity.	Keep moving Swing your arms hard Kick your legs high

Lesson Plan # #11, 20

Time	Activity	Organization	Comments
10 mins	MOVEMENT IN MOTION 1. Beanbag 2. song about slow/fast 3. Swing, shake, twist, stretch	Children in their own space in front of instructor. Copy the instructors movements. Instructor follows the movements & words of the tape. Allow time for individual creativity.	Keep moving Swing your arms hard Kick your legs high

OPENING ACTIVITIES - continued

Lesson Plan #14

Time	Activity	Organization	Comments
10 mins	MOVEMENT IN MUSIC 1. Walk, run, gallop 2. Kids in Motion 3. Body Rock	Children in their own space in front of instructor. Copy the instructors movements. Instructor follows the movements & words of the tape. Allow time for individual creativity.	Keep moving Swing your arms hard Kick your legs high

Lesson Plan #15,16

Time	Activity	Organization	Comments
10 mins	MONKEY TAILS GAME	Children tuck tail (scarf) into pants. All children chase each other & grab as many tails from other children as possible. When many tails are gone, stop game & redistribute tails. Repeat.	Reach for tails Look out for other children Keep moving

Lesson Plan #12,13,21

Time	Activity	Organization	Comments
10 mins	NUMBER GAME	Place polyspots on gym floor in groups of 1,2,3. Children run around outside of gym, instructor blows whistle & calls out a number. Children run & put their foot on that number. Repeat with different numbers & locomotion skills.	Keep to outside of gym Keep moving Find the right number

Lesson Plan #10,17,23

Time	Activity	Organization	Comments
10 mins	MOVEMENT TO MUSIC (Contemporary Music) 1. Michael Jackson 2. MC Hammer 3. Chris - X	Children in their own space in front of instructor. Copy the instructors movements. Instructor follows the movements & words of the tape. Allow time for individual creativity.	Keep moving Swing your arms hard Kick your legs high

Lesson Plan 1

Time	Activity	Organization	Comments
10 mins	Objective 1 - CATCHING 1. Catching a balloon 2. Catching a scarf 3. Catching a bean bag 4. Catching a pillow ball with a partner	1. Children in own space. Tap balloon in air and catch. 2. In own space throw scarf in air and catch with two hands 3. Small toss in air, catch bean bag. Increase height of toss with success. 4. Stand opposite a partner (5 feet away). Toss ball to partner. Take a step back if successful.	Get your hands on balloon. Reach for the ball Hug the ball
10 mins	Objective 2 - KICKING 1. Pendulum leg swing 2. Kick imaginary ball 3. Kick stationary ball 4. Kick a balloon	1. Children stand in circle, hold hands and swing leg like a grandfather clock. 2. Have the children kick an imaginary ball around the room. Use a drum beat to get "step-kick". 3. Place pillow ball on a polyspot 8 feet from a pin. Step-kick ball to knock pin over. 4. Kick a balloon around gym. Encourage a step into the ball & keep moving.	Swing leg from hip Emphasize step & kick Kick hard Reward pattern of kick, not knocking over pins
10 mins	Objective 3 - GALLOPING 1. Step-together- step-together slowly 2. Step-together- step-together quickly 3. Galloping with a scarf tied to the lead leg 4. Galloping after hoops	1. Place colored star on each foot. Red on right foot, blue on left foot. Put right foot in front. Slowly step-together down the gym. Repeat with left foot in front. 2. Repeat activity above, but try and make the movement faster than in 1. 3. Teacher ties a scarf on lead leg. Child holds onto the scarf "reins of horse" & gallops to music. Scarf is switched to other leg & activity repeated. 4. Roll a hoop for the child, have the child gallop and get it. Vary speed of hoop based on child's abilities. Have child gallop with both legs leading.	Keep red/blue star in front Say "step-together" Try to move faster, keep star in front "Pull on reins/scarf", keep leg in front. Look out for other "horses" Relax back leg. Positively reinforce effort!
3 mins	CLOSURE¹	Talk to children about what they liked to do best. Reiterate key focus of activities eg pump arms on running.	

Note: ¹ = All lesson plans will finish with a three-minute closure as described above. This will not be shown in the remaining lesson plans.

Lesson Plan #6,7

Time	Activity	Organization	Comments
10 mins	BODY PART GAME	Go over body parts at beginning. Encourage children to keep moving around gym. Assist where necessary.	Count the number of ..knees.. you have together

Lesson Plan 2

Time	Activity	Organization	Comments
10 mins	Objective 1 - KICKING 1. Leg swing 2. Step & kick ball 3. Run & kick a milk jug 4. Run & kick ball	1. Review leg swing. 2. Step & kick ball. O → --O Spot Ball 3. Run & kick milk jug around the gym. 4. Run & kick ball. O → -- → -- → --O Spot Run Ball	Swing leg from hip <u>Step</u> & kick Kick hard
10 mins	Objective 2 - CATCHING 1. Catch a rolling ball 2. Catch a tossed bean bag 3. Catch a tossed ball 4. Catch a dropped (bounced) ball	1. Partners O ≠ O Roll a green ball along the ground and catch with <u>hands</u> . 2. Toss bean bag & catch. 3. Partners O ≠ O Throw & catch foam ball. If catch 3x successfully, take a step back. 4. Each child bounce a ball on the ground & catch it.	Reach with hands Toss lightly Reach fro ball
10 mins	Objective 3 - GALLOP 1. Step-together-step-together 2. Gallop slow-fast 3. Gallop like a horse	1. Place a red star on R foot & blue on L foot. Step 1 foot in front, bring back leg to front foot, move slowly. 2. Same as # 1 but move more quickly. Gradually increase speed. 3. Tie scarf on leg & hold onto ends (reins). Gallop holding reins (pretend to be horses). Keep front foot in front.	Let's gallop like horses Keep the front foot in front

Lesson Plan 3

Time	Activity	Organization	Comments
10 mins	Objective 1 - HOPPING 1. Stand on 1 leg 2. Jump 1-2 feet 3. Leg swinging 4. Hop to fish 5. Hop using arms	1. Stand on 1 leg like a pelican on your spot. Star on feet, 2. Jump up & down on 2 feet on spot. Then jump up & down on "one foot" 3. Stand on spot swinging leg forward and back. 4. Hop from their spot in the pond to get fish & take them back to spot. Can only carry one fish at a time. 5. Hop short distance using arms to help.	Use your arms to balance Push with your legs Swing arms to help you hop
10 mins	Objective 2 - CATCHING 1. Sitting - drop & catch ball 2. Kneeling - drop & catch ball 3. Standing - drop & catch ball 4. Catch ball across 'Monster river'	1. Sit in a straddle, (on carpet squares) drop the ball & catch it with <u>hands</u> . 2. Kneel on carpet square, drop & catch ball. 3. Standing on carpet square, drop & catch ball with <u>hands</u> . 4. Throw foam ball across the river with partner. If catch 3x, move to a wider part of the river.	<u>Drop</u> the ball Reach with your hands & fingers
10 mins	Objective 3 - KICKING 1. Step & kick 2. Run & kick milk jug 3. Run & kick ball	1. Step & kick ball - review O --> --O Spot-Step-Kick 2. Run & kick milk jugs around gym. Emphasize running approach. 3. Run & kick ball emphasize running approach to ball. Kick ball to pins. O -----O -----[] Spot Run Kick Pin	Step & swing leg, kick Run & kick Reinforce pattern not knocking pin

Lesson Plan 4

Time	Activity	Organization	Comments
10 mins	Objective 1 - BOUNCING 1. Drop & catch (2 hands) 2. 1 handed bounce 3. Bounce a Balloon kneeling	1. Drop ball & catch with 2 hands. Bounce the ball in the front right hand side of the body (if R handed). 2. Drop ball, let it rise to hip height and then push ball back to floor and catch. If child can do it 1 time <u>with control</u> then let them try "2". <u>Control</u> is important, do not let them proceed without having control. 3. Kneel on a carpet square and have a child bounce the balloon. Emphasize pushing with fingers, not slapping.	<u>Drop</u> the ball Look where it bounces Push with fingers <u>Control</u> is important, do not let them proceed without having control. Push with fingers
10 mins	Objective 2 - KICKING 1. Kick milk jugs - Review 2. Run & kick 3. Kick a rolling ball	1. Run & kick ball toward wall. O -----> O Spot Run Ball Wall 2. Kick milk jugs around the gym. Emphasize run & kick. 3. Line children up on spots. Roll beach ball to child and have them kick it to you. O O O O O O Children X Teacher	Run & kick hard Swing the leg Look at the ball Swing the leg

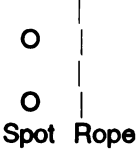
10 mins	Objective 3 - HOPPING 1. Swinging leg 2. "Swing-hop" 3. Hop to fish	1. Place a 'red star' on the R foot & a "green star" on the L foot. Children stand on a spot. Swing R leg back & forward keeping R knee bent. Also do on L leg. 2. Start with leg bent and behind. Swing leg forward on count "1", swing leg back on count 2, on count "3" hop forward as leg swings forward. Stop & repeat. Do on both legs. 3. Hop to go and get a fish. Bring it back to the nest. Only carry 1 fish at a time. Start by standing still and swinging arms before hopping. O ----- x O ----- x O ----- x O ----- x Hoops Hop Fish	Look how your leg swings Swing your leg forward & hop Use your arms Swing your legs Emphasize arm swing forward as children hop.
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Lesson Plan 5

Time	Activity	Organization	Comments									
10 mins	Objective 1 - THROWING 1. Step & throw with a scarf tied to leg 2. Step & throw 3. "Clean up your back yard" - throwing	1. Stand on spot, tie scarf on leg opposite to throwing arm. Step scarf leg in front and throw ball as <u>hard</u> as possible at monster on wall. O ----- Spot Throw Wall 2. Take scarf off leg and repeat exercise. 3. Clean up your back yard throwing. Throw yarn balls over rope. Try & throw <u>all</u> the balls to the other side. <table><tr><td>x</td><td> </td><td>x</td></tr><tr><td> x </td><td> </td><td> x </td></tr><tr><td>x</td><td> </td><td>x</td></tr></table> Children Rope Children	x		x	x		x	x		x	Throw hard Step your scarf leg in front <u>Step</u> & throw Emphasize <u>step</u> & throw.
x		x										
x		x										
x		x										
10 mins	Objective 2 - BOUNCING 1. Drop & catch 2. Bounce high-low 3. Continuous bouncing	1. Bounce ball & catch. Work on dropping ball. 2. Drop ball, push 1 hand and catch it. Experiment with the strength of the hand contact with the ball. Make it go high, low. Then try to get it to hip height. Bounce into hoop. 3. Dribble ball repeatedly while standing. Try to keep ball to outside R and at hip height.	Let go (drop) the ball Push hard Push soft Push with fingers Stand upright									

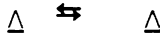
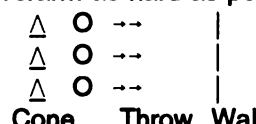
10 mins	Objective 3 - JUMP 1. Bend & straighten legs 2. Bend legs, swing arms back 3. Bend & Jump with arm swing 4. Rocket jumps	1. Children stand on spot, "launch pad". Bend Repeat 2. Bend legs and put arms behind at same time and then stand and swing arms above head. 3. Do the same as #2 but do it faster and "take-off" like a rocket (jump). Get children to count "3,2,1...take-off". 4. Jump through a Balloon hoop held by the teacher. Emphasize arms. "Jump to the moon".	Bend your legs to jump Bend - legs Swing - arms Swing your arms
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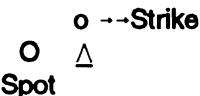
Lesson Plan 6

Time	Activity	Organization	Comments
10 mins	Objective 1 - BOUNCING 1. Bounce ball 3x 2. Bounce ball on right/leg of body 3. Obstacle course	1. Children stand inside hoop on ground, jump outside hoop. Bounce ball inside hoop 3x and catch with 1 hand. 2. No hoops. Bounce ball on the same side of the body as the hand being used. Bounce ball on the opposite side of the body to hand. 3. Hold ball, run, bounce ball, gallop, bounce ball, skip, bounce ball, run & try a basket, run & try a basket, run back to start.	Push with fingers Stand upright Bounce ball at hip height Ask about which is easiest.
10 mins	Objective 2 - THROWING 1. Step off spot & throw 2. Step over rope & throw	1. Stand on spot. Step off spot & throw at the shapes on the wall. Teacher calls out the shape & children throw ball. 2. Children line up two at a time. Teacher holds two hoops. Children throw yarn balls through the hoop. Children step over a rope and throw ball.  O O Spot Rope	Step forward Throw hard Step with opposite leg Emphasize step & throw. Praise step not throwing through hoop

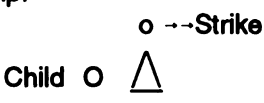
10 mins	Objective 3 - JUMPING 1. Arm swinging with scarves 2. Arm swing & jump 3. Jump for distance	1. Children are frogs. Hold onto a scarf in each hand and swing arms from behind body to forward and up. 2. Have children stand on their "lily pads". Hold onto their scarves. Swing their arms and jump as far as they can to the next "lily pad". If the child reaches the lily pad, move it back. Emphasize arms. O -----O O -----O 3. Put frog feet on and practice jumping as far as possible. Start children at one spot and place a bean bag where they land. Next turn try to jump further. O -----□ Spot Jump Bean bag	Swing your arms hard Bend your knees Bend & straighten legs when jump Push with your legs Try to jump further
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Lesson Plan 7

Time	Activity	Organization	Comments
10 mins	Objective 1 - GALLOPING 1. Step-together-step - together 2. Gallop around cones 3. Gallop to music	1. Stars on feet. Review step-together-step-together. 2. Hold a scarf as a whip. Gallop around the cones. Change legs at end.  3. Play the song "She'll be coming around the mountain". When the music plays the children gallop. When the music stops the children "freeze" and switch legs before the music starts again.	Keep front feet in front Relax back leg
10 mins	Objective 2 - THROWING 1. Arm circles forward 2. Imaginary baseball pitcher 3. Reach behind & throw ball	1. Stand on spot. Swing arm forward in big circles. Go fast & hard. Tell the children this is important for throwing. 2. Stand on spot. Pretend to be a baseball pitcher. Swing arm behind body & throw imaginary ball. 3. Use 6 cones, one behind each child. Each child should be one arm's length in front of cone. Reach behind body and throw to wall targets. Throw overarm as hard as possible. 	Swing arm back & over Throw hard Swing arm Reach behind, swing & throw

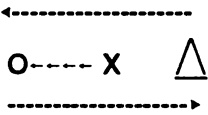
10 mins	Objective 3 - STRIKING 1. Shake hands with friend 2. Shake hands with bat 3. Swing bat without ball 4. Hit ball off cone	1. Shake hands with each other 2. Shake hands with the bat while the top of the bat is resting on the ground. Shake hands with the bat $\frac{1}{3}$ of the way up the bat. Place other hand underneath the first hand. Explain this is the grip. 3. Get proper grip on bat. Tie scarf on non-dominant arm. Stand on spots spaced 5 feet apart. Practice swinging bat without ball. 4. Place a foam ball on a cone. Place a spot on the floor behind cone. Have child swing bat & hit ball. 	Check grip of children Dominant-hand over other hand Stand side on Scarf arm faces pitcher Swing bat Swing right through
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Lesson Plan 8

Time	Activity	Organization	Comments
10 mins	Objective 1 - HOPPING 1. Leg swinging 2. Hop off spot 3. Hop to fish	1. Stand on spot. Swing leg forward and backward bent. Review 2. Stand on spot on one leg. Swing <u>arms</u> forward and hop off spot. 3. Sit in out flamingo nests (hoop & hoop holder) and hop to get a fish and bring it back to the nests. Repeat on other foot.	Swing leg from hip Swing arms forward & hop forward Push with legs Encourage the children to use their "flamingo wings".
10 mins	Objective 2 - CATCHING 1. Catch ball with hands 2. Ball catching game	1. Line up children on spots about 5 feet away. Throw ball encouraging catching with <u>hands</u> only. If child cannot catch, move closer and throw ball to hands. If child can catch with hands have them step back for next turn.  2. Line up children on spots. Front person throws ball to #2, 2-3, 3-4, 4-5, 5 runs to front and all children move back a spot. Repeat until all children have been to front of line.  O O O O O 1 - 2 - 3 - 4 - 5	Reach for ball Get your hands on the ball Encourage light toss Grab ball & pull to chest
10 mins	Objective 3 - STRIKING 1. Hit ball off cone 2. Mini T-ball game	1. Place ball on cone. Have children hit ball off cone. Encourage a strong swing. Check grip.  Child O  2. Stand about 6 feet from child. Toss a beach ball. Have them hit the ball and run around 1 cone and back to base.	Check grip Strong swing Swing long - all the way through

Lesson Plan 9

Time	Activity	Organization	Comments
10 mins	Objective 1 - CATCHING 1. Ball catching game 2. Partner catching in sitting 3. Partner catching in standing	1. Children on spots. #1 throws to #2, #2 to #3, etc. Back person runs to front. Repeat. (8" foam ball) <----- O O O O O 1 - 2 - 3 - 4 - 5 2. Use fluff balls. Sit child opposite partner, very close (arms length). Have children throw ball very softly to the hands of the other child. Emphasize catching with hands and cooperation between children. If successful move back a little. O ≠ O 3. Repeat standing.	Light toss Reach with hands Lean forward for ball Toss ball to chest Look at ball
10 mins	Objective 2 - JUMPING 1. Jump with arm swing 2. Jump for distance	1. Children stand on spot 'lily pad' and hold onto scarves. They swing their arms into the air and jump as far as possible to the next lily pad. If they make it, move spots further apart. 2. Line up children sitting on spots. Stand one child on footprints. Have child jump as far as possible. Where the child lands place a bean bag. Next time the child jumps have them try to beat last jump. O-----[] Spot Jump Bean bag	Swing arms forward Encourage arm swing above head, jumping for distance. Push with legs Swing arms forward above head

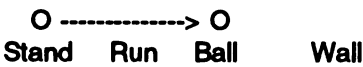
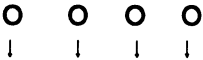
10 mins	Objective 3 - STRIKING 1. Hit rolling ball 2. Hit tossed ball	1. Stand children on spots. Roll a foam ball to the child along the ground. Have the child hit it as hard as possible. Child runs & gets ball. Each child has their own ball which they throw to teacher when it is their turn. Children O O O O Teacher X 2. Stand 3 feet from child, toss a beach ball to the child. Child hits the ball & runs around the cones.  Child Teacher	Stand side-on Step & swing Swing hard Swing to the ball
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Lesson Plan 10

Time	Activity	Organization	Comments
10 mins	Objective 1 - BOUNCING 1. Stationary bouncing 2. Bouncing activity 3. Walking & bouncing	1. Stand in hoop with ball. Jump out of hoop and bounce ball 3x and catch. If successful repeat with 4 bounces etc. Go up to 10 bounces. 2. Place hoop in square. Have children run to first hoop, bounce 3x, run to next hoop, bounce 3x, etc. When bounced 3x in each hoop run & "high 5" partner. They then do the same. <pre> O-----O O-----O </pre> 3. Line up children (stand in hoops). Bounce ball as they walk forward. <pre> O ----- O ----- O ----- Bounce </pre>	Push with fingers Stand upright Relax arm used for bouncing Push ball forward Push ball hard Keep ball to same side of body as hand
10 mins	Objective 2 - KICKING 1. Run & kick a stationary ball 2. Run & kick a rolling ball	1. Stand on spots. Run & kick ball toward pins. Emphasize the run and kick part. <pre> O -----O -----[] Spot Run Kick Pin </pre> 2. Line up children on spots. Roll beach ball toward children. Have child run towards ball and kick it. <pre> Children O O O O </pre> Teacher X	Run & kick Swing leg Reinforce pattern not knocking over pins Swing leg

10 mins	Objective 3 - CATCHING 1. Catch a balloon with hands - short distance 2. Catch a balloon with hands - longer distance 3. Catch a small rolling ball with hands 4. Sitting - catch a small ball with hands	1. Sitting opposite partner (approx 2 feet) tap balloon to partner. Catch with <u>hands</u> . 2. Standing 4 feet apart, tap balloon to partner. Catch with hands. 3. Roll green ball to partner. Children sitting about 5 feet apart. Reach forward & secure with hands. 4. Sit close to partner (approx 2 feet), throw ball underhand & catch with hands.	Lean forward to ball Stretch fingers Get hands on ball & pull to chest
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Lesson Plan 11

Time	Activity	Organization	Comments
10 mins	Objective 1 - JUMPING & HOPPING 1. Jumping & hopping obstacle course	1.	Push with your legs Swing your arms
10 mins	Objective 2 - KICKING 1. Run & kick a stationary ball 2. Run & kick a rolling ball	1. Run & kick ball against the wall.  2. Stand on spots. Roll ball to the child, have them run & kick it.	Step & kick into ball Kick hard Swing leg
10 mins	Objective 3 - BOUNCING 1. Stationary bouncing 2. Walk and dribble 3. Dribble ball - shoot a basket	1. Bounce ball in hoop 3x, then catch. Gradually increase up to 10x. Start children in hoop, then jump them out & bounce ball. 2. Line up hoops . Stand in hoop, then bounce ball and walk (dribble) down to line & back.  (line) 3. Bounce ball in hoop 5x then run down & try to get a basket (hoop held above head height). 	Push with fingers Relax arm Move from elbow Dribble ball to outside of body Bounce hip height

Lesson Plan 12

Time	Activity	Organization	Comments
10 mins	Objective 1 - KICKING 1. Run & kick a stationary ball 2. Kick a rolling ball to a goal	1. Run & kick a ball through a hoop. Encourage strong kicking action. O -----> O O Spot run ball hoop 2. Roll ball to child. Child runs out & kicks ball as hard as possible towards a goal. Teacher acts as goalie. O O O Children △ x △ Teacher	Reinforce kick pattern Kick <u>hard</u> Trunk leans back swing leg Move into ball
10 mins	Objective 2 - THROWING 1. Step & throw hard 2. Throw hard & follow through 3. Imaginary baseball pitcher 4.	1. Throw at shapes on wall. Emphasize step and throw. O O O Spots 2. Throw at balloons on wall. Let arm swing & follow through. 3. Imaginary throw. Swing arm behind back, step & throw. Wall	Step & throw Step with opposite leg Throw hard Follow through Reach behind Step & throw
10 mins	Objective 3 - STRIKING 1. Hit a ball off cone 2. Hit a tossed ball	1. Children stand behind cone. Hit ball off cone. o --> Strike Child O △ 2. Children hit ball tossed by teacher. Emphasize "step and hit". Child runs around teacher. OOOO children stand and wait O Spot to stand O Step onto next spot X Teacher	Hand grip Step & Swing Side-on stance Swing through

Lesson Plan 13

Time	Activity	Organization	Comments
10 mins	Objective 1 - THROWING 1. Step & throw 2. Imaginary baseball pitcher 3. Throw a bean bag at hoop	1. Place a star on opposite (stepping) foot. Step & throw at hoops on wall. 2. Pretend throwing. Hands in front (1). Step back and arm back (2). Throw (3). Teach each count separately, then try to link together. 3. Throw a bean bag at hoops on the wall using 1,2,3 count.	Emphasize step with opposite foot. Arm back & throw Throw hard Count 1,2,3 per movement pattern
10 mins	Objective 2 - JUMPING 1. Arm swings 2. Jump with arm swing 3. "Frog jumping the lily pad" 4.	1. Frog feet on feet. Stand on spot, swing arms forward and back. Hold onto scarves. 2. Swing arms 3x starting with arms behind. On count "3" arms swing forward and child jumps. 3. Jump from one "lily pad" to another. If child is successful with jump, move spots further apart. O -----> O O -----> O O -----> O O -----> O	Tell children an arm swing is important swing arms high Push with your legs Lean forward Land on your feet

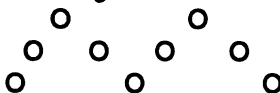
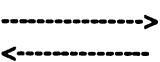
10 mins	Objective 3 - STRIKING 1. Swing bat without ball 2. Strike a tossed ball.	1. Place a star on the non-dominant shoulder (eg R handed, L shoulder). Tell child to point star to you. Have children step & swing without ball. Do several times check grip. Put star on non-dominant foot to encourage step. O O O O children on spot X teacher pitcher 2. Spread out children . Each child has a ball. Child taps ball with bat & rolls ball to teacher. Teacher is 4-5 feet away. Toss ball to child, encourage step & swing to ball. If child is not successful use a beach ball. Child runs & gets ball, teacher throws to next child. O O O O children X teacher	Stand sideways Swing long Look at the teacher & ball
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Lesson Plan 14

Time	Activity	Organization	Comments
10 mins	Objective 1 - CATCHING 1. Catch a tossed ball 2. Catching relay 3. "Hot Potato"	1. Children stand opposite a partner & catch a tossed ball 3x. If children catch the ball successfully then both children take a step back. Throw & catch ball 3x. If not successful, take a step forward, if successful, take another step back. Repeat. Emphasize catching with hands. ○ ⇄ ○ ○ ⇄ ○ ○ ⇄ ○ spots 2. 1 throws to 2, 2 to 3, 3 to 4, 4 to 5. 5 runs to the front & everyone moves back one spot. repeat until the person who was at the front is back to the front. O-->O-->O-->O-->O 1 2 3 4 5 3. Children stand in circle. Throw a ball around a circle as quickly as possible "because the ball is hot."	Reach for the ball Get your hands on the ball Spread your fingers wide Be ready for the ball Small toss Watch the ball Emphasize catching with hands

10 mins	Objective 2 - BOUNCING 1. Stationary bouncing 2. Run & bounce 3. Bounce (dribbling)	1. Talk to children about pushing the ball with fingers. Children bounce ball in hoop 3x and catch. Build up to 10 bounces in a row. 2. Spread hoops out in a line with 3-5 feet between hoops. Child runs, bounces hoop 3x then runs to next hoop & repeats. Have more than one child going at once. ←----- O - O - O 3x run 3x run 3x 3. Children stand in line holding onto ball. Bounce ball 2x then catch. Next time the child walks 2 steps at the same time as they bounce the ball 2x. Repeat & build up to continuous dribbling. ----- ↓ ↓ ↓ Dribble	Push the ball Use your fingers Push hard Push soft Go slow Push the ball Push the ball in front of you
10 mins	Objective 3 - THROWING 1. Throw at name 2. Throw for distance	1. Go over the 1,2,3 without ball. (1) Arms in front, (2) throwing arm in back, (3) throw. Go through 1,2,3 & throw a bean bag or green ball. Throw at child's name on wall. 2. Line up children on line or jump rope. Have children throw bean bag with the 1,2,3 action. Where it lands, place the child's spot. Next time try to throw further than spot.	Step & throw Throw hard Emphasize a hard throw, and arm back before throw. Look where your bean bag landed last time. See if you can throw further this time.

Lesson Plan 15

Time	Activity	Organization	Comments
10 mins	Objective 1 - THROWING 1. 1,2,3 2. Throw at letters 3. Throw for distance	1. Review 1 "arms in front", 2 "arm behind", 3 "throw" without ball. 2. Throw at letters on wall, using 1,2,3. using green balls. 3. Throw bean bag as far as possible. Where bean bag lands place a spot. Next time try to throw further.	Step & throw reach back, throw forward Throw as hard as possible.
10 mins	Objective 2 - JUMPING 1. Jump with frog feet 2. Jump in & out of hoop 3. Rocket take-off	1. Jump from one spot to next down a "windy road" with frog feet on.  2. Jump into & out of hoop that is off the ground in a hoop holder.  3. Child stands on spot, jumps into hoop. Counts 3..2..1 then jumps and arms swing above head.	Push with legs Swing arms forward & high Encourage arm swing Swing arms above head Bend your legs & straighten
10 mins	Objective 3 - CATCHING 1. Catch rolling hoop 2. Roll & catch hoop 3. Bounce & catch hoop 4. Toss & catch hoop	1. Children in partners. Roll hoop to partner, partner catches <u>with hands</u> . Children stand approx. 6 feet apart.  2. Children roll own hoop, run and catch hoop <u>with hand</u> . 3. Throw hoop into air (about 1 foot in air) , let bounce on floor and try to catch it <u>with hands</u> . 4. Throw hoop into air and catch with hands.	Reach for hoop with hand Push hoop away Run & reach with hand Look at hoop Reach for hoop

Lesson Plan 16

Time	Activity	Organization	Comments
10 mins	Objective 1 - CATCHING 1. Bounce & catch hoop 2. Throw & catch hoop 3. Catch tossed bean bag.	1. Throw hoop in air, let it bounce & catch with hands. 2. Throw hoop in air & catch with hands. 3. Children stand on spots. Toss bean bag to child, child catches with hands & throws it back to teacher.	Reach for hoop Lean forward Reach forward Catch with hands
10 mins	Objective 2 - KICKING 1. Run & kick milk jug 2. Run & kick ball 3. Run & kick rolling ball	1. <u>Run</u> & kick milk jugs around the room. Emphasize running approach. 2. Run & kick ball as hard as possible. Try to make the ball reach the wall. If ball reaches the wall, take a big step back. O ---> O -----> Spot Ball 20 ft Wall 3. Roll the ball to the children. Have the children run & kick the ball.	Swing your leg & kick hard Lean forward as you kick Keep moving into the ball
10 mins	Objective 3 - STRIKING 1. Review grip 2. Practice swinging 3. Hit ball off cone 4. Hit tossed ball	1. Place a star on the child's non-dominant shoulder. Review grip with child. Dominant over non-dominant 2. Practice step and swing bat without ball. 3. Hit balls off cone. Stand on spot. Step & swing O Ball O △ Spot 4. Toss ball to child & child steps & swings at ball.	Stand sideways Swing long Step off spot & strike the ball Look at teacher & ball

Lesson Plan 17

Time	Activity	Organization	Comments
10 mins	Objective 1 - KICKING 1. Run & kick milk jug to wall 2. Kick ball at milk jug 3. Catch kicked ball.	1. Children on spot, run & kick milk jug to wall. O----->[] Spot Run Jug Wall 2. Place milk jug by wall. Run & kick ball to hit milk jug. O----->O [] Spot Run Ball Jug/Wall 3. Children stand opposite each other. Kick ball to other child, child bends down & catches ball with hands. Child kicks ball back to partner. kick -----> <----- Spot kick Spot	Kick as hard as possible Keep moving to ball/jug Lean forward to kick Kick soft Kick to partner
10 mins	Objective 2 - GALLOPING 1. Step - together - step 2. Gallop like horses 3. "Giddy up"	1. Place a star on each foot. Put "red" star in front. Step-together-step-together. Do with other foot in front (blue star). Gradually increase speed to a gallop. 2. Gallop "like horses" from one line to another line. Work with each foot leading. Gallop to a drum beat. 3. Place a rope around one child's waist, other child holds onto rope. "Giddy up" horses around obstacle course. Both children galloping. -----> △ △ △ ----->	Go slow Keep front foot in front Listen to the beat Gallop to the beat Gallop together

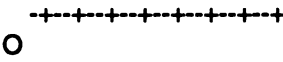
10 mins	Objective 3 - STRIKING 1. Practice swinging 2. Step & swing	1. Sticker on non-dominant shoulder. Step & swing at a pretend ball. Check grip & which way body is facing. 2. Toss ball to child, emphasize step & strike. "Step off spot" & swing. Run around bases. O O O other children O spot run run X teacher △ -----> △ run	Stand sideways Step & swing Step off spot & swing Swing long Transfer bodyweight
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Lesson Plan 18

Time	Activity	Organization	Comments
10 mins	Objective 1 - BOUNCING 1. Bounce ball to partner 2. Bouncing from within hoop 3. Bounce & walk	1. Children stand opposite partner. Bounce ball in middle to other child. Talk about bouncing ball softer/harder to make the ball go higher or lower. 2. Stand in hoop. Bounce ball 1x and catch, then 2x & catch. Build up to 10x then catch. Emphasize control & <u>push</u> with fingers. 3. Place spots on ground in row. Stand on first spot, bounce ball 2x and walk 2 steps, catch ball. Go to next spot and repeat.	Push the ball down to the floor Bounce in the middle Push with your fingers Push hard/soft Push ball in front
10 mins	Objective 2 - THROWING 1. Review 1,2,3 2. "Low five" throw 3. Throw at letters	1. Review 1, hands in front; 2, arm behind & back; 3, overarm throw. 2. One child stands in front of the other. Child in front does 1. On 2 the child swings arm down & back and "low fives" the other child's hand with the back of their hand. then 3 over hand throw. 3. Children 1,2,3 throw at letters on wall. Tell children throw at D for Deon. Go through all children's first letter of their name.	Swing arm back & throw Transfer body weight Throw hard

10 mins	Objective 3 - JUMPING 1. Arm swing jumps 2. Jump the river 3. Free jump	1. Place hoops in a line and jump from one hoop to next. Emphasize arm swing. Leap on spots back to beginning. o o o o o Hoops o o o o o Spots 2. Place 2 skipping ropes on floor one set of ends close and the other ends further apart. Jump from one spot to the next, progressively getting wider. If you "fall in the river" go back to the previous spot. o o o o 2 3 6 7 3. The children can jump or leap over river if time permits.	Swing your arms high Push with your legs Land on your feet Lean forward Big jump How far can you jump
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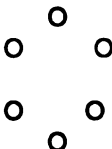
Lesson Plan 19

Time	Activity	Organization	Comments
10 mins	Objective 1 - BOUNCING 1. Stationary bouncing 2. Partner dribbling	1. Stand on spot. Bounce ball up to 10x then catch. 2. Children stand on spot 1. First child dribbles ball to spot 2; turns around & bounces ball (one bounce) to other child at spot 1. Child on spot 2 runs back to spot 1 while the child dribbles ball to spot 2. 	Push with fingers Push hard/soft Push ball in front Take your time
10 mins	Objective 2 - JUMPING 1. Arm swings & jump 2. Jump for distance	1. Stand on spot and swing arms. Swing arms 3x. On 3 rd swing of arms forward, jump forward. 2. Stand with feet on spot. Jump as far as possible. Place bean bag on spot child landed. Encourage to jump further next time. Tell children a good arm swing is important. Give child a rosette and write number of furthest jump. 1 2 3 4 5 6 7 8 +---+---+---+---+---+---+ 	Swing arms forward & high Push with your legs Lean forward Jump as far as you can

10 mins	Objective 3 - THROWING 1. "Low five" & throw 2. 1,2,3 fluff ball 3. Throw at numbers	1. One child stand in front of the other. Child in front does 1, on 2 the child swings arm down & back and "low fives" the other child's hand with the back of their hand. then '3' overhand throw. Use fluff ball. 2. Children throw fluff ball at each other. Emphasize 1,2,3. As children throw further, step further apart. 3. Throw at numbers on wall using 1,2,3 approach.	Arm back & throw Throw hard Transfer your body weight Step & throw
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Lesson Plan 20

Time	Activity	Organization	Comments
10 mins	Objective 1 - KICKING 1. Leg swinging 2. Kick a pretend ball 3. Run & kick at goal	1. Stand on 1 leg & swing leg. (Review) 2. Run, step & kick a pretend ball 3. Each child has a partner. One child acts as goalie between two spots. The kicker has 3 tries at running, kicking & getting a goal. Then switch places O X O Spot Child Spot O Ball ↑ ↑ Run ↑ X Child	Tell children it is important to swing leg in kicking Run, big step & kick Run fast, swing leg & kick hard
10 mins	Objective 2 - THROWING 1. Review 1,2,3 2. Throw at target 3. Throw at target of varying distance	1. Review 1,2,3 2. Throw at numbers on wall. Start with 1,2,3 etc up to 10. Everyone on own spot same distance from wall. O O O O Wall 3. Throw at numbers on wall with bean bag. Go to first spot, throw at number. Retrieve bean bags then go to next spot. Many children can go at one time. O 1,2 O 3,4 O 5,6 O 7,8 O 9,10 Wall	Step & arm back, throw Throw hard & follow through Throw so hard you step forward

10 mins	Objective 3 - CATCHING 1. Catch a tossed bean bag low to high 2. Catch a tossed bean bag & clap 3. Catch a tossed bean bag	1. Toss bean bag in air & catch with hands. Progressively throw higher. 2. Toss bean bag in air, clap once then catch bean bag. If successful, clap 2x then catch. 3. Stand on spot in a circle. Toss foam ball around circle. If it gets around circle without dropping, everyone takes a step back. 	Look at bean bag Reach for bean bag/ball Emphasize catching with hands Get your hands on the ball Bend your arms as you catch
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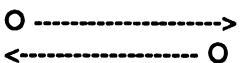
Lesson Plan 21

Time	Activity	Organization	Comments
10 mins	Objective 1 - JUMPING 1. Arm swinging 2. Arm swing & jump 3. Jump for distance	1. Stand on spot, hold 2 scarves. Swing arms back & forward. 2. Stand on spot. Swing arms 3x, then jump. Keep hold of scarves. 3. Stand on footprints. Jump as far as you can. Tell them to swing arms as hard as they can. Write number on medal for furthest distance jumped.	Talk to children that the arms are important for jumping. Swing your arms high above your head Bend your legs & push
10 mins	Objective 2 - KICKING 1. Kick milk jugs around the gym 2. Run & kick for distance	1. Run & kick milk jugs around gym. 2. Run & kick a pillow ball as far as you can. Place spot where the ball stops. Next time kick harder. Each child goes one at a time. Child Ball Spot O -----O -----O Run & kick Mark	Emphasize kick as hard as you can Swing your leg Lean Forward Kick so hard you step forward
10 mins	Objective 3 - CATCHING 1. Catch a tossed bean bag 2. Catch a bean bag from a partner 3. Catch a small ball 4. Catching number game	1. Throw bean bag in air & catch. Start throwing low and gradually throw higher. 2. Stand opposite partner, toss bean bag to partner. Throw with both hands. 3. Throw green ball to partner. Throw with both hands. 4. Students stand in circle wearing a numbered necklace . Throw foam ball to person with next number. Mix up order of children.	Look at ball Reach for the ball Spread your fingers wide Bend your arms as you catch

Lesson Plan 22

Time	Activity	Organization	Comments
10 mins	Objective 1 - STRIKING 1. Step & swing bat 2. Step & swing at ball	1. Place a star on L shoulder and L foot (for R handed). Check grip on bat. Step & swing without ball. 2. Throw beach ball to child, tell them to step with starfoot & swing at ball.	Step & swing Move towards the ball Swing through Always correct to sideways orientation before hitting
10 mins	Objective 2 - HOPPING 1. Swing one leg 2. Arm swing 3. Hop with arm swing 4. Hop & "fish"	1. Stand on one leg and swing a bent leg. 2. Stand on one leg, bend arms & swing them. 3. Hop a short distance from one spot to next. 4. Hop from spot to go get "fish".	Tell children arm swing will help them hop Emphasize arm swing Push with legs Lean forward
10 mins	Objective 3 - CATCHING 1. Catch rolling ball 2. Catch thrown ball 3. Catch smaller ball 4. Throw & catch	1. Roll big foam ball along floor to child. child catches with hands & throws back to teacher. 2. Throw foam ball to child with hands. O O O O O Children on spots X Teacher 3. Repeat 1 & 2 with: - Smaller foam ball - Green ball 4. Let children practice throwing & catching green balls.	Emphasize catching with hands Reach for the ball Bend your arms as you catch Spread your fingers

Lesson Plan 23

Time	Activity	Organization	Comments
10 mins	Objective 1 - GALLOPING 1. Step - together - step - together 2. Gallop to a drum beat 3. Galloping horses	1. Red star on R foot, green star on L foot. Step - together - step - together at a walking pace. Keep the red star in front. 2. Gallop to a drum beat from one spot to another.  3. In partners, one child is the "horse" one child is the "rider". Place a rope around the lead child's waist. The other child holds onto the rope. Both children gallop around a course. Switch places.	Keep front foot in front Relax your back leg Lean forward slightly
10 mins	Objective 2 - THROWING 1. Arm circle forward 2. Throw a scarf 3. Throw at a target	1. Hold onto scarf with throwing hand. Circle arm forward with scarf. 2. Crumple scarf up in ball in hand. Swing arm backward , upward & over head. Throw scarf. 3. Tape hoops to wall. Throw bean bag at wall with 1,2,3 approach.	Arm back & throw Throw hard Step & throw Transfer body weight

10 mins	Objective 3 - BOUNCING 1. Stationary bounce 2. Bounce ball either side of body 3. Dribbling	1. Stand in hoop. Jump out & bounce ball in hoop. 2. Stand on spot. bounce ball from right to left side of body and back again. 3. Walk from one spot to another bouncing ball. Walk & bounce O ----->O	Push ball with fingers Push ball in front Bounce ball at hip height
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Lesson Plan 24

Time	Activity	Organization	Comments
10 mins	Objective 1 - BOUNCING 1. Bouncing imaginary ball 2. Stationary bouncing 3. Dribble ball	1. Review with children push with fingers, not slap the ball. Bounce an imaginary ball. 2. Stand on spot. Bounce 1x then catch, 2x ... up to 10x & catch. 3. Dribble ball to hoop, bounce 3x, run to next hoop bounce 3x, etc then run back to other children & throw ball to next person. O ----> O --> O --> O --> O Spot 3x 3x 3x 3x ----- Run	Push with fingers Use hand not arm Push ball in front
10 mins	Objective 2 - STRIKING 1. Grip 2. Stance 3. Strike an imaginary ball 4. Strike a tossed ball	1. Review grip on bat 2. Review sideways orientation 3. Stand on spot with bat. Step off spot & swing bat (no ball). 4. Toss foam ball to child. Step & swing bat. Each child has own ball. child runs & gets ball then returns to spot. O O O O Children on spots X Teacher	Check grip Sideways orientation Step & swing Move towards the ball Swing through
10 mins	Objective 3 - CATCHING 1. Review step 2. Throw an imaginary ball 3. Throw at target	1. Review with which foot we step. Have children show you. 2. Review arm wind up. Have children "pretend throw" with arm wind up. 3. Throw bean bag at letters on wall using 1,2,3 approach. Throw at the letter of child's name.	Step & throw Arm back & throw Throw hard & follow through

APPENDIX E

Demographic Questionnaire

DEMOGRAPHIC QUESTIONNAIRE

Name: _____

Date of Birth: _____ Sex: Female _____ Male _____

Please list each of your children. If a child is your step child please state.

<u>Child's Name</u>	<u>Date of Birth</u>	<u>Sex Boy/Girl</u>	<u>Living in My Home</u>	<u>Your Age at Birth of Child</u>	<u>Biological Father in Contact</u>
1. _____	_____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____	_____

Are there other people living in your house? Yes ___ No ___

Please list:

<u>Age</u>	<u>Sex</u>	<u>Relationship to you</u>
_____	_____	_____
_____	_____	_____

Are you a single parent? Yes ___ No ___

If yes, please check proper explanation:

☐ Never married
☐ Separated since Month: _____ Year: _____
☐ Divorced since Month: _____ Year: _____

Please check the final level of education you have obtained:

☐ Elementary school, but not high school
☐ Some high school Which grade: _____
☐ High school graduate
☐ Some college or technical school
☐ College graduate
☐ Masters degree
☐ M.D. Ph.D. or law degree
☐ Other: Please explain _____

Employment History

From the time my child was born until he/she was 2 years old I was:

☐ not employed
☐ employed part time
☐ employed full time

From the time my child was born until now I was:

☐ not employed
☐ employed part time
☐ employed full time

If you are presently employed outside the home, please indicate which best describes your job:

- ___ Clerical worker, such as bank teller, bookkeeper, secretary, typist, or mail carrier.
- ___ Craftsman, such as baker, automobile mechanic, machinist, painter, plumber, or carpenter.
- ___ Farmer, or farm manager.
- ___ Laborer, such as construction worker, car washer, sanitary worker, or farm laborer.
- ___ Manager or administrator, such as sales manager, office manager, school administrator, or restaurant manager.
- ___ Military service worker, such as career officer, enlisted man\woman in Armed Forces.
- ___ Operative Worker, such as meat cutter, assembler, machine operator, welder, or taxicab, bus, or truck driver.
- ___ Professional worker, such as accountant, artist, registered nurse, engineer, librarian, social worker, actor, actress, athlete, politician.
- ___ Proprietor or business owner, such as owner of a small business, a contractor, or a restaurant owner.
- ___ Protective service worker, such as a detective, police officer, or guard, sheriff, or fire fighter.
- ___ Sales worker, such as salesperson, advertising, insurance agent, or real estate broker.
- ___ School teacher, such as an elementary or secondary teacher.
- ___ Service worker, such as a barber, beautician, practical nurse, private household worker, janitor, waitress, or waiter.
- ___ Technical worker, such as a draftsman, medical or dental technician, or computer programmer.
- ___ Other, Please explain _____

APPENDIX F
Motor Skill Questionnaire

MOTOR SKILL QUESTIONNAIRE

Name: _____

PHYSICAL ACTIVITIES AT SCHOOL

1. Do you like to do gym?
2. What skill do you most like to do in gym?
3. What skill do you least like to do?
4. What is your favorite piece of equipment to play with in gym?
5. Do you like to move to music?
If so what song do you like to move to?
6. What makes someone good at exercise?
7. What skill can you do the best?
8. What skill is hardest to do?
9. How do you feel when you exercise?
10. Which child is best at gym in your class? Why?
11. Which child is worst at motor skills? why?

HOME ACTIVITIES

12. What types of things do you do at home?
- Find out who the child does each of these things with?
13. What is your favorite thing to do at home?
14. What do you do most often at home?
15. What is your favorite toy at home?
16. What do you do outside at home?
17. Who do you play with at home?
Prompt: Friends, siblings, adults (find out age and gender)
18. Is there a park that you play in close to home? If yes
19. How often do you play there in the summer?
20. With whom do you go the park?

(When the questionnaire is given to the caregiver, substitute 'you\your' for 'your child')

PERCEPTIONS OF PHYSICAL ACTIVITY - Implemented to the Caregiver

21. Did you do gym when you were in school?
22. What did you most like about gym?
23. What did you least like about gym?
24. Do you think gym is important to your child's health and future education? Explain?