This is to certify that the

thesis entitled

PERCEIVED COMPETENCE AND ATTRACTION TO PHYSICAL ACTIVITY IN A DIVERSE POPULATION OF FIFTH GRADERS

presented by

Karin M. Allor

has been accepted towards fulfillment
of the requirements for

M.S. degree in Physical Education and Exercise Science

Martha E. Ewing
Major professor

Date 10/24/97

DATE DUE	DATE DUE	DATE DUE
JAN 2 5 2002 MAY 2 9 2008 10 08 07		MAY 0 5 2004 0216 04
OCT 1 6 2008 06 04 08		

PERCEIVED COMPETENCE AND ATTRACTION TO PHYSICAL ACTIVITY IN A DIVERSE POPULATION OF FIFTH GRADERS

By

Karin M. Allor

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER OF SCIENCE

Department of Physical Education and Exercise Science

1997

ABSTRACT

PERCEIVED COMPETENCE AND ATTRACTION TO PHYSICAL ACTIVITY IN A DIVERSE POPULATION OF FIFTH GRADERS

By

Karin M. Allor

Little attention has been given to the relationship of perceived competence and both sport participation of minority youth and the broader view of physical activity. Children's motivation to participate in physical activity, which may influence their health status, depends in part on their attraction to physical activity (Brustad, 1996). The purpose of this study was to determine if males, females, African American, or Caucasian youth differ in attraction to physical activity or perceived competence. Participants were 105 fifth grade boys and girls from a diverse, urban population. Students completed five subscales of the Children's Attraction to Physical Activity (CAPA) scale (Brustad, 1993), three subscales of the Perceived Competence inventory (Harter, 1978), and five physical activity logs. Results from the CAPA revealed that males scored higher than females on three subscales, and there were no race differences. A significant race by sex interaction was revealed for social perceived competence: African American males scored higher than African American females. Also, African American females were found to be significantly less physically active than African American males in terms of both duration and intensity.

ACKNOWLEDGEMENTS

Special thanks are in order for several individuals who have helped me through the learning process during my first three years of graduate education. My advisor, Dr. Marty Ewing, has done a fantastic job of sticking by me and guiding me through my frequent decision changes and tough times, helping me keep my sense of humor. Dr. Jim Pivarnik has been a great mentor, arranging many opportunities for personal and professional development. Dr. Crystal Branta has kept me grounded and thinking practically- she is almost a second mother to me. Dr. Anne Garcia has been a valuable friend and mentor throughout both my undergraduate and graduate careers. Although she is not on my committee, Dr. Jeanne Foley has been a much appreciated mentor and friend as well.

In addition to my professors, the support of friends and family has been a great comfort to me. My parents are a constant source of unconditional love and encouragement, actually proud of the monster they have created. I cannot thank Matthew enough for enduring the brunt of my stress, somehow surviving. My best friend Michelle runs a close second to enduring the stress and putting up with me. I would also like to thank the rest of my family, fellow graduate students, and all my other friends for their help in getting me through my first major research experience.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

Nature of the Problem

The cost of health care in the United States has been increasing rapidly in the past few years and will most likely continue to increase. One of the major reasons for the increase is lack of a healthy lifestyle in adults, which is a major risk factor for cardiovascular disease (Baranowski et al., 1992; Cunnane, 1993). A healthy lifestyle includes proper nutrition and participation in physical activity because life requires both energy intake and energy expenditure (Paffenbarger, Hyde, Wing, Lee, & Kampert, 1994). There is recent evidence that risk factors for cardiovascular disease in adults have antecedents during childhood and adolescence (Bar-Or, 1994). In fact, as many as 60% of American children have at least one modifiable risk factor for heart disease by the time they are 12 years old (Baranowski et al., 1992), and researchers have found a fairly strong relationship between adult obesity and adolescent obesity (Bar-Or, 1994). Although data show that physical activity helps reduce the risk of coronary heart disease (CHD) in adults, there are no data available that show habitual physical activity in childhood leads to habitual activity in adulthood, thus reducing risk for CHD. Some studies, however, have linked physical activity to cardiovascular fitness in children (e.g., Sallis, McKenzie, & Alcaraz, 1993). Regardless, one might intuitively expect that regular physical activity

in children leads to regular physical activity in adulthood, which leads to reduced risk factors for CHD.

Stucky-Ropp and DiLorenzo (1993) determined it is important to teach children healthy habits that will continue into their adult lives so that risk factors to disease can be diminished. Physical activity decreases almost 50% between the ages of six and 16, and it decreases even more after the age of 16 (Sallis, Simons-Morton, et al., 1992). King et al. (1992) also found physical activity to decline after late adolescence or early adulthood. Ainsworth, Berry, Schnyder, and Vickers (1992) found low physical activity levels to be prevalent in a study examining African American college freshmen, suggesting interventions encouraging a healthy lifestyle should be implemented at a younger age. Thus, it is important to determine where children first learn that physical activity is an important part of their lives and why they are motivated to participate in physical activity, particularly in an unstructured format.

Children can learn about physical activity from many different sources including family members, peers, physical education classes at school, organized extracurricular programs, and self-discovery. Several researchers have found that children exhibit similar physical activity patterns to their families (Freedson & Evenson, 1991; Sallis, Patterson, Buono, Atkins, & Nader, 1988). Brustad (1993, 1996) found that parents who expressed enjoyment of physical activity encouraged their children to be physically active more than those who did not enjoy physical activity. Furthermore, Stucky-Ropp and DiLorenzo (1993) pointed out that "socialization in the family is one of the major influences on health-related behavior patterns that are formed in early childhood."

Aside from the family, one would think that physical education classes could be the best place to learn about the importance of physical activity, but that is not often the case. DiNuble (1993) found physical education classes at school were not the best place for children to learn about adopting healthy lifestyles. Only 36% of elementary and secondary schools in the United States offer daily physical education, and only the state of Illinois requires K-12 students to be in a physical education class daily (DiNubile, 1993). Elementary school children in Michigan spend approximately 20-30 minutes twice a week with physical education teachers. In that limited amount of time, there is little opportunity to teach children basic skills, let alone time to inform them about how to develop healthy lifestyles. Furthermore, many districts do not even achieve the minimal standards. For example, the participants in the current study receive one hour of physical education per week for 10 weeks during the course of a school year. This lack of physical education instruction is probably a major reason for the following facts about Michigan school children: One third of Michigan school children are overweight. One of five African American girls, one of six African American boys, and one of 12 Caucasian children have elevated resting blood pressures. Two to four percent of Michigan school children have "severely high" blood pressure. Finally, 39% of Michigan children have elevated cholesterol levels, while the national average is 25% (Pivarnik, 1995).

Physical activity in children, then, is important, and the next question to answer is how it can be assessed. Researchers have used several methods to assess the physical activity levels of adults, and many have been modified for use with children. No method can be considered the "gold standard", but questionnaires are used most often

(Ainsworth, Montoye, & Leon, 1994). Initially, Sallis (1991) found that for children under the age of 10, it was best to use the proxy method. In later work, Sallis, Condon, et al. (1993) concluded that children as young as 10 could accurately self-report physical activity. For overall quality of results and ease for the researcher, Sallis (1991) determined self-administered recall was the best of the measures. However, it is noted that children may have trouble accurately recalling their activities.

The population that was examined in this study has received little attention in most of the literature assessing children's physical activity. The participants were African American and Caucasian males and females from a low socioeconomic environment. These children may have different barriers to participating in physical activity than children who participated in previous studies. Children from low socioeconomic areas generally have fewer opportunities to participate in organized physical activity programs. In areas and schools that face budget problems, publicly funded youth sports programs are often cut (Coakley, 1994). Often, community centers are the first to go, but sometimes even varsity sports may be cut. When varsity sports are cut in areas where socioeconomic status is high, parents pay for their children to play sports. In a lower socioeconomic area, parents may not be able to afford to pay for their children to play (Coakley, 1994). Several children may have single parent families, significantly limiting income. Single parents often do not have sufficient time to spend being physically active with children because they have to work and then come home to perform household tasks (Coakley, 1994). If children live in an area where it is not safe to play outside, their opportunities are extremely limited, especially if the community center has been

eliminated and parents do not have the time or money to send the children to places where activities are offered. Based on these issues, it is important to assess this population and determine if the children have different needs for programming physical activities and physical education classes.

The next logical course of action is to find out why children choose their physical activity habits. Several researchers have found reasons for why children participate in organized sport. Among the reasons reported are fun, skill improvement/ development, excitement of competition, fitness, competence, affiliation, and challenge (Gill, Gross, & Huddleston, 1983; Gould, Feltz, & Weiss, 1985; Seefeldt, Ewing, & Walk, 1991; Weiss & Chaumeton, 1992). When the data from all these studies were reported, no significant sex differences or race differences were found for participant motives in organized sport (Seefeldt al., 1991). However, the sex difference issue has been examined more closely than the racial difference issue.

When boys and girls are asked to rank their reasons for participating in organized sports, they are usually similar. Seefeldt and his colleagues (1991) found that boys and girls cited similar top ten reasons for participating in sport, but ranked them differently in order of importance. Girls stated staying in shape, getting exercise, learning new skills, playing as part of a team, and making new friends were more important to them when compared to boys. Boys stated doing something they are good at, improving skills, competing, and winning were more important to them when compared to girls.

Between races, children have also cited similar reasons for participating in organized sport, but they ranked them differently. In the Seefeldt et al. (1991) study,

Caucasians and Asian Americans stated having fun was their top reason for participating in sport. African Americans chose doing something they are good at, while Hispanics chose improving skills. Native Americans chose staying in shape as their top reason. All races, except Hispanics, chose improving skills as their second reason. Winning and competing were more important to African Americans and Hispanics than the other three races. Despite the differences in order of preference, no statistically significant differences were found between the reasons children of different races cited for participating in sport.

Although many researchers (e.g., Gill et al., 1983; Gould et al., 1985; Seefeldt et al., 1991) have examined participant motives exclusively for organized sport and assumed reasons carried over into the physical activity realm, some (e.g., Brustad, 1993; Brustad, 1996; Klesges, Eck, Hanson, Haddock, and Klesges, 1990; Sallis, Alcaraz, et al., 1992) have studied participant motives for physical activity. Physical activity is defined as "both the structured (e.g., organized youth sport, school physical education) and unstructured (e.g., after-school play) movement experiences" of children (Brustad, 1993). Differences in participant motives for physical activity between boys and girls have been found in some studies, and some of those differences have been related to age. Several studies revealed that motivation for participation in physical activity decreases with age, but it is more so for girls than boys (Aaron et al., 1993; Faucette et al., 1995). Tappe, Duda, and Ehrnwald (1989) discovered that adolescent males and females have different barriers for not participating in physical activity. In addition, Faucette et al. (1995) found adolescent males choose different types of activities than adolescent females. Females

tend to participate in more individual activities, while males tend to participate in more team sports. Gill, Gross, and Huddleston (1983) also found females placed a greater emphasis on friendship and fun in their activities than males. Similarly, females emphasized being with friends and making new friends as important reasons for participating.

In 1993 Brustad devised a scale, Children's Attraction to Physical Activity (CAPA), for measuring attraction to physical activity, which is a construct very similar to participant motivation. Kenyon (1968a, 1968b) was the first to study participant motives for physical activity in the 1960s, and he developed a scale for measuring attitude toward physical activity in adults. Simon and Smoll (1974) later modified the scale so it could be used with children and called it the Children's Attitudes Toward Physical Activity Scale (CATPA). Brustad modified the CATPA into the CAPA and has used the CAPA in two research studies, one in 1993 and the other in 1996. Both of Brustad's studies revealed sex differences for different subscales of the CAPA; boys were found to enjoy the physical exertion aspects and peer relation aspects of physical activity more than girls.

Studies examining racial differences in participant motives for physical activity are rare, representing an important void in the literature for both sport and physical activity. Brustad (1996) found no significant difference between Latino and White children in attraction to physical activity. Aside from this study and the Seefeldt et al. (1991) study, a literature review yielded no other studies investigating racial differences in participant motives. This is an area that needs to be examined more closely.

One of the common reasons for participation in sport and physical activity is

competence motivation (Brustad, 1993; Klint & Weiss, 1987; Roberts, Kleiber, & Duda, 1981). The original model of competence motivation is generally attributed to Harter. According to Harter (1978, 1982), individuals try to demonstrate competence at certain activities by engaging in mastery attempts. Based on the attempts, individuals will experience success or failure. Social factors and intrinsic/extrinsic motivation can influence the perceived successes and/or failures of the individuals. Over time, a person will develop a feeling of competence following success at a given activity or a feeling of incompetence following failure. Harter developed an inventory to measure perceived competence based on general self-worth, physical, social, and cognitive domains.

Using Harter's (1978) model and inventories, sport psychologists have tested extensively perceived competence in the sport domain. Weiss and Horn (1990) found that children with high perceptions of competence possess higher levels of participation, internal control, and intrinsic motivation than those with lower perceptions of competence. Individuals high in perceived competence are also said to exert more effort on tasks, persist at achievement tasks, and experience positive affect (Harter 1978, 1982). Similarly, Roberts et al. (1981) stated that children who have higher perceived competence in physical activity are more likely to experience positive affect in sport situations and to be more persistent after experiencing failure at a physical task than children with low perceived competence in physical activity. Thus, children with higher perceived physical competence are more likely to participate in sport; however, skill level may play a role in determining competence and participation as well.

Literature regarding the relationship of perceived competence to participation in

physical activity is limited. Brustad (1993) found that physical perceived competence was a predictor of each of the five CAPA subscales and noted that these results were noteworthy due to "lack of studies examining the impact of children's perceptions of competence on their motivation to stay involved in physical activity". He again found similar results in his 1996 study.

As with participant motives, research examining sex differences in perceived competence is limited, and research examining racial differences is practically non-existent. The literature on sex and sport participation suggests boys have higher perceived competence than girls (Brustad, 1993; Brustad, 1996; Ebbeck, 1994; Horn & Harris, 1996). In fact, Ebbeck (1994) found girls to prefer less challenging activities than boys. Three studies examining the relationship between perceived competence and physical activity were found in the review of literature conducted for this study. Brustad found that boys had higher perceived competence than girls in both his 1993 and 1996 studies. Williams and Gill (1995) found similar results. Brustad (1996) also did not mention any differences in perceived competence based on ethnicity, but it was not one of the goals of his study. Based on the void in existing literature, it is important to further examine sex differences in perceived competence, as well as examine racial differences, particularly with respect to physical activity, as these differences may explain different patterns of physical activity. Furthermore, none of the studies found in the review of literature for this study linked motivation for activity with actual participation in activity.

Statement of the Problem

Lack of knowledge in the areas of attraction to physical activity and perceived

competence could have serious implications for how physical education curricula and organized physical activity programs are developed. Although researchers have examined these constructs, the typical populations used for participants have been Caucasian, middle class children, with the exception of Brustad's (1996) study. It remains to be seen if children from a more diverse, lower socioeconomic background face the same issues as those that children from a primarily middle class population and if programming should be changed based on these possible differences. Studies involving children from diverse racial and socioeconomic backgrounds are needed. The issue of how to get children involved in regular physical activity, especially those with low perceptions of physical competence, needs to be addressed. Furthermore, motivation and actual behavior need to be examined together. The main purpose of this study was to examine children's perceived competence and attraction to physical activity in a population that is diverse and low in socioeconomic status. Further, the relationship of these variables to actual amount and intensity of physical activity was examined.

Hypotheses

1. Males would score higher than females on the vigorous physical activity and peer acceptance subscales of the CAPA.

2. There would be no significant difference between males and females on the CAPA subscales of liking of games and sports, importance of physical activity, and fun of physical exertion.

3. There would be no difference between Caucasians and African Americans on the five CAPA subscales.

4. Females would have lower perceived competence than males on both the physical competence and general self-worth subscales, and there would be no difference between females and males on the social competence subscale.

5. There would be no significant difference between Caucasians and African Americans in perceived competence on all three subscales.

6. Males will report more time spent being physically active than females.

7. There will be no significant difference between Caucasians and African Americans in time spent being physically active.

Corollary Question

Because the relationships of perceived competence and attraction to physical activity to actual time spent being active or intensity of activity have never been examined, there was not enough evidence available to make any predictions about the relationships in the form of a hypothesis. However, the relationship was to be examined when the data were analyzed.

Delimitations

This study was conducted using a sample of Caucasian and African American fifth graders from a lower socioeconomic area including inner city elementary schools. Results are limited to this specific population.

Operational definitions

Low socioeconomic area. Schools that had a high percentage (over 50%) of students on free and reduced lunch were included as low in socioeconomic status. This information was obtained from the principals at each elementary school participating in the study. It was not known if the individual participants in this study received free or reduced lunch because that information is considered confidential by the school district. The free and reduced lunch percentages were merely used as an indicator of

socioeconomic status of the school communities. Furthermore, over 50% of the children in the school district as a whole were on free and reduced lunch.

Assumptions

It was assumed that the participants in this study answered all the questions on the given inventories as honestly and correctly as possible. Furthermore, it was assumed that the participants filled out the activity logs honestly and that the activity logs appropriately measured the children's physical activity.

CHAPTER 2

REVIEW OF LITERATURE

Participation in physical activity and sport, both structured and unstructured, is an important topic to study because of its implications for people's future health conditions. Yet, the general population has not seemed to recognize the effects that habitual physical activity can have on future health status. Approximately 40% of adults in Australia, Canada, and the United States are physically active enough to obtain health benefits, but only about 10% report exercising at a level sufficient for maintaining cardiorespiratory fitness (Bouchard, Shephard, & Stephens, 1994). Researchers have recently attempted to make individuals aware of the benefits of physical activity by acts like hosting an international consensus symposium and publishing the results and writing a United States Surgeon General's report on physical activity and well-being (U.S. Department of Health and Human Services, 1996). There are still many aspects of physical activity that need to be studied, especially with regard to the effects of psychological parameters. Two of these variables, participant motives and perceived competence, were examined in this study.

Physical Activity Research

Physical activity of adults has been a popular topic among researchers in the health field for quite some time. King et al. (1992) summarized several studies examining the determinants of physical activity and exercise in adults and found several

characteristics: Women have lower physical activity levels than men; physical activity decreases with age; studies on racial differences are rare; no clear relationship exists between occupation and physical activity; level of education is positively associated with leisure-time physical activity; a modest relationship between income and physical activity exists; family aggregation of physical activity exists; and healthy people are more active than unhealthy people. Researchers have also made the link between lack of physical activity and various health problems such as coronary artery disease in adults (Aaron et al., 1993; Freedson & Evenson, 1991; Stucky-Ropp & DiLorenzo, 1993). However, no studies have assessed a direct link between body fat content as measured by body mass index or skinfolds and health outcomes (Bouchard & Shephard, 1994).

There are several methods available to assess physical activity. Direct observations can be used, which are not limited by recall or self-report bias but are difficult to use in large-scale studies (Ainsworth, Montoye, & Leon, 1994). Another method that is not practical for large-scale studies is use of physical records. Survey instruments, like the Child/Adolescent Activity Log (Garcia, George, Coviak, Antonakos, & Pender, 1997) used in this study, are the most popular type of physical assessment tools and easy to use with a large population (Ainsworth, Montoye, & Leon, 1994). Mechanical devices such as pedometers, heart rate monitors, and motion sensors can be used for monitoring physical activity. However, many of these devices have a large error of measurement (Ainsworth, Montoye, and Leon, 1994). Although it is expensive and not practical for use with large populations, the use of doubly labeled water is probably the most accurate method (Ainsworth, Montoye, and Leon, 1994). The process of using

doubly labeled water involves subjects ingesting isotopes of hydrogen and oxygen, which eventually are metabolized by the body and measured to estimate energy expenditure (Ainsworth, Montoye, & Leon, 1994). All methods have their pros and cons, and researchers have to choose which method they should use based on the population in question.

Once researchers began to determine correlates of physical activity in adults, a logical next step was to evaluate physical activity in children. Sallis, Simons-Morton, et al. (1992) summarized several studies examining the determinants of physical activity in children and found both similar and different characteristics when compared to those of adults: Fitness levels affect physical activity; boys are more active than girls; children from high socioeconomic status families are more active than other children; percent of time spent outdoors is related to physical activity; and access to programs may be a factor in physical activity. The issue of how to assess physical activity in children has been examined as well.

Levels of participation in physical activity in children have been measured primarily by methods of self-report such as interviews, diaries, proxy reports, or self-administered recall (Sallis, 1991). Devices designed to record activity level such as the Caltrac accelerometer and heart rate wristwatch monitor have also been widely used with children . Researchers have also combined the two methods in an attempt to provide more validity for their studies (e.g., Freedson & Evenson, 1991). Sallis (1991) summarized the different ways to use self-report and found the following results: Diary measures have the strongest validity, but the burden on participants is high; interviewer-

administered measures were moderately valid, but interviewers need to be properly trained; self-administered measures were found to be reliable but no validity was reported, and the cognitive limitations of children need to be considered; proxy measures had some support, particularly for children under the age of 10, but an adult's knowledge of a child's behavior can be limited. As with adults, all measurement techniques are subject to error. Sallis (1991) indicated that the one technique a researcher chooses should simply suit his or her needs, budget, and experimental design.

Because the participants in the present study were deemed old enough to accurately remember physical activities from the previous day, a one-day physical activity recall, the Child/ Adolescent Activity Log (CAAL; Garcia et al., 1997), was used. Although there are several different physical activity recalls available, this particular instrument was selected because of its potential for subjects to accurately report physical activity minutes and for the investigator to determine intensity. Activity measures from the CAAL can easily be reported as average daily activity minutes or can easily be converted to intensity units (calories expended per kilogram of body mass). This is different than many other inventories that report scores in terms of metabolic equivalents (METs); MET values for children and adults are different but are not often calculated differently for studies involving children's physical activity (Sallis, Buono, & Freedson, 1991).

Apart from the issue of difficulty measuring physical activity of children, limiting factors in our understanding of physical activity behaviors are differences due to sex and race and differences in psychological characteristics. Sex differences indicating that boys

are more physically active than girls have been found (Faucette et al., 1995; King et al., 1992). and research is limited on racial differences in children's physical activity (King et al., 1992). Research in the separate realms of sport and physical activity has shown conflicting results for differences in perceived competence between sexes, which is an issue that will be examined in greater detail later in this review. Unfortunately, most of the existing research on children's physical activity (King et al., 1992; Pambianco, Wing, & Robertson, 1990; Sallis, Simons-Morton, et al., 1992) has involved participants from a fairly homogeneous population of White, middle class, suburban areas. Research on socioeconomic status variables and access to programs has been limited as well (Sallis, Simons-Morton, et al., 1992). Both diversity and socioeconomic status are issues that deserve attention in the literature and cannot be ignored.

In response to this void in the literature, some researchers have attempted to study physical activity in non-White children. The racial group that has received the most attention thus far is the Hispanic population because Sallis and his colleagues perform research in California and have access to them. Sallis, Patterson, Buono, Atkins, & Nader (1988) found that familial aggregation of physical activity occurred in both White and Mexican-American families, but the correlations between certain family members were different. Specifically, the physical activity of White children correlated with that of their mothers, while the physical activity of Mexican-American children correlated higher with their fathers' physical activity. In a similar study involving White and Mexican-American subjects, Patterson et al. (1989) found no racial differences in familial aggregation of physical activity after participation in an intervention program. Research

involving other races is scarce, as is research examining psychological parameters of physical activity.

Participant Motives for Sport and Physical Activity

In the 1980s the issues of both participant motives and perceived competence moved to the forefront of sport psychology literature. Many researchers examined these two constructs, especially with regard to how they affected participants in youth sport. Unfortunately, the participants in most of these studies were not from ethnically diverse backgrounds. Furthermore, sport was examined without much thought toward exercise or physical activity. Most assumed that the data resulting from the studies on participant motives and perceived competence carried over into the physical activity realm. Although sport is the most likely vehicle in which children can be physically active, it may be safe to assume that a growing number of children are physically active by some avenue other than sport. An example is a currently popular physical activity, rollerblading. One can observe children who are interested in rollerblading for adult-organized or neighborhood pick-up games of hockey or for simply rolling around the neighborhood. It is certainly conceivable that motives for participating in either competitive or leisure rollerblading activity might be similar or different from more traditional organized youth sport activities, depending on the context of the situation. Furthermore, some researchers (e.g., Brustad, 1993; Brustad, 1996; Gould, Feltz, & Weiss, 1985; Horn & Harris, 1996; Seefeldt, Ewing, & Walk, 1991) have begun to examine sex differences in participant motives and perceived competence; however, racial differences remained largely ignored. While there are few studies regarding sex

and race differences in children's participant motives and perceived competence in physical activity, those that exist will be discussed in the next few pages.

Early studies on participant motives examined general motives for and attitudes toward participation in physical activity. Kenyon (1968a) was the first to develop a model for "characterizing physical activity". His six subdomains for the characterization of physical activity are (a) physical activity as a social experience, (b) for health and fitness, (c) as the pursuit of vertigo (i.e., looking for a thrill-seeking element or some degree of risk when participating), (d) as an aesthetic experience (activities thought to be beautiful or artistic), (e) as a recreational experience or catharsis (providing a release of tension), and (f) as an ascetic or competitive experience (Kenyon 1968a). Subsequently, he developed a scale to assess these Attitudes Toward Physical Activity (ATPA) but admitted the difficulty in measuring attitude, which he defined as a "disposition reflecting both direction and intensity of feeling toward a particular object, whether it be concrete or abstract" (Kenyon, 1968b). He found his subscales to be reliable, with the exception of physical activity as catharsis.

Researchers attempted to extend Kenyon's (1968b) work by examining the six subscales he found and his definitions of attitude. Because Kenyon's work was done with adult subjects, Simon and Smoll (1974) attempted to develop a scale assessing Children's Attitudes Toward Physical Activity (CATPA). Modifications were made to the wording to make the statements easier for children to understand. The CATPA was deemed appropriate for testing children in fourth through sixth grade. However, it is questionable if the CATPA is acceptable for use with children because the inventory was

initially taken from adult research. The CATPA also assesses attitude, which is a difficult construct to measure and may not completely describe participant motives or correlate well with actual engagement in activity.

The bulk of the literature on participant motives shows several reasons why children participate in sport, but most researchers have not assessed the reasons for participating in exercise and general physical activity. Fun, skill improvement/ development, excitement of competition, fitness, competence, affiliation, and challenge seem to be the most common reasons why children participate in organized youth sport programs (Gill, Gross, & Huddleston, 1983; Gould, Feltz, & Weiss, 1985; Seefeldt, Ewing, & Walk, 1991; Weiss & Chaumeton, 1992). Gould and Petlichkoff (1988) suggested that the aforementioned motives represent surface-level motives that are marked with underlying constructs of achievement orientation, competence motivation, and cognitive-affective stress models or theories. It is important to note that a child's reasons for participating may be different at different stages of their lives, and factors such as age, skill level, sex, and race can play a role in determining those reasons.

Few studies have been conducted regarding the effect age has on participation motivation in sport, although it is still an important consideration. No one has devised a cognitive model or theory of the relationship between the two, and researchers often have to use available age groups. Gould et al. (1985) examined competitive swimmers between the ages of eight and 18, and the results showed younger swimmers were motivated by external factors such as achievement status and parents and friends wanting them to participate; while more experienced swimmers were motivated by internal factors such as

having fun and fitness. Brodkin and Weiss (1990) asked competitive swimmers from six different age groups, ages six to 74, to complete the Participation Motivation Questionnaire. Results showed that the younger children (ages six to nine) rated fun, competence, significant others, and competition issues more important than the older groups (Brodkin & Weiss, 1990). The older children (ages 10-14) also rated significant others to be more important than the younger groups did. For the high school/college age group (ages 15-22), health and fitness and social status were more important than for the other groups. Young adults (ages 23-39) also rated health and fitness as more important than the other groups. Similar to the young children, the older adults (age 60+) participated mainly for fun. Unfortunately, this study had a fairly small sample size, but its implications are important, suggesting that people in different developmental stages have different motives for participating in sport.

Similarly, effect of skill level on sport participation motivation has not been well-studied. Gould et al. (1985) found that swimmers with less than one year of experience rated skill development more important than the more experienced swimmers, but the two levels were not much different in overall motives for participating. In a study by Klint and Weiss (1986), children were found to have different reasons for participating in gymnastics depending on their skill level (e.g., competitive, recreational, and former participant). While fitness and competence-related issues were important for all groups, the competitive group members were more highly motivated by competition itself. Those who left the sport and the recreational group were more inclined to participate for reasons of fun. Hence, the study found differences in skill level overall, but individual variation in

responses for participation motives seemed to represent part of the differences in both studies.

It is questionable whether or not sex has an effect on participation motives. Gill et al. (1983) examined participant motives at a summer sports school with children ranging in age from eight to 18 and found that while the ratings for participant motives were very similar for boys and girls, boys demonstrated the tendency to rate achievement items higher than girls. However, there were more similarities than differences in overall responses between boys and girls. Seefeldt et al. (1991) also found no significant statistical difference between boys and girls in reasons for participating in sport. Boys' and girls' top ten reasons for participating were the same, but ranked in different orders. Girls rated staying in shape, getting exercise, learning new skills, playing as part of a team, and making new friends higher than boys. Boys rated doing something they are good at, improving skills, excitement of competition, and winning higher than girls, but both genders selected having fun as the top reason (Seefeldt et al., 1991). In a study of competitive swimmers by Gould et al. (1985), females placed more emphasis on friendship and fun than males did. Females also placed greater emphasis on being with friends, making new friends, and fitness than males did. Contrary to the Gill et al. (1983) study, Gould found no differences in participant motives between males and females.

Although no published research in this literature review was found with regard to the effect of social variables on participant motives in sport, it is a topic that should be addressed. Social variables are inherent in some of the top reasons why children participate in sport (e.g., affiliation), and the effects of family, peers, teachers, and

coaches are important. Some children who are participating in sport may not even want to participate, but they are pushed by their parents to do so anyway. Others who might rejoice at the opportunity to participate might not get a chance. Thus parents, teachers, and coaches need to be educated about why children are participating in physical activity.

There are some studies that have examined motives for participation in physical activity, not just sport. Klesges et al. (1990) and Sallis, Simons-Morton, et al. (1992) found that children who spend more time outside are more active than those who spend more time inside. Schultz, Smoll, Carre, and Mosher (1985) restructured the CATPA and created a new scale for use with third graders because research emerged that showed attitudes are formed in middle childhood. However, even with the changes, the CATPA does not have high concurrent validity in how measures might match up with actual behaviors (Schultz et al., 1985). There is also little predictive validity, but the moderate relationship between CATPA scores and children's involvement in physical activities does provide some convergent validity. There have been a few problems noted with the CATPA. One problem with the CATPA is that children can easily choose a socially desirable answer instead of answering honestly, which is admittedly a common problem with research instruments. Following is the description of the two main problems cited by Brustad (1991).

Dissatisfaction with the CATPA inventory led to investigation of attraction toward physical activity instead of attitude. Brustad (1991) built the rationale for examining attraction instead of attitude by stating two problems with the CATPA: (a) The inventory was created using adults' characterizations of physical activity, which makes its

validity with children questionable; (b) The scale was designed to measure trait-like aspects of attitude, but it had poor test-retest reliability over a six-week time period. Thus, the authors suggested the scale should not be used to assess attitude-behavior relationships over time or individual differences (Brustad, 1991). Brustad (1993) actually interviewed children to determine why they participated in physical activity. He then factor analyzed the results and formulated his own inventory, Children's Attraction to Physical Activity (CAPA). The CAPA has five subdomains: attraction to vigorous physical activity, liking of games and sports, importance of physical activity, peer acceptance in games and sports, and fun of physical exertion. Because he was interested in perceived competence as well, Brustad formatted the questions to be similar to those of Harter's (1979). Brustad's scale also determined parental influence on level of physical activity. Thus, the CAPA measures participant motives via attraction, not attitude.

Similar to the sport and participant motive literature, researchers have found sex differences in motives for participating in physical activity. Brustad (1993) found that males had higher perceived competence in physical activity than females, which may have led to more participation in physical activity than females. Results later obtained by Brustad (1996) were similar to those in the 1993 study. In fact, several studies have found that physical activity of females and males is about the same until puberty. After puberty, participation levels for both appear to decrease with age, but more so for females than males (Aaron et al., 1993; Faucette et al., 1995). Tappe, Duda, and Ehrnwald (1989) found adolescent males and females to have different barriers for not participating in physical activity. Males cited barriers such as having a girlfriend and using alcohol and

other drugs, while females cited barriers of wanting to do other things with their time and lack of interest. Thus, there appear to be sex differences in participation motivation in physical activity.

Social factors for participating in physical activity are also important. Patterson et al. (1989) determined families should be targeted in health intervention programs rather than individuals because the families make similar changes in their health habits together. When Freedson and Evenson (1991) placed Caltrac accelerometers on family members and had them fill out daily activity logs, children exhibited physical activity patterns similar to their parents. A study by Sallis, Patterson, McKenzie, and Nader (1988) found that children's physical activity levels were modified by parent modeling. Similarly, parental physical activity orientations were related to physical activity levels in the study by Brustad (1993). He found that parents who expressed high levels of enjoyment of physical activity encouraged children's participation more than parents who experienced less enjoyment. Yet, two studies showed no correlation between parents' and children's physical activity levels. Fitness and activity levels of children and parents were measured by McMurray et al. (1993), and no relationship between parents' attitudes toward activity or activity patterns existed. Sallis, Alcaraz, et al. (1992), using Caltrac accelerometers to determine parent levels of physical activity, found no relationship with children's activity levels. A possible reason for the differences between studies may be that different parents were considered. For example, in the Brustad (1993) study, mostly mothers were included, while in the Sallis et al. (1988) study, the parents included in the study had to meet an activity level criterion. None of the four studies considered which parent the

child stated he or she used as a model for activity patterns, which may have accounted for some of the differences.

Similarly, peer relations have been commonly cited as an important element of sport and physical activity participation. Affiliation is one of the top reasons children participate in sport (Gill, Gross, & Huddleston, 1983; Gould, Feltz, & Weiss, 1985; Seefeldt, Ewing, & Walk, 1991). Brustad (1993) found peer relations to be important in motivation for physical activity. Also, Weiss and Duncan (1992) noted the implication by many researchers that the physical education or sport environment is a medium for the development of peer relations.

A void exists in the literature on racial differences in participant motives between both sport and physical activity. Aaron et al. (1993) found that whites were more physically active than blacks on the basis of time, but not when results were adjusted for intensity of activity. No explanations were given as to why there might be a difference, however. Brustad (1996) found no significant differences for participant motives in physical activity between Latino and White children. Seefeldt et al. (1991) found no statistically significant differences between motives for participating in sport between races, but certain races ranked some reasons higher than other races. In comparison to children of other races, African American, Hispanic American, and Native American children rated skill improvement higher than fun, and African American children rated "doing something I'm good at" even higher than did children of other races. Excitement of competition and winning were rated higher for African American and Hispanic youth. Braddock (1980) also reported racial variations in attraction to sport.

Minorities may not have the same opportunities to engage in physical activity as do Caucasians. In the state of Michigan in 1994, 46% of African American children and 12% of White children grew up in poverty (Goodway-Schiebler, 1994). Oliver (1980) pointed out that the disadvantages of class and racial obstacles are compounded for minorities. Coakley (1994) agreed, stating that "historical circumstances combined with economic inequality have given rise to connections between certain sports and the lifestyles of people with differing amounts of wealth and power". In fact, lower class minorities may see sport as a way to get out of poverty and are more likely to believe sport is an avenue for social mobility (Braddock, 1980). This belief indicates that lower class minorities may have different motives for participating in sport than middle class Whites. African American families are more than four times more likely than White families to consider starting sport participation early in childhood as a possible path to increased social mobility (Coakley, 1994). Furthermore, some parents think it is unsafe for their children to play outside in their neighborhoods (Goodway-Schiebler, 1994). If urban schools have budget reduction, physical education is usually one of the first programs cut (Goodway-Scheibler, 1994). Lack of locations available for sport participation and lack of physical education in school could be a large problem for a family that was counting on achieving higher status via sport participation or who valued an active lifestyle for their children.

Almost all the studies presented thus far revolve around organized activity programs; few studies have examined non-structured physical activity. Studies also rarely address the non-participants. The bulk of the participant motive literature looks at the

participants. While it is important to know why participants are active, it is also important to know why non-participants are inactive because opportunities to become physically active often precede organized sport opportunities. Thus, researchers can discover little more about participant motives until cultural factors and non-participants are addressed.

Perceived Competence in Sport and Physical Activity

Perceived competence is a commonly cited reason for why children participate in sport and physical activity (Brustad, 1993; Klint & Weiss, 1987; McCullagh, Matzkanin, Shaw, & Maldonado, 1993; Roberts, Kleiber, & Duda, 1981). Perceived competence is a theoretical model developed by Harter (1978) that was modified from a model of effectance motivation by White. Harter (1978, 1982) states that people try to demonstrate competence at particular activities. They engage in mastery attempts, and if the attempts are successful, they will gain positive feelings and continue the activity. Conversely, people can fail at mastery attempts and gain negative feelings, eventually resulting in discontinuation of the activity. These mastery attempts can occur in a variety of settings. The model is developmental, and an inventory to assess it was developed, with four domains of competence (physical, social, cognitive, and general self-worth). Harter initially applied competence motivation to the academic setting, but other researchers have applied the model to the sport setting (e.g., Horn & Harris, 1996; Klint & Weiss, 1987; Roberts et al., 1981). People high in perceived competence are said to exert more effort, persist longer at achievement tasks, and experience greater positive affect. Similarly, children are more motivated to demonstrate competence in areas where they have higher abilities (Weiss & Chaumeton, 1992). Thus, perceptions of competence

affect participation in sport and physical activity and vice versa.

Roberts and his colleagues (1981) were the first to study perceived competence as a motive for participating in sport. They found that organized sport participants in the fourth and fifth grades had higher perceived physical competence than non-participants. Klint and Weiss (1987) studied gymnasts between the ages of eight and 16 in a non-school organized program and found specifically that children higher in perceived physical competence rated skill development as a more important reason for participating than children with lower perceived competence. Furthermore, children high in perceived social competence were motivated by affiliation. According to Horn and Harris (1996), children with high perceptions of competence have been found to be more persistent after they experience failure and have higher expectations for successful performance than children with low perceptions of competence, suggesting that those children high in perceived physical competence are more likely to continue participation after failure experiences. Conversely, one study found no relationship between participant motives and perceived competence in youth soccer players between the ages of seven and 14 (McCullagh et al., 1993), although the authors were expecting a relationship. The authors concluded that the small sample size and age may have had something to do with their lack of expected results. In general, the relationship between perceived competence and participation motivation has been well-supported.

Researchers have attempted to link perceived competence to other psychological constructs, such as anxiety, intrinsic/extrinsic motivational orientation, and self-esteem. Ebbeck and Stuart (1993) found that perceived competence predicted self-esteem in a

sample of football players ages 11-14 who participated in a community youth sport program. A relationship between perceived competence, skill level, and self-worth was found in tennis participants who were between the ages of 10 and 67 (Ebbeck, 1994). Weiss and Horn (1990) found that children between the ages of eight and 13 who were participating in a summer sport program with higher perceptions of competence in sport had higher perceptions of perceived control, intrinsic motivation, and levels of participation. However, several psychosocial constructs can be linked to perceived competence in the physical activity arena, and literature supports participant motives as one of the most common variables. Weiss and Horn (1990) also pointed out that sources of perceived competence could be important, which led Horn to study further children's perceived competence with respect to ability to judge competence in relation to age.

Age and gender differences related to perceived competence and sport have been reported. Children's perceptions of competence change as they age, as does their ability to judge their competence (Horn & Harris, 1996). Young children's perceptions of competence are usually not accurate. Specifically, they tend to rate their competence too high compared to their teacher's rating. However, as children reach the middle childhood stage, their perceptions of competence appear to drop slightly and plateau. Ability to judge competence increases when children reach middle childhood (Horn & Harris, 1996). Usually, children at the age of middle childhood judge their abilities by performance outcome information. When children reach adolescence, they tend to use peer feedback as sources of competence; but after they reach adulthood, the use of peers for competence information tends to decrease. Ebbeck (1994) found that female

competitive tennis players used different sources for determining perceived competence at different age levels. Surprisingly, Weiss and Horn found no age-related differences in perceived competence in their 1990 study. The best explanation the authors could give was that the sample was unique.

Similarly, sex has an effect on perceptions of competence in sport. Among tennis players, Ebbeck (1994) found that females prefer less challenging activities, suggesting their perceived competence may be somewhat low. During young childhood, girls have higher perceived competence in play-oriented and locomotor skills, but boys have higher perceived competence in fundamental motor skills and sport-specific skills (Horn & Harris, 1996). Feltz and Petlichkoff (1983) examined interscholastic sport participants and dropouts between the ages of 12 and 18 and found that males had higher perceived competence scores than females. Weiss and Horn (1990) determined that children who overestimated and underestimated competence had different levels of perceived control based on sex, but overall differences in perceived competence between sexes were not found. This finding agrees with results from Roberts et al. (1981) because they found no sex differences in perceived competence. Feltz and Petlichkoff (1983) suggested that the reason for this finding was due to age differences in the subject sample. It is possible that age and gender are confounded with respect to perceived competence in sport.

Research on participant motives and investigation of perceived competence both lack specific and important aspects. Research on perceived competence in sport based on racial differences is difficult to find and needs to be studied in greater detail. Similarly, research on perceived competence in organized sport activity is readily available, but

there is a void in the literature on unstructured physical activity and perceived competence. It is possible that if these areas are addressed, children will be more likely to become and remain physically active so that health-related fitness can be achieved throughout the lifespan.

Brustad (1993, 1996) is the only researcher so far who has examined perceived competence with respect to physical activity and the relationship between perceived competence and participant motives. Using the CAPA inventory and the physical competence subdomain of Harter's perceived competence inventory, Brustad (1993) found that perceived competence predicted attraction to physical activity, which is based on participant motives. In both 1993 and 1996 he found that fourth through sixth grade boys had higher overall perceived competence than girls of the same age. No racial differences between Whites and Latinos in perceived competence were found in the latter study.

The social aspects of perceived competence cannot be ignored. According to the perceived competence model (Harter, 1978), reinforcement is an important component of feedback on mastery attempts. Parents often provide approval or disapproval on tasks children perform. It is important to establish patterns of positive feedback on mastery attempts when children are young so that they get used to experiencing success. Brustad (1993, 1996) examined parental influence on perceived competence in physical activity. He found that higher parental encouragement resulted in higher perceived competence. Klint and Weiss (1987) found that peer influence plays a role in perceived competence in sport. Gymnasts higher in perceived social competence were more motivated by

affiliation factors. Social aspects of perceived competence need to be studied more in relation to both sport and physical activity.

In conclusion, children participate in physical activity for many reasons. Fun, affiliation, skill improvement, fitness, excitement of competition, challenge, and competence are just a few of these reasons. The link between competence and participant motives is important and should be examined more closely in the future, especially with respect to sex and race differences. The lack of cultural information on these topics merits attention. Furthermore, more study needs to be done on unstructured physical activity, and why children do or do not participate, especially with focus on why children do not participate.

CHAPTER 3

METHOD

Participants

The participants in this study were 105 fifth grade boys (n=51) and girls (n=54) attending five different elementary schools in a moderate-sized midwestern city. The schools were selected by the district's supervisor of Research and Evaluation Services and were included because they each had more than 50% of their students receiving free and reduced lunch and similar distributions of African American and Caucasian children (approximately 46% and 41% on average). The district as a whole also had over 50% of its students receiving free and reduced lunch. However, the district wide averages of African American and Caucasian students were 34% and 48%, respectively. Approximately 225 students were asked to participate in the study.

A power analysis was conducted prior to data collection to determine the optimal number of participants for the study. Results of the analysis indicated that approximately 124 participants (31 participants in each group of girls, boys, African American, Caucasian) were needed in order to find statistical significance at an alpha level of .05. The actual number of participants obtained was 105, and all of the participants were included in the regression analysis. Therefore, about 85% of the subjects needed for optimal power actually took part in this study. However, analyzing the hypotheses

required comparing girls to boys and African Americans to Caucasians, resulting in approximately 60 participants being included in those analyses. A possible strategy for obtaining more participants would have been to contact more elementary schools from the district. However, the supervisor of the district's Research and Evaluation Services was unable to recruit any more schools that met both the criteria of diversity and socioeconomic status and who were willing to participate.

Average age of the participants was 10.2 years (SD=.5). No potential subjects were excluded from participation in the study unless they did not return the informed consent form (See Appendix A). A breakdown of participants by race and sex is provided in Table 1. The biracial designation was provided for children who identified with a mixed racial background, while the "other" category was reserved for children who did not identify with any of the races provided on the demographic questionnaire (See Appendix B).

Table 1

Number of Participants by Race and Sex

	BOYS	*GIRLS*	*TOTAL*
African American	18	14	32
Caucasian	15	24	39
Native American	1	--	1
Asian	2	1	3
Hispanic	3	--	3
Biracial	9	13	22
Other	3	2	5

Instruments

Demographic Questionnaire. Students completed a background questionnaire (See Appendix B) composed by the primary investigator. The questionnaire included questions about age, sex, race, mother's and father's race, mother's and father's occupations, with whom they live, liking of physical activity, activities in which they like to participate, why they do or do not enjoy participating, and organized sport and exercise activities in which they currently participate. The primary reason for having the participants complete these questions was to obtain all the demographic variables possible for the basis of comparison.

Children's Attraction to Physical Activity (CAPA). Brustad (1993) developed the CAPA to measure dimensions of attraction to physical activity. The five subscales used in this study consist of attraction to vigorous physical activity, liking of games and sports, importance of physical activity, peer acceptance in games and sports, and fun of physical exertion (See Appendix C). All items were scored based on a four point response format similar to Harter's (1982) approach in which children are presented with two opposing choices and asked to decide which statement best reflects their own feelings. Once children have made that choice, they then select if that is "somewhat true" or "really true" for them. Brustad (1993) reported that reliabilities for each of the five subscales satisfied an established alpha level of .60, with values ranging from .62 to .78. In a follow-up study with a different sample of children, Brustad (1996) obtained alpha values ranging from .44 to .74. Although the importance of physical activity for health reasons subscale did not have an acceptable value (.44) in the second study and was excluded from further

analysis in the 1996 study, it did have an acceptable value in the 1993 study and was included in this study. Reliability coefficients for each of the subscales for this study were as follows: liking of vigorous physical activity (.60), fun of physical exertion (.65), liking of games and sports (.74), peer acceptance in games and sports (.75), and importance of physical activity for health reasons (.69). Factor analysis provided construct validity for the five initial subscales (Brustad, 1993).

Harter's Perceived Competence Inventory for Children. Harter's (1982) inventory to measure children's perceived competence has four subscales that measure level of general self-worth, physical activity competence, social competence, and cognitive competence. The three subscales used in this study were the social, physical, and general self-worth domains (See Appendix D). Items were scored on a four point scale using the same method as described above for the CAPA inventory. Initial reliability coefficients for the three subscales were .78, .83, and .73, respectively. Reliability coefficients for this study were .78, .80, and .74, respectively. Construct validity was demonstrated by factor analysis in the initial study (Harter, 1978).

The Child/Adolescent Activity Log (CAAL). This log, developed by Garcia, George, Coviak, Antonakos, & Pender (1997), was used to determine the children's daily physical activity levels (See Appendix E). Children completed the log by indicating the date when activities were performed, checking which activities they performed, and circling how many minutes they were engaged in each activity. In this study, a child who was not absent any of the days during the study completed four activity logs on weekdays and one activity log for a weekend day. Initial daily test-retest correlations for the

instrument were between .73 and .94; reliability for the average summary score was .95 (Garcia et al., 1997). Criterion validity was determined by correlating activity duration responses with Caltrac accelerometer values, comparing average daily duration scores with participants' responses to a single item on typical activity level, and comparing average intensity scores with indices from a physical fitness testing protocol. Logical validity was determined by comparing activity across seasons for the entire sample and separately by sex.

Procedure

Administration of the instruments. Informed consent forms (See Appendix A) were completed by the parents or guardians of each participant prior to the start of data collection. Data collection involved visiting eight different classrooms within five schools, but all participants were tested in the same one-week time period. The data collection process began on a Monday. Pairs of researchers went into the various classrooms involved in the study and explained the general purpose of the study. The researchers then administered the demographic questionnaire, CAPA, and Harter's Perceived Competence Inventory. All participants filled out the demographic questionnaire first. Approximately half of the participants completed the CAPA inventory before Harter's perceived competence inventory, while the other half completed Harter's perceived competence inventory before the CAPA. The participants were assured that results would be confidential and were instructed to answer questions as honestly as possible. One investigator from each research team read all questions from each instrument aloud for the students. Both investigators answered any questions about

the items.

After the first day's data were collected, the research teams informed the students that they would return the next day to ask them some more questions about things they like to do. Upon returning the following day, the primary investigator explained the procedure for completing the activity logs and helped the students fill out the log for the previous day's activities. For the following three days and the next Monday, students were expected to recall their physical activities from the previous day and record them when they came to school. Each classroom teacher was responsible for helping the participants complete the logs on the Wednesday, Thursday, and Friday of data collection. On the final Monday of data collection, the primary investigator returned to the schools to administer the last activity logs, which assessed Sunday's activities, and to collect the other completed logs.

Anthropometric data. Each participant's height (cm), weight (kg), and three measurements each of the triceps and calf skinfolds (mm) were measured using a standing anthropometer, a standard scales, and skinfold calipers. Most heights and weights were measured by the primary investigator, while most skinfolds were taken by another trained investigator (Table 2). Every tenth child was re-measured the same day to assess within-subject variability (Malina,1995). When compared to some growth studies (Malina, 1995; Siegel, 1995), the data for height and weight appeared to have a similar amount of measurement error. See Table 3 for results of this study compared to growth studies assessing anthropometric data of similar populations. The error for the skinfold measures, particularly the calf skinfolds, appeared to be slightly high when compared to

Table 2

Anthropometric Measures for Boys and Girls

	BOYS	*GIRLS*	*TOTAL*
Height (cm)	143.4	146.2	144.8
Weight (Kg)	42.5	46.0	44.3
Avg. Triceps fold (mm)	15.3	19.4	17.4
Avg. Calf fold (mm)	14.7	19.3	17.1
Body Mass Index	20.5	21.1	20.8

Table 3

Results of Technical Error of Measurement

	Current	*Study 1*	*Study 2*	*Study 3*	*Study 4*	*Study 5*
Height	.23	.34	.55	.35	.54	.18
Weight	.20	---	---	---	---	.21
Triceps	1.36	1.59	.69	.55	.51	.35
Calf	1.68	1.40	.98	.47	.66	.10

Adapted from Malina, 1995 and Siegel, 1995

1. San Diego, Mexican-American school girls 12-17 years, replicates taken one day after initial measurements, n=30. (Brown, 1984)
2. Austin, White swimmers, both sexes, 8-18 years, replicates taken 1-4 weeks after initial measurements, n=13. (Meleski, 1980)
3. Sao Paulo, Brazil, low socioeconomic status school children, eight years old, replicates taken after an interval of about one week, n=23-29. (Rocha Ferreira, 1987)
4. Austin, low socioeconomic status Mexican-American boys, 9-14 years, replicates taken one day after initial measurements, n=25. (Zavaleta & Malina, 1982)
5. South Texas, female soccer players, ages 10-23, replicates taken one month after initial measurements, n=100. (Siegel, 1995)

growth studies. There are a couple of possible reasons for the higher error. One possibility is the low number of participants (n=10) who were re-tested for the current study. Most of the other studies cited had at least 20 subjects. Another possibility is the age of the participants. It is difficult to separate the muscle tissue from the fat tissue in many children. In addition, females usually experience an increase in body fat prior to puberty.

Regardless, skinfold measures are generally associated with some degree of error, and the measurement error obtained in this study was deemed acceptable.

Treatment of the Data

Data collected in this study were analyzed using the Statistical Package for the Social Sciences (SPSS;1996) software. To determine if there were significant differences between sex, race, and the interaction between sex and race in attraction to physical activity as indicated by scores on the CAPA subscales, a 2 x 2 (race by sex) Multivariate Analysis of Variance (MANOVA) was run. To determine if there were differences in sex, race, and the interaction between sex and race in perceived competence as determined by scores for the Harter's Perceived Competence inventory subscales, a 2 x 2 (race by sex) MANOVA was run. To determine if there were differences in sex, race, and the interaction between sex and race in physical activity, separate 2 x 2 (race by sex) ANOVAs were run for both average daily minutes of physical activity and average daily intensity of physical activity. All interaction effects found were examined using Tukey's Honestly Significant Difference post hoc test. To determine predictors of physical activity, a correlation matrix was run between the anthropometric measures, the CAPA subscales, the Harter subscales, average daily activity minutes, and average daily intensity (average daily calories expended per kilogram body weight per minute). Variables that exhibited correlations of 0.3 or higher to average daily minutes and average daily intensity were entered into a linear stepwise regression. Variables from the CAPA that were entered into the regression analysis included fun of physical exertion, liking of physical activity, peer acceptance, and vigorous physical activity; variables from Harter's

inventory that entered into the regression analysis were perceived social competence and perceived physical competence. The correlations for the anthropometric data were not high enough to enter the regression analysis.

CHAPTER 4

RESULTS

Before analyses of the Children's Attraction to Physical Activity and Harter's Perceived Competence inventory were conducted, a preliminary check for order effects was run. To examine the potential order effects a repeated measures (subscale score by order of administration) Analysis of Variance (ANOVA) was run. No order effects were found for the CAPA subscales, $F(1, 92) = .74$, $p>.05$ or for the Harter subscales, $F(1, 94) = .29$, $p>.05$. Thus, administering the CAPA subscales first to approximately half the participants and the Harter subscales first to approximately half the participants eliminated any potential order effects. Also, only the African American and Caucasian males and females were included in the analyses because those were the two main racial groups on whom this study was to focus.

Children's attraction to physical activity. It was hypothesized that males would score higher than females on the vigorous physical activity (VIGPA) and peer acceptance (PEER) subscales of the CAPA instrument and that there would be no difference between males and females on the remaining three CAPA subscales, liking of games and sports (LIKPA), importance of physical activity (IMPPA), and fun of physical exertion (FUNPE). It was also hypothesized that there would be no difference between African Americans and Caucasians on the five CAPA subscales. Because the CAPA is a new

inventory and the relationship among subscales was unknown, a Pearson-Product Moment inter-scale correlation was run to determine if the subscales should be analyzed separately or together. As can be seen in Table 4, the highest correlation (.49) occurred between the vigorous physical activity and importance of physical activity subscales. Most correlations were in the moderate range, and a multivariate approach was selected to avoid a problem with shared variance.

Table 4

Correlation Matrix for CAPA Subscales

	LIKPA	FUNPE	VIGPA	PEER	IMPPA
LIKPA	1.00				
FUNPE	.45	1.00			
VIGPA	.46	.47	1.00		
PEER	.31	.46	.25	1.00	
IMPPA	.29	.26	.49	.17	1.00

A 2 x 2 (race by sex) Multivariate Analysis of Variance (MANOVA) was run for the five subscales. The interaction of race and sex was not significant for any of the subscales, $F(5, 58) = 1.69$, $p>.05$. (See Appendix F for means and standard deviations.) No main effect for race was found, $F(5, 58) = .97$, $p>.05$. However, a main effect for sex was found, $F(5, 58) = 3.47$, $p<.05$. Examination of the univariate Fs for each of the subscales showed that the expected results for sex differences had not occurred. There was no significant difference between the scores of males and females for the vigorous physical activity subscale, $F(1, 62) = 1.13$, $p>.05$, or the importance of physical activity subscale, $F(1, 62) = 1.78$, $p>.05$. On the other hand, males scored significantly higher than females on the peer acceptance (PEER) subscale, $F(1, 62) = 12.64$, $p=.001$, the

liking of games and sports (LIKPA) subscale, F(1, 62) = 5.84, p=.019, and the fun of physical exertion (FUNPE) subscale, F(1, 62) = 6.13, p=.016. See Table 5 for means and standard deviations for both race and sex.

Table 5

Means and Standard Deviations for Sex and Race on CAPA Subscales

n=66	*VIGPA*		*PEER*		*LIKPA*		*FUNPE*		*IMPPA*	
	M	SD	M	SD	M	SD	M	SD	M	SD
Males	3.33	.44	3.37[a]	.45	3.50[b]	.58	3.47[b]	.46	3.54	.46
Females	3.18	.58	2.85[a]	.66	3.08[b]	.74	3.12[b]	.63	3.34	.64
Af. Amer.	3.27	.42	3.05	.56	3.26	.64	3.23	.56	3.57	.48
Caucasian	3.24	.60	3.17	.56	3.32	.69	3.36	.53	3.32	.62

a = p < .001
b = p < .05

Perceived competence. It was hypothesized that females would have lower perceived competence than males on two of Harter's Perceived Competence subscales (Physical Perceived Competence and General Self-Worth) and that there would be no difference between males and females on the Social Perceived Competence subscale. It was also hypothesized that there would be no difference between the scores of African Americans and Caucasians on the three Harter subscales. Again, a correlation matrix was run and inter-scale correlations were high, resulting in analysis via a 2 x 2 (race by sex) MANOVA so as to eliminate shared variance. As can be seen in Table 6, the highest correlation found was between the perceived physical competence (PHYSPC) and perceived social competence (SOCPC) subscales (.67).

Results of the MANOVA showed no significant sex or race difference, F(1, 59) =

1.20, $p>.05$ and $F(1, 59) = .25$, $p>.05$, respectively. Means and standard deviations are presented in Appendix F. However, an interaction effect between race and sex was found, $F(1, 59) = 2.87$, $p<.05$. Examination of the univariate Fs suggested that the interaction effect occurred mainly due to differences in the perceived social competence subscale, $F(1, 61) = 8.29$, $p=.005$. Post hoc analysis via Tukey's Honestly Significant Difference (HSD) test revealed that African American males (AA males) scored significantly higher than African American females (AA females), $F(1, 64) = 3.07$, $p=.05$, and Caucasian females (C females) scored higher than African American females at a nearly significant level, $F(1, 64) = 3.07$, $p=.07$. See Table 7 for interaction means and standard deviations.

Table 6

Correlation Matrix for Harter's Perceived Competence Subscales

	SOCPC	PHYSPC	SELFPC
SOCPC	1.00		
PHYSPC	.67	1.00	
SELFPC	.63	.48	1.00

Table 7

Interaction Means and Standard Deviations for Perceived Competence Subscales

		SOCPC		PHYSPC		SELFPC	
	n	M	SD	M	SD	M	SD
AA Males	15	3.31[a]	.37	3.09	.48	3.36	.43
C Males	15	2.92	.83	2.95	.79	3.27	.83
AA Females	12	2.68[ab]	.76	2.50	.88	3.12	.66
C Females	23	3.21[b]	.50	2.91	.61	3.40	.47

a = .052
b = .07

Physical Activity. It was expected that males would be physically active for a higher number of average daily minutes than females and that there would be no difference in average number of activity minutes between African Americans and Caucasians. To be included in the physical activity analyses, participants must have turned in three or more activity logs. Also, repeated measures ANOVA (day by total reported activity minutes for each of the five days) was run to determine if there were differences between days in the number of minutes spent participating in activities. Results showed no significant differences between days for average activity minutes, $F(4, 50) = .718$, $p>.05$. Thus, a 2 x 2 (race by sex) ANOVA was used to examine if significant differences in race or sex or an interaction of the two for average daily activity minutes existed. Results revealed a significant main effect for sex, $F(1, 57) = 6.47$, $p<.05$. Males reported more average daily minutes exercising than females. No significant main effect between African Americans and Caucasians was found, $F(1, 57) = .82$, $p>.05$. See Table 8 for means and standard deviations. Of particular note in Table 8 are the large standard deviations for all participant groups (approximately forty five minutes to one hour and 20 minutes daily). These data suggest that while males are more active than females, generally, there is considerable overlap of the groups. In addition, a significant interaction effect was found, $F(1, 57) = 5.66$, $p<.05$. See Table 9 for means and standard deviations. Post hoc analysis via Tukey's HSD revealed that African American males reported a significantly higher number of average daily physical activity minutes than African American females, $F(3, 57) = 4.11$, $p<.05$. No other differences between groups were statistically significant.

Table 8

Means and Standard Deviations for Sex and Race for Average Daily Activity Minutes

	n	M	SD
Males	25	127.3[a]	67.3
Females	33	82.0[a]	56.9
African American	24	96.7	46.3
Caucasian	34	104.9	77.9

a = p<.05

Table 9

Means and Standard Deviations for the Interaction Between Sex and Race for Average Daily Activity Minutes

	n	M	SD
AA Males	13	142.8[a]	65.8
AA Females	11	42.3[a]	26.8
C Males	12	110.6	68.8
C Females	22	101.8	87.1

a= p<.05

The physical activity data were also analyzed with regard to intensity according to the protocol established by Garcia, George, Coviak, Antonakos, and Pender (1997). Garcia et al.'s protocol consists of assigning metabolic costs established by McArdle, Katch, and Katch (1986) to each activity, multiplying the cost by a correction factor (1.18) to be used with children, and then multiplying by reported minutes spent doing the activity. Resulting values were then divided by the number of completed logs (three or more) so that intensities were represented as average daily calories expended per kilogram body weight per minute because larger individuals will expend more calories than smaller individuals.

The intensity measures of physical activity produced similar results to the measures of average daily activity minutes. Again, repeated measures ANOVA (day by total calories expended per kilogram per minute each day) revealed no significant difference in intensities of activity between days, $F(4, 50) = .742$, $p>.05$. Thus, a 2 x 2 (race by sex) ANOVA was run to examine potential significant differences between race, sex, or their interaction and average daily intensity of activity. Results showed a significant main effect for sex, $F(1, 57) = 11.0$, $p<.05$. See Table 10 for means and standard deviations for both sex and race. Males expended more average daily calories per kilogram per minute during physical activity than females. No main effect was found between African Americans and Caucasians, $F(1, 57) = .44$, $p>.05$. Also, a significant interaction effect was found, $F(1, 57) = 6.31$, $p<.05$. Means and standard deviations are presented in Table 11. Post hoc analysis using Tukey's HSD revealed that African American males expended significantly more average daily calories per kilogram per minute than African American females, $F(3, 57) = 5.76$, $p<.05$. No other differences between groups were statistically significant.

Table 10

Means and Standard Deviations for Sex and Race for Intensity of Physical Activity

	n	M	SD
Males	25	19.5[a]	10.1
Females	33	10.8[a]	7.8
African American	24	14.5	6.6
Caucasian	34	14.6	11.2

a = $p<.05$

Table 11

Interaction Means and Standard Deviations for Sex and Race for Intensity of Physical Activity

	n	M	SD
AA Males	13	22.2[a]	9.8
AA Females	11	5.3[a]	3.4
C Males	12	16.5	10.3
C Females	22	13.5	12.2

a = p<.05

Corollary Question. Finally, a corollary question was posed for this study to determine if there was a relationship between motivation (perceived competence and attraction to physical activity) and/or selected anthropometric measures and time spent being active and/or intensity of activity. Because the sample size was insufficient to allow including all variables in the linear stepwise regression procedure, a correlation matrix was run between all the anthropometric measures, the five CAPA subscales, the three Harter subscales, and the two physical activity measures of both average daily activity minutes and intensity (average daily calories expended per kilogram body weight per minute). The highest possible number of variables that could be selected for each separate regression were included. Thus, more variables entered the regression analysis when the entire sample was included as opposed to when segments of the samples were analyzed. Results showed that the variables having the highest correlations to both average daily activity minutes and average daily calories expended were fun of physical exertion (FUNPE), liking of games and sports (LIKPA), peer acceptance (PEER), perceived physical competence (PHYSPC), perceived social competence (SOCPC), and attraction

to vigorous physical activity (VIGPA); these variables were entered into two separate regression analyses for the entire sample as potential predictors of both average daily activity minutes and average daily intensity of activity.

The peer acceptance subscale of the CAPA was the best predictor for average daily activity minutes for the entire sample (n=76) accounting for 14.6% of the variance. Due to the significant difference for sex and the interaction between race and sex in average daily activity minutes, separate linear stepwise regressions were run for sex and race. Because partitioning the sample into sex and race decreased the number of cases, only the subscales with the two or three highest correlations to average daily activity minutes from the correlation matrix were entered into the analysis. Two variables (PEER, VIGPA) were entered into the regression procedure for African Americans, and three variables (FUNPE, VIGPA, PEER) were entered into the regression procedure for males, females, and Caucasians. The peer acceptance subscale on the CAPA was the best predictor for average daily activity minutes for the males (n=34), accounting for 22.4% of the variance. Similarly, the peer acceptance subscale of the CAPA was the best predictor of activity minutes for the females (n=47), accounting for 9.5% of the variance. For Caucasian children (n=34), the peer acceptance and fun of physical exertion subscales of the CAPA were the best predictors for activity minutes, accounting for a total of 36.6% of the variance. For African American children (n=22), the vigorous physical activity subscale of the CAPA was the best predictor of activity minutes, accounting for 30.2% of the variance. See Table 12 for specific regression results.

Table 12

Results of Linear Stepwise Regression on Average Daily Activity Minutes

Predictor	n	R	R Square	R Square Δ	Significance
TOTAL (PEER)	76	.383	.146	.146	.001
MALES (PEER)	34	.473	.224	.224	.005
FEMALES (PEER)	47	.309	.095	.095	.035
CAUCASIAN (PEER)	34	.522	.273	.273	.002
CAUCASIAN (FUNPE)	34	.605	.366	.094	.040
AF. AMER. (VIGPA)	22	.550	.302	.302	.005

Similar results were found when a regression analysis was performed for the average daily intensity of physical activity. The peer acceptance subscale of the CAPA was the best predictor of average daily intensity (average daily calories expended per kilogram per minute) for the entire sample (n=76) accounting for 16.3% of the variance. Due to the significant difference for sex and an interaction between race and sex in intensity, separate linear stepwise regressions were again run for sex and race. Because partitioning the sample into sex and race decreased the number of cases, the subscales with the two or three highest correlations to average daily intensity of activity were entered into the analysis. Two variables (PEER, VIGPA) were entered into the regression procedure for African Americans, and three variables (FUNPE, LIKPA, PEER) were entered into the regression procedure for males, females, and Caucasians. The peer acceptance subscale on the CAPA was the best predictor of intensity for the males (n=34), accounting for 23.8% of the variance. The fun of physical exertion subscale of the CAPA was the best predictor of intensity for the females (n=47), accounting for 10% of

the variance. For Caucasian children (n=34), the peer acceptance subscale and fun of physical exertion subscale of the CAPA were the best predictors for intensity, accounting for a total of 42.3% of the variance. For African American children (n=23), the fun of physical exertion subscale of the CAPA was the best predictor of intensity, accounting for 29.7% of the variance. See Table 13 for specific regression results.

Table 13

Results of Linear Stepwise Regression on Intensity of Physical Activity

Predictor	n	R	R Square	R Square Δ	Significance
TOTAL (PEER)	76	.403	.163	.163	.000
MALES (PEER)	34	.488	.238	.238	.003
FEMALES (FUNPE)	47	.317	.100	.100	.030
CAUCASIAN (PEER)	34	.558	.311	.311	.001
CAUCASIAN (FUNPE)	34	.650	.423	.112	.020
AF. AMER. (FUNPE)	23	.545	.297	.297	.007

In summary, results were both expected and unexpected. Males scored higher than females on the peer acceptance, liking of games and sports, and fun of physical exertion subscales of the CAPA. No significant differences were found between race or sex in perceived competence, but an interaction between race and sex was found for perceived social competence. Males were found to be significantly more active than females in both average daily activity minutes and average daily intensity of physical activity, and African American males were found to be significantly more active than African American females in terms of both average daily activity minutes and average daily intensity.

Finally, the

the CAPA w

a whole or f

Finally, the peer acceptance, fun of physical exertion, and vigorous activity subscales of the CAPA were all predictors of physical activity, either for the participant population as a whole or for sex or race.

The pu

competence an

children in a d

were a result o

main effects fo

determine pos

overall predict

Result

attraction to p

hypothesis of

females on th

(PEER) subsc

(Seefeldt, Ew

boys and girl

shown a diffe

et al. study ex

examined ph

CHAPTER 5

DISCUSSION

The purpose of this study was to determine if differences existed in perceived competence and attraction to physical activity between race and sex among fifth grade children in a diverse, low socioeconomic area. Most of the differences noted in this study were a result of either main effects of sex or the interaction effects of race and sex. No main effects for race were found. Furthermore, a corollary question for this study was to determine possible predictors for physical activity. Peer acceptance seemed to be the best overall predictor of physical activity.

Results indicated that there were sex differences between males and females in attraction to physical activity. These results represented partial support for the first hypothesis of this study because it was expected that males would score higher than females on the attraction to vigorous physical activity (VIGPA) and peer acceptance (PEER) subscales with no difference on the other three subscales. Some prior research (Seefeldt, Ewing, & Walk, 1991) has shown no statistically significant difference between boys and girls in participant motives, while other prior research (Brustad, 1993) has shown a difference between boys and girls in participant motives. However, the Seefeldt et al. study examined youth sport participants, while this study and the Brustad study examined physical activity. Thus, it appears that there are no sex differences in

participant m

motives for p

The ir

physical activ

is possible th

participating

make the tean

exerting them

being with fri

participant m

closely becau

activity to st

increase the

Furth

the results f

subscales, p

differences

physical ac

study was

and liking

this study

subscale

participant motives for sport, but there are significant sex differences in participant motives for physical activity.

The implication that there are different motives between sexes for participating in physical activity is important, particularly for physical education and health instructors. It is possible that boys and girls who participate in organized sport have similar motives for participating because they possess the ability to play at a given level in order to simply make the team. On the other hand, boys who participate in physical activity may enjoy exerting themselves while they are out with their friends; whereas girls may simply enjoy being with friends, whether or not they are being physically active. This difference in participant motives between sexes for physical activity needs to be examined more closely because educators could be better informed about which aspects of physical activity to stress for both sexes. By stressing the proper points it may be possible to increase the number of children who become habitually physically active.

Furthermore, there were some differences between the results from this study and the results from Brustad's (1993; 1996) studies. In 1993 Brustad found that two subscales, peer acceptance and liking of games and sports (LIKPA), contributed to sex differences, and in 1996 Brustad found that the boys liked the vigorous aspects of physical activity and favorable peer relations in physical activity more than girls. This study was similar to both of Brustad's in that males scored higher on the peer acceptance and liking of games and sports subscales than females. Yet, it is important to note that in this study males also scored higher than females on the fun of physical exertion (FUNPE) subscale. Based purely on previous CAPA results, males scoring higher than females on

the fun of ph

that the popu

which may a

of exercise m

help account

Resul

no race differ

between Cau

CAPA subsc

important poi

or physical a

economics, c

Sever

competence,

1996; Ebbec

number of st

between mal

no support f

and Horn (19

lack of differ

Feltz & Petli

& Gill, 1995

the fun of physical exertion subscale was not expected. However, one must keep in mind that the population in this study is different from those in the other two Brustad studies, which may account for differences. Also, Brustad (1996) found that boys liked the vigor of exercise more than girls, and vigor is conceptually similar to exertion, which may also help account for differences between the current study and Brustad's two studies.

Results from previous research (Brustad, 1996; Seefeldt et al., 1991) have shown no race differences in participant motives. Similarly, there were no race differences between Caucasians and African Americans in this study as determined by scores for the CAPA subscales. These results supported the second hypothesis of the study. This is an important point to note because it suggests that differences in participating in either sport or physical activity are related to factors other than motive, such as opportunity, economics, or interest.

Several past studies have found males to be higher than females in perceived competence, particularly perceived physical competence (e.g., Brustad, 1993; Brustad, 1996; Ebbeck, 1994; Feltz & Petlichkoff, 1983; Williams & Gill, 1995). Despite the large number of studies in the literature that have found these differences, no difference between males and females in perceived competence was found in this study, resulting in no support for hypothesis three. However, Roberts, Kleiber, and Duda (1981) and Weiss and Horn (1990) also found no differences between sexes in perceived competence. This lack of difference is difficult to explain because studies on both sport (e.g., Ebbeck, 1994; Feltz & Petlichkoff, 1983), and physical activity (Brustad, 1993; Brustad, 1996; Williams & Gill, 1995) have revealed sex differences in perceived competence. One possible

reason for th

important th

participation

activity dom

between per

that children

se or in doin

eliminating

It w

competence

between His

literature su

accordance

between rac

despite no ra

interaction o

males scored

males report

explanation

from being

might obtain

possible exp

reason for the lack of difference is that boys tend to consider achievement status more important than girls do (Gill, Gross, & Huddleston, 1983), and although sport participation is usually competitive, there usually is not much competition in the physical activity domain. Additionally, intrinsic interest has been found to play a mediating role between perceived competence and effort (Williams & Gill, 1995), which could indicate that children participate in physical activity because they are interested in the activity per se or in doing active things with their friends without the element of competition, eliminating the possible need for exhibiting great competence.

It was expected that there would be no differences between races in perceived competence. Brustad (1996) found no differences in perceived physical competence between Hispanic and Caucasian children. No other studies found in the review of literature suggested any differences in perceived physical competence between races. In accordance with expected results, no differences in any areas of perceived competence between races were found, supporting the fourth hypothesis of this study. However, despite no race or sex main effects on perceived competence, there was a significant interaction of race and sex for perceived social competence (SOCPC). African American males scored higher than African American females, indicating that African American males reported more social competence than the African American females. A possible explanation for this is that African American males may obtain their social competence from being good at sport and physical activities, whereas African American females might obtain social competence from friends, family, or some other source. Another possible explanation is that African American females sexually mature slightly earlier

than Caucasi

1991). Thus,

have affecte

was not asse

One

mentioned in

role in childr

tend to rely

other stage o

Horn (1997)

comparison

and Harris (

relationship

criteria, and

The

in physical a

competence

motives. Sin

between phy

.72 was four

of the CAPA

peers plays a

than Caucasian females and decidedly earlier than most males (Malina & Bouchard, 1991). Thus, concerns about how they look or how others perceive how they look may have affected feelings about social competence. Unfortunately, sexual maturation status was not assessed in this study so one can only guess about its potential effects.

One must also seriously consider the effects of age on perceived competence, as mentioned in the review of literature. Horn and Harris (1996) reported that age can play a role in children's sources of perceptions of competence. During late childhood children tend to rely more on peer evaluation as a source of competence information than any other stage of childhood (Horn & Harris, 1996). In a recent study, Weiss, Ebbeck, and Horn (1997) found that children ages 10-14 relied almost exclusively upon social comparison and evaluation for sources of competence information. Furthermore, Horn and Harris (1996) reported that in 10-11 year-old sport participants there was a positive relationship between perceived competence and the use of peer comparison, internal criteria, and affect, which they deemed attraction to sport.

The relationship between perceived competence and motivation for participation in physical activity is important. Brustad (1993) found that perceived physical competence predicted attraction to physical activity, which was a measure of participant motives. Similarly, Weiss and Duncan (1992) noted a multivariate correlation of .75 between physical competence and peer acceptance variables. In this study a correlation of .72 was found between perceived physical competence and the peer acceptance subscale of the CAPA. At this particular age level (approximately 10 years old), the influence of peers plays a large role in determining perceptions of competence, and the reasons for this

influence m

Som

perceptions

part be due

Brustad, 19

who encour

than the chi

have been f

Gill, 1995).

significant p

source of g

suggests pa

Although in

considerati

reported liv

children lea

parent fami

Furthermor

possible th

socializatio

socializatio

research.

influence must be examined further.

Some researchers who have studied the relationship between peer influence and perceptions of competence have pointed out the possibility that this occurrence may in part be due to the effect of other social influences, particularly parents (Brustad, 1993; Brustad, 1996; Duda & Hom, 1993). Brustad (1993) found that the children of parents who encouraged them to be more physically active had higher perceptions of competence than the children whose parents did not encourage physical activity. Goal orientations have been found to be important in determining perceptions of competence (Williams & Gill, 1995). Children higher in either task or ego orientation were found to perceive their significant parent to be higher in that same orientation, suggesting that parents are a major source of goal orientation in children who play sports (Duda & Hom, 1993). This suggests parents were found to affect their children's perceptions of competence. Although influence of parents was not examined in this study, it is an important consideration, particularly when one notes that almost half of the participants (n=42) reported living with their mother only. It is possible that in a single-parent atmosphere, children learn to rely on their peers more often and at an earlier age than children in two-parent families due to the single-parent having less time to spend with children. Furthermore, because the single parent in this study was most often a female, it is possible that different socialization for boys and/or girls may have occurred than the socialization that occurs for children in two-parent families. However, speculation about socialization of children into physical activity in single-parent families requires more research.

It is d

studies exam

& Alcaraz, 1

activity resul

about intensi

by the Michi

guidelines co

preferably da

(Pivarnik, 19

average of a

variance is e

activity.

Inten

children's ac

activity. Bec

heart rate an

measureme

of heart rate

determine i

$mlO_2/kg/m$

multiples o

for a given

It is difficult to compare the physical activity results from this study to other studies examining physical activity (e.g., Freedson & Evenson, 1991; Sallis, McKenzie, & Alcaraz, 1993). This is due to the existence of different methods for assessing physical activity results. If one merely examines total activity minutes, no information is gained about intensity of activity, which is also an important factor. The position paper published by the Michigan Governor's Council on Physical Fitness, Health and Sports includes guidelines concerning physical activity for children. These guidelines suggest "regular, preferably daily, light to moderate physical activity for at least 30 minutes per day" (Pivarnik, 1995, p. 6). The average participant in this study was active for well over an average of approximately 30 minutes per day (M=89.7 min., SD=72.9). However, the variance is extremely large with some children participating in very little physical activity.

Intensity of activity was also calculated in an attempt to more accurately assess the children's activity. There are a few different methods for assessing intensity of physical activity. Because exercise physiologists assume that there is a linear relationship between heart rate and energy expenditure at submaximal, moderate-to-vigorous activity levels, measurement of heart rate is often used as an indicator of intensity. Often, measurement of heart rate is not feasible, and researchers use metabolic equivalents (METS) to determine intensity. One MET, the number assigned to energy expenditure at rest, is 3.5 $mlO_2/kg/min$ for adults. Different activities can be classified according to how many multiples of one MET (resting energy expenditure) they require. Total energy expenditure for a given activity can be determined by identifying the activity's MET value indicated

in a synopsis of published norms and multiplying by the duration of the activity (Ainsworth et al., 1993). MET values are the most common indicator of physical activity intensity reported in the literature.

However, there are two problems with using the established MET values when examining physical activity of children. The first problem is that children do not have the same resting energy expenditure as adults. The resting energy expenditure of children is higher than that of adults. Although different studies may have determined different values, one representative value cited in the literature is 4.82 ml/kg/min (Bray, Morrow, Pivarnik, & Bricker, 1992). The second problem is that children expend more energy to perform a given activity than adults (Sallis, Buono, & Freedson, 1991). No existing research has shown what the repercussions of this combination of problems might be when attempting to calculate children's intensity of physical activity.

When deciding how to analyze the data from the Child and Adolescent Activity Log (CAAL), Garcia, George, Coviak, Antonakos, and Pender (1997) attempted to incorporate these differences in their protocol. The investigators used established references for metabolic costs and multiplied by a correction factor (1.1) reported by Sallis, Buono, and Freedson (1991). This value was then multiplied by activity minutes to obtain an intensity value expressed in calories per kilogram body weight per minute. The reason body weight was not included in the analysis is because children who weigh more will naturally expend more calories. Thus, the data from both Garcia et al. (1997) and this study were analyzed on an absolute basis; however the correction factor used in this study was 1.18 (Sallis, Buono, & Freedson, 1991) because the participants were slightly

different ages (average approximately 10 years) than those in the Garcia et al. (1997) study (average approximately 12 years). To conclude, the most exact method for calculating intensity of children's activity has not been determined, and it was deemed satisfactory for the current study to consider intensity as Garcia and her colleagues defined it.

Results indicated that males spent more time being physically active than females and that there was no statistically significant difference between average daily activity minutes of African Americans and Caucasians. These results were expected and supported hypotheses six and seven. However, an interaction effect between race and sex was found. African American males reported a significantly higher number of average daily physical activity minutes than African American females. This interaction was most likely a notable contributor to the main effect found for sex.

Results also indicated that males were more intensely active than females and that no main effects were found for race in terms of average daily activity intensity. This finding was similar to Aaron et al. (1993), who found no difference between races in terms of intensity of exercise but did find that males exercised more intensely than females. However, an interaction effect between race and sex was found in this study. Similar to the results from average daily activity minutes, it was African American males who reported more intense activity than African American females. There are two main implications regarding the sex and race interactions for average daily activity minutes and average daily activity intensity. The first is that African American females were the least active segment of the populations considered in this study, which could be important

information for physical education and health instructors. Educators must recognize they are less active and determine ways to get them more interested in physical activity. The second implication is that the reason why African American females are less active should be determined and addressed. Although it was not possible to address this second implication in the current study, future research should be directed toward examining possible reasons why African American females are less active than their peers, especially with respect to how this relates to peer acceptance. Examining them in relation to females of other races would also help our understanding. Mode of activity or cultural factors may have some effect on decreased activity in African American females.

Children in this study appeared to be sufficiently active despite the lack of physical education they receive. When compared to the children from the Garcia et al. (1997) study, the children in this study appear to be slightly more active. Average daily duration of activity in the Garcia et al. (1997) study ranged from approximately 60-85 minutes across seasons, while average daily duration of the children in this study was approximately 90 minutes.

When intensity of activity was evaluated in this study, results were similar to those found for average daily activity minutes. The participants in this study appeared to be slightly more active than those in the Garcia et al. (1997) study in terms of intensity as well. Average daily intensity scores for the Garcia et al. (1997) study ranged from approximately eight to 11 calories per kilogram per minute, while the average for this study was approximately 13 calories per kilogram per minute.

However, the participants in the Garcia et al. (1997) study may have appeared

slightly less active than the participants in the current study as a result of several factors. First, Garcia and colleagues (1997) used a different correction factor than the one used in this study because of a variation in ages of the sample population. Use of a different correction factor alone may have influenced the calculations. Second, due to age differences, the participants in the Garcia study were at a different status of puberty than the participants in this study. Because physical activity has been found to decline around puberty and more of the participants in the Garcia study were likely to have reached puberty than those in this study, it is possible that maturation status caused lower physical activity levels in the Garcia population. Third, the Garcia study included data from fall, winter, and spring, while the data for this study were collected in late fall. Thus, weather may have affected the children's participation levels. Fourth, there were large standard deviations in both the Garcia study and this study, resulting in a large margin of error for both studies. Fifth, the Garcia study had a much larger sample than the current study, which may have accounted for the difference. Finally, errors in self-reporting may have occurred for both samples, also accounting for some differences in activity level.

The corollary question posed for this study indicated that certain variables would be tested as predictors of physical activity. After running a correlation matrix to discover which variables had the highest correlations with average daily activity minutes and average daily intensity, separate linear regression analyses were conducted for physical activity as both total activity minutes and intensity. Correlations between body mass index, average triceps skinfold, and average calf skinfold with the physical activity variables were poor, which was not a surprise when one considers no link has been made

between these types of anthropometric measures and activity for this age group (Bouchard & Shephard, 1994). The peer acceptance subscale of the CAPA was a significant predictor of average daily activity minutes for the entire sample, and for males, females, and Caucasians separately. In addition, the peer acceptance subscale of the CAPA was a significant predictor of average daily activity intensity for the entire sample, and for males and Caucasians separately. The fun of physical exertion subscale predicted average daily activity minutes for Caucasians and average daily activity intensity for females, Caucasians, and African Americans separately. The vigorous physical attraction subscale of the CAPA predicted average daily activity minutes for African Americans. Thus, the significance of peer acceptance, fun of physical exertion, and vigorous physical activity in relation to physical activity should be examined more closely.

The overwhelming prevalence of the peer acceptance subscale of the CAPA for predicting physical activity is particularly notable when one considers the link that was previously established between peer acceptance and perceived competence. Peer acceptance is a source of perceptions of competence for children and in turn affects actual activity levels. It is a common belief that sport participation improves social relations of children (Weiss & Duncan, 1992). Perhaps the relationship is in the opposite direction, i.e., social relations improve sport participation and physical activity participation. If this is true, implications for physical educators would then be to somehow attempt to develop favorable peer relations through more team-building types of exercises. Klint and Weiss (1987) found that children who perceived themselves as physically competent in sport also cited affiliation/team atmosphere as more important than those who reported lower

perceptions of competence. Regardless, this relationship between peer relations, perceived competence, and activity needs to be examined more closely.

In the review of literature, it was stated that studying non-active children is just as important as examining active children so researchers can determine what is keeping non-active children from participating in physical activities. Because this research took place in a public school setting, the primary investigator was hoping to obtain a population of participants who were both active and non-active. However, every participant in this study reported liking physical activity, meaning it is possible that non-active children were not included in the analyses. This possibility that there were few non-active participants could be the reason why the fun of physical exertion and vigorous physical activity subscales of the CAPA turned out to be predictors of physical activity. Naturally, children who are interested in physically exerting themselves are more likely to be physically active. If an equal number of active and non-active children (i.e., more children who reported disliking physical activity) had been included in this study, results may have turned out differently; therefore it is important that this issue be addressed in future research.

This study was an attempt to explore race and sex differences in attraction to physical activity and perceived competence. One must keep in mind that the results are limited to a diverse, low socioeconomic population. However, the results suggest that these children are not much different than those populations already included in published research, aside from the lack of difference in perceived competence between boys and girls.

In addition, results of this study seem to highlight that organized sport is different from health-related physical activity behavior. Motives for being physically active are different for boys and girls, although they are not different for race; whereas in sport there are no significant differences between sexes or races. Perceived competence for physical activity is not different between boys and girls or between races. However, the literature on differences in perceived competence in sport shows divided results between boys and girls and no differences between races. Furthermore, it is motives for being active that seem to dictate actual physical activity behavior, particularly peer-related motives. Thus, our understanding of physical activity behavior cannot be improved until physical activity is studied further as its own entity with respect to participant motives, particularly peer acceptance.

Educators can use the results of this study as a guide for making changes in curriculum. Because boys and girls appear to have different motives for being physically active, physical education instructors could consider teaching boys and girls separately on occasion. In fact, it may be beneficial to hold same-sex physical education classes, so that different motives can be addressed to the different sexes and embarrassment about puberty-related issues can be held to a minimum. Both boys and girls could be allowed to learn about physical activities that do not involve sport skills alone, i.e., teachers could stress some activities in which one can participate throughout the lifespan (e.g., dancing or bowling). Along with showing the children life-long physical activities, teachers could stress the importance of participating in some of these activities based on a health-related fitness perspective and based on an emphasis that these activities can be done with

friends, which may appeal to the peer acceptance variable that appears to be linked with physical activity participation. Finally, physical education and health instructors could speak frankly about why physical activity is important to people, explaining about cardiovascular risk factors and a healthy lifestyle.

There are some important implications for future research. First, the relationship of peer relations to perceived competence and physical activity should be examined more closely. Second, parental influence for sport has been widely examined, but the parental influence on perceived competence and physical activity behavior could be addressed more thoroughly, particularly in single-parent households. Third, non-participants still need to be included in analyses. Fourth, reasons why African American females are less active than African American males should be explored. Finally, better ways to assess physical activity should be determined and utilized in research with children.

APPENDIX A

MICHIGAN STATE
UNIVERSITY

Dear parent/guardian:

Karin Allor of Michigan State University is conducting a project to study children's physical activity levels, particularly with respect to reasons for participating in physical activity and perceived competence at physical activity. The project is approved by the Lansing School District.

Your child's participation in the project is being requested. Participating in the study will involve your child filling out some questionnaires and activity logs while he/she is in school. Your child's height, weight, and two measures of percent body fat will also be recorded. There are no foreseeable risks or discomforts to your child if he/she participates in this study. Participation is voluntary, and your child can discontinue participation at any time.

By participating in this study, your child will help determine active lifestyles of fifth grade children. It is possible that the results of this research study will be published, but your child's name or identity will not be revealed.

If you have any questions regarding the study, you may contact Karin at (517-333-3686) or Dr. Martha Ewing, the project supervisor, at (517-353-4652).

I have read and discussed the above information with my child and grant permission for my child to participate in this study. **Please have this form signed and returned to the school by November 18, 1996.**

COLLEGE OF
EDUCATION
Department of Physical Education & Exercise Science
Michigan State University
I M Sports Circle
East Lansing, Michigan
48824-1049
FAX 1-517/353-2944

Child's name_____ Parent/Guardian's name_____

Parent/Guardian signature_____ Date_____

Child's Signature_____ Date_____

APPENDIX B

APPENDIX B

Name_____

QUESTIONNAIRE

Directions: Please answer the following questions about yourself by filling in the blank, circling the correct choice, or checking the appropriate line:

Age_____ Birthdate_____ Sex M / F (Circle one)
Month/Day/Year

Race: ____ (1) Black ____ (2) Hispanic ____ (3) American Indian ____ (4) Asian

____ (5) White ____ (6) Biracial ____ (7) Other _____ (please identify)

Mother's Race: ____ (1) Black ____ (2) Hispanic ____ (3) American Indian

____ (4) Asian ____ (5) White ____ (6) Biracial (7) Other _____ (please identify)

Father's Race: ____ (1) Black ____ (2) Hispanic ____ (3) American Indian

____ (4) Asian ____ (5) White ____ (6) Biracial (7) Other _____(please identify)

Mother's Job_____ Father's Job_____

Who do you live with? _____ Both parents _____ Mother _____ Father _____Other

Directions: Below is a list of examples of physical activities:

Rollerblading	Basketball	Football	Soccer
Riding a bike	Dancing	Gymnastics	Running
Swimming	Recess games	Wrestling	Tennis

1. Do you like physical activity? _____Yes _____ No
   If your answer is yes, go to question 2
   If your answer is no, go to question 4
2. What is your favorite physical activity? _____

3. Why do you like your favorite physical activity?

(Go to question 5)

4. Why do you dislike physical activity?

Physical Activity Experiences

5. Are you a member of a sport team that is part of your school or do you plan to join one?

_____ Yes _____ No

Many groups (such as community centers, parks and recreation, churches, YMCAs, YWCAs) outside of schools provide sport teams for you to join and/or activity sessions (like swimming, bowling, and dancing) for you to go to. Think about your experiences on these teams and in these sessions and answer the following questions.

6. Are you a member of a sport team outside your school or do you plan to join one?

_____ Yes _____ No

7. Do you attend instructional physical activity classes like swimming, bowling, or dancing?

_____ Yes _____ No

8. Do you regularly go to a community center like the YMCA for activity?

_____ Yes _____ No

9. Do you regularly go to a park or playground to play games with your friends?

_____ Yes _____ No

APPENDIX C

APPENDIX C

WHAT I AM LIKE

Really true for me	Sort of true for me				Sort of true for me	Really true for me
		EXAMPLE				
A.____	____	Some kids like to eat ice cream more than anything else	BUT	Other kids like other foods more than ice cream	____	____
1.____	____	Some kids like playing outdoor games and sports	BUT	Other kids would rather play indoors	____	____
2.____	____	Some kids don't like getting sweaty when they exercise or play hard	BUT	Other kids don't mind getting sweaty when they exercise or play hard	____	____
3.____	____	Some kids have more fun playing games and sports than anything else	BUT	Other kids like doing other things	____	____
4.____	____	Some kids don't like to exercise very much	BUT	Other kids like to exercise a whole lot	____	____
5.____	____	Some kids get told by other kids that they are not very good at games and sports	BUT	Other kids are told that they are good at games and sports	____	____
6.____	____	Some kids feel really tired after they exercise or play hard	BUT	Other kids don't feel so tired after they exercise or play hard	____	____
7.____	____	Some kids get nervous or worried about playing games and sports	BUT	Other kids don't get nervous or worried about playing games and sports	____	____
8.____	____	Some kids get teased by other kids when they play games and sports	BUT	Other kids don't get teased when they play games and sports	____	____

Really true for me	Sort of true for me				Sort of true for me	Really true for me
9._____	_____	Some kids think that the more exercise they get the better	BUT	Other kids think that it is not good to get too much exercise	_____	_____
10._____	_____	Some kids don't make many friends when they play games and sports	BUT	Other kids make a lot of friends when they play games and sports	_____	_____
11._____	_____	Some kids don't enjoy exercise very much	BUT	Other kids enjoy exercise a whole lot	_____	_____
12._____	_____	Some kids try hard to stay in good shape	BUT	Other kids don't try hard to stay in good shape	_____	_____
13._____	_____	Some kids wish they didn't have to play games and sports	BUT	Other kids wish they could play more games and sports	_____	_____
14._____	_____	Some kids think that they will feel really good after they exercise or play hard	BUT	Other kids think that they will feel bad after they exercise or play hard	_____	_____
15._____	_____	Some kids don't like getting out of breath when they play hard	BUT	Other kids don't mind getting out of breath when they play hard	_____	_____
16._____	_____	Some kids think it is very important to always be in good shape	BUT	Other kids don't think it is so important to always be in good shape	_____	_____
17._____	_____	For some kids, games sports is their favorite thing	BUT	Other kids like other things more than games and sports	_____	_____
18._____	_____	Some kids don't think that exercise is so important for their health	BUT	Other kids think that exercise is very important for their health	_____	_____

Really true for me	Sort of true for me				Sort of true for me	Really true for me
19._____	_____	Some kids are popular with other kids when they play games and sports	BUT	Other kids are <u>not</u> popular with others when they play games and sports	_____	_____
20._____	_____	Some kids look for-ward to playing games and sports	BUT	Others kids <u>don't</u> look forward to playing games and sports	_____	_____
21._____	_____	Some kids like to burn a lot of energy by playing hard	BUT	Other kids don't like to burn a lot of energy by playing hard	_____	_____
22._____	_____	Some kids think that exercise is the most important thing for good health	BUT	Other kids think that other things are more important to good health than exercise	_____	_____
23._____	_____	Some kids really <u>don't</u> like to exercise	BUT	Other kids do like to exercise	_____	_____
24._____	_____	Some kids feel bad when they run hard	BUT	Other kids feel good when they run hard	_____	_____
25._____	_____	Some kids <u>don't</u> like to run very much	BUT	Other kids do like to run a whole lot	_____	_____

APPENDIX D

APPENDIX D

Really true for me	Sort of true for me				Sort of true for me	Really true for me
A._____	_____	Some kids like to play video games more than anything else	BUT	Other kids like to do other activities more than playing video games	_____	_____
1._____	_____	Some kids find it hard to make friends	BUT	For other kids it's pretty easy	_____	_____
2._____	_____	Some kids do very well at all kinds of sports	BUT	Others don't feel that they are very good when it comes to sports	_____	_____
3._____	_____	Some kids feel that there are a lot of things about themselves that they would change if they could	BUT	Other kids would like to stay pretty much the same	_____	_____
4._____	_____	Some kids have a lot of friends	BUT	Other kids don't have very many friends	_____	_____
5._____	_____	Some kids wish they could be a lot better at sports	BUT	Other kids feel they are good enough	_____	_____
6._____	_____	Some kids are pretty sure of themselves	BUT	Other kids are not very sure of themselves	_____	_____
7._____	_____	Some kids don't think they are a very important member of their class	BUT	Other kids think they are pretty important to their classmates	_____	_____
8._____	_____	Some kids think they could do well at just about any new outdoor activity they haven't tried before	BUT	Other kids are afraid they might not do well at outdoor things they haven't tried	_____	_____

Really true for me	Sort of true for me			Sort of true for me	Really true for me
9.____	____	Some kids feel good about the way they act	BUT Other kids wish they acted differently	____	____
10.____	____	Some kids are always doing things with a lot of kids	BUT Other kids usually do things by themselves	____	____
11.____	____	Some kids feel that they are better than others their age at sports	BUT Other kids don't feel they can play as well	____	____
12.____	____	Some kids think that maybe they are not a good person	BUT Other kids are pretty sure that they are a good person	____	____
13.____	____	Some kids wish that more kids liked them	BUT Others feel that most kids do like them	____	____
14.____	____	In games and sports some kids usually watch instead of play	BUT Other kids usually play rather than just watch	____	____
15.____	____	Some kids are very happy being the way they are	BUT Other kids wish they were different	____	____
16.____	____	Some kids are popular with others their own age	BUT Other kids are not very popular	____	____
17.____	____	Some kids don't do well at new outdoor games	BUT Other kids are good at new games right away	____	____
18.____	____	Some kids aren't very happy with the way they do a lot of things	BUT Other kids think the way they do things is fine	____	____

Really true for me	Sort of true for me			Sort of true for me	Really true for me
19._____	_____	Some kids are really easy to like	BUT Other kids are kind of hard to like	_____	_____
20._____	_____	Some kids are among the last to be chosen for games	BUT Other kids are usually picked first	_____	_____
21._____	_____	Some kids are usually sure what they are doing is the right thing	BUT Other kids aren't so sure whether or not they are doing the right thing	_____	_____

APPENDIX E

APPENDIX E

Daily Exercise Log

Name _____

Yesterday was: Sun. Mon. Tues. Wed. Thurs. Fri. Sat. (circle one) Write In: Month ____ Date ____

Did you do any activity yesterday? ☐ YES ☐ NO

If YES, complete items below.

Put a check mark (✓) by each activity that you did yesterday and circle the total number of minutes.

ACTIVITY	Check if done yesterday (✓)	Number of minutes?						
1. Walking	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
2. Jogging/Running	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
3. Ice/Roller Skating	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
4. Swimming for fun	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
5. Swimming laps	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
6. Bicycling	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
7. Aerobic/Other Dance	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
8. Volleyball	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
9. Football	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
10. Softball/Baseball	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
11. Soccer	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
12. Tennis/Racquetball/ Badminton	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
13. Basketball	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
14. Gymnastics/Tumbling	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
15. Ice Hockey	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
16. Recess Games like: jumping rope, Frisbee, tag	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
17. Snow Activities like: sledding, playing in snow	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
18. Exercises/Calisthenics	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
19. Martial Arts like: Karate, Tae Kwon Do	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
20. Weightlifting	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
21. Wrestling	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours
22. Other: _____	☐	1-10 mins	11-20 mins	21-40 mins	41-60 mins	1-2 hours	2-4 hours	>4 hours

7/27/93

APPENDIX F

APPENDIX F

Table 14

Means and Standard Deviations for the Interaction Between Sex and Race for CAPA Subscales

		VIGPA		PEER		LIKPA		FUNPE		IMPPA	
	n	M	SD	M	SD	M	SD	M	SD	M	SD
AA Males	13	3.45	.32	3.51	.27	3.57	.49	3.54	.40	3.71	.31
C Males	15	3.21	.55	3.25	.64	3.43	.68	3.40	.51	3.37	.61
AA Females	14	3.10	.52	2.59	.85	2.96	.79	2.91	.72	3.43	.65
C Females	24	3.27	.64	3.11	.48	3.21	.70	3.33	.55	3.26	.63

Table 15

Means and Standard Deviations for Sex and Race on Perceived Competence Subscales

n=65	SOCPC		PHYSPC		SELFPC	
	M	SD	M	SD	M	SD
Males	3.11	.60	3.02	.63	3.31	.63
Females	2.94	.63	2.70	.74	3.26	.57
Af. Amer.	2.99	.56	2.79	.68	3.23	.54
Caucasian	3.06	.66	2.93	.70	3.34	.65

LIST OF REFERENCES

REFERENCES

Aaron, D. J., Kriska, A. M., Dearwater, S. R., Anderson, R. L., Olsen, T. L., Cauley, J. A., & LaPorte, R. E. (1993). The epidemiology of leisure physical activity in an adolescent population. Medicine and Science in Sports and Exercise, 25(7), 847-853.

Ainsworth, B.E., Berry, C.B., Schnyder, V.N., & Vickers, S.R. (1992). Leisure-time physical activity and aerobic fitness in African-American young adults. Journal of Adolescent Health,13, 606-611.

Ainsworth, B.E, Haskell, W.L., Leon, A. S., Jacobs, D. R., Montoye, H.J., Sallis, J.F., & Paffenbarger, R. S. (1993). Compendium of physical activities: Classification of energy costs of human physical activities. Medicine and Science in Sports and Exercise, 25(1), 71-80.

Ainsworth, B. E., Montoye, H. J., & Leon, A. S. (1994). Methods of assessing physical activity during leisure and work. In C. Bouchard, R.J. Shephard, and T. Stephens (Eds.), Physical Activity, Fitness, and Health: International Proceedings and Consensus Statement (pp. 146-159).

Baranowski, T., Bouchard, C., Bar-Or, O., Bricker, T., Heath, G., Kimm, S. Y. S., Malina, R., Obarzanek, E., Pate, R., & Washington, R. (1992). Assessment, prevalence, and cardiovascular benefits of physical activity and fitness in youth. Medicine and Science in Sports and Exercise, 24(6, Suppl.), S237-S247.

Bar-Or, O. (1994). Childhood and adolescent physical activity and fitness and adult risk profile. In C. Bouchard, R.J. Shephard, and T. Stephens (Eds.), Physical Activity, Fitness, and Health: International Proceedings and Consensus Statement (pp. 931-942). Champaign, IL: Human Kinetics.

Bouchard, C. & Shephard, R.J. (1994). Physical activity, fitness, and health: The model and key concepts. In C. Bouchard, R.J. Shephard, and T. Stephens (Eds.), Physical Activity, Fitness, and Health: International Proceedings and Consensus Statement (pp. 77-88). Champaign, IL: Human Kinetics.

Braddock, J.H. (1980). Race, sports, and social mobility: A critical review. Sociological Symposium, 30, 18-38.

Bray
for estimati
179.

Bro
participatin
248-263.

Bru
Measureme

Bru
influences
223.

Bru
Parental so
67(3), 316-

Coa
path to suc
MO: Mosb

Cu
coronary b

Di
Medicine,

D
self-repor
Science,

E
participa
86.

E
Perceptio
players.

F
(1995).
choices

Bray, M.S., Morrow, J.R., Pivarnik, J.M., & Bricker, J.T. (1992). Caltrac validity for estimating caloric expenditure with children. Pediatric Exercise Science, 4(2), 166-179.

Brodkin, P., & Weiss, M. R. (1990). Developmental differences in motivation for participating in competitive swimming. Journal of Sport and Exercise Psychology, 12, 248-263.

Brustad, R.J. (1991). Children's perspectives on exercise and physical activity: Measurement issues and concerns. Journal of School Health, 61(5), 228-230.

Brustad, R. J. (1993). Who will go out and play? Parental and psychological influences on children's attraction to physical activity. Pediatric Exercise Science, 5, 210-223.

Brustad, R.J. (1996). Attraction to physical activity in urban schoolchildren: Parental socialization and gender influences. Research Quarterly in Exercise and Sport, 67(3), 316-324.

Coakley, J.J. (1994). Class relations and social mobility: Is sport participation a path to success? In Sport and Society: Issues and Controversies (p.274-301). St. Louis, MO: Mosby-Year Book Inc.

Cunnane, S. C. (1993). Childhood origins of lifestyle-related risk factors for coronary heart disease in adulthood. Nutrition and Health, 9, 107-115.

DiNubile, N. A. (1993). Youth fitness - Problems and solutions. Preventative Medicine, 22, 589-594.

Duda, J.L. & Hom, H. L. (1993). Interdependencies between the perceived and self-reported goal orientations of young athletes and their parents. Pediatric Exercise Science, 5, 234-241.

Ebbeck, V. (1994). Self-perception and motivational characteristics of tennis participants: The influence of age and skill. Journal of Applied Sport Psychology, 6, 71-86.

Ebbeck, V., & Stuart, M. E. (1993). Who determines what's important? Perceptions of competence and importance as predictors of self-esteem in youth football players. Pediatric Exercise Science, 5, 253-262.

Faucette, N., Sallis, J. F., McKenzie, T., Alcaraz, J., Kolody, B., & Nugent, P. (1995). Comparison of fourth grade students' out-of-school physical activity levels and choices by gender: Project SPARK. Journal of Health Education, 26(2), S82-S90.

Feltz, D.L. and Petlichkoff, L. (1983). Perceived competence among interscholastic sport participants and dropouts. Canadian Journal of Applied Sport Sciences, 8(4), 231-235.

Freedson, P. S., & Evenson, S. (1991). Familial aggregation in physical activity. Research Quarterly for Exercise and Sport, 62(4), 384-389.

Garcia, A.W., George, T.R., Coviak, C., Antonakos, C., & Pender, N. J. (1997). Development of the Child/Adolescent Activity Log: A comprehensive and feasible measure of leisure-time physical activity. Manuscript submitted for publication.

Gill, D.L., Gross, J.B., & Huddleston, S. (1983). Participation motivation in youth sports. International Journal of Sport Psychology, 14,1-14.

Goodway-Schiebler, J.D. (1994). The effect of a motor skill intervention on the fundamental motor skills and sustained activity of african-american preschoolers who are at-risk. Unpublished doctoral dissertation, Michigan State University, East Lansing.

Gould, D., Feltz, D., & Weiss, M. (1985). Motives for participating in competitive youth swimming. International Journal of Sport Psychology, 16, 126-140.

Gould, D. & Petlichkoff, L. (1988). Participation motivation and attrition in young athletes. In F. Smoll, R. Magill, and M. Ash (Eds.), Children in Sport (pp.161-178). Champaign, IL: Human Kinetics.

Harter, S. (1978). Effectance motivation reconsidered. Human Development, 21, 34-64.

Harter, S. (1979). The perceived competence scale for children. University of Denver.

Harter, S. (1982). The perceived competence scale for children. Child Development, 53, 87-97.

Horn, T.S. & Harris, A. (1996). Perceived competence in young athletes: Research findings and recommendations for coaches and parents. In F. Smoll and R. Smith (Eds.), Children and Youth in Sport (pp.309-329). Chicago: Brown and Benchmark.

Kenyon, G. S. (1968a). A conceptual model for characterizing physical activity. The Research Quarterly, 39(1), 96-105.

Kenyon, G. S. (1968b). Six scales for assessing attitude toward physical activity. The Research Quarterly, 39(3), 566-574.

King, A. C., Blair, S. N., Bild, D. E., Dishman, R. K., Dubbert, P. M., Marcus, B. H., Oldridge, N. B., Paffenbarger, R. S., Powell, K. E., & Yeager, K. K. (1992). Determinants of physical activity and interventions in adults. Medicine and Science in Sports and Exercise, 26(6, Suppl.), S221-S236.

Klesges, R., Eck, L. H., Hanson, C. L., Haddock, C. K., & Klesges, L. M. (1990). Effects of obesity, social interactions, and physical environments on physical activity in preschoolers. Health Psychology, 9(4), 435-449.

Klint, K. A., & Weiss, M. R. (1986). Dropping in and dropping out: Participation motives of current and former youth gymnasts. Canadian Journal of Applied Sport Sciences, 11(2), 106-114.

Klint, K. A., & Weiss, M. R. (1987). Perceived competence and motives for participating in youth sports: A test of Harter's competence motivation theory. Journal of Sport Psychology, 9, 55-65.

Malina, R.M. (1995). Anthropometry. In P.J. Maud & C. Foster (Eds.). Physiological Assessment of Human Fitness (pp. 205-219). Champaign, IL: Human Kinetics.

Malina, R.M. & Bouchard, C. (1991). Other factors affecting growth and maturation. In Growth, Maturation, and Physical Activity (p. 391-415). Champaign, IL: Human Kinetics.

McArdle, W., Katch, F., & Katch, V. (1986). Exercise Physiology: Energy, nutrition, and human performance (2nd ed.). Philadelphia: Lea & Febiger.

McCullagh, P., Matzkanin, K. T., Shaw, S. D., & Maldanado, M. (1993). Motivation for participation in physical activity: A comparison of parent-child perceived competencies and participation motives. Pediatric Exercise Science, 5, 224-233.

McMurray, R.G., Bradley, C.B., Harrell, J.S., Bernthal, P.R., Frauman, A.C., & Bangdiwala, S.I. (1993). Parental influences on childhood fitness and activity patterns. Research Quarterly for Exercise and Sport, 64(3), 249-255.

Oliver, M.L. (1980). Race, class, and the family's orientation to mobility through sport. Sociological Symposium, 30, 62-86.

Pambianco, G., Wing, R.R., & Robertson, R. (1990). Accuracy and reliability of the caltrac accelerometer for estimating energy expenditure. Medicine and Science in Sports and Exercise, 22(6), 858-862.

Paffenbarger, R.S., Hyde, R.T., Wing, A.L., Lee, I.M., & Kampert, J.B. (1994). Some interrelations of physical activity, physiological fitness, health, and longevity. In C. Bouchard, R.J. Shephard, & T. Stephens (Eds.), Physical Activity, Fitness, and Health: International Proceedings and Consensus Statement (pp.119-133). Champaign, IL: Human Kinetics.

Patterson, T.L., Sallis, J.F., Nader, P.R., Kaplan, R.M., Rupp, J.W., Atkins, C.J., and Senn, K.L. (1989). Familial similarities of changes in cognitive, behavioral, and physiological variables in a cardiovascular health promotion program. Journal of Pediatric Psychology, 14(2), 277-292.

Pivarnik, J.M. (1995). The importance of physical activity for children and youth. Paper commissioned by the Michigan Governor's Council on Physical Fitness, Health, and Sports, Lansing, Michigan.

Roberts, G.C., Kleiber, D.A., & Duda, J.L. (1981). An analysis of motivation in children's sport: The role of perceived competence in participation. Journal of Sport Psychology, 3, 206-216.

Sallis, J.F. (1991). Self-report measures of children's physical activity. Journal of School Health, 61(5), 215-219.

Sallis, J.F., Alcaraz, J.E., McKenzie, T.L., Hovell, M.F., Kolody, B., & Nader, P.R. (1992). Parental behavior in relation to physical activity and fitness in nine-year-old children. American Journal of Diseases in Children, 146(11), 890-896.

Sallis, J.F., Buono, M.J., & Freedson, P.S. (1991). Bias in estimating caloric expenditure from physical activity in children. Sports Medicine, 11(4), 203-209.

Sallis, J.F., Condon, S.A., Goggin, K.J., Roby, J.J., Kolody, B., & Alcaraz, J.E. (1993). The development of self-administered physical activity surveys for 4th grade students. Research Quarterly for Exercise and Sport, 64(1), 25-31.

Sallis, J. F., McKenzie, T. L., & Alcaraz, J. E. (1993). Habitual physical activity and health-related physical fitness in fourth-grade children. American Journal of Diseases in Children, 147, 890-896.

Sallis, J. F., Patterson, T. L., Buono, M. J., Atkins, C. J., & Nader, P. R. (1988). Aggregation of physical activity habits in Mexican-American and Anglo families. Journal of Behavioral Medicine, 11(1), 31-41.

Sallis, J.F., Patterson, T.L., McKenzie, T.L., & Nader, P.R. (1988). Family variables in preschool children. Developmental and Behavioral Pediatrics, 9(2), 57-61.

Sallis, J. F., Simons-Morton, B. G., Stone, E. J., Corbin, C. B., Epstein, L. H., Faucette, N., Iannotti, R. J., Killen, J. D., Klesges, R. C., Petray, C. K., Rowland, T. W., & Taylor, W. C. (1992). Determinants of physical activity and interventions in youth. Medicine and Science in Sports and Exercise, 24(6, Supplement), S248-S257.

Schultz, R.W., Smoll, F.L., Carre, F.A., & Mosher, R.E. (1985). Inventories and norms for children's attitudes toward physical activity. Research Quarterly for Exercise and Sport, 56(3), 256-265.

Seefeldt, V., Ewing, M., and Walk, S. (1991). An overview of youth sports programs in the United States. Paper commissioned by the Carnegie Council on Adolescent Development, Washington D.C.

Siegel, S. R. (1995). Growth and maturity status of female soccer players from late childhood through early adulthood. Unpublished master's thesis, University of Texas, Austin, Texas.

Simon, J. A., & Smoll, F. L. (1974). An instrument for assessing children's attitudes toward physical activity. The Research Quarterly, 45(4), 407-415.

Stucky-Ropp, R. C., & DiLorenzo, T. M. (1993). Determinants of exercise in children. Preventative Medicine, 22, 880-889.

Tappe, M. K., Duda, J. L., & Ehrnwald, P. M. (1989). Perceived barriers to exercise among adolescents. Journal of School Health, 59(4), 153-155.

U.S. Department of Health and Human Services. Physical Activity and Health: A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 1996.

Weiss, M.R. & Chaumeton, N. (1992). Motivational orientations in sport. In T. Horn (Ed.), Advances in Sport Psychology (pp.61-99). Champaign, IL: Human Kinetics.

Weiss, M.R. & Duncan, S. C. (1992). The relationship between physical competence and peer acceptance in the context of children's sports participation. Journal of Sport and Exercise Psychology, 14, 177-191.

Weiss, M.R., Ebbeck, V., and Horn, T. S. (1997). Children's self-perceptions and sources of physical competence information: A cluster analysis. Journal of Sport and Exercise Psychology, 19, 52-70.

Weiss, M. R., & Horn, T. S. (1990). The relation between children's accuracy estimates of their physical competence and achievement-related characteristics. Research Quarterly for Exercise and Sport, 61(3), 250-258.

Williams, L. & Gill, D. L. (1995). The role of perceived competence in the motivation of physical activity. Journal of Sport and Exercise Psychology, 17, 363-378.