

PARENTAL INFLUENCE ON THE PHYSICAL ACTIVITY BEHAVIOR OF
SCHOOL-AGE CHILDREN IN A SOCIO-ECONOMICALLY DIVERSE
COMMUNITY

by

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DEDICATION

This is dedicated to my loving wife Cathy, my two wonderful daughters, Christi and Kim; and my parents, LTC (USAF Retired) Roland R. and Helen Holt.

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LIST OF ABBREVIATIONS OR SYMBOLS

Children's Attraction to Physical Activity Scale	CAPA
Children's Physical Activity Correlates Scale	CPAC
Parental Influence Scale.....	PI
Perceived Athletic Competence Scale	PC
Physical Activity Questionnaire – Children	PAQ-C
Socio-Economic Status	SES
Youth Physical Activity Performance Model	YPAP

ABSTRACT

PARENTAL INFLUENCE ON THE PHYSICAL ACTIVITY BEHAVIOR OF SCHOOL-AGE CHILDREN IN A SOCIO-ECONOMICALLY DIVERSE COMMUNITY

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George Mason University, 2015

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The intent of this study was to evaluate the relationships among selected factors of parental influence and the physical activity behavior of children ages 8-11 in a socio-economically diverse setting. The Youth Physical Activity Promotion Model (YPAP) (Welk, 1999) served as the theoretical framework for this study. Many concerns have been raised about the academic performance, self-esteem, self-image, and physical fitness (including levels of diabetes, obesity and other diseases) among youth. While a variety of factors contribute to trends in decreasing academic test scores, increased behavioral issues and an increase in childhood health related issues, it is recognized that decreased levels of physical activity may play a significant role. A cross-sectional study was conducted of 136 children (aged 8-11) attending an elementary school in northern Virginia with a majority-minority student population. Students were administered a survey to assess level of physical activity, attraction to physical activity, perceived athletic competence and parental influence (i.e., encouragement, involvement, facilitation

and role modeling). Parent feedback was collected during a parent focus group. Analyses indicate parental influence has a direct effect on child physical activity behavior, and that perceived athletic competence and attraction to physical activity play indirect roles. The study findings validate the YPAP model for school age children in a socio-economically diverse community. Parents have a strong influence on their children's physical activity behavior regardless of socio-economic status, safety and the built environment. In this study students had a high level of physical activity and participated in a number of different activities. Students appear to have benefited from a collaborative effort to increase awareness of the importance of physical activity, and increase the level of physical activity behavior in the community. The effort involved the school administration, recreation departments, physical education teachers, city government, local non-profit organizations, and parent volunteers coming together to overcome obstacles (e.g., built environment, parental safety concerns).

CHAPTER I: INTRODUCTION

Physical activity has been shown to provide physical, social, emotional and cognitive benefits to individuals of all ages, but most specifically children as they continue to develop and grow (Weiss & Barnett, 2010; Weiss & Wiese-Bjornstal, 2009). Despite the known benefits of physical activity (i.e., enhanced academic performance, self-esteem, self-image, and physical fitness), research suggests that the amount of physical activity in which children participate within and outside the school day continues to decrease (Halpern, 2003; Hofferth, 2009; Siedentop, 2009). The reasons for this decline are complex (e.g., urban design, the built environment, safety concerns, increased media usage, changes in social interaction, and changes to school policy) (Halpern, 2003; Tomkinson & Olds, 2007). In addition to not experiencing the benefits of physical activity, adults and children can experience health related issues due to a more sedentary life style and decreased level of physical activity.

Hill, Nowak, and Christakis (2010) predict that adult obesity will reach 40 percent over the next forty years, an increase of 15 percent over the past two decades. The prevalence of children in the United States classified as “at risk for overweight” or “overweight” has tripled in the past 20 years exceeding 30 percent (Budd & Volpe, 2006). Clearly, childhood obesity trends now mirror adult obesity trends. Childhood obesity results in numerous negative health consequences (e.g., Type II Diabetes, hypertension, sleep apnea, social exclusion, depression) placing an economic and social

burden on society (Nemet, Barkan, Epstein, Friedland, Kowen & Eliakim, 2005).

Extremely troubling is that childhood obesity can influence the chances of being obese as an adult, and experiencing the same health consequences.

Given the recognized advantages of physical activity, it would seem that children would be more inclined to participate as they grow; but research indicates that this is not the case. Internationally, physical activity has been shown to decline as children increase in age (Bradley et al., 2011). Clements (2004), surveying over 800 mothers in the United States, found that children spent much less than half the time playing outdoors than their parents did when they were children. In a survey of 2,000 English parents, children were found to spend an average of five hours playing outside per week which was just half of the amount time their parents had spent outside when they were children (Winter, 2013). Hofferth (2009) considered the trend in children's activities from 1997 and 2003, and noted that "probably the most unexpected [finding] was the decline in participation in sports and outdoor activities" (p. 46). Such a decline has significant consequences for the health and fitness of children. The factors impacting time spent playing sports and outdoors, include increased use of media and parental concerns of crime and safety issues, should be considered in terms of reducing sedentary behavior and increasing physical activity among children.

Socio-economic and cultural factors also play a role in the level of physical activity experienced by children. Socio-economic status has been shown to be related to barriers to physical activity in given neighborhoods (e.g., constraints to organized sport opportunities). De Lauzon and Charles (2004) state that "socioeconomic status can have

an impact on the level of physical activity or the sedentary lifestyle of subjects” (p. 1), affirming Lynch, Kaplan, and Salonen (1997), who concluded that childhood socio-economic status (SES) is strongly related to subsequent adult participation in physical activity. Specifically, Roberts and Foehr (2008) found in general children; adolescents and teenagers spend over six hours per day using various types of media. The types of media used by this group vary based on race, age, ethnicity, socio-economic status and psychosocial factors. White youth tend to spend more time on the computer while African-American and Hispanic youth appear to spend more time with media overall, specifically television. Roberts et al. (1999) observed that: “Among 8-18 year-olds, the patterns for racial/ethnic sub-groups changes somewhat. First, the magnitude of the overall differences in media exposure increases dramatically” and second “relative to White youngsters, Hispanic 8-18 year olds spend over an hour a day more than White kids with television, movies and video games” (p. 22). This increased focus on screen time may detract from discretionary time and the opportunity to engage in other activities.

Additionally, the built environment is shown to have an impact on the amount of time students play outside or are involved in physical activity. Safety and crime concerns impact level of physical activity (Carver, Timperio & Crawford, 2008; Davison & Lawson, 2006; Tappe et al., 2013; Weir, Etelson & Brand, 2006). Further, safety concerns and the built environment can create barriers to children participating in physical activity. Wilson et al. (2004) noted that residents in lower SES areas perceive they have fewer safe areas for use by children for physical activity. Parents’ concerns

about safety can have a significant impact on the physical activity levels of their children (Weir, et al., 2006). For example, if parents have concerns about the safety of the environment in which they live, they are more likely to encourage their children to participate in sedentary activities (Tandon et al., 2012). Gorden-Larsen et al. (2006) found that children living in lower SES and high-minority locations may have less access to facilities which in turn result in decreased levels of physical activity. Thus parents concern in relation to safety of their child can create a barrier to participating in physical activity.

School administrators seek to comply with the standards set in the No Child Left Behind legislation, parents try to cope with safety concerns regarding children playing outside, and children are hampered by a built environment that does not promote active walking and biking to school. Schools are under pressure to improve test scores on state and national academic tests. As a result, less time is being allocated during the school day for physical activity. This decline in school-based physical activity may negatively impact academic performance. Rasmussen and Laumann (2013) noted that exercise not only promoted improved academic performance but also cognition and self-esteem in healthy children. Castelli et al. (2007) found that physical fitness was positively related to academic achievement among a population of third and fifth graders from a diverse socio-economic background. Students were selected from four schools from the same district in the Illinois school system. Two of the schools were high performing in math and reading, and 24.6% of the students received free and reduced lunch. The other two schools were below the standard for reading and math, and 60% of the students received

free and reduced lunch/breakfast. While some school districts have reduced time spent on physical education others have introduced creative programs aimed at increasing time spent promoting physical activity (Donnelly & Lambourne, 2011; Flores, 1995). In allaying arguments against increasing time spent in physical education Ahamed et al. (2007) found that a model targeted to increase physical activity time for children during the school day could successfully be implemented without a reduction in academic performance.

Stemming from this theory, Welk, Wood, and Morss (2003) examined parental influence on physical activity of children in a predominantly white, middle class suburban setting. The authors considered a number of factors affecting child physical activity behavior (i.e., children's attraction to physical activity, perceived athletic competence, parental role modeling, parental encouragement, facilitation and involvement). Welk et al. noted that "parents influence children both directly and indirectly" and that "social-cognitive-based constructs provide a reasonable explanation for how this influence is mediated" (p. 29).

In developing the Youth Physical Activity Promotion model (YPAP), Welk (1999) considered how social cognitive theory, theory of reasoned action and social ecological theory all impact child physical activity behavior. A factor in social cognitive theory is self-efficacy, or "people's beliefs about their capabilities to exercise control over events that affect their lives" (Bandura, 1989, p. 1175). Self-efficacy is an important factor in motivating people to move to action. "People's self-efficacy beliefs determine their level of motivation, as reflected in how much effort they will exert in an endeavor

and how long they will persevere in the face of obstacles. The stronger the belief in their capabilities, the greater and more persistent are their efforts” (Bandura, 1989, p. 1176). Social cognitive theory also deals with interpersonal influence on behavior which provides a connection between parental support and child physical activity behavior (Bandura, 1986). This theory frames the psychosocial dimensions influencing physical activity, self-efficacy, social influences and beliefs about activity outcomes. These psychosocial dimensions have been found to intervene and moderate child physical activity levels (Crim, Hensley, & Finn, 2009; Hohepa, Scragg, Schofield, Kolt & Schaaf, 2007; Huang, Wong, Salmon, & Hui, 2011; Strauss, Rodzilsky, Burack & Colin, 2001; and Welk et al., 2003).

The research of Welk and colleagues (2003) was based on a primary goal of promoting child physical activity, initiating a comprehensive investigation of the impact of parental influence on physical activity as mediated by gender, ethnicity and socio-economic status. The Youth Physical Activity Promotion (YPAP) “model provides a conceptual framework for understanding the factors that may predispose, enable, and reinforce a child to be physically active” (p. 18).

Extending this work, Smith (2004) studied African American students and similarly found that parents have a direct and indirect influence on children’s physical activity. Welk et al. (2003) and Smith (2004) both recommended that future research look at the role of parental influence on physical activity levels in a more socio-economically diverse population setting. Based on these recommendations, the current research study focused on a school with a majority- minority student population. Determining what

mechanisms affect parental influence on children's physical activity would support future intervention efforts. Building upon Welk et al. (2003), the purpose of this research was to study the relationship among parental influences and the physical activity behavior of children in the third through fourth grade in a socio-economically, culturally/racially diverse community in Northern Virginia.

Hypotheses

Based on a thorough review of the literature, the following hypotheses have been proposed to assess a modified version of Welk's (1999) Youth Physical Activity Promotion Model (see Figure 1), including the direct and indirect interrelationships among parental influence, perceived competence, attraction to physical activity, and children's level of physical activity participation. Specifically, it is hypothesized that:

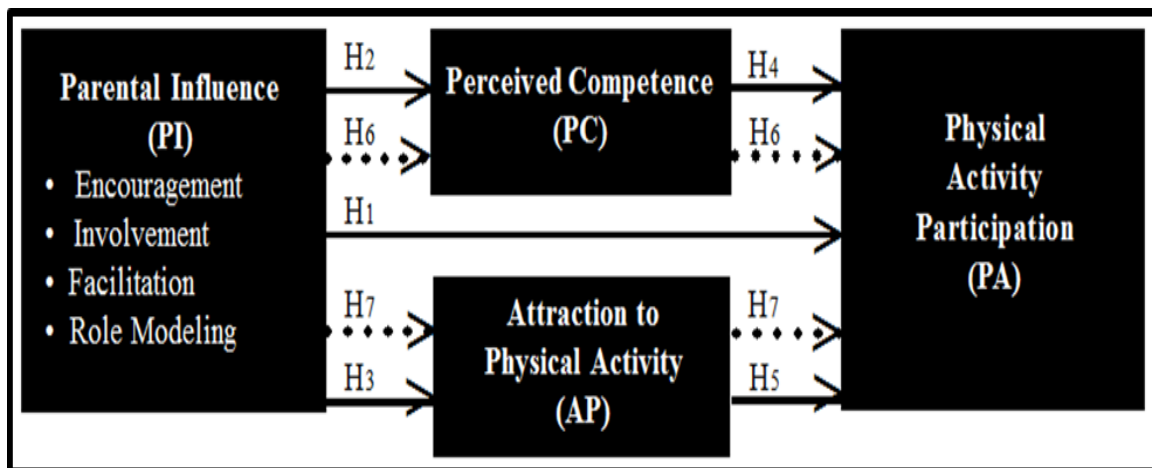


Figure 1. Modified Youth Physical Activity Participation Model

H1: There will be a significant relationship between Parental Influence (PI) and level of Physical Activity Participation (PA), specifically:

- PI is directly and positively related to PA;
- Encouragement (PIenc) is directly and positively related to PA;
- Involvement (PIinvolve) is directly and positively related to PA;
- Facilitation (PIfac) is directly and positively related to PA; and
- Role-modeling (PIrole) is directly and positively related to PA.

H2: There will be a significant relationship between Parental Influence (PI) and Perceived Competence (PC), specifically:

- PI is directly and positively related to PC;
- Encouragement (PIenc) is directly and positively related to PC;
- Involvement (PIinvolve) is directly and positively related to PC;
- Facilitation (PIfac) is directly and positively related to PC; and
- Role-modeling (PIrole) is directly and positively related to PC.

H3: There will be a significant relationship between Parental Influence (PI) and Attraction to Physical Activity (AP), specifically:

- PI is directly and positively related to AP;
- Encouragement (PIenc) is directly and positively related to AP;
- Involvement (PIinvolve) is directly and positively related to AP;
- Facilitation (PIfac) is directly and positively related to AP; and
- Role-modeling (PIrole) is directly and positively related to AP.

H4: There will be a significant and direct relationship between Perceived Competence (PC) and level of Physical Activity Participation (PA).

H5: There will be a significant and direct relationship between Attraction to Physical Activity (AP) and level of Physical Activity Participation (PA).

H6: There will be a significant indirect and positive relationship between Parental Influence (PI) and level of Physical Activity Participation (PA) moderated by Perceived Competence (PC).

H7: There will be a significant indirect and positive relationship between Parental Influence (PI) and level of Physical Activity Participation (PA) moderated by Attraction to Physical Activity (AP).

Definitions

The following terms will be used throughout this study and are defined as:

Academic Performance - Academic performance is used to describe factors that may influence student success in school (Centers for Disease Control, 2010, p. 8). These factors fall into three primary areas:

- Cognitive Skills and Attitudes (e.g., attention/concentration, memory, verbal ability).
- Academic Behaviors (e.g., conduct, attendance, time on task, homework completion).
- Academic Achievement (e.g., standardized test scores, grades).

Attraction to Physical Activity - Brustad (1993) defined behavioral attraction as a reflection of positive feelings toward a skill or subject. In this study attraction to physical activity was assessed through the use of the Children's Attraction to Physical Activity Scale developed by Brustad. The scale asks children questions such as "I have more fun playing games and sports more than anything else."

Obesity - For adults, overweight and obesity ranges are determined by using weight and height to calculate "body mass index" (BMI). BMI is used because, for most people, the result correlates with amount of body fat. An adult who has a BMI of 30 or higher is considered obese (Centers for Disease Control and Prevention, 2013).

Childhood Obesity - The Center for Disease Control (CDC) attempts to avoid using the term obesity because children are still growing. The CDC identifies two levels of overweight for children (1) at risk for overweight defined as BMI between the 85th and 95th percentiles and (2) overweight/obese is defined as a BMI at or above the 95th percentile for children of the same age and sex. BMI is used as a screening tool to identify possible weight problems for children (Centers for Disease Control and Prevention, 2013).

Parental Influence - includes the influence of parental physical activity, encouragement, engagement, parental support for child physical activity, parenting style, and family cohesion on child and adolescent activity behavior (Welk et al., 2003)

- Encouragement – Overt efforts by parents to encourage their child to be active. Scale items include statements such as "My parents encourage me to

try hard at games and sports,” and “My parents remind me to do some physical activity.”

- Involvement – Overt forms of support for child physical activity. Scale items include statements such as “My parents play games and sports with me”, and “My parents help me with sports.”
- Facilitation – Parent’s passive efforts to provide access or opportunities for the child to be active. Scale items include statements such as “My parents buy me sports equipment,” and “My parents take me to parks and play grounds.”
- Role Modeling – Parent’s interest in activity and their efforts to be physically active. Scale items include statements such as “My parents are in really good shape,” and “My parents like to walk and bike for exercise.”

Perceived Competence - Perceived competence is an individual’s judgment about his or her ability in a particular area (Weis, 2000). Weis states that youth who have a high perceived competence are more likely to enjoy the activities in which they are involved. The opposite is true for children with low perceived competence. Exercise programs designed for children should allow for development of a level of high perceived competence or that competence should be attainable. This is important in forming lifelong physical activities which will benefit the children. PC consists of those elements that motivate individuals to participate in particular activities (Harter, 1978, 1981). According to Harter, people are motivated to achieve competence academics, athletics and peer relationships. Children are particularly motivated by a perception of mastery in

these areas and that perceived mastery motivates them to continue efforts to increase skill or competency (Burlinson, 2010).

Physical Activity - Any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level (United States Department of Health & Human Services, 2008). The World Health Organization (WHO) recommends that people aged 5–17 should accumulate at least 60 minutes of moderate to vigorous physical activity daily. According to the Society of Health and Physical Educators (SHAPE) America, physical activity is bodily movement of any type and may include recreational, fitness, and sport activities. In fact, physical activity is almost anything that involves the muscular and skeletal systems (SHAPE America). The benefits of regular physical activity include: reduced risk for overweight, diabetes and other chronic diseases, improved academic performance, children feel better about themselves, reduced risk for depression and the effects of stress, helps children prepare to be productive, healthy members of society and improved overall quality of life (Castelli et al., 2007; Cawley, Frisvold & Meyerhoefer, 2013; Crews, Lochbaum & Landers, 2004; Hollar et al., 2010; Janssen et al., 2010; Nemet et al., 2005)

Self-Esteem - Considered an important component of emotional health, self-esteem is the way individuals perceive themselves and their self-value encompassing both self-confidence and self-acceptance. Self-esteem is the way individuals think and feel about themselves and how well they do things that are important to them. In children, self-esteem is shaped by what they think and feel about themselves (“Self-Esteem”, The Encyclopedia of Children’s Health n.d.).

Delimitations and Limitations

This study was delimited to third and fourth grade students attending Jennie Dean Elementary School in Manassas, Virginia. The student population is socio-demographically diverse, and was specifically selected as such, as previous studies related to physical activity promotion have focused primarily on children from white, middle or upper class families. The survey data were collected in June 2012 based on availability of students at the conclusion of the school year, after completion of the Standards of Learning (SOL) testing mandated by the Commonwealth of Virginia to demonstrate mastery of core subjects [Note: The SOL test is based on expectations for student learning and achievement in grades K-12 in English, mathematics, science, history/social science, technology, the fine arts, foreign language, health and physical education, and driver education (Virginia Department of Education, 2012)]. Data collection was delimited to use of a series of scales, specifically the Children's Attraction to Physical Activity Scale; Perceived Competence Scale; Parental Influence Scales; and the Physical Activity Questionnaire for Children. These instruments were developed by Brustad (1993, 1996), Harter (1982, 1985), and Kowalski et al. (1997), respectively.

The study was further delimited in that it is a cross-sectional design which does not allow for establishment of causality. The data collection for this research project took place the first week of June 2012, immediately prior to the conclusion of school. As a result, the scope of the project was smaller than initially planned. A more robust research study would call for a longitudinal collection of data, or a cohort study to assess parental

influence on physical activity behavior of students pre-school through high school. The data on child physical activity was self-reported, so there may be possible error in estimation, as well as response rate bias that affects representation by social-economic status. Socio-economic measurements used in this study predict only a modest amount of variation in student's physical activity. Future studies should include other relevant predictors such as physical environment and peer influence. The built environment and concerns for safety can play a major role in limiting the amount of time children spend involved in physical activity.

The findings of this study may also be limited by the response rate and the honesty of the participants. Parents who are more active may be more likely to have given permission for their children to participate in the study. In turn, the students may have felt that they needed to inflate physical activity data in order to make their school look "better." The sample size may be too small to provide data enabling generalization of the findings in this population. Additional constraints included funding for the project to provide trained research assistants, incentives for completing questionnaires, use of accelerometers and mailing of surveys. The use of subjective (self-report) physical activity measures might be a source of error as compared to a more objective measure such as direct observation or use of an accelerometer (Troiano et al., 2008). Cultural bias may affect the assessment of physical activity of students; students may not associate with some of the physical activities on the measurement tool, as these activities may fall outside of their cultural frame of reference. The time of year the study was performed may have similarly limited the results. In particular, favorable weather conditions and end

of year activities in school may affect the student's perspective on parental influence as well as personal level of physical activity. Future studies should focus on seasonal variations in activity patterns. The researcher's involvement in planning for a family fitness night in October preceding the collection of data may have influenced the results by increasing parental and student awareness of physical activity opportunities.

CHAPTER II: LITERATURE REVIEW

The intent of this study was to examine parental influence on children's physical activity levels, and moderation by perceived competence and children's attraction to physical activity. The positive outcomes of physical activity include improved academic performance, self-esteem, self-image physical health and mental well-being (Castelli et al., 2007; Cawley et al., 2013; Crews et al., 2004; Hollar et al., 2010; Janssen et al., 2010). The negative outcomes of sedentary behavior include obesity and diabetes (Mitchell et al., 2009; Nemet et al., 2005). Hispanic/Latino children are at greater risk of sedentary behavior and obesity (Nyberg et al., 2011; Olvera et al., 2010; Salud America! 2011). Children's physical activity behavior is influenced by factors including parents, peers, media, safety concerns, built environment, children's attraction to physical activity and perceived competence (Cairney, et al., 2012; Davison et al., 2006; Gordon-Larson, et al., 2006; Hofferth et al., 2009; O'Connor et al., 2009; Paxton, Estabrooks, & Dziewaltowski, 2004; Trost et al., 2003). Therefore the purpose of the study is to examine the effects of parental influence on a population of elementary school students from a diverse ethnic and socio-economic background. Within this chapter, a review of the literature is presented focused on physical activity participation, obesity, and constraints to physical activity participation. Other key areas also discussed in this chapter include

perceived competence, attraction to physical activity and parental influence on child physical activity behavior.

Physical Activity

One key area for promoting mental and physical health in children is the impact of physical activity and exercise. Physical activity is any body movement that works the muscles and uses more energy than used when at rest. Walking, running, dancing, swimming, yoga, and gardening are additional examples of physical activity. Exercise is a type of physical activity that is planned and structured. Lifting weights, taking an aerobics class and playing on a sports team are examples of exercise (United States Department of Health and Human Services, Guidelines for Physical Activity, 2008). Weiss and Barnett (2010) discuss the developmental health benefit of physical activity. These benefits include physical fitness, feelings of social acceptance, positive identity, body image, and self-esteem, and academic achievement. Given the benefits of physical activity, and possible negative outcomes from sedentary behavior, it could be assumed that there would be a significant focus on increasing child physical activity behavior.

Physical activity can be a lifelong habit that contributes to the well-being of children as they grow to adulthood. Dishman (2001) reported that “(a) only 8 percent to 20 percent of the U.S. population regularly participates in vigorous physical activity; (b) 30 percent to 59 percent of the U.S. population has relatively sedentary lifestyles; and (c) 50 percent of the individuals who start regular physical activity programs drop out within six months” (p.280). If adults are incapable of engaging in the levels of physical activity needed for health and fitness what impact does this have on children? The research

focused on child physical activity behavior indicates that both boys and girls exhibit a steady decline in levels of physical activity as they age. The decline has been shown to start around 9 years of age, with the most significant drop between ages 14-18 (Allison et al., 2007; Nader et al., 2008). The results of the *2001 Youth Risk Behavior Study* showed that physical activity was declining at all grade levels during high school with minorities participating at significantly lower levels (Grunbaum et al., 2002). A result of these findings has been a renewed focus on determining what is causing the decline in physical activity among children and what interventions can be used to reverse the trend.

The level of physical fitness of school aged children has continued to decline. Overall in the United States, the percentage of students participating in physical education classes in school decreased during the 1990s and is still under 30 percent for students in grades 7-12 (Budd & Volpe, 2006). One of the reasons this has happened is that administrators and school boards believe that students need to spend more time on academics (Ahamed, Macdonald, Reed, Naylor, Liu-Ambrose, & McKay, 2007). However, a Canadian study conducted by Trudeau and Shephard (2008) demonstrated that physical activity can be added to the school day by taking time from other subjects without the risk of adverse impact on student academic achievement. The authors also found that “adding time to “academic” or curricular” subjects by taking time from physical education does not enhance grades in these subjects and may be detrimental to overall health.”

Research studies have found that Hispanic/Latino children exercise less than their non-Hispanic counterparts (Olvera, et al., 2010). This decreased physical activity may be

connected to cultural phenomena among Hispanics (Morales et al., 2002), including factors associated with acculturation (Liu et al., 2009), language (Springer et al., 2009); and perception of body size (Killion et al., 2006).

Physical activity interventions can be used to increase physical activity and reduce sedentary behavior among Hispanic children. Gesell et al. (2008) found a positive correlation between social influence and physical activity in pre-adolescent Hispanic/Latinos. It appears to indicate that Hispanic parents and family units may have a positive impact on increasing physical activity levels among Hispanic youth. As the family is the most important social unit in Hispanic/Latino culture, future research should examine interventions that support and reinforce the influences of the social unit to encourage physical activity (Padilla & Villalobos, 2007).

Outcomes of Physical Activity

Academic achievement. A number of research studies indicate that academic achievement is associated with physical activity. Eveland-Sayers et al. (2009) found “significant relationships among components of health-related physical fitness and mathematics academic achievement scores” (p. 101). Physical activity may play a role in reducing stress and improving mood, self-image, and self-esteem which, in turn, may contribute to academic achievement. Castelli et al. (2007) studied a group of third and fifth grade students and found that “associations were demonstrated in total academic achievement, mathematics achievement, and reading achievement, thus suggesting that aspects of physical fitness may be globally related to academic performance in preadolescents” (p. 239). A research brief from Active Living Research (2007) identified

fourteen published studies that demonstrated a link between physical activity and academic performance, and that health studies in four different countries, including the United States, "observed statistically significant positive correlations between physical activity participation and academic performance" (p. 3).

The findings of the research focused on the connections between physical activity and academic achievement is mixed. While Rasmussen (2013) found no notable difference in academic achievement, as a factor of physical activity, there was an improvement in the emotional state of the children participating in the studies. Given that psychological factors have been found to impact academic achievement, there appears to be a connection between physical activity and academic achievement that should be given further attention. Additionally, providing more time for physical activity in school does not appear to degrade academic performance. As research has shown that increased physical activity can lead to improved academic performance both schools and parents should look for opportunities to provide additional time for children to participate in physical activity.

Self-Esteem. Many of the studies of physical activity and its cognitive effects on children also considered how physical activity influences self-esteem (Lee & Hopkins, 2013, Miller et. al, 2008). Tremblay, Inman and Willms (2000) found that physical activity had a significant effect on the self-esteem of male and female 6th graders, as did Crews et al. (2004) in a study of Hispanic 4th graders. The more physical activity the students engaged in the higher their self-esteem. Strauss (2000) studied the impact of obesity on the self-esteem of children age 9 and 10. He found that obese Hispanic

females demonstrated lower self-esteem as they moved into adolescence. Physical activity can play a role in building the self-esteem of Hispanic children thereby promoting improved mental and physical well-being. Physical activity can lower the risk of overweight and obesity in children thus reducing the risk of declining self-esteem. Children's self-esteem is related to how they see themselves in relation to others. High self-esteem can influence body image, social interaction, academic performance, perceived competence to physical activity and fitness. Based on these outcomes physical activity should be promoted as a factor contributing to self-esteem.

Obesity

Thirty percent of the United States population is now considered obese and the trend is increasing; if nothing is done to intervene by 2050, the obesity rate is predicted to reach forty-two percent (Hill et al., 2010). Childhood obesity rates are mirroring the growth in adult obesity rates. The economic and social costs of obesity are significant and have negative consequences for society and the individual (Wang & Dietz, 2002, Wang, et al., 2008, Wang et al., 2011). Childhood obesity has been found to be a strong predictor of adult obesity. So what can be done to prevent or treat childhood obesity, and thus reduce the growth of adult obesity? Physical activity and exercise are interventions that can be used in the prevention and treatment of childhood obesity. Research studies have found that more time spent on physical activity helps reduce weight, reduce body mass, improve health, improve fitness and improve academic performance. Hollar et al. (2010) studied the impact of a two year intervention utilizing dietary, curricula, and physical activity components, on BMI and academic performance. Results indicated that

a higher percentage of those elementary school students ages 6 through 13 who received the intervention, versus control group school children, stayed within the normal BMI range or decreased their BMI, and had significantly higher math scores. Hispanic and White intervention school children were more likely to have higher math scores. These results affirm those of Nemet et al. (2005) in a combined dietary-behavioral-physical activity intervention with children ages 6 through 13.

The United States Department of Health and Human Services (2010) conducted a review of fifty studies involving physical activity and academic performance. The review found that slightly more than half (50.5 percent) demonstrated a positive relationship between physical activity and improvement in academic performance. Carrel et al. (2005) conducted a study to see if a school based fitness program could improve body composition, cardiovascular fitness, and insulin sensitivity in overweight children. Researchers found that children enrolled in fitness-oriented classes showed greater loss of body fat, increase in cardiovascular fitness and improvement in fasting insulin levels as compared to the control group. Ribeiro et al. (2010) conducted a review of five school-based physical education intervention studies involving Latin American youth in elementary and middle school settings. Results indicated that high quality school physical education programs positively increase levels of child physical activity.

Schools can act as a catalyst to promote healthy lifestyles and encourage children to participate in physical activity. However, additional opportunities must be provided outside of the school setting in order to make a significant change in behavior. Successful implementation of prevention and treatment interventions for childhood

obesity is best accomplished by creating a collaborative effort in the community. Groups such as schools, parents, public health organizations, recreation departments, transportation organizations, businesses and non-profit organizations need to come together to provide a focused effort to reverse the current trend. Future research should be conducted on the impact of multi-layered approaches to childhood obesity prevention and treatment.

Concern over increased levels of obese and overweight Americans is not new. However, it seems that the level of concern is growing. Of specific concern is the increased percentage of obesity among children and adolescents. A sedentary lifestyle, increased consumption of calories, and lack of physical activity have contributed to the growth of obesity in children in the United States and around the world (Caballero, 2007; Kosti & Panagiotakos, 2006). Regardless of the causes of obesity, it is clear this is a major epidemic that could impact many facets of American life. In a study on the economic costs of obesity and inactivity, Colditz (1999) found that the direct costs of inactivity and obesity account for 9.4 percent of the national health care expenditures in the United States. Wang and Dietz (2002) studied the health issues and economic burden associated with childhood obesity. Looking at data files from the National Hospital Discharge Survey, 1979-1999, the authors found that the hospital discharges of youths for all obesity-associated diseases increased over the period 1979-1999. The estimated cost of hospital visits for youth rose from \$12.6 million in 1979-1981 to \$110 million in 1997-1999. Direct health care costs of obesity (defined as a BMI greater than 30 percent) in the United States in 1995 included: Type II Diabetes, 36.6 billion; Cardiopulmonary Heart

Disease, 16.2 billion; Hypertension, 7.6 billion; Gall Bladder Disease, 4.3 billion; Cancer, 1.65 billion and Osteoarthritis, 3.6 billion. In a 2011 study conducted by Wang et al., it was found that the annual extra medical cost of obesity in the USA in 2003 was estimated at \$75 billion.

The community in which one lives, the socio-economic climate, governmental and societal focus on education and health, and engagement in physical activity all affect the success of possible interventions. Childhood obesity trends are now mirroring adult obesity trends. “In the past 23 years, obesity rates among adults have increased by 15%, among teens by nearly that much, and even among children younger than 5 by 10 percent” (Cox & Chamberlain, 2010, p. 2). The prevalence of American children classified as “at risk for overweight” or “overweight” has tripled in the past 20 years and currently exceeds more than 30 percent (Budd & Volpe, 2006). Recent studies indicate that being overweight or obese in childhood can predict overweight later in life (Deckelbaum & Williams, 2001) Prevention and treatment of childhood obesity is paramount if the trends are going to be turned around.

Childhood obesity. As with adult obesity, childhood obesity results in negative health consequences. Childhood obesity is associated with many of the same adult health issues including Type II Diabetes, hypertension, sleep apnea, social exclusion and depression. As troubling as these health issues are during childhood, the greatest concern for childhood obesity is that it can influence the chances of having obesity as an adult. Data from four longitudinal studies were reviewed and showed that the probability of being overweight at 35 years of age for children with BMI in the 85th to 95th percentiles

increased with increasing age (Deckelbaum & Williams, 2001). Several research studies over the past decade have indicated that obese children have a high likelihood of growing into obese adults (Freedman et al.; 2005, Singh et al, 2008; Whitaker et al., 1997).

Obesity in children may more immediately impact psychological and social well-being. Negative stereotypes and characterizations were found during studies involving the peers of obese children (Koroni et al., 2009; Puhl & Latner, 2007; Zeller, Reiter-Purtill, & Ramey, 2008). Lobstein, Baur, and Uauy (2004) studied American women who were obese as adolescents, and found that as adults they had lower educational attainment, lower income, experienced higher rates of poverty and had a lower likelihood of marriage, compared with thinner women. Although these psychological and social impacts may not, in turn, impact number of friends, self-esteem, or body satisfaction during adolescence, they may have a lasting effect on individuals in adulthood (Annis, Cash & Hrabosky, 2004).

Globally, over 42 million children under five years of age are overweight (World Health Organization, 2010). Changes in social trends have contributed to the increase in childhood obesity. Changes in social norms, environment, and the availability of twenty four hour restaurants and grocery stores also contribute to these changes. These changes include: “increase in use of motorized transport to school, increase in traffic hazards for walkers and cyclists; decrease in opportunities for recreational physical activity; and increased sedentary recreation” (Lobstein, et al., 2004, p. 7).

A comparison of obesity rates in industrialized countries indicates that the childhood obesity trend is much lower in the Scandinavian countries and the Netherlands

(The Organization for Economic Cooperation and Development [OECD], 2005). In the United States 30.6 percent of the population is obese, in the Netherlands the number is 10 percent, Denmark is 9.7 percent, Sweden is 9.5 percent and Norway at 8.3 percent (OECD Health Data, 2005). Of primary importance are the preferred modes of transportation, nutrition, and an overall focus on providing fitness opportunities for all citizens. The top four countries in use of bicycles as a major mode of transportation are the Netherlands, Denmark, Sweden and Norway. In the Netherlands, 28 percent of the population bike and 18 percent walk for transportation to and from various locations such as work and school (Pucher & Dijkstra, 2003). These countries also have programs that encourage children to be involved in physical activity, exercise and sports (Nauright, et al., 2010). The focus on active transportation and active play supports the creation of habits that continue into adulthood and promote healthy behavior. In comparing obesity statistics between these countries and the United States it appears that factors such as opportunities for recreation, use of alternate modes of transportation, government focus on wellness and inclusion of significant physical activities in school for students, all play a part in the prevention and treatment of obesity.

Treatment interventions for childhood obesity focus on reversing obesity trends and creating a sustainable balanced lifestyle between fitness and nutrition. Prevention differs from treatment in that the interventions are focused on preventing children from becoming obese. Interventions for the treatment and prevention of obesity are necessary to address the steady rise in childhood obesity.

Obesity and Latino children. Increased sedentary behavior and lower levels of physical activity are becoming issues for children from all ethnic and socio-economic levels. Previous studies utilizing the Youth Physical Activity Promotion model have examined primarily white suburban population samples. Given that the United States is growing more socio-economically diverse, it is appropriate to examine how the model applies to this changing population.

Among diverse populations, the Hispanic/Latino segment is the fastest growing ethnic group in the United States. The United States Census Bureau (2010) projects that the Hispanic population will grow from 15 percent of the population in 2010 to 24 percent by 2050. Considering this growth, studies should be conducted to provide a more complete picture of how increased sedentary behavior and lower levels of physical activity impact all children.

The decline in physical activity behavior of children impacts the rates of obesity and overweight for populations of children from all ethnic and socio-economic backgrounds. At the same time, statistics show that Hispanic/Latino youth are more likely to be overweight or obese than their white peers (Salud America! 2011). More than 38 percent of Hispanic/Latino youth are overweight and almost 21 percent are obese (Ogden, Carroll, Curtlin, Lamb, & Flegal, 2010). This increases the odds for Hispanic/Latino youth to develop health and psychological problems. If successful interventions can be identified that support increased levels of physical activity, and lower the rates of obesity for Hispanic/Latino children, such efforts may provide insights that will benefit the growing diverse population in the United States.

Research indicates that there are environmental and socio-economic factors that pose barriers to physical activity and facilitate sedentary behavior among Hispanic/Latino youth (Nyberg, Ramirez, & Gallion, 2011). Centrella-Nigro (2009) cited socio-economic status, diet, and physical activity, Hispanic/Latino perception of body image and acculturation in examining causes of overweight and obesity in Hispanic/Latino children. Perez, Hoelscher, Brown, and Keider (2007) studied eating patterns and food consumption among children and adolescents (4th, 8th and 11th grade students in Texas). Almost 40 percent of study subjects were Hispanic. Perez, et al. found that the fourth graders had the healthiest eating habits while the eleventh graders had the worst; however, the fourth graders had the highest level of overweight. Unanswered was whether or not the overweight was due to excess calorie intake or lack of physical activity.

To prevent or treat obesity, researchers must find ways to help parents work with their children and the community to overcome barriers and encourage higher levels of child physical activity. Butte, Puyau, Adolp, Vohra and Zaken (2007) conducted a cross-sectional assessment of the physical activity of Hispanic/Latino youth using accelerometers. The authors found that total physical activity among these youth declined as they got older. The researchers recommended efforts be made to increase the time spent in moderate to vigorous activity by United States Hispanic/Latino children and adolescents, with special attention given to the overweight, girls, and adolescents.

Constraints to Physical Activity Participation

Media usage. The amount of free time that children spend using media has increased over the last few decades, as children have increased access to technology in both the home and classroom. Improvements in technology have coincided with changes in the way children spend time, with more time being spent involved in sedentary behaviors. Studies by Hofferth and Sandberg (2001) and Hofferth (2009) show that an increasing amount of children's leisure time is spent watching television, watching videos and playing computer games. African American and Hispanic/Latino children watch more television and videos than do White children (Kumanyika & Grier, 2006); while white children spend more time on computers and surfing the Internet. This increase in sedentary activity reduces the time and benefits of physical activity and puts children at risk for health related issues. Anderson and Bucher (2006) found that the increase in overall media usage puts minority children at risk for obesity and diabetes. A contributing factor to increased media time can be found in parental safety concerns which result in children being kept indoors. Thus safety concerns and the built environment also contribute to the increase in media usage.

Safety concerns and the built environment. Safety concerns about traffic and crime as well as the type of physical environment in which a person lives can create barriers to physical activity (Davison & Lawson, 2006; Gordon-Larson et al., 2006; Franzini et al., 2009; Tappe et al., 2013). If parents are concerned about the safety of their children they are less likely to let them play outside, travel to a park, or take active transportation to school. Safety concerns often become a constraint on the level of

physical activity in which children are engaged. Carver, Timperio & Crawford (2008) found, in a review of research studies concerning safety and physical activity, that low levels of active transport and physical activity in a neighborhood were associated with perceived neighborhood safety. This review confirms previous studies related to perceptions of safety and child physical activity (Molnar et al., 2004, Weir et al., 2006). If a child lives in an area lacking sidewalks and having unsafe roadways, they are less likely to engage in higher levels of physical activity. Issues with the built environment often disproportionately affect members of minorities and lower socio-economic groups. Zhu (2008, p. 282) found that “low income, Hispanic children are likely to live in unsafe areas with poor street environments,” and that this factor contributes to reduced levels of child physical activity. Gorden-Larsen et al. (2006) found that people of “lower-socio-economic status, and high-minority block groups, had reduced access to facilities, which in turn was associated with decreased physical activity” (p. 417).

Perceived Competence

Harter (1982) developed the Perceived Competence Scale for Children to assess a child’s sense of confidence across cognitive, social and physical domains. The author found that the scale provided meaningful feedback in four areas: “cognitive competence in school, social competence with peers, physical competence in sport, and general self-worth” (p. 88). The largest correlation among the subscales involved the social and physical competence scales. This correlation may indicate that peer popularity in school is related to physical achievement in activities and sport. The sample population

consisted of over 2,000 boys and girls in third grade through ninth grade from middle to upper class families in California, Colorado and Connecticut.

Welk (1999), in developing the Youth Physical Activity Promotion model, saw perceived competence as a pre-disposing factor affecting the level of physical activity experienced by children. Welk, Wood, and Morss (2003) modified an assessment subscale for physical competence to examine parental influences on physical activity of a sample population consisting of 944 predominantly Caucasian children from diverse socio-economic backgrounds. Smith (2004) mirrored Welk's research looking at a sample population of one hundred and ten primarily African-American children in third through sixth grade. Both Smith and Welk et al. found that parents indirectly influence their children's physical activity behavior through perceived competence and attraction to physical activity.

Cairney et al. (2012) used Harter's (1982) Perceived Competence Scale to examine associations among gender, perceived athletic competence, and enjoyment of physical education among fourth grade girls and boys. The study found that "enjoyment of physical education makes continued engagement in physical activity more likely; if children do not enjoy physical education, they may be less likely to lead an active lifestyle, and to realize the associated health benefits" (p. 7). This finding is consistent with other studies (Bois et al., 2005; Gao, 2008; Ziviani et al., 2006) demonstrating the effectiveness of Harter's Perceived Competence to be valid across a variety of studies.

Attraction to Physical Activity

Brustad (1996) conducted a study to examine whether the factors involved with children's interest in physical activity are influenced by gender and parental influence. To ensure that the findings of the study could be generalized, he included a participant population that included 107 children from fourth through sixth grades. The student ethnicity was predominantly Latino (66 percent) and the students came from lower socioeconomic family settings. Brustad (1993) focused on Children's Attraction to Physical Activity (CAPA), and Perceived Physical Competence and Parental Socialization and found a significant relationship between parental socialization processes and children's perceived physical competence and attraction to physical activity. Paxton et al. (2004) conducted a study focused on interaction of attraction to physical activity, perceived competence and physical activity with a group of females, ages nine to fourteen, involved in 4H. The findings suggested that there is a relationship between attraction to physical activity, perceived competence and physical activity behavior. Researchers have used the Children's Attraction to Physical Activity Scales to assess parental influence and children's attraction to physical activity and have found the scales to be valid and reliable (Paxton et al., 2004; Rose et al., 2009; Smith, 2004; Welk et al., 2003).

Parental Influence

A number of studies have demonstrated that parents play a key role in the level of their child's physical activity (O'Connor, Jago & Baranowski, 2009; Welk, 1999; Welk et al., 2003; Trost et al., 2003). Welk (1999) evaluated the utility of a mediational model used to explain parental influence on children's physical activity behavior. The model

used to guide this research is based on the Youth Physical Activity Promotion (YPAP) model, a socio-ecological model developed specifically to characterize and explain factors influencing children's physical activity behavior. In building his model, Welk looked to Bandura's (1986, 1988) work with Social-Cognitive Theory or the process of knowledge acquisition or learning directly correlated to the observation of role models. These models can be those of an interpersonal imitation or media sources. Effective modeling teaches general rules and strategies for dealing with different situations (Bandura, 1986).

In his research on the physical activity behavior of children, Trost et al. (1997) used social cognitive theory and the YPAP model. Trost et al. concluded that "physical activity self-efficacy, participation in community sports, and beliefs regarding physical activity outcomes were found to be important predictors of physical activity behavior" (p. 262). The results of the research confirmed the hypothesis that parents influence children both directly and indirectly, and supported the general premise that parents have a strong influence on the physical activity habits of their children. These analyses reveal that parents influence children through a variety of specific behaviors.

A number of research studies have focused on parental modeling, encouragement and support. Smith (2004) utilized Welk's (1999) YPAP model to look at parental influence on the physical activity of African American students and found results consistent with Welk's findings. Trost et al. (2003) evaluated a model of parental influence on youth physical activity. The purpose of the study was to test a conceptual model linking parental physical activity orientations (parental physical activity, and

perceived importance of physical activity) and parental instrumental support for physical activity participation. Parental physical activity behavior, parental enjoyment of physical activity and perceived importance of PA were positively associated with parental support. Parental support, in turn, was related to child PA both directly and indirectly through positive association with child self-efficacy perceptions. The findings in relation to parental support suggest that intervention programs should adopt strategies that will increase the frequency with which parents and caregivers (1) transport their child to and from PA venues, (2) watch their child participate in sport and PA, (3) participate in sport and PA with their child, and (4) positively reinforce activity with their child for participating in sport or PA.

The influence of parental modeling has been examined and results appear to demonstrate that parental modeling does not have a strong influence on child physical activity levels. Trost et al. (2011) conducted a review of 52 studies focused on the relationship between parent physical activity and child physical activity and found that only 33% of the associations were significant and positive. A question for future research is whether the majority of the parent's physical activity took place in the absence, or presence, of their child. If the activity took place without the child then the opportunities for learning would be minimal, and the relationship between parent's and child's activities would not be significant. Bradley et al. (2011) found that parents and child involvement, together, in physical activity, and the parent's own level of physical activity, were associated with the level of physical activity for both boys and girls.

Parental influence through role-modeling and participation in physical activity decreased as children age. Alderman, Benham-Deal, and Jenkins (2010) took a developmental approach to examine parental influence on children's physical activity levels over time (i.e., as the parents and children get older). The findings suggested a moderate to strong relationship between parents' and young children's physical activity patterns: "As parents and children age, however, the association between their physical activity behaviors wanes" (p. 65). Two studies examining the influence of parents on their pre-school children's physical activity found that parents' enjoyment of physical activity was a significant predictor of child physical activity behavior (Loprinzi & Trost, 2010; Zecevic et al., 2010). Based on these results, it appears that parents can have a greater influence on their child's physical activity through role modeling earlier in life but that this influence decreases over time.

Efforts to engage families to spend time together, communicate with each other, and develop strong family bonds are likely to promote self-esteem and, thereby, physical activity (Ornelas, Perreira, & Ayala, 2007). Parents should focus on encouraging their children to be more active as a way to be fit and healthy. Davison et al. (2002) found that mothers and fathers provide similar levels of encouragement but tend to use different methods. Mothers provide more logistical support while fathers are more likely to use their own behavior to encourage activity. Loprinzi and Trost (2010), in a study of pre-school children, found that parental support for their child's physical activity was positively associated with physical activity at home, but not at school. Social support and logistical support appear to be key factors in parents influencing children's physical

activity behavior (Raudsepp, 2006). There is evidence that general social support from families may foster higher levels of physical activity during adolescence. There appears to be a need to help parents be more deliberate and consistent in their actions so that they might have some impact on the decline parents have on child physical activity behavior during adolescence. Encouraging parents to provide transportation to physical activity and sport opportunities is warranted (Bradley et al., 2011). Future research could build on this study by examining associations between parental support and children's activity using more diverse sample of children and families with non-traditional living situations (e.g., step-parents, single-parent households, adoptive parents, same sex marriages with children, grandparents or aunts and uncles caring for children), by using a longitudinal design to assess the temporal sequence of parental support and children's physical activity, by assessing additional domains of parental support, and by using a direct measure of physical activity.

Summary

In summary, the lack of physical activity among children is a growing concern. Physical activity plays a role in the positive mental and physical development of children, including enhanced academic performance and strong self-esteem. Lack of participation has been shown to influence physical and mental health (e.g., obesity, diabetes, depression). Hispanic/Latino children are disproportionately impacted by sedentary behavior. Lower levels of physical activity can create barriers to success in school and contribute to health issues related to obesity and diabetes. Parents can have a significant influence on the level of child physical activity behavior. How ethnic and socio-economic

status affects parental influence on children's physical activity behavior is not well understood. This study focused on parental influence on the physical activity of school age children in a socio-economically diverse community; in turn, validating the YPAP model and clarifying appropriate physical activity promotion strategies for the growing Hispanic and Latino population in Virginia.

CHAPTER III: METHODOLOGY

A low level of physical activity among children is a growing issue which can have significant impacts on their health and lifestyles over time. Participation in physical activity has been shown to be related to academic performance and self-esteem, and act as a possible intervention to health related issues. Hispanic/Latino children are at a higher risk for low levels of physical activity which can contribute to poor performance in school and health related issues. Research is needed to examine the factors that influence children's involvement in physical activity (e.g., Parental Influence, Parental Encouragement, Parental Involvement, Parental Facilitation, Parental Role Modeling, Attraction to Physical Activity, Perceived Competence). Key among these is parental influence. The purpose of this research was to study the relationship among parental influences and the physical activity behavior of children in the third through fourth grade in a socio-economically diverse community in Northern Virginia. Research has shown that parents have a direct influence on their children's physical activity participation, in fact their support of child physical activity behavior, their own level of physical activity, and their enjoyment of physical activity has been shown to predict the extent to which their children engage in the recommended level of physical activity (Heitzler, Martin, Duke, & Huhman, 2006; Loprinzi & Trost, 2010; Raudsepp, 2006; Zecevic et al., 2010).

In this chapter, a review of methodology is presented, specifically the sample selection process, data collection method, instrumentation, and methods of analysis.

Subjects

Purposeful sampling was used in order to have a student population of diverse socio-economic status. Study subjects were drawn from a population comprising approximately 300 students in the third and fourth grades who attended Jennie Dean Elementary School in Manassas, Virginia. There were five classes of third graders with an average class size of 24, and four classes of fourth graders with an average class size of 27. This location was selected based on the diversity of the student body, the fact that none of the students walk or bike to school, and the proximity of an after-school program in which many of the students are enrolled. Many previous studies of parental influence have been conducted with sample populations that were majority Caucasian and middle to upper socio-economic status (Trost et al., 2003, Welk et al., 2003). The student population at this elementary school is 59 percent Hispanic/Latino, 19 percent Caucasian, 16 percent African American, 3 percent identified as 2 more races, 2 percent Asian/Pacific Islander and 1 percent Native American (National Center for Education Statistics, 2014). The mixed socio-economic status is further evidenced by the fact that 62 percent of the students at the elementary school were eligible for the free and reduced lunch program (Virginia Department of Education, 2012). Students are not permitted to walk or bike to the school even though there are accessible sidewalks and paths. It is presumed that walking and biking are prohibited due to safety and liability concerns, although the school policy predates the current elementary school administration. There

is a Boys and Girls Club within walking distance from the school and students from the elementary school participate in after-school programs and activities.

The research protocol and all collection instruments were approved by the George Mason University Institutional Review Board (Appendix A and B).

Data Collection.

Student Survey. An email was sent by the researcher to the school division requesting permission to conduct the survey. In turn, the researcher met with division representatives including the Supervisor of Administrative Services for the Manassas School District; and the Principal, School Nurse, and the head Physical Education teacher of Jennie Dean Elementary School, to finalize plans for the student survey. The school notified parents about the study being conducted in concert with the school system with a parental notification letter sent via email (Appendix C). The letter explained the purpose of the research and methods. Per school policy, parents were asked to respond to the letter if they *did not* want their children to participate in the research (Appendix D). The school also included information concerning the study in a newsletter that was sent out to parents (Appendix E).

The researcher, with support from the physical education teachers, administered the survey during the regular fifty minute physical education class (Appendix F). The data collection was carried out on two consecutive days (June 4-5, 2012). The first group of students, on the morning of June 4, completed the survey in the gymnasium while sitting on the floor; the second group, on the afternoon of June 5, completed the survey in the lunch room sitting at tables.

The physical education teacher introduced the researcher to the students. The researcher explained the purpose of the study and student rights. Participants were told that only the researcher would have access to the information, and they were informed of the purpose of the research, specifically to assess their current physical activity level and their attitudes towards physical activity and sport. The researcher told the students that their participation would provide valuable information for future research and practice and that this was not a test. The questions were read to the students who in turn completed the survey. The physical education teacher moved around the room to ensure questions were being completed and to notify the researcher if the students had questions about the survey. Physical activity was defined for the students as any activity which gets your body moving, or makes you breathe hard. A few examples of physical activity (e.g., walking, running, bicycling) were provided to assist with understanding the questions. The student assent form, which the researcher explained verbally at the start of the session, noted the participants could withdraw from the study at any time and for any reason (Appendix G). Students whose parents declined permission for them to take the survey, or decided they did not want to take the survey, were asked to sit quietly in a group away from the students taking the survey. Students who declined to participate were monitored by the physical education teacher in the first session and by their classroom teachers in the second session. The students interacted quietly during this time.

Each class comprised 3rd or 4th grade students with an average of 26 students per class. Ninety-five percent of the students in third and fourth grade take physical education

classes. The other five percent of students do adapted physical education; these students were excluded from this study.

Parent Focus Group. Parents were invited to attend a focus group meeting held after the data was collected from the students. The invitation was sent to parents through the electronic communications network used by the Parent Teacher Organization (personal communication with Sandy Thompson, Supervisor of Administrative Services, City of Manassas Schools). The focus group took place on Tuesday, June 5, 2012, from 10:00 a.m. through 12:00 p.m. in the school theater. Pastries, juice, and coffee were provided for participants. The Supervisor of School Administrative Services, representing the school district, introduced the researcher to the group. The researcher provided the participants with an explanation of the purpose of the study and the focus group; they were informed that participation was voluntary and they could participate as much, or as little, as they wanted in the discussion. All were asked to sign a consent form prior to participation and agreement to allow the focus group discussion to be recorded by the researcher (Appendix H). Participants were asked to introduce themselves with their name and why they were interested in participating in the research. Participants were asked to complete a survey including demographic information (e.g., gender, year of birth, level of education, income, number of children in the household and ethnicity), as well as questions focused on parental influence on children's' physical activity (Appendix I). The researcher conducted the focus group session asking general questions (Appendix J) of the parents concerning their physical activity behavior; support of their children's physical activity behavior; their perception of opportunities for the children to

be physically active during school; their children's after school sport and physical activity behavior; safety and the built environment; active transportation to school; and school and community events that promoted child physical activity. The researcher ensured that all participants were given the opportunity to respond to the questions and thanked the participants for the involvement in the focus group.

Measurement Instruments

Student Survey. An instrument was developed for distribution to children comprising five parts. Specifically, the Physical Activity Questionnaire for Children (PAQ-C), Children's Attraction to Physical Activity (CAPA), Perceived Competence (PC), Parental Influence (PI), and Demographics. This survey instrument was pilot tested with a 4th grader who reported complete understanding of the content and was able to finish the survey in less than 15 minutes. Parent data was collected using both quantitative and qualitative methods.

Part one - Physical activity participation. Section one of the survey instrument included the Physical Activity Questionnaire for Children (PAQ-C) that measured children's physical activity levels. The PAQ-C is a self-administered, 7-day recall instrument. It was developed to assess general levels of physical activity throughout the school year for 8 to 14 year olds in grades 4 to 8 (Kowalski et al., 2004). The survey consists of ten questions focused on physical activity to include activity outside of school, activity during physical activity, activity during recess, activity during the weekend, frequency and intensity of physical activity and what if anything kept them from participating in their normal level of physical activity (See Appendix F). The PAQ-C

does not discriminate between specific activity intensities, such as moderate and vigorous activities. The mean of the summed items for the overall score is calculated using the answers from questions 1-9. Question 10 is used to describe any unusual factors that may have kept the child from participating in physical activity and is not included in the summary score. Crocker et al. (1997) conducted three studies examining the item and scale properties of the PAQ-C, an examination of the PAQ-C's test re-test reliability, internal consistency, and sensitivity to gender differences, and an examination of the reliability of the averages of 2 or 3 PAQ-C scores as a composite yearly activity score for children. The results demonstrated that the PAQ-C is a valid measure of physical activity in children. Kowalski et al. (1997) conducted two studies which examined the convergent, construct, and divergent validity of the PAQ-C. Overall, the results of these studies supported the validity of the PAQ-C. In this study, the reliability of the PAQ-C scale was calculated and found to be consistent with earlier studies ($\alpha = .619$).

Part two - Attraction to physical activity. Part two consisted of fifteen questions related to children's attraction to physical activity (See Appendix F). The Children's Attraction to Physical Activity Scale (CAPA) was developed by Brustad (1993, 1996). The original CAPA scale contained 25 items that measured attraction to physical activity on five subscales. Welk et al. (2003) reduced the original scale to 15 items based on pilot studies. Brustad has now developed a shorter version that contains 15 items, the three best predictive from each of the five subscales in the original longer version (Smith, 2004). The CAPA modified by Welk et al. (2003) is used with children with a mean age of 10 years. The version of the CAPA used by Rose et al. (2009) was used in this study

and replaces the structured alternate format with a Likert format. The version developed by Rose for use with children age 6 through 8 has demonstrated reliability of the four subscales ($\alpha \geq .55$). The initial reliability analysis including the negatively worded questions calculated ($\alpha = .767$). The subscale for peer acceptance was moderate after removing negatively worded items. Rose et al. (2009) recommended “that the measurement of the overall construct with young children not include negatively worded items” (p. 577). The reliability of the CAPA scale in the present study was found to be consistent with or higher than the earlier studies ($\alpha = .788$).

Part three - Perceived competence. Part three consisted of the six questions from Harter’s Self-Perception Profile for Children (1985) addressing perceived athletic competence (PC) (See Appendix F). While the full profile assesses five domains of children’s self-worth, including scholastic competence, social competence, athletic competence, physical appearance, and behavioral conduct, with correlations of $r = .80-.86$, only the six questions measuring perceived competence were used in this survey (Harter, 1985).

In this study, the reliability of the Perceived Competence scale was calculated and found to be consistent with earlier studies. The initial analyses, including negatively worded questions, had a Cronbach alpha of .005. These negatively worded items were removed from further analyses. The modified Perceived Competence scale had acceptable reliability of .630.

Part four - Parental influence. Part four of the assessment comprised 15 items measuring parental influence on children’s participation in Physical Activity (PI) (See

Appendix F). These 15 items were further divided into 4 sub-scales (encouragement, involvement, facilitation and role modeling) (Welk et al., 2003). Welk et al. used the Youth Physical Activity Model as a guide to create the questions proposing that parental influence has a direct and indirect effect on child physical activity. The authors found good alpha reliability among the scale items ($\alpha = .68$ to $.82$). Smith (2004) tested the same scales and found that “the parental influencing variables significantly predicted physical activity” (p. 28).

In this study the reliability of the Parental Influence scales was calculated and found to be consistent with, or stronger than, earlier studies. Initially the reliability was calculated at $\alpha = .824$, with the PI role modeling factor scale calculated at $\alpha = .489$. With the removal of the negatively worded question in the role modeling factor scale the reliability improved to $\alpha = .849$ and $\alpha = .661$ respectively. The four sub-scales were also found reliable (PI encouragement $\alpha = .683$; PI involvement $\alpha = .797$; PI facilitation $\alpha = .563$).

Part five - Demographics. Demographic information was collected utilizing four questions related to grade, age, gender and ethnicity (See Appendix F). The question on ethnicity provided multiple categories in line with the school and national census data. Students were able to pick multiple categories, or provide their own description under the “Other” category.

Parent survey and focus group. Parents were asked to provide demographic information assessed using six questions, including gender, year of birth, education level, income level, number of children in household, and ethnicity (See Appendix I). The

questions were aligned with decennial census data. Parents were also given a survey that contained six questions pertaining to parental influence (See Appendix I). The questions included statements such as “How often have you encouraged your child to do physical activities or play sports?” and “How often have you watched your child participate in physical activity or sports?”

After the parents completed the survey, the researcher asked 16 open ended question related to parental physical activity, parental support for child physical activity, physical activity in school, after school physical activity and sports, safety and the built environment, walking and bicycling to school, recreation facilities and parks and school events (See Appendix J). Questions included “How do you feel about physical activity?”, “What things do you think would help your child to be more active outdoors?”, and “How do you feel about your child walking or bicycling to school?” Parents also were asked to provide demographic data including gender, year of birth, level of education, income level, the number of children in their household and their ethnicity.

Data analyses

Data from the student surveys were entered into SPSS. Descriptive statistics (e.g., mean, standard deviation, frequencies) were calculated for demographic and all scale data. A series of bivariate correlations were utilized to test hypotheses 1-5. Partial correlations were calculated to determine the moderating impact of Perceived Competence and Attraction to Physical Activity on the relationship of Parental Influence and Physical Activity. Results from the parental focus group, including descriptive statistics, were analyzed using quantitative and qualitative methods. Iterative thematic

analyses were used to analyze the qualitative data from the parent focus group in line with grounded theory as described by Glaser (1990), Glaser (1992) and Glaser and Strauss (1967). Common themes were derived and discussed.

CHAPTER IV: RESULTS

The purpose of this study was to investigate the interrelationship among parental influences and the physical activity behavior of children. This chapter includes a description of study results, including a profile of the sample; descriptive analysis of participation in organized physical activity, parental role modeling, parental encouragement, parental involvement, parental facilitation, perceived competence; and hypothesis testing.

Students

Demographic and Experiential Characteristics. One hundred and thirty-six students participated in this study. Of these, 49.3 percent were 3rd graders and 50.7 were 4th graders (Table 1). The participants represented 66 percent of the total population (102 students) of third grade students and 64 percent of the total population (107 students) of 4th grade students. Female students slightly outnumbered male students 52.9 percent to 47.1 percent, respectively, and the mean age of participants was 9.31 years ($SD=.735$).

In a socio-economically diverse community, the sample population was representative of the school census data (National Center for Education Statistics, 2014). Hispanic students represented 59 percent of the student population in grades 1-4, with 18 percent Caucasian and 16 percent Black. Over 48 percent of the participants ($n=73$) described themselves as Hispanic or Latino (Table 2). Even though the majority self-

identified as Hispanic or Latino, participants included children of various ethnic backgrounds. Fourteen of the participants indicated multiple ethnicities and seventeen indicated another race or ethnicity. African-American students made up over 19 percent of the sample population and Caucasian students made up over 15 percent.

Table 1. Gender, Age and Grade of Respondents (n=136)

Variable	<i>n</i>	%
Gender		
Female	72	52.9
Male	64	47.1
Age		
8 years	16	11.8
9 years	68	50.0
10 years	46	33.8
11 years	6	4.4
Grade		
3	67	49.3
4	69	50.7

Table 2. Race and Ethnicity of Respondents (n=136)

Race and Ethnicity	<i>N</i>	%
Hispanic, Latino	73	48.7
Black, African American	29	19.3
White, Caucasian	23	15.3
Other	17	11.3
Native American	4	4.0
Asian/Pacific Islander	2	1.3
Total response*	150	100

Note: Number of responses is above 136, as students were able to select multiple races or ethnicities.

Students were asked the frequency of their participation in physical activities (on a scale of 1-5, where 1= participation in no activity in the last 7 days and 5= participation in the activity 7 or more times in the past 7 days). Frequency of participation was assessed for each of the twenty two activities listed on the PAQ-C. Students reported participating in twenty-two distinct activities (including “other” activities). Of these, the top eight activities in which over half of the students participated are noted in Table 3, with 84 percent indicating tag. Additionally, students reported such unique activities as skipping, dancing and ice skating. The mean physical activity score for the sample based on all activities was 3.41 out of 5, meaning for this sample the participants were moderately active over the past week. This result is higher than the 3.23 reported by Welk et al. (2003) and the 2.79 reported by Smith (2004).

Table 3. Frequency and Intensity of Participation in Physical Activities
(Top 8 activities in which respondents participated)

Activity	Number of Respondents	Mean Intensity*
Tag	114	3.60
Running	107	3.90
Soccer	91	3.60
Walk	90	3.52
Swim	87	3.44
Bike	86	3.74
Basketball	83	3.42
Dance	70	3.69

*On a scale of 1 to 5, where 1 = no activity in the past 7 days and 5= 7 or more times in the past 7 days

Scale Characteristics. Three scales were used to assess effects on child physical activity behavior. Each of the three scales had been used in previous studies examining psychosocial correlates (attraction to physical activity, perceived competence and parental influence) and their influence on child physical activity behavior. Students were asked thirty six questions related to attraction to physical activity, perceived competence and parental influence. This section contains summary scale data, specifically, the Children's Attraction to Physical Activity (CAPA); Perceived Competence (PC); and Parental Influence (PI).

A modified Children's Attraction to Physical Activity (CAPA) scale contained 15 questions (See Table 4). The original CAPA scale, developed by Brustad (1993, 1996), contained 25 items that measured attraction to physical activity on five subscales. The number of items was reduced in this study in line with previous work by Welk et al. (2003) and Smith (2004). Students indicated highest attraction to statements such as; "I think it is important to always be in good shape" (3.68), "I try to stay in shape" (3.67), "I

think the more exercise you get, the better” (3.47). The lowest mean attraction score was on the questions that asked about students having a negative interaction with other students when engaged in physical activity, “I get teased by other kids when I play games and sports” (1.80). These results are in line with the 95210 program promoted by the school. This program, sponsored by the Northern Virginia Healthy Kids Coalition, focuses on promoting physical activity, reducing sedentary behavior, and encouraging healthy eating habits. The message that is sent to students is that each day, they should get nine hours of sleep; eat five servings of fruits and vegetables; have less than two hours of screen time outside of school; get one hour of physical activity; and drink no sugary drinks. .

The scales contained negatively worded questions that were used in previous research studies with older children. These questions were removed from analyses after they were found to significantly and negatively influence scale reliability. This may have been a function of student’s ability to understand these types of questions. Research has found that younger children and children with poorer reading skills may have difficulty in responding appropriately to negatively worded questions.

Table 4. Summary of Responses to Children's Attraction to Physical Activity Items

	Never	Rarely	Most of the time	Always	M	N
I have more fun playing games and sports than anything else	9.9%	13.9%	29.8%	46.6%	3.13	131
I like to exercise lots	12.9%	26.5%	28.0%	32.6%	2.80	132
I am told that I am good at games and sports	7.6%	23.7%	32.8%	35.9%	2.97	131
I get teased by other kids when I play games and sports	53.5%	22.5%	14.7%	9.3%	1.80	129
I think the more exercise you get, the better	4.5%	11.3%	17.3%	66.9%	3.47	133
I enjoy exercise a lot	12.1%	16.7%	23.5%	47.7%	3.07	132
I don't mind getting out of breath after playing hard	10.7%	16.8%	29.0%	43.5%	3.05	131
I think it is important to always be in good shape	2.3%	3.8%	17.3%	76.7%	3.68	133
Playing games and sports is my favorite thing	2.3%	11.4%	27.3%	59.1%	3.43	132
I am popular when I play games and sports	28.2%	30.5%	23.7%	17.6%	2.31	131
I look forward to playing games and sports	6.0%	12.0%	19.5%	62.4%	3.38	133
I really like exercise	9.8%	15.8%	21.1%	53.4%	3.18	133
I really like to run a lot	1.5%	9.1%	37.1%	52.3%	3.40	132
I feel good when I run hard	5.3%	16.7%	34.8%	43.2%	3.16	132
I try to stay in shape	0%	5.3%	22.0%	72.7%	3.67	132

Note: Four point scale, where 1=Never, 4=Always

The Perceived Competence scale contained 6 questions from Harter's Self-Perception Profile for Children (1985), a study that addressed perceived athletic competence, with items altered and used by Wood et al. (2003) and Smith (2004) in their studies focused on the YPAP model. The responses that indicated a higher perceived level of competence included; "I wish I could be better at sports" (3.33), "I think I can do well at any new sport I try" (3.02) (Table 5). The lowest level of competence was indicated when students were asked about having a negative interaction with other students when engaged in physical activity, "I would rather watch games and sports instead of playing" (2.06). The results reflect the high overall physical activity scores in that students want to do better at sports, think they can do better, and spend more time being physically active.

Table 5. Summary of Responses to Perceived Competence Items

	Never	Rarely	Most of the time	Always	M	N
I do really well at all kinds of sports	9.8%	23.5%	40.2%	26.5%	2.83	132
I think I can do well at any new sport I try	6.9%	20.6%	35.9%	36.6%	3.02	131
I wish I could be better at sports	10.1%	7.8%	20.9%	61.2%	3.33	129
I feel that I am better at sports than other kids my age	20.0%	20.8%	31.5%	27.7%	2.67	130
I would rather watch games and sports instead of playing	44.9%	22.8%	14.2%	18.1%	2.06	127
I don't do well at new outdoor games	40.8%	13.1%	24.6%	21.5%	2.27	130

The Parental Influence scale contained 15 questions (Table 6). The scale was developed by Welk et al. (2003) in their research to validate the YPAP model, and was used by Smith (2004) and others in subsequent research. The parental influence subscales included; parental encouragement; parental involvement; parental facilitation; and parental role-modeling. Students reported that the greatest sense of parental influence on statements including; “My parents want me to play outside” [parental encouragement] (3.21); “My parents tell me that I am good at games and sports” [parental encouragement] (3.19); “My parents encourage me to try hard at games or sports” [parental encouragement] (3.06); and “My parents take me to parks and playgrounds” [parental facilitation] (3.05). Worth noting, parental encouragement and parental facilitation had the highest correlation with children’s’ physical activity behavior of the four sub scales at $r=.35$ and $r=.43$ respectively. The lowest sense of parental influence was indicated on items such as; “My parents don’t like to do much physical activity” [parental role-modeling] (2.14); and “My parents play games and sports with me” [parental involvement] (2.31). This is consistent with other studies indicating that parental role-modeling is a less significant factor in influencing child physical activity behavior then encouragement and facilitation (Bradley, 2011; Heitzler, 2006; Smith, 2004; Welk et al., 2003).

Table 6. Summary of Responses to Parental Influence Items

	Never	Rarely	Most of the time	Always	M	N
Encouragement						
My parents tell me that I am good at games and sports	10.7%	11.5%	26.7%	50.4%	3.19	131
My parents want me to play outside	8.3%	14.4%	25.0%	52.3%	3.21	132
My parents remind me to do some physical activity	10.0%	19.2%	34.6%	36.2%	2.97	130
My parents encourage me to try hard at games or sports	12.2%	14.5%	28.2%	45.0%	3.06	131
Involvement						
My parents play games and sports with me	28.6%	29.3%	24.8%	17.3%	2.31	133
My parents help me with sports	27.3%	24.2%	23.4%	25.0%	2.46	128
My parents practices games and sports with me a lot	24.0%	26.4%	26.4%	23.3%	2.49	129
Facilitation						
My parents let me play on community or school sports teams	32.3%	22.3%	17.7%	27.7%	2.41	130
My parents buy me sports equipment	23.8%	20.8%	30.8%	24.6%	2.56	130
My parents take me to parks and playgrounds	8.3%	25.0%	19.7%	47.0%	3.05	132
Role-Modeling						
My parents get a lot of exercise	19.7%	24.2%	25.0%	31.1%	2.67	132
My parents are in really good shape	7.6%	23.5%	39.4%	29.5%	2.91	132
My parents don't like to do much physical activity	38.0%	25.6%	20.9%	15.5%	2.14	129
My parents like to walk or bike for exercise	16.8%	22.1%	25.2%	35.9%	2.80	131
My parents would rather walk or bike to the store	21.5%	23.8%	23.1%	31.5%	2.65	130

Hypothesis Testing. Based on a thorough review of the literature, a series of hypotheses were proposed and evaluated using a modified version of Welk's Youth Physical Activity Promotion Model (and associated paths). Hypotheses 1-7 address the direct and indirect interrelationships among parental influence, perceived competence, and attraction to physical activity, and children's level of physical activity participation. The results of the testing of intercorrelations are indicated in Figure 2.

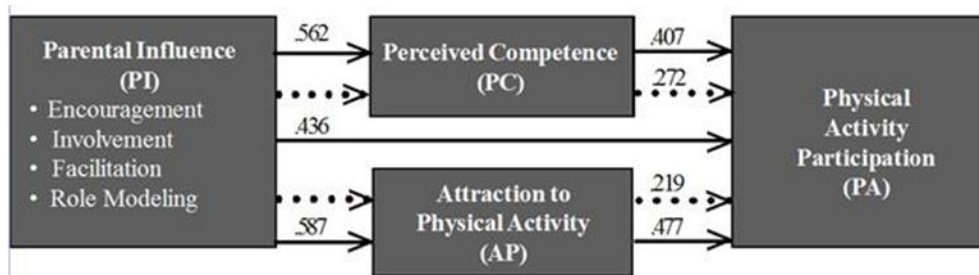


Figure 2. Interrelationships among the Key Variables of Parental Influence, Perceived Competence and Attraction to Physical Activity
(Note: All paths are significant at $p < .001$ level)

Hypothesis one. It was hypothesized that there would be a significant relationship between parental influence (PI) and children's physical activity participation (PA). This hypothesis was supported by the data, specifically PI was directly and positively related to PA ($r = .44$, $p < .001$) as were the individual factors of Encouragement (PIenc) ($r = .55$, $p < .001$), Involvement (PIinvolve) ($r = .25$, $p = .004$), Facilitation (PIfac) ($r = .43$, $p < .001$), and Role-modeling (PIrole) ($r = .31$, $p < .001$) (Table 7).

Table 7. Bivariate Correlations among Key Variables

Measure	AP	PA	PC	PI	PIenc	PIinvolve	PIfac
PA	.48						
PC	.50	.41					
PI	.59	.44	.56				
PIenc	.61	.35	.45	.74			
PIinvolve	.36	.25	.48	.79	.43		
PIfac	.52	.43	.45	.72	.38	.45	
PIrole	.36	.31	.36	.81	.42	.57	.47

Note: All correlations are significant at $p < .001$

AP = Children's Attraction to Physical Activity Scale

PA = Physical Activity Questionnaire Children

PC = Perceived Athletic Competence Scale

PI = Parental Influence Scale

PIenc = Parental Influence Encouragement scale

PIinvolve = Parental Influence Involvement Scale

PIfac = Parental Influence Facilitation Scale

PIrole = Parental Influence Role Modeling Scale

All correlations were significant at $p < .001$

Hypothesis two. It was hypothesized that there would be a significant relationship between parental influence (PI) and perceived competence (PC). This hypothesis was supported by the data, specifically PI was directly and positively related to PC ($r=.56$, $p<.001$), as were the individual factors of Encouragement (PIenc) ($r=.45$, $p<.001$), Involvement (PIinvolve) ($r=.48$, $p<.001$), Facilitation (PIfac) ($r=.45$, $p<.001$), Role-modeling (PIrole) ($r=.36$, $p<.001$) (Table 7).

Hypothesis three. It was hypothesized that there would be a significant and direct relationship between PI and AP. This hypothesis was supported by the data, specifically, PI was directly and positively related to AP ($r=.59$, $p<.001$), as were the individual factors of Encouragement (PIenc) ($r=.61$, $p<.001$), Involvement (PIinvolve) ($r=.36$,

$p < .001$), Facilitation (PIfac) ($r = .52$, $p < .001$), Role-modeling (PIrole) ($r = .36$, $p < .001$) (Table 7).

Hypothesis four. It was hypothesized that there would be a significant and direct relationship between PC and PA. This hypothesis was supported by the data ($r = .41$, $p < .001$) (Table 7).

Hypothesis five. It was hypothesized that there would be a significant and direct relationship between AP and PA. This hypothesis was supported by the data ($r = .48$, $p < .001$) (Table 7).

Hypothesis six. It was hypothesized that there would be a significant and indirect relationship between PI and PA as moderated by PC. This hypothesis was supported by the data, specifically PI was indirectly and positively related to PA as moderated by PC ($r = .27$, $p < .001$) (Figure 2).

Hypothesis seven. It was hypothesized that there would be a significant and indirect relationship between PI and PA as moderated by AP. This hypothesis was supported by the data, specifically PI was indirectly and positively related to PA as moderated by AP, ($r = .22$, $p < .001$) (Figure 2).

Additional analyses. A multiple regression analysis was performed to identify the predictive ability of the series of independent variables on physical activity. Thirty-eight percent (38%) of the variance in physical activity was explained. This finding is aligned with Welk et al. (2003), who found that “the combination of Attraction, PerComp, and ParInf accounted for 30 percent of the variance in the child’s activity

behavior” (p. 25). Welk et al.’s data further “revealed that Attraction accounted for the largest amount of unique variance” (p. 25).

There are other factors that have been shown to be significant in predictive ability, that were not evaluated in this study, including; household income (Franzini et al., 2009; Ferreira et al., 2007; Tandon et al. 2012); health (Glazebrook et al., 2006, Murphy & Carbone, 2008); time available for activity (Dwyer et al., 2006; O’Dea, 2003; Thompson et al., 2001); and proximity to parks (Floyd et al., 2011; Roemmich et al., 2006). Sallis, Prochaska, and Taylor (2000) examined correlates of physical activity in children and adolescents. The study indicated statistically significant results for including, perceived barriers; healthy diet; program/facility access; and time spent outdoors. It is clear that there are a large number of factors that can influence child physical activity, but this study found that Children’s Attraction to Physical Activity, grade level, Parental Influence, Parental Influence (involvement), Parental Influence (role modeling), Parental Influence (encouragement) and Parental Influence (facilitation) accounted for significant predictability related to child physical activity behavior.

Parents

Demographic Characteristics and Parental Involvement in Children’s

Physical Activity Participation. Parents were asked six questions related to demographics, and completed a six question quantitative survey focusing on parental encouragement, involvement, facilitation and role modeling in regards to their child’s participating in sport and physical activity (See Appendix I). The focus group was majority female; white; with some college; and a household income of over \$75,000.

Although the ethnic makeup was predominantly white, there were participants in the group that identified themselves as Hispanic/Latino. The makeup of the group was socio-economically diverse, but situated within a higher SES area (Tables 8 and 9). Compared to the United States median income (\$51,939), the City of Manassas has a median household income of \$70,634, and the surrounding county with a median household income, 2008-2012 of \$96,160 (DeNavas-Walt, & Proctor, 2014).

Table 8. Gender, Age, Education and Income Level of Parent Focus Group Participants

Variable	<i>n</i>	%
Gender		
Female	6	75.0
Male	2	25.0
Age		
30-39 years	3	42.8
40-49 years	2	28.6
50-59 years	2	28.6
Education		
Some College	5	62.5
College Degree	3	37.5
Income Level		
\$30,000-\$50,000	2	25.0
\$75,000 or higher	6	75.0

Table 9. Race and Ethnicity of Parent Focus Group

Race and Ethnicity	<i>n</i>	%
Hispanic, Latino	2	25.0
White/Caucasian (non-Hispanic)	6	75.0

Additionally, parents were asked about the importance of their child being good at sports and physical activity (See Appendix J). Analysis of the quantitative data from the parent focus group survey provided information on parental encouragement, involvement, facilitation and role-modeling. Participants noted their weekly influence on their child's physical activity behavior on a scale of one to five, with one equal to no influence on physical activity behavior and five equal to daily influence on physical activity behavior. Participants could also opt out of answering a question by indicating that they did not know the answer or the question was not applicable.

The mean scores for the two parental encouragement questions were 2.63 and 2.88, respectively, indicating that parents once per week, or sometimes, encourage their child to do physical activity or sports, and have told their child that physical activity was good for their health (Table 10). For the parental involvement question the mean was 2.50 indicating that parents watched their child engage in a physical activity, or sports, with their child between at least once a week and almost daily, and for parental facilitation, the mean was 2.25 indicating that parents provided their child with transportation to a place where they could engage in physical activity or sports, a little more than once a week. The mean score for parental role-modeling was 2.13 indicating that parents engaged in physical activity, or sports, about once a week with their child.

Parents answered an additional question asking how important it was that their child is good at sports and physical activity. Parents provided answers on a scale of one to four, where zero is not important and four is very important. The mean answer was 2.38 indicating that parents thought that it was important for their child to engage in sports or physical activity. These results support the comments of the parents provided in the feedback session.

Table 10. Parent Focus Group Survey Items

	Never	Once per week	Some times	Almost Daily	Daily	M	N
Encouraged this child to do physical activity or sports?	0%	0%	50.0%	37.5%	12.5%	2.6	8
Done a physical activity or played sports with this child?	0%	0%	87.5%	12.5%	0%	2.1	8
Provided transportation so this child can go to a place where he or she can do physical activities or play sports?	0%	0%	75.0%	25.0%	0%	2.3	8
Watched this child participate in physical activity or sports?	0%	12.5%	37.5%	37.5%	12.5%	2.5	8
Told this child that physical activity is good for his or her health?	0%	0%	0%	0%	0%	2.9	8
How important is it to you that this child is good at sports and physical activity?	12.5	0%	37.5%	37.5%	12.5%	2.4	7

Focus Group Thematic Analysis. A focus group discussion took place immediately following completion of the survey where parents were asked to respond to questions concerning physical activity of their children. Several themes were found in analyzing the feedback from the parent focus group session. Parents provided feedback on topics including child safety, the built environment, support for physical activity, availability of information involving physical activity opportunities and the importance of collaboration in increasing child physical activity. Parents expressed concerns about safety and the built environment. As one parent noted, “I have a 17 year old daughter but I still pretty much supervise what they [her children] do. It is a different world out there”, while another has told her daughter “don’t go outside unless I am with you, I don’t want her to be outside by herself, it is that whole safety thing.” While parents were concerned about safety, they indicated that physical activity was important to them and their children. In talking about her son, one parent stated that “he has so much energy, if I don’t keep him busy I am in trouble.” Another parent who was concerned about fitness and health of her child stated, “My daughter is heavy and big for her age; it [physical activity] is a way to help her control [her] weight.” Related to behavior and academic performance one parent noted that “It [physical activity] really helps with his focus [in school and at home].”

Parents were very supportive of providing their children with opportunities to engage in sport and physical activity. One couple indicated that they were able to engage in physical activity with their children, “My husband and I will go out walking the dog while they [children] are riding their bikes.” Several parents indicated that it was

important to do physical activity together with their children, commenting, “We do a lot of things [physical activity] together as a family” and “[We have a] health and fitness night and having a Wii [Fit] there [helps get everyone involved].” Parents also found ways to schedule more physical activity time for their children by adjusting their schedules. One parent indicated that leaving their child for an extended time at day care provided additional opportunities for physical activity, “There are days where I pick them [children] up from daycare earlier, I leave him there so he can get recess time, he loves to outside, sports. This comment was supported by another parent who said, “That is similar to my son, he is very hyper and he needs the activity.”

Parents indicated that there were obstacles to supporting their children due to time constraints and lack of information. Many people in the community have a long commute time to work, or work evenings and weekends, which reduces free leisure time at home to interact with their children. One parent talking about her spouse said, “Christen [spouse] works in retail, our schedule fluctuates a lot, he works on the weekend.” Several other parents indicated that it was difficult to find information concerning opportunities for sport and physical activity. Comments for improvements made by parents also included:

- “What would be good would be a directory [of events promoting physical activity and sport].”
- “Publish it bilingually, make sure everyone is aware of it, and perhaps use school buses in the summer.”
- “Part of the problem is we are not getting the information [on opportunities for physical activity and sports].”

- “I don’t have time to go surfing the web [to locate opportunities for physical activity and sport].”

Parents emphasized the importance of having a collaborative effort involving local government, schools and non-profits, helping to create an environment that supports the promotion of physical activity and sports. They were very complimentary of the school staff noting that, “Don [Physical Education teacher] is always looking for innovative ways [to promote physical activity] and “This school is very health conscious, and Mr. Toogood [School Principal] is very focused on educating the child in all areas, character development, academically and physically.” Parents in the focus group provided information to others including:

- “October 3rd is Walk to School Day [and] the Girl Scouts could help out.”
- “I like it, we are doing it division wide, oh yeah 95210.”
- “[does] anyone know about the Healthy Kids Club, they do things like Zumba and promoting healthy snacks?”

The parents in the group appeared to be well-informed about sport and physical activity opportunities available for their children, but were able to benefit from information shared in the focus group.

CHAPTER V: DISCUSSION AND CONCLUSION

The intent of this research study was to explore parental influences on the physical activity behavior of children in a socio-economically diverse community. Physical activity has been shown to play a key role in promoting social, physical, psychological and cognitive well-being among children. Children's activities are influenced by multiple factors (e.g., safety concerns, built environment, socio-economic status). Given the developmental age of the children in this research study, parents still play a significant role in influencing their behavior. Previous research studies have indicated that Hispanic/Latino children are more at risk for sedentary behavior, with the resulting lack of physical activity impacting children's physical and mental health. It is therefore essential to determine which factors impact children's physical activity behavior so as to best ameliorate the circumstances (reduce constraints and increase motivation). Parents can be provided with strategies that can support increased physical activity thereby promoting a healthy lifestyle for their children. The following areas will be discussed in this chapter; safety and the built environment; parental influence on child physical activity; collaboration and community involvement in overcoming barriers to physical activity; suggestions for future research; and the study's conclusion and implications.

Safety and Built Environment Impacts

Studies have found that active transportation (e.g., bicycling, walking) to school helps promote increased physical activity (Davison, Werder & Lawson, 2008; Faulkner, 2009; Sirard et al., 2005). Students attending Jennie Dean Elementary School however are not allowed to walk or bike to school. According to the school administration, these restrictions are based on an unwritten policy created by an earlier school administration to address concerns for the built environment, safety of the students, and possible liability issues arising from potential incidents (Personal communication with Sandy Thompson, Supervisor of Administrative Services, City of Manassas Schools and Don Regenbogen, Physical Education Teacher, Jennie Dean Elementary, May 2012).

Additionally, the built environment, in relation to the transportation network and recreational opportunities, can have an effect on children's physical activity behavior (Davison & Lawson, 2006). Gorden-Larsen (2006) found that "lower-SES and high-minority block groups had reduced access to facilities, which in turn was associated with decreased physical activity" (p. 417). One impact on the sample population included the built environment in and around the school and the neighborhoods where the children live. The built environment often plays a part in restricting a student's ability to walk or bike to school. Lack of sidewalks, bike trails and low speed roads in the vicinity of the school can cause parents to keep their child from active transportation due to safety concerns related to automobile traffic. Lack of available bicycle facilities at a school (e.g., bike racks for secure bike storage) can also be a barrier to active transport.

The built environment surrounding the school and neighborhoods creates a perception of an environment unsafe for active transportation by students (Figure 3; A). Dual sets of railroad tracks border the northern side of the school without the presence of a separated crossing option for pedestrians or bicyclists (B). From the southeast to northwest, a four-lane road passes in front of the school's entrance. There is a multi-use asphalt path on one side of the road and a sidewalk on the other side providing potential options for walking and biking to school (C). From the east the approach is a heavily used two lane road that does not have a sidewalk, or adequate infrastructure for safe crossing of the intersection (D). The entrance to the school is a two lane road without pedestrian or bicycling infrastructure (D).

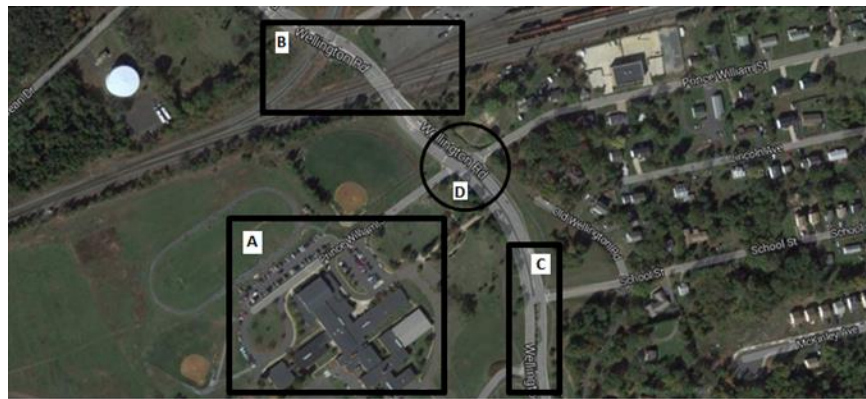


Figure 3. Built Environment-Area Surrounding Jennie Dean Elementary School

Feedback received during the parental focus group indicated that parents realized the importance of physical activity, and saw a connection with active transport. They were, however, not comfortable letting their children walk or bike to school. The

comments focused on these safety issues concerning possible crime and the built environment. A review of crime statistics from the City of Manassas for 2012 indicated 22 percent of calls for service, the highest percentage in the city, were to addresses in and around the neighborhoods in which the majority of students live (Manassas City Police 2012 Annual Report, (2012), p. 19). These concerns are substantiated and mirror the findings of other studies focused on physical activity levels of minorities and families in low SES neighborhoods (Olvera et al., 2010, Wilson et al., 2004). Wilson et al. (2004) suggested that residents of low SES areas perceive that they may have less access to physical activity if they live in an unsafe area. Weir et al. (2006) found that parents' concern about safety can have a significant impact on their children's physical activity participation. This safety concern also relates to children interacting with the built environment. Olvera et al. (2010) found that Latino mothers perceive environments as less safe than their children which may impact physical activity levels.

Based on previous studies, and given the concerns of parents about crime and the built environment, one might conclude that the physical activity level of the students would be below the levels found in other studies with a primarily socio-economically diverse population. In fact, in this study, the physical activity levels of the children were higher than previous studies and still reflected a direct relationship to parental influence. There are several possible explanations for these results. One possibility is the availability of a Boys and Girls Club in close proximity to the school. Conversations with school personnel and parents indicated that over one-quarter of the students participate in after-school activities at the club. Beets et al. (2009), Gortmaker et al. (2012) and Trost,

Rosenkranz and Dziewaltowski (2008) focused on after-school programs, determining that they can provide additional opportunities for physical activity. Another possibility is the high level of focus placed on physical activity in the school. In general, physical education teachers play a significant role in promoting child physical activity (McKenzie, Sallis & Rosengard, 2009; Sallis et al., 1997). The senior Physical Education teacher at Jennie Dean Elementary School is an active and engaged member of the school and the community. For example, he applied for a grant to promote running and held a marathon program where students walk or run each day, adding up their mileage towards “completing” 26.2 miles (the equivalent of a marathon). Student progress was charted on the walls of the gymnasium. Students were encouraged to walk and run, and all students were rewarded for making progress towards their goals.

Lastly, the parental focus group indicated that while they were concerned about safety, they encouraged their children to play in the immediate vicinity of their household where they could be observed. Parental encouragement can play a significant role in promoting child physical activity, and opportunities in the immediate vicinity of the home can be a safe place to engage in physical activity even in a higher crime area (Davison et al., 2006; Edwardson & Gorely, 2010; Heitzler, et al., 2006).

Parental Influence

Given the socio-economic characteristics of the students, parental safety concerns and obstacles created by the built environment, one would expect that the students in this study would experience a low level of physical activity. However, in this study the students had a physical activity level that was much higher than previous studies looking

at parental influence. Parental influence (or the influence of significant other adults) appears to be a key factor in overcoming these potential obstacles in that the data showed a significant relationship between parental influence and the physical activity level of children. The results from this study were similar to the findings of Welk (1999) and Smith (2004) looking at parental influence on children's physical activity.

Parental influence on physical activity declines over an individual lifespan as other factors grow to have a greater influence on child and adolescent behavior (Alderman et al., 2010). It is critical that parents help their children create healthy exercise and nutritional habits during the elementary school years. This study demonstrated that parental influence was directly correlated to children's physical activity in a socio-economically diverse community. Given the obstacles of safety and the built environment, and the research findings that have indicated that minority groups are at greater risk for low physical activity, how is it that this sample population experienced a high level of physical activity? Potentially, a collaborative effort with parents working with school personnel, health agencies, government and non-profit groups, may have assisted in mediating the barriers to promoting child physical activity participation. Among, possible reasons for this unexpected result, it is important to consider the proximity to more affluent areas, that the extended family may have played a role as key influencers, and that the city and region have a robust parks and recreation system.

Collaboration and Community Engagement

Overcoming the potential barriers to physical activity promotion requires a collaborative effort. In addition to parental influences, research has shown that increases

in physical activity and decreases in weight result from collaboration between parents, school, government, health care and non-profit organizations. A research study by HSC Corporation (2007) focused on identifying messages and methods that would effectively motivate African-American and Hispanic/Latino parent and adolescents to adopt and maintain healthier lifestyles. The findings from the study indicated that “collaboration among community leaders and government, health care providers, schools, and families is also critical to helping these most vulnerable populations adopt and maintain healthier lifestyles” (p. 8). Multi-disciplinary approaches seem to fair best when attempting to support parents’ efforts to create healthy lifestyles. One of these approaches is the Safe Routes to School (SRTS) program which promotes students biking and walking to school. Parents can team with school administrators, government officials and local non-profits to improve the built environment using the five E’s (i.e., evaluation, engineering, education, encouragement and enforcement). McDonald et al. (2014) “found that engineering improvements [as a result of SRTS programs] are associated with an 18 percent relative increase in walking and bicycling”. Nemet et al. (2005) found that a dietary-behavioral-physical activity approach worked well in both the short-term and the long-term. Trost and Loprinzi (2011) recommended that physicians and health care providers play a more significant role in influencing beliefs, attitudes and behaviors related to physical activity. Choudhry et al. (2011) found that a collaborative after-school program could increase physical activity levels and fight obesity, but that “engaging parents effectively in the after-school time frame proved challenging; additional strategies to engage parents are under development” (p. 363). Community engagement

and collaboration benefit the students, parents and community as a whole providing additional opportunities to enhance well-being and healthy lifestyles.

There are a number of ways in which this collaborative environment may have enhanced health for the students attending Jennie Dean Elementary School. The INOVA Health System in Northern Virginia offers community outreach to schools in an effort to improve student health. INOVA partners with organizations within the community to offer care, information and resources. In this case, the organization has partnered with schools and other organizations in northern Virginia to spearhead the Northern Virginia Healthy Kids initiative which includes the “95210” and “*Move the Needle on Obesity*” programs, both valuable and much-needed community health improvement initiatives. The Northern Virginia Healthy Kids Coalition (NVHKC) brings groups together with a common goal: to promote better health for children of all ages. One of the programs created by this partnership is 95210 (i.e., nine hours of sleep, five fruits and vegetables, no more than two hours of screen time, one hour of moderately vigorous physical activity and zero sugary drinks). Information on this program is provided to parents, listed on posters through the school, and reinforced during the school year by the school nurse and the physical education teachers. The City of Manassas School District consistently works with schools to promote the 95210 message and create opportunities for promoting healthy behavior. In particular, the school district works closely with the school physical education teachers to obtain grants to support program development. The lead Physical Education teacher at Jennie Dean Elementary School is well known in the community as a swim coach and is well liked by the students. He consistently looks for new

opportunities to impact the physical activity of the students. For example, working together with the school nurse, a plan was created for the first Harvest Moon Family Fitness and Fun Night (Appendix K) at the school in October 2011 and a family fitness event in 2012 (Appendix L). Organizations from throughout the community participated in these events (e.g., city police department, city parks and recreation, a local fitness center and bike shop). Activities included yoga, a bicycle producing electricity by pedal power, jump rope station/demonstration, bicycle safety demonstration, bicycle tune ups, bicycle give away for a boy and girl, walking challenge and nutritional education. Previous attendance at family oriented events during the school week had been small but the turn out for the family fitness night event exceeded all expectations with over 200 students and family members in attendance. Sandy Thompson, Supervisor of Administrative Services, Manassas City School system, stated “the families had great time learning about healthy lifestyles and loved learning [about] walking and biking safety” (personal communication, May, 2012). Feedback from students and parents was positive and as a result a much larger family fitness event was conducted the following year.

The affluent nature of the surrounding communities may also play a moderating role in providing additional opportunities for physical activity. The City of Manassas is proximate to four counties which are among the top fifteen of the richest in the country (Geldis, 2012). The surrounding counties (i.e. Loudoun, Fairfax, Stafford, Prince William) have a significant amount of parks, recreational opportunities and open spaces that can be utilized by families from the City of Manassas without having to travel long

distances. Students have an increased awareness of opportunities in the broader region through their interaction in the community with other children from these jurisdictions and the media coverage of events in the neighboring suburban environments.

Suggestions for Future Research

This study focused on a small population of students in a suburban, socio-economically diverse community. Future research should be conducted with larger sample sizes consisting of students in grades 3-6 over a longer period of time. Researchers should be careful to avoid possible external influences such as the researcher's involvement in planning and participation in the first Jennie Dean Elementary Harvest Moon Fitness Festival that took place in October 2011 prior to the data collection (See Appendix K). This may have increased awareness of exercise and fitness opportunities among parents and students. The school indicated that typical participation for an event of this nature would be low, but the event actually attracted over 200 students and parents on a school night. The event was enhanced and held on a weekend the following October (2012) and there is now strong ongoing community support for this event (See Appendix L).

Students completed the survey in large groups during two separate sessions, in two different locations within the school. Future research should consider having the students take the survey in the same location and in smaller groups. This will help control for possible differences resulting from the environment and group dynamics.

Future research should also utilize accelerometers for the measurement of child physical activity participation. Using self-reported data may have contributed to reporting

an increased level of physical activity compared to previous studies. In measuring physical activity levels, Troiano et al. (2008) stated “objective and subjective measures of physical activity give qualitatively similar results regarding gender and age patterns of activity.” The article goes on to state that “adherence to physical activity recommendations according to accelerometer-measured activity is substantially lower than according to self-report[ed data]” (p. 182).

It is recommended that researchers utilize the YPAP model in cross-cultural research. As increasing adherence to physical activity appears to require a collaborative approach, so should the methods used for research. Davison and Lawson (2006) state that “a trans disciplinary approach that draws upon diverse research disciplines such as geography and planning, public health, exercise science, criminal justice and human development” should be used to study the barriers that effect children participating in physical activity (p. 15). This type of approach can help to identify the range of factors that either enhance or create barriers to the promotion of physical activity, thus leading to a comprehensive examination of the efforts needed to collaboratively promote physical activity among children.

Building upon Davison and Lawson’s work on barriers to child physical activity, researchers should focus on the infrastructure in and around where children live, play and go to school. As discussed earlier, the built environment plays a significant role in how parents and children perceive the safety of the environment around them. This in turn can influence the amount of time that children spend of time children spend outside engaged in physical activity. A significant amount of research is underway related to Safe Routes

to Schools and how active transportation impacts child physical activity behavior. Positive changes to infrastructure have been made when local non-profit organizations team with parents, school officials, public health and local government. A collaborative effort of this type could make a difference in changing the built environment like the one found at Jennie Dean Elementary into a safe environment for students to walk and bike to school.

Researchers should be cautious in the use of negatively worded questions in survey instrumentation depending on the age and reading abilities of the sample population. Marsh (1986) found that “younger children and children with poorer reading skills are less able to respond appropriately to negative items and that this effect biases the interpretation of their responses” (p. 37). The sample population in this study consisted of students in third and fourth grades. The Virginia Department of Education school profile report for this school indicates that the students are scoring below the levels attained by the division and state aggregated scores for reading English (“Virginia Department of Education, School, School Division and State Report Cards,” n.d.). As a result, in this study, understanding the six negatively worded questions was impacted; questions were removed from the full analysis.

Conclusion and Implications

The results of this study support previous research that parents directly and indirectly influence children’s activity levels and further use of the Youth Physical Activity Promotion Model (Welk, 1999). Welk (1999) and Smith (2004) noted that future studies should focus on various ethnic groups in addition to Caucasian and African-

American students. This study shows that the results for the YPAP model are consistent when used in a socio-demographically diverse student population. The results also appear to indicate that parental influence combined with community support is strong enough to overcome the barriers typically created by safety concerns and the built environment. Future research should focus on collaborative efforts that support parents in their attempts to influence child physical activity behavior. Bringing together parents, school staff, health organizations, local government and non-profits in an effort to effect change in child physical activity behavior can be productive and support student mental and physical health.

Increased levels of physical activity can play a significant role in creating the environment needed to increase healthy behaviors, and reduce medical issues related to obesity and diabetes. Physical activity can influence a number of positive outcomes in the life of a child including improved cognitive skills affecting academic performance, providing high self-esteem, physical fitness and health. In an effort to increase the number of students graduating from high school and college who are innovative and possess critical thinking skills, it would appear that increased opportunities for physical activity can play a key role in improving student success.

This research study focused on a socio-economically diverse student population, where Hispanic/Latino students comprise the largest population segment. The Hispanic/Latino population is the fastest growing segment of the population in the United States. From 1980 to 2011 the Latino population has grown from 14.6 million to nearly 52 million, and is expected to reach 132 million by the year 2050 (United States Census

Bureau, 2011). It is imperative that opportunities are provided for all children, especially those who live in a diverse socio-economic environment and may be more at risk for the negative consequences of sedentary behavior, to engage in physical activity and sports. Parental influence supports the introduction and adherence of healthy behavior habits including children being physically active. Increased levels of participation in physical activity and sports can lead to enhanced academic performance and well-being.

There is a need to create an environment in which opportunities are provided to all students for participation in physical activity. Government, business, schools, recreation departments, the religious community, and non-profit organizations, must work with parents and familial groups to provide the tools necessary to help children to create healthy lifestyle habits that stay with them as they grow into adulthood. Inclusion and communication are key factors in engaging parents in this process. Efforts must be made to include all parents (or guardians) in the decision-making process, and to find ways to communicate opportunities that are available for engaging their children in sports and physical activity. One possible solution to improve inclusion and communications was noted by parents in the parent focus group discussion. It was recommended that the school district work with local government to create an online portal that would provide a location for parents to view available opportunities in the local area for sports and recreation. Based on the feedback from the parent focus group, it appears that parents will support and encourage, their child's physical activity behavior if they have the information needed on available opportunities in a timely and easy to find format.

Based on the feedback received from the parent focus groups and the student survey data, it appears that parents want to make a difference in how their children spend their leisure time. Clearly, parental influence is essential to increasing physical activity levels of children. Such influence will, in turn, create healthy lifelong patterns of behavior that will enhance the well-being of individuals and society.

APPENDICES

Appendix A. HSRB Approval



Office of Research Subject Protections

Research Hall
4400 University Drive, MS 6D5, Fairfax, Virginia 22030
Phone: 703-993-4121; Fax: 703-993-9590

TO: Ellen Drogin Rodgers, College of Education and Human Development

FROM: Aurali Dade
Assistant Vice President, Research Compliance 

PROTOCOL NO.: 8112 Research Category: Masters Thesis

PROPOSAL NO.: N/A

TITLE: Parental Influence on the Physical Activity Behavior of School-Age Children in a Socio-economically Diverse Community

DATE: June 6, 2012

Cc: Rick Holt

On 6/6/2012, the George Mason University Institutional Review Board (GMU IRB) reviewed and approved the above-cited protocol following expedited review procedures.

Please note the following:

1. A copy of the final approved consent document is attached. You must use this copy with the IRB stamp of approval for your research. Please keep copies of the signed consent forms used for this research for three years after the completion of the research.
2. **Any modification to your research (including the protocol, consent, advertisements, instruments, funding, etc.) must be submitted to the Office of Research Integrity & Assurance (ORIA) for review and approval prior to implementation.**
3. Any adverse events or unanticipated problems involving risks to subjects including problems involving confidentiality of the data identifying the participants must be reported to the ORIA and reviewed by the IRB.

The anniversary date of this study is 6/5/2013. **You may not collect data beyond that date without GMU IRB approval.** A continuing review form must be completed and submitted to the ORIA 30 days prior to the anniversary date or upon completion of the project. In addition, prior to that date, the ORIA will send you a reminder regarding continuing review procedures.

If you have any questions, please do not hesitate to contact me at 703-993-5381.

Appendix B. HSRB Application



Office of Research Subject Protections
4400 University Drive, MSN 6D5, Fairfax, Virginia 22030
Phone: 703-993-4208, 703-993-4121; Fax: 703-993-9590

Human Subjects Review Board (HSRB)

New Submission Checklist

To avoid delay in the processing of HSRB applications, please ensure that the following are included in your application. Applications cannot be reviewed until all of the following checklist items are submitted.

YES	NO	N/A	ITEM
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Application with ALL sections completed (including check boxes on first page)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Application signed by Principal Investigator
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CITI Training completed by all researchers including research assistants
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Proposed Consent Form (See Template Consent and Consent Guidelines)– All instructional language removed, written at the appropriate reading level for participants
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Proposed Assent Form (If minors are involved) – Written at the appropriate reading level for the age group (Contact ORSP for a sample of a 6 th grade Assent Form)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Instrumentation – All surveys, questionnaires, standardized assessment tools, interview questions, focus group questions/prompts or other instruments of data collection
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Recruitment Materials – Letters to potential participants, advertisements, flyers, listserve postings, emails, brochures, SONA postings, telephone scripts, presentation scripts, etc.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Grant Applications – If the research is funded, include the grant application as submitted to the funding agency (Please note that the HSRB application title must match the grant application title.)
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Debriefing Form – If the study proposes to use deception or incomplete information to participants
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cultural Contact Information – If the study is being conducted outside the US, the HSRB must inquire about the conduct of research in that country. Submit the name and contact information of an individual who can provide that information.

Applications can be reviewed without the following items, but if they are applicable to the study, they must be submitted before approval can be given.

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Research in Mason Classrooms – Submit permission from the instructors when course credit is given
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Research in School Systems – Submit approval letter from the school district Human Subjects Review Board
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Research in Universities – Submit approval letter from the University Human Subjects Review Board
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Research in Hospitals – Submit approval letter and approved consent document from the hospital Human Subjects Review Board
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Research in Institutions/Organizations without Human Subject Review Boards – Submit permission letter from the institution/organization
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If George Mason is the primary recipient of funding, submit Human Subjects Review Board approval from subcontractors conducting human subjects research
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Psychology Department – Sign off by the Chair of the Department
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	School of Management (SOM) – Submit SOM routing form with all approval signatures
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other Mason Committee Oversight– If your study involves the use of blood or other human biological specimens, submit Institutional Biosafety Committee approval. If your study involves sources of ionizing radiation or X-ray producing devices, submit Radiation Safety Committee approval.

George Mason University
Human Subjects Review Board
Application for Human Subjects Research Review

For ORSP Use Only		GMU
Protocol No. _____	Proposal No. _____	
Classified: <input type="checkbox"/> Exempt <input type="checkbox"/> Non Exempt <input type="checkbox"/> Expedited		
Signature _____		Date _____

Federal Regulations and George Mason University policy require that all research involving humans as subjects be reviewed and approved by the University Human Subjects Review Board (HSRB). Any person, (GMU faculty member, staff member, student, or other person) wanting to engage in human subject research at or through George Mason University must receive written approval from the HSRB before conducting research. Approval of this project by the HSRB only signifies that the procedures adequately protect the rights and welfare of the subjects and should not be taken to indicate University approval to conduct the research.

Please complete this cover page AND provide the Protocol information requested on the back of this form. Forward this form and all supporting documents to the Office of Research Subject Protections, MS 6D5. If you have any questions please feel free to contact ORSP at 703-993-4121.

Project Title:	Parental Influence on the Physical Activity Behavior of School-Age Children in a Socio-economically Diverse Community	
	Principal Investigator (Must be Faculty)	Co-Investigator / Student Researcher*
Name	Dr. Ellen B. Drogin Rodgers	Rick Holt
Department	Associate Dean, Student and Academic Affairs, CEHD	IIR & Payroll
Mail Stop	4B4	3C3
Phone	703-993-2034	703-993-4576
Email	erodger1@gmu.edu	rholt2@gmu.edu

*Student researchers should provide a mailing address rather than campus address. Additional researchers should be listed on a separate page.

Type of Project:

☐ Faculty/Staff Research
☐ Doctoral Dissertation
☒ Masters Thesis
☐ Student Project (Specify Grad or Undergrad):
☐ Other (Specify):

VULNERABLE POPULATION:	PERSON IDENTIFIABLE DATA:	RESEARCH DESIGN:
<input type="checkbox"/> Fetuses/Abortuses/Embryos	<input type="checkbox"/> Audio taping	<input type="checkbox"/> Questions on harm to self or others
<input type="checkbox"/> Pregnant women	<input type="checkbox"/> Video taping	<input type="checkbox"/> Questions on illegal behavior
<input type="checkbox"/> Prisoners	<input type="checkbox"/> Data collected via email	<input type="checkbox"/> Deception
<input checked="" type="checkbox"/> Minors	<input type="checkbox"/> Data collected via Internet	<input type="checkbox"/> Human/computer interaction
<input type="checkbox"/> Mentally disabled	<input type="checkbox"/> Confidential electronic records	<input type="checkbox"/> Collection/analysis of secondary data
<input type="checkbox"/> Emotionally disabled	<input checked="" type="checkbox"/> Coded data linked to individuals	Funding: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<input type="checkbox"/> Physically disabled	<input type="checkbox"/> Human biological materials	Source:
<input type="checkbox"/> Undergrad student pool (Psych/SOM)	Biosafety Project #:	OSP Proposal #:
<input type="checkbox"/> Other:	(If yes, please attach a copy of the grant application)	

I certify that the information provided for this project is correct and that no other procedures will be used in this protocol. I agree to conduct this research as described in the attached supporting documents. I will request and receive approval from the HSRB for changes prior to implementing these changes. I will comply with the HSRB policy for the conduct of ethical research. I will be

responsible for ensuring that the work of my co-investigator(s)/student researcher(s) complies with this protocol.

Principal Investigator Signature

Date

ABSTRACT

1. Describe the aims and specific purposes of the research project and the proposed involvement of human participants.

Research studies have shown that childhood obesity is growing at an alarming rate. Hispanic/Latino children have a higher incidence of overweight and obesity, as well as sedentary behavior. Possible interventions to address the health and well-being outcomes of overweight and obese youth include diet, exercise, and the influence of others. Research has shown that parents have the most influence over their children's physical activity before the age of 9; after which time, physical activity levels begin to decline. In an effort to improve the health and well-being of children, those factors encouraging childhood physical activity must be identified. This study will test the Youth Physical Activity Promotion Model developed by Welk (1999), and utilized by Crim et al., 2009; Smith, 2004; Trost et al. 2003; and Welk et al., 2003. To date, such studies have examined parental influence on child physical activity behavior among those residing in majority white, middle-upper class communities, or rural black communities. The focus of this study will be delimited to a largely hispanic/latino population.

2. Describe the characteristics of the intended sample (number of participants, age, sex, ethnic background, health status, etc.).

The intended sample will consist of approximately 228 student-parent dyads from Jennie Dean Elementary School in the City of Manassas school system, Manassas, Virginia. The female and male students are in grades 3 and 4, with ages ranging from 8 to 11 years old. The ethnic makeup of the student population in grades 1 through 4 at Jennie Dean Elementary is 55% Hispanic/Latino (of varied races); 20% African-American (non-Hispanic); 21% Caucasian (non-Hispanic); and 4% other (non-Hispanic).

3. Identify the criteria for inclusion or exclusion. Explain the rationale for the involvement of special classes of participants (children, prisoners, pregnant women, or any other vulnerable population).

Purposive sampling was used to select the school based on the need for a sample of children of various ethnic backgrounds. Previous research utilizing the Youth Physical Activity Promotion Model as a basis to assess the effect of parental influence on child physical activity behavior have been conducted in mostly white, suburban and rural communities with majority middle to upper income populations. This study population consists of a majority minority student population in a mixed income setting. Childhood obesity can lead to adult obesity having adverse health and social consequences. Research studies have shown that Hispanic/Latino children have a higher incidence of obesity and sedentary behavior, and a lower level of physical activity. The Hispanic/Latino population is the fastest growing minority in the United States. Elementary school students must be included in this survey to assess their perceptions of parental influence, their attraction to physical activity and their perceived physical activity competence.

4. Describe your relationship to the participants if any.

None

PROTOCOL – Involving Human Participation

1. If there are direct benefits to the participants, describe the direct benefits and also describe the general knowledge that the study is likely to yield. If there are no direct benefits to the participants, state that there are no direct benefits to the participants and describe the general knowledge that the study is likely to yield.

There are no direct benefits to the participants. The study will help identify what factors of parental influence play direct or indirect roles in child physical activity behavior. Comparing the data from this study to data from previous studies will help determine the generalizability to different ethnic groups. Given the incidence of childhood obesity and sedentary behavior, and low physical activity levels among Hispanic/Latino children, this study may provide insights that can help provide parents with techniques to reverse these trends.

2. Describe how participants will be identified and recruited. Note that all recruitment materials (including ads, flyers, letters to participants, emails, telephone/presentation scripts, SONA postings) for participants must be submitted for review for both exempt and non-exempt projects.

All students at Jennie Dean Elementary in grades 3 and 4 are eligible to participate in the study. Students will be notified by their physical education teacher that a research study will be conducted at the end of May and that they are invited to participate with their parents consent. Parents will be sent a letter from the school notifying them of the research study and the purpose of the study. Parents will be invited to participate in a focus group to take place on June 5 from 9:00AM-10:00AM at Jennie Dean Elementary. The Parent Teacher Association is notifying parents of the event. All parents who have students in grades 3 and 4 are being invited to participate in the focus group.

3. Describe your procedures for obtaining informed consent. Who will obtain consent and how will it be obtained. Describe how the researchers will ensure that subjects receive a copy of the consent document.

Parents will be notified of the research study by sending a flyer to each home. Per the school district policy parents can opt out of having their children participate in the study. The researcher will provide the students with the student assent form prior to initiating the student survey. Only children who sign their own assent form will be surveyed. The students will complete the student survey the week of June 4 during their regularly scheduled physical education class period (estimated to take no more than 30 minutes). Parents who attend the focus group will be asked to sign a consent form that will be provided by the researcher at the start of the focus group. The researcher will introduce himself, explain the purpose of the study and the focus group and then hand out the consent forms to the parents for signature.

4. State whether subjects will be compensated for their participation, describe the form of compensation and the procedures for distribution, and explain why compensation is necessary. State whether the subjects will receive course credit for participating in the research. **If yes**, describe the non-research option for course credit for the students who decide not to participate in the research. The non-research option for course credit must not be more difficult than participation in the research. Information regarding compensation or course credit should be outlined in the Participation section of the consent document.

No compensation will be provided as part of the research study.

5. If minors are involved, their active assent to the research activity is required as well as active consent from their parents/guardians. This includes minors from the Psychology Department Undergraduate Subject Pool. Your procedures should be appropriate to the age of the child and his/her level of maturity and judgment. Describe your

procedures for obtaining active assent from minors and active consent from parents/guardians. Refer to the *Guidelines for Informed Consent for additional requirements if minors from the Psychology Subject Pool are involved.*

.Parents will be sent a flyer from the school detailing the intent of the the research study and the information needed to notify the school if they want their child excluded from the study. The researcher and physical education teacher will provide the students with the student assent form prior to initiating the student survey (handing them out and collecting them). Only children who return the signed student assent form will be surveyed.

6. Describe the research design and methods. What will be done to participants during the study? Describe all tests and procedures that will be performed. Include an estimate of the time required to complete the tests and procedures.

This research study has a mixed qualitative/quantitative design. Demographic information will be collected from parents and students as part of the completion of the survey. Parents will be asked to participate in focus group that will take place on Tuesday, June 5, from 9:00am through 10:00am at Jennie Dean Elementary School. During the focus group (consisting of structured and unstructured questions), parents will be asked to provide basic demographic information including the following: gender, age, level of education, income level, number of children in household and ethnicity. Parents will then be asked a series of questions and parental involvement and influence on physical activity. The focus group discussion will be recorded by the researcher.

Students will be asked to complete the student survey during school hours in their regularly scheduled physical education class. They will be asked to provide the following demographic information: age, grade level, gender and ethnicity. The demographic information will be included on a cover sheet attached to the student questionnaire. Students will be asked a series of questions from two different measures. It is estimated that it will take approximately 30 minutes to have students complete the student assent form, provide instructions and complete the student questionnaire. The researcher will explain instructions for the survey to students. The researcher will read the survey questions out loud to the students for part two of the survey.

7. Describe how confidentiality will be maintained. If data will be collected electronically (e.g. by email or an internet web site), describe your procedures for limiting identifiers. Note that confidentiality may have to be limited if participants are asked questions on violence toward self or others or illegal behavior. Contact the Office of Research Subject Protections for assistance.

Students will not be required to provide their names on the student survey. The information from the surveys will be manually entered into an electronic database using randomly generated code numbers so that individuals cannot be identified. Data will be used in aggregate so as to keep personal information confidential. The research and principal investigator will be the only people with access to the paper questionnaires. The electronic data will be stored securely on a password protected thumb drive and Mason account. Original paper questionnaires completed by the students will be shredded after data is entered. The notes taken by the researcher from the focus group discussion will be scanned and stored securely on a password protected thumb drive and Mason account. The hand written notes will be shredded after they have been scanned. The recorded focus group discussion will be secured in a locked container at George Mason University. The researcher and principal investigator will be the only people with access to the scanned notes and recording of the focus group discussion. The information will be transcribed. The transcription will be checked for accuracy by the researcher. The recording will be erased once the information is verified by the researcher and authorized by the principal investigator.

8. Describe in detail any potential physical, psychological, social, or legal risks to participants, why they are reasonable in relation to the anticipated benefits and what will be done to minimize the risks. Where appropriate, discuss provisions for ensuring medical or professional intervention in case participants experience adverse effects. Where appropriate, discuss provisions for monitoring data collection when participants' safety is at risk.

No potential physical, psychological, social, or legal risks are anticipated.

9. If participants will be audio-or video-taped, discuss provisions for the security and final disposition of the tapes.
Refer to Guidelines for Informed Consent.

The recorded focus group discussion will be secured in a locked container at George Mason University. The researcher and principal investigator will be the only people with access to the recording. The information will be transcribed. The transcription will be checked for accuracy by the researcher. The recording will be erased once the information is verified by the researcher and authorized by the principal investigator.

10. If participants will be misinformed and/or uninformed about the true nature of the project, provide justification. Note that projects involving deception must not exceed minimal risk, cannot violate the rights and welfare of participants, must require the deception to accomplish the aims of the project, and must include a full debriefing.
Refer to Guidelines for Informed Consent.

N/A

11. Submit a copy of each data collection instrument/tool (including questionnaires, surveys, standardized assessment tools, etc.) you will use and provide a brief description of its characteristics and development. Submit scripts if information and/or questions are conveyed verbally.

Attached; Focus group questions for parents. The student survey will consist of questions from the PAQ-C and CPAC scale (Welk, 2003). Part one of the survey, the PAQ-C, is a 7 day recall questionnaire designed to assess general levels of physical activity in children ages 8-14. It has been used in a number of studies involving children to include Crim et al., 2009, Smith, 2004, Trost et al., 2003 and Welk et al., 2003. It provides a summary physical activity score derived from nine items, each scored on a 5-point scale. Studies have shown good reliability ($r = .75$ for males and $r = .82$ for females) and validity of the instrument (Kowalski et al., 1997). Part two of the survey, CPAC, is designed to measure attraction to physical activity perceived athletic competence and parental influences on child physical activity (Welk et al., 2003). CPAC has been used in a number of studies involving children to include Crim et al., 2009, Smith, 2004, Trost et al., 2003 and Welk et al., 2003. The alpha reliability for the CPAC instrument in previous studies has ranged from .70 to .74 (Welk et al., 2003). To measure these constructs, the survey will use two previously validated instruments (Brustad, 1993, 1996; Harter 1982, 1985). All of these instruments used Harter's (1982, 1985) structured alternative question format. This format reduces socially desirable responses by presenting children with two opposing choices and then asking them to choose which statement best represents how they describe themselves (Harter, 1985). Children's attraction to physical activity will be measured using the Children's Attraction to Physical Activity Scale (CAPA (Brustad, 1993, 1996). The original CAPA scale contained 25 items that measured attraction to physical activity on five subscales. Welk et al. (2003) took the original 25 – question scale and reduced it to 15 questions through pilot studies. Brustad has now developed a shorter version that contains 15 items, the best three from each of the five subscales in the original longer version (Smith, 2004). Since the CAPA short version is now recommended for use, these questions will be used in Part Two of the survey. Children's perceived athletic competence will be measured using Harter's Self-Perception Profile for Children (1985). Five domains of children's self-worth were measured in the Profile instrument, including scholastic competence, social competence,

athletic competence, physical appearance, and behavioral conduct (Harter (1985). Only the six questions measuring athletic competence will be used in Part Two of this survey ($r = .80-.86$) (Harter, 1985). Welk (2003) developed four scales to assess parental influence. The original 4 scales developed by Welk consisted of 18 questions. The 15 questions used in this survey are designed to assess parental encouragement, involvement, facilitation and parent activity involvement.. In using the structured alternative format, the questions are assigned values of 1-4. One represents a low level of parental influence and 4 represents a high level of parental influence

12. **INFORMED CONSENT:** Attach appropriate Proposed Informed Consent document(s). **See Guidelines for Informed Consent and the Template Informed Consent Document for additional information.**

13. **APPROVAL FROM COOPERATING INSTITUTION/ORGANIZATION:** If a cooperating institution/organization provides access to its patients/students/clients/ employees/etc. for participant recruitment or provides access to their records, Attach written evidence of the institution/organization human subjects approval of the project.

PROTOCOL - Involving Existing Records

For the study of existing data sets, documents, pathological specimens, or diagnostic specimens.

1. Describe your data set.
2. Provide written permission from the owner of the data giving you access for research purposes at George Mason University if the data set is not publicly available.
3. Describe how you will maintain confidentiality if the data set contains person identifiable data.
4. Describe what variables you are extracting from the data set.

Appendix C. Parental Notification Letter

Parental Notification Letter

Parental Influence on Child Physical Activity Behavior Survey

Our school is taking part in a study being conducted by a graduate student from George Mason University. The survey is focused on identifying factors that promote increased student physical activity. The survey will be conducted for students in grades 3-4. The content of the survey includes questions related to student's physical activity behavior. Doing this paper and pencil survey will cause little or no risk to your child. Students will not put their names on the survey. All students in grades 3-4 will have the opportunity to participate in the survey. The survey will be conducted during regularly scheduled physical education classes. The survey is voluntary. The information will be confidential and used in an aggregate manner so that individual feedback cannot be determined.

If you do not want your child to participate in this survey, please contact the school office by sending a note through your child to his or her physical education teacher-Don Regenbogen.

Parents will be sent a short survey requesting feedback on their physical activity behavior and factors involving parental influence on the physical activity behavior of their children. The school will send the survey home with your child. Doing this paper and pencil survey will cause little or no risk. The information will be confidential and used in an aggregate manner so that individual feedback cannot be determined. The survey is voluntary.

Parents who complete the survey and return in the sealed envelope to the physical education teacher will be entered in a random drawing. Two winners will be selected to receive a \$50.00 gift card from Giant Food Supermarkets.

Appendix D. Manassas School Policy (Innovative or Experimental Projects)

Excerpt from City of Manassas School Policy

02/06 6-19

INSTRUCTION

INNOVATIVE OR EXPERIMENTAL PROJECTS

A. Scope of this Policy: Experimental and innovative programs that are not consistent with accreditation standards or other regulations promulgated by the Board of Education shall be submitted to the Board of Education for approval prior to implementation.

B. Complaints: Any complaints arising under this policy may be submitted under Policy 6- 21, as appropriate.

C. Parental Rights: Parents have the following rights with respect to experimental programs:

1. The right to inspect all instructional materials which will be used in conjunction with such program or project;

2. The right to decline participation in the program on the part of the child after inspection of the instructional materials; and

3. The right to informed consent in any research or experimentation program or project.

- a. As used herein, the term "research or experimentation program or project" means any systematic investigation which departs from the application of established and

accepted methods which are appropriate to meet the students' needs and may result in physical or psychological injury to the participants. The designation of any program or project as a research or experimentation program or project shall be made by the Superintendent.

b. No research shall be conducted or authorized unless the student's parents or guardian (or the student, if legally emancipated) signs a student consent form and has it witnessed.

D. Conduct, Exceptions: The following rules apply to the conduct of experimental research and there are no exceptions to this policy except as provided herein:

1. Any research involving students shall be approved and conducted under the review of a human research committee established by the school division.

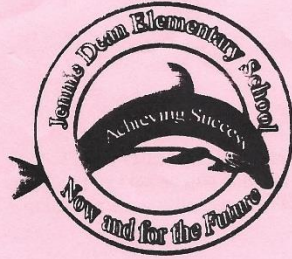
2. If the research results will be such that the subjects cannot be identified and the research falls within the exemptions provided in Virginia law, the research is exempted from these requirements.

3. Any complaints arising under this policy shall be submitted to the superintendent for review as appropriate.

Legal References: 20 U.S.C., §§ 1232h, 20 U.S.C. § 1232h(a), 45 C.F.R. 46.101 et seq. Virginia Code §§ 22.1-16.1, 22.1-70, 22.1-78, 32.1-162.16 through 162.20. 8 VAC 20-131-330,,8 VAC 20-565-10 et seq.

Adopted by School Board: February 21, 2006

Appendix E. Jennie Dean Elementary Newsletter (May/June 2012)



MAY/JUNE 2012

A MESSAGE FROM OUR ADMINISTRATORS

Hello Jennie Dean Families! We are quickly approaching the end of the 2011-2012 School Year, and what a year it has been! We will end the school year with our annual SOL testing. Grades 3 and 4 will be taking their SOL tests between May 17th and June 7th. On June 8th we will celebrate with our end of the year "STARnival"!! Remind students that they earn the STARnival by showing their best behavior at school. We will also have Field Day and several end of the year programs going on. It is sure to be a busy time and an exciting end to a great school year!

A MESSAGE FROM THE SUPERVISOR OF ADMINISTRATIVE SERVICES

Parental Influence on Child Physical Activity Behavior Survey

Our school is taking part in a study being conducted by a graduate student from George Mason University. The survey is focused on identifying factors that promote increased student physical activity. The survey will be conducted for students in grades 3 and 4. The content of the survey includes questions related to student's physical activity behavior. Doing this paper and pencil survey will cause little or no risk to your child. Students will not put their names on the survey. All students in grades 3 and 4 will have the opportunity to participate in the survey. The survey will be conducted during regularly scheduled physical education classes. The survey is voluntary. The information will be confidential and used in an aggregate manner so the individual feedback cannot be determined.

If you do not want your child to participate in this survey, please contact the school office by sending a note with your child.

Parents will be sent a short survey requesting feedback on their physical activity behaviors and factors involving parental influence on the physical activity behavior of their children. The school will send the survey home with your child. Doing this paper and pencil survey will cause little or no risk. The information will be confidential and used in an aggregate manner so that individual feedback cannot be determined. The survey is voluntary.

Parents who complete the survey and return in the sealed envelope to the physical education teacher will be entered in a random drawing. Two winners will be selected to receive a \$50.00 gift card from Giant Food Supermarkets.

SOL TESTING DATES

May 17 – 3 rd Gr. S.S.	May 22 – 4 th Gr. Reading	May 23, 24 – 3 rd Gr. Reading
May 30 – 4 th Gr. Math	May 31 – 3 rd Gr. Math	June 5, 6 – 3 rd Sci., 4 th S.S.

Appendix F. Student Physical Activity Survey

Youth Physical Activity Survey

Please provide the following information:

What grade are you in? _____

How old are you? _____

Are you a girl or a boy? _____

How do you describe yourself (please circle one)?

- Asian or Pacific Islander
- Black or African American
- Caucasian or White
- Mexican American, Latino, or Hispanic
- Native American Indian
- Other _____

Youth Physical Activity Survey

Part 1

We are trying to find out about your level of physical activity from *the last 7 days* (in the last week). This includes sports or dance that make you sweat or make your legs feel tired, or games that make you breathe hard, like tag, skipping, running, climbing, and others.

Remember:

There are no right and wrong answers — this is not a test!

Please answer all the questions as honestly and accurately as you can — this is very important.

1. Physical activity in your spare time: Have you done any of the following activities in the past 7 days (last week)? If yes, how many times? (Mark only one circle per row.)

	No	1-2	3-4	5-6	7 times or more
Skipping	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rowing/canoeing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In-line skating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tag	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Walking for exercise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bicycling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jogging or running	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aerobics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Swimming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Baseball, softball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Football	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Badminton	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Skateboarding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Soccer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Street hockey	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Volleyball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Floor hockey	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Basketball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ice skating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cross-country skiing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ice hockey.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. In the last 7 days, during your physical education (PE) classes, how often were you very active (playing hard, running, jumping, throwing)? (Check one only.)

- I don't do PE ☐
- Hardly ever ☐
- Sometimes ☐
- Quite often ☐
- Always ☐

3. In the last 7 days, what did you do most of the time *at recess*? (Check one only.)

- Sat down (talking, reading, doing schoolwork)... ☐
- Stood around or walked around ☐
- Ran or played a little bit ☐
- Ran around and played quite a bit ☐
- Ran and played hard most of the time ☐

4. In the last 7 days, what did you normally do *at lunch* (besides eating lunch)? (Check one only.)

- Sat down (talking, reading, doing schoolwork)... ☐
- Stood around or walked around ☐
- Ran or played a little bit ☐
- Ran around and played quite a bit ☐
- Ran and played hard most of the time ☐

5. In the last 7 days, on how many days *right after school*, did you do sports, dance, or play games in which you were very active? (Check one only.)

- None ☐
- 1 time last week ☐
- 2 or 3 times last week ☐
- 4 times last week ☐
- 5 times last week ☐

6. In the last 7 days, on how many *evenings* did you do sports, dance, or play games in which you were very active? (Check one only.)

- None ☐
- 1 time last week ☐
- 2 or 3 times last week ☐
- 4 or 5 last week ☐
- 6 or 7 times last week ☐

7. *On the last weekend*, how many times did you do sports, dance, or play games in which you were very active? (Check one only.)

- None ☐
 1 time ☐
 2 — 3 times ☐
 4 — 5 times ☐
 6 or more times ☐

8. Which *one* of the following describes you best for the last 7 days? Read *all five* statements before deciding on the *one* answer that describes you.

- A. All or most of my free time was spent doing things that involve little physical effort ☐
 B. I sometimes (1 — 2 times last week) did physical things in my free time (e.g., played sports, went running, swimming, bike riding, did aerobics) ☐
 C. I often (3 — 4 times last week) did physical things in my free time ☐
 D. I quite often (5 — 6 times last week) did physical things in my free time ☐
 E. I very often (7 or more times last week) did physical things in my free time ... ☐

9. Mark how often you did physical activity (like playing sports, games, doing dance, or any other physical activity) for each day last week.

	None	Little bit	Medium	Often	Very often
Monday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tuesday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wednesday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thursday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Saturday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sunday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Were you sick last week, or did anything prevent you from doing your normal physical activities? (Check one.)

- Yes ☐
 No ☐

If Yes, what prevented you? _____

Youth Physical Activity Survey

Part 2

The following questions ask you about your interests in physical activity.

Instructions:

- Please read the sample question below.
- Choose only one answer.

Remember there is no right or wrong answer; simply choose the one that works best for you.

Never	Rarely	Most of the time	Always
1	2	3	4

Example - I like to eat ice cream more than anything else.			
1	2	3	4

Q1. I have more fun playing games and sports than anything else.			
1	2	3	4

Q2. I like to exercise lots.			
1	2	3	4

Q3. I am told that I am good at games and sports.			
1	2	3	4

Q4. I get teased by other kids when I play games and sports.			
1	2	3	4

Q5. My parents get a lot of exercise.			
1	2	3	4

Q6. I think the more exercise you get, the better.			
1	2	3	4

Q7. I do very well at all kinds of sports.			
1	2	3	4

Q8. My parents let me play on community or school sport teams.			
1	2	3	4

Never	Rarely	Most of the time	Always
1	2	3	4

Q9. I enjoy exercise a lot.			
1	2	3	4

Q10. My parents play games and sports with me.			
1	2	3	4

Q11. My parents are in really good shape.			
1	2	3	4

Q12. My parents help me with sports.			
1	2	3	4

Q13. I don't mind getting out of breath after playing hard.			
1	2	3	4

Q14. I think it is important to always be in good shape.			
1	2	3	4

Q15. Playing games and sports is my favorite thing.			
1	2	3	4

Q16. My parents buy me sports equipment.			
1	2	3	4

Q17. My parents take me to parks and playgrounds.			
1	2	3	4

Q18. My parents tell me that I am good at games and sports.			
1	2	3	4

Q19. I am popular when I play games and sports.			
1	2	3	4

Q20. My parents want me to play outside.			
1	2	3	4

Q21. I look forward to playing games and sports.			
1	2	3	4

Q22. I really like to exercise.			
1	2	3	4

Never	Rarely	Most of the time	Always
1	2	3	4
Q23. I really like to run a lot.			
1	2	3	4
Q24. I feel good when I run hard.			
1	2	3	4
Q25. I try to stay in good shape.			
1	2	3	4
Q26. My parents practice games and sports with me a lot.			
1	2	3	4
Q27. I think I can do well at any new sport I try.			
1	2	3	4
Q28. I wish I could be better at sports.			
1	2	3	4
Q29. My parents don't like to do much physical activity.			
1	2	3	4
Q30. My parents like to walk or bike for exercise.			
1	2	3	4
Q31. I feel that I am better at sports than other kids my age.			
1	2	3	4
Q32. My parents would rather walk or bike to the store if possible.			
1	2	3	4
Q33. My parents remind me to do some physical activity.			
1	2	3	4
Q34. I would rather watch games and sports instead of playing.			
1	2	3	4
Q35. My parents encourage me to try hard at games or sports.			
1	2	3	4
Q36. I don't do well at new outdoor games.			
1	2	3	4

Appendix G. Child Assent Form

George Mason University
Child Assent Form for Research

This research study is being conducted to learn more about how best to increase levels of physical activity. Your answers will help us learn more about elementary school students and will be used to provide improved opportunities for health programs.

Taking part in this project is up to you. Your choice about taking part will not affect your grades in school or your ability to participate in school activities

The answers that you give will be kept private. No one will ever know what you say unless you tell them. Your name will never be used.

This is not a test and there is no right or wrong answer

If you do not want to answer a question you can skip it.

I, _____, understand that my parents have said its okay for me take part in a research project about physical activity done by George Mason University.

I am taking part because I want to, and have been told that I can stop at any time I want to and I won't get in trouble.

What is today's date? _____

Signature

Appendix H. Parental Consent Form

George Mason University Informed Consent Form for Research

Parental Influence on the Physical Activity Behavior of School-Age Children in a Socio-economically Diverse Community

Richard Holt and Dr. Ellen B. Drogin Rodgers, School of Recreation Health and Tourism, College of Education and Human Development

We are asking you to participate in a parent focus group. The purpose of the focus group is to examine various influences that parents have on your children's physical activity levels.

RESEARCH PROCEDURES

If you agree to participate in this focus group you will be asked questions by the researcher concerning your own interest in physical activity and your influences on your child's physical activity levels. The focus group is scheduled to take one hour. The researcher will ask questions, take notes and record the discussion. The recording will be used to ensure the information presented in the focus group is accurately transcribed.

RISKS

There are no foreseeable risks for participating in this study.

BENEFITS

There are no direct benefits to participants. Hopefully, the information found will help in encouraging kids to be more physically active and can help guide any programs that you and your child may have access to in the future.

CONFIDENTIALITY

Although focus group participants will be asked to keep the contents of the discussion confidential, due to the nature of a focus group, the researcher cannot control what participants might say outside of the research setting. The recording will start at the beginning of the focus group session and the researcher will notify you when the recording is going to start and when the recording is stopped. The recording of the focus group discussion will be secured in a locked container at George Mason University until the data can be transcribed and the transcription verified by researchers involved in this study. After verification the data will be erased. The data will only be accessed by the principal investigators.

PARTICIPATION

Your participation in this focus group is voluntary; you may decline to participate without penalty. If you decide to participate you can withdraw from the focus group at any time without penalty. There are no costs to you or any other party.

CONTACT

If you have any questions please contact Rick Holt, or Dr. Ellen B. Drogin Rodgers, School of Recreation, Health and Tourism, College of Education and Human Development at George Mason University. They may be reached at 703-993-2010, or CEHD, George Mason University, 4400 University Drive, Fairfax, VA 22030. You may contact the George Mason University Office of Research Subject Protections at 703-993-4121 if you have questions or comments regarding your rights as a participant in this study.

CONSENT

I have read the above information. I have received a copy of this form. I agree to participate in this focus group with the understanding that I may withdraw at any time.

Printed Name &

Signature _____ Date _____

Appendix I. Parent Focus Group Survey

Parental Influence on the Physical Activity Behavior of School-Age Children in a Socio-economically Diverse Community

There is no right or wrong answer and no personal information will be used for reporting. The data in this study will be confidential. Data will be recorded without personal identifiers. Please be as candid as possible with your responses. Thank you for your time and input.

Name _____

Gender - M/F _____

Year of Birth _____

Level of education

- K-12
- High School degree
- Some College
- College Degree

Income level:

- 0-\$30,000
- \$30,001-\$50,000
- \$50,000-\$75,000
- \$75,001 or more

Number of children in household:

- 1
- 2
- 3
- 4 or more

Ethnicity:

- Asian or Pacific Islander
- Black or African American
- Mexican American, Latino, or Hispanic
- Native American Indian
- White, Caucasian, or Anglo
- Other _____

(Please continue and complete the short survey on the back of this page)

PARENTAL INFLUENCE QUESTIONS

During a typical week. How often have you:

(CIRCLE ONE NUMBER FOR EACH TYPE OF PERSON)

Questions	None	Once	Sometimes	Almost daily	Daily	Don't know	Not applicable
Q1. Encouraged this child to do physical activities or play sports?							
A. Male adult(s)	0	1	2	3	4	5	6
B. Female adult(s)	0	1	2	3	4	5	6
Q2. Done a physical activity or played sports with this child?							
A. Males adult(s)	0	1	2	3	4	5	6
B. Female adult(s)	0	1	2	3	4	5	6
Q3. Provided transportation so this child can go to a place where he or she can do physical activities or play sports?							
A. Male adult(s)	0	1	2	3	4	5	6
B. Female adult(s)	0	1	2	3	4	5	6
Q4. Watched this child participate in physical activity or sports?							
A. Male adult(s)	0	1	2	3	4	5	6
B. Female adult(s)	0	1	2	3	4	5	6
Q5. Told this child that physical activity is good for his or her health?							
A. Males adult(s)	0	1	2	3	4	5	6
B. Female adult(s)	0	1	2	3	4	5	6
Q6. How important is it to you that this child is good at sports and physical activity?							
A. Male adult(s)	0	1	2	3	4	5	6
B. Female adult(s)	0	1	2	3	4	5	6

Appendix J. Parent Focus Group Questions

Parent Focus Group Interview Guide

Parental Influence on the Physical Activity Behavior of School-Age Children in a Socio-economically Diverse Community

Introduction

Hi, my name is Rick Holt and I work at George Mason University. I asked to be able to meet with you today to learn more about the physical activity participation of your children and how you feel about physical activity and sport. I am interested in learning about all of the different things you consider when you determine your child's physical activity. I suspect that there are some interesting and insightful experiences that you can share with us today. I am so pleased that you are willing to participate in this project. I will be recording our conversation so that I can accurately transcribe what we discuss. Is everyone okay with me recording the conversation? No one will hear the tape, or see the transcript, except me and the principle investigator. Your identities will be kept confidential.

With us today to observe the discussion is Sandy Thompson, Supervisor of Administrative Services for Manassas City Public Schools.

Introductions -

Your name, and activity or sport you or your kids are involved in, and I will start off the introductions with my story.

I am an exercise advocate and love to bicycle, run and swim. One of my daughters enjoys running and the other likes to bike ride. Growing up I liked to ride bikes. I remember once that I broke my foot running barefoot on an uneven hill. The doctor put a cast on it and said I had to wear it for three weeks. It was summer time and I did not want to stop riding my bike. At the end of the first week I had cracked the cast while riding my bike and had to go back for another one. At the end of the second week I cracked the cast again while riding my bike. I made it to the end of the third week without breaking the cast, but I was able to ride my bike during the three weeks my cast was on. How did my foot turn out? Just fine and I know this because I ended up being a high school track star. Oh, I still like to bike and often commute to work on my bike.

Demographic

Before we get started I would like to ask some background questions and have you complete a short survey concerning physical activity participation:

Age, Ethnicity, Income, Number of children in household

Main topics

Physical Activity

- Q1. How much exercise do you get during an average week?
- Q2. What or whom do you think influences your physical activity?
- Q3. How do you feel about physical activity? (BE SURE THEY KNOW WHAT YOU MEAN BY PA...MIGHT NEED TO SAY SPORTS, DANCE, PLAYING, BIKING, WALKING, RUNNING, ETC.)

Support for Child Physical Activity

- Q4. In what ways do you influence your child to be physically active?
- Q5. What facilitates your child getting involved in physical activity?

Physical Activity in School

- Q6. What opportunities are there for your child to be physically active in school?
- Q7. What type(s) of physical activity is (are) your child involved in during school?

After School Physical Activity and Sports

- Q8. What things do you think would help your child to be more active outdoors?
- Q9. What are your thoughts on opportunities for your child to be physically active, or involved in sports after school?

Safety/Built environment

- Q10. Thinking about your neighborhood what concerns do you have about your child being physically active in that environment?
- Q11. What things would you like to see in your neighborhood to help your child be more active?
- What concerns you most about your child's safety?

Walking and Biking to School

- Q12. What do you think about walking and biking for exercise?
- Q13. How do you feel about your child walking for biking to school?

Recreation Facilities and Parks

- Q14. What are your thoughts on the value of recreation and parks?

School events

- Q15. Did any of you have the opportunity to attend the October Harvest Moon Healthy Kids event?
- Q16. What you remember most about the event?

Appendix K. Jennie Dean Harvest Moon Family Fun and Night 2011



Fun for the whole family
at the

Harvest Moon Family Fun Night

Wednesday, October 12th
From
6:30 p.m. - 8:00 p.m.

Jennie Dean Elementary
9601 Prince William Street

Activities to include:

<i>Boys and Girls Club – Fitness Demonstrations</i>	Northern Virginia Healthy Kids Coalition 9-5-2-1-0	<i>Outdoor Learning Garden Tour</i>
Walking Challenge	<i>Fitness Circuit</i>	<i>A-1 Cycling Bike Safety and Tune Ups</i>
<i>Jump Rope Station</i>		

Thank you to our sponsors:

- 4-H Green Club
- A-1 Cycling
- Boys and Girls Club
- Jennie Dean PTA
- Jennie Dean Wellness Committee
- Manassas City Police Department
- MCPS School Health Advisory Board
- Northern Virginia Healthy Kids Coalition
- Preventionconnections.org -
Safe Routes to School Mini-Grant
- Rick Holt - George Mason University

manassas City
Police Department
Bike Rodeo

**Healthy
Snacks will be
provided**



Appendix L. Jennie Dean's Harvest Moon Festival 2012




Fun Run/Bike Ride

- Bring your bike, or just your feet, and join us as we complete a short run and/or bike ride around the school!
- This event begins at 9:00 with the pre-event procedures. Meet outside at the front corner of the gym.
- The Police Bike Rodeo will be at the Festival from 10:00am-11:00am and a representative from A-1 Bike Shop will be available from 10:00am-1:00pm.

Festival Events

- Healthy Snacks and H2O
- Ethnic food for sale
- Manassas Sports Pub
- Exciting Games
- Horse Rides
- Hay/Wagon Rides
- Manassas City Volunteer Fire Department
- Face Painting
- Demonstrations
 - Road Tennis
 - Yoga
 - Zumba®
 - Manassas Dance Company

October 20, 2012
Fun Run and Bike Ride
at 9:00am
Festival open from
10:00am-1:00pm



Come join the Jennie Dean Staff, Families, and Community for a few hours of fun, exercise, and adventure!



Events:



- Fun Run/Bike Ride 9:00am
- Festival Opens 10:00am
- Police Bike Rodeo 10:00am-11:00am (Backyard)
- Fire Engine on display 10:00am-11:45am (Front of School)
- Face Painting 10:00am-12:30pm (Back Bus Loop)
- Games 10:00am-1:00pm (Back Bus Loop)
- Horse Rides 10:00am-1:00pm (Back Bus Loop)
- Hay/Wagon Rides 10:00am-1:00pm (Back Bus Loop)
- A-1 Bike Shop 10:00am-1:00pm (Hym)
- Yoga Demonstration 10:15am-10:45am (Hym)
- Pumpkin Walk 10:30am-11:30am (Back Bus Loop)
- Ethnic Food Sales 10:30am-1:00pm (Back Bus Loop)
- Manassas Sports Pub 10:30am-1:00pm (Back Bus Loop)
- Road Tennis Demonstration 11:10am-11:40am (Backyard)
- Zumba® Demonstration 11:15am-11:45am (Hym)
- Manassas Dance Company Demonstration 12:10pm-12:40pm (Hym)




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CURRICULUM VITAE

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