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THE INFLUENCE OF OBSERVATIONAL LEARNING ON SELF-REPORTED
PHYSICAL ACTIVITY, SELF-EFFICACY FOR PHYSICAL ACTIVITY,
AND HEALTH-RELATED FITNESS KNOWLEDGE

by

Charles Gregory Bullock

Abstract of a Dissertation
Submitted to the Graduate School
of the University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

December 2014

ABSTRACT

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by Charles Gregory Bullock

December 2014

The obesity epidemic has caused tremendous burden to our economy and healthcare system. Physical activity is one method that can reduce the obesity rate. However, physical activity declines in high school and does not recover. The likelihood of adolescents continuing their involvement in physical activity depends on how they navigate the highs and lows of their physical activity experiences (Feltz & Magyar, 2006). The purpose of this study is to look at the role of observational learning in physical activity and behaviors in an adolescent population. Specifically, this research examines the influence of observational learning on self-reported physical activity, self-efficacy for physical activity, and health-related fitness knowledge, controlling for gender, ethnicity, and grade.

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A Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

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CHAPTER I

INTRODUCTION

Background of Study

The rise in rate of overweight children is of concern because those who are overweight as adolescents and children are more likely to become overweight and obese adults (USDHHS, 2001). This research further indicates that an obesity epidemic also jeopardizes the future economic competitiveness and military security of our nation. Health insurance agencies have recognized the disaster that lies ahead should health habits not improve, and many companies encourage employees to enroll in health maintenance organizations that emphasize wellness (Merkle & Treagust, 1993). Physical educators have repeatedly warned that more emphasis on physical activity is needed now more than ever as sedentary computer-based pursuits continue to occupy students' leisure time (Goodwin, Fitzpatrick, & Craigon, 1996). Current trends in juvenile obesity are a cause for concern (Biddle, Gorley, & Stensel, 2004b).

Youth and Physical Activity

The promotion of physical fitness in adolescence may be important in helping to delay the development of heart disease in young adults (Boreham et al., 2002). A strong inverse association between age and participation in physical activity has been reliably reported in epidemiologic data. Physical activity levels begin to decline early in childhood, and the decline continues throughout childhood and adulthood (Calfas et al., 2000). Offering quality physical education taught by skilled instructors is critical in high school as the decline in physical activity is most prevalent in adolescence. National guidelines require that adolescents be involved in 60 minutes of moderate-to-vigorous

physical activity a day; however, only 8% of adolescents meet these requirements (Troiano et al., 2008).

School as an Intervention

The school system in the United States is extensive and offers an opportunity to positively impact students' perception of physical activity; however, today, schools compete fervently for status within their districts and states, and most of this competition centers on testing in the academic areas. One could speculate that if schools had also to prove their competence by required state testing in physical education, more emphasis would be placed on the program. The purpose of the educational system in the United States is to prepare young people to become educated adults, but academic competition seems to have taken the forefront in most school systems limiting opportunities that emphasize the importance of physical activity throughout the lifespan. According to the School Health Policies and Programs Study conducted in 2006, almost 22% of schools overall did not have a physical education requirement (Lee, Burgeson, Fulton, & Spain, 2007). This study also indicated that as grade level increased among schools that required physical education in at least one grade, physical education requirements decreased from 50% or more in grades 1 through 9 to only 20.4% in grade 12. Only 59% of the schools requiring physical education grades considered those grades the same as grades from other subject areas. Physical activities taught in physical education classes in the schools have emerged as an important way to educate students to improve their health (Corbin, 2002a, 2002b; President's Council on Physical Fitness and Sports, 2006; USDHHS, 2000). Two reasons for quality physical education programs in our schools are: (a) developing an active lifestyle is a learned behavior and should be established as

early as possible and (b) the carryover effects of physical activity habits developed in childhood are important in developing such patterns in adulthood (President's Council on Physical Fitness and Sports, 2006).

Declarative Knowledge a Factor

Keating et al. (2009) suggest that our nation's longtime failure to change student physical activity patterns could be a result of continuing to make use of a curriculum that incorporates little teaching of health related fitness knowledge. Knowledge empowers us to make correct choices, and, when one considers information that will impact physical activity, knowledge impacts our physical well-being as individuals and as a nation. According to Keating et al. (2009), mastery of student health-related fitness knowledge might be used to hold students and teachers accountable, and they recommend that student health-related fitness knowledge assessment be standardized for each grade in K-12 programs. We must consider that, after all these years of attempting to change physical activity behavior in a ready-made wide scoping delivery system (our schools), the method of delivery may need re-examining. Perhaps a different approach to our teaching methods might better equip students with the knowledge and skills to lead a more physically active lifestyle. By teaching knowledge to individuals that will help them achieve active lifestyles, physical educators have the opportunity to take steps to change lives. Health-related fitness knowledge, when taught by physical educators and class room teachers, has an impact on moderate to vigorous activity (Fox & Biddle, 1988). One of the questions this research project will attempt to answer is what influence health-related fitness knowledge has on self-reported physical activity.

Conceptual Framework

Albert Bandura's 1986 Observational Learning Theory (OLT) could be useful in the physical education class. Bandura's theory has become perhaps the most influential theory of learning and development. The following steps are involved in the observational learning process: (1) Attention—In order to learn one needs to pay attention. One is far more likely to dedicate full attention to an interesting model; (2) Retention—Storing information is an important part of the learning process; (3) Reproduction—Performing the learned behavior observed and practicing that behavior leads to improvement and skill advancement; and (4) Motivation—Actions will weaken unless the perceived consequences of performing them are favorable to cause a repeated performance (Bandura, 1986). In a physical education environment, students are attending to multiple environmental and cognitive cues. The OLT suggests that students who attend to cues and use peers and teachers as models will attempt to reproduce those skills on their own. A critical piece of this theoretical framework is the final component of motivation. Motivation is necessary to inspire individuals to desire to demonstrate repeatedly the knowledge that they have acquired, therefore, strengthening the performance of the learned behavior.

Statement of Problem

The obesity epidemic has caused tremendous burden to our economy and healthcare system. Physical activity is one method that can reduce the obesity rate. However, physical activity declines in high school and does not recover. The likelihood of adolescents continuing their involvement in physical activity depends on how they navigate the highs and lows of their physical activity experiences (Feltz & Magyar,

2006). The purpose of this study is to examine the relationship among the following: (a) observational learning and self-efficacy for physical activity; (b) observational learning and health-related fitness knowledge; (c) self-efficacy for physical activity and self-reported physical activity; and (d) health-related fitness knowledge and self-reported physical activity.

Bandura (2006) describes self-efficacy as the beliefs one holds about his or her capability to produce results by actions. Viewed from a physical activity perspective, self-efficacy is the belief in one's capabilities to learn or perform motor skills to obtain a certain outcome (Feltz & Magyar, 2006). Individuals help determine the shape of their personal development through their life experiences (Bandura, 1997). Central to navigating positive and negative experiences in physical activity is self-efficacy (Feltz & Magyar, 2006). Self-efficacy has a relationship to each of the four components of Bandura's OLT (Bandura, 2006). One's perception of his or her ability is rooted in knowledge gained by attentively observing and subsequently gaining knowledge which lead to attempts at reproduction. Success at reproduction encourages motivation; therefore, self-efficacy should be enhanced and encourage the participant to re-initiate the observational learning cycle. What influence does observational learning have on self-efficacy for physical activity, controlling for grade, gender, and ethnicity? There is an influence of observational learning on self-efficacy for physical activity controlling for grade, gender, and ethnicity.

Information or knowledge is gained in the declarative phase either by verbal instructions or observation of demonstrations (Yi & Davis, 2003). Theory and evidence support the idea that declarative knowledge is generally a necessary precursor to skilled

task performance and that persons process the information and relate it to the cognitive and motor processes that they believe are required to perform the task (Kanter & Ackerman, 1989). Fox and Biddle (1988) indicate that students must gain adequate health-related fitness knowledge to be fitness independent. In fact, the importance of student of health-related fitness knowledge has been recognized for more than 40 years (American Association for Health, Physical Education, and Recreation, 1969). What influence does observational learning have on health-related fitness knowledge, controlling for grade, gender, and ethnicity? There is an influence of observational learning on health-related fitness knowledge controlling for grade, gender, and ethnicity.

Self-efficacy is a major determinant of one's task performance (Bandura, 1986, 1997). Tied to self-efficacy is motivation. The first source of people's beliefs in their capabilities is through mastery experiences (Bandura, 2012). How one feels about task performance plays a major role in motivating one to continue to practice that task. Self-efficacy beliefs are a vital part of motivation in youth sport and physical activity because they influence task choice, effort, persistence, and resilience (Bandura, 1990; Feltz, 1994; Schunk, 1995). Those who feel successful about learning and/or performing a motor skill are more likely to try that skill, give more effort, try longer when faced with difficulties, and accomplish higher levels of performance (Chase, 2001; Feltz & Lirgg, 2001; George, 1994). What influence does self-efficacy for physical activity have on self-reported physical activity, controlling for grade, gender, ethnicity? There is an influence of self-efficacy for physical activity on self-reported physical activity controlling for grade, gender, and ethnicity.

Health-related fitness knowledge, when taught by physical educators and classroom teachers, has an impact on moderate to vigorous activity (Fox & Biddle, 1988). Reviewing current data, one would conclude that teaching health-related fitness knowledge in physical education is, at the least, a vital first step for equipping youth with the knowledge needed to maintain a healthy lifestyle throughout all of life. One of several studies, The Youth Physical Activity and Nutrition Survey conducted in Florida public middle schools, concluded that the lack of knowledge about physical activity and dietary behaviors among Florida middle school youth set the stage for the obesity epidemic to continue (Zapata, Bryant, McDermott, & Hefelfinger, 2008). Knowledge about exercise and health raises students' awareness, and increases their ability to make informed decisions about physical activity (Goldfine & Nahas, 1993). What influence does health-related fitness knowledge have on self-reported physical activity, controlling for grade, gender, ethnicity? There is an influence of health-related fitness knowledge on self-reported physical activity controlling for grade, gender, and ethnicity.

Significance of Study

This study was an examination of the role of observational learning in physical activity and behaviors in an adolescent population. Specifically, this research examined the influence of observational learning on self-reported physical activity, self-efficacy for physical activity, and health-related fitness knowledge controlling for gender, ethnicity, and grade.

Delimitations

This study sampled 9th-12th grade high school students in the Northeast, South, West, and Midwest geographical regions of the United States. The study was limited to

9th-12th grade students taking physical education courses at public high schools in the fall of 2013. While there could be inherent differences due to age, gender and ethnicity, these variables were controlled for in the research design.

Limitations

One possible limitation is an inconsistency in the administration of the survey instrument, although a script was provided for each administrator. While attempts were made to secure participants from each geographic region, there were no participants from the West which might impact generalizability. Finally, even though it was assumed that all of the instruments were valid and reliable, for one of the instruments (PE Metrics), validity and reliability were not established. The Chronbach's alpha for actual data run in this research yielded a low coefficient.

Assumptions

It was assumed that the instruments yielded valid and reliable data. It was also assumed that the respondents read the directions and answered honestly.

Operational Definition of Variables

Health related fitness knowledge—knowledge concerning an individual's capability to engage in physical activity and to protect themselves from disease (Keating et al., 2009) as measured in this research by Standards 3 and 4 of the PE Metrics Exam.

Self-efficacy—refers to belief in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands (Bandura, 1977) as measured in this research by a piloted adaptation of the Physical Activity Self-Efficacy Scale (PASES).

Self-reported physical activity—individual physical activity recorded about one’s self using methods such as questionnaires, surveys, and diaries (Biddle, Gorley, Pearson, & Bull, 2011) as measured by the Physical Activity Questionnaire for Adolescents (PAQA).

Observational learning—model-based training interventions affect training outcomes through one or more of four observational learning processes: (1) attention; (2) retention; (3) production; and (4) motivation (Yi & Davis, 2003) as measured by the cited authors’ observational learning instrument created for computer software training and adapted through a pilot study for this research.

CHAPTER II

REVIEW OF LITERATURE

Obesity

Obesity is a significant health problem among today's youth (Power, Bindler, Goetz, & Daratha, 2010). This research further indicates that, in the last decade, the rate of American children becoming overweight has reached nearly 50%. It also states that 17% of youth in America are currently overweight, and close to the same percentage is at risk of becoming so. The World Health Organization (2010) states that overweight children are four times more likely to become overweight adults, and the U.S. Department of Health and Human Services (2001) reports that rising rates of overweight children is particularly worrisome because children and adolescents who are overweight are more likely to become adults who are overweight and obese. In fact, the chance that an overweight adolescent will become an overweight or obese adult is 70% (Torgan, 2002). Interpreting data from the National Children and Youth Fitness Study, Ross and Pate (1987) states that our children were more obese than ever before as early as the late 1980s.

Though the high prevalence of obesity and overweight are major concerns in the U.S. (Flegal, Carroll, Ogden, & Curtin, 2010), the World Health Organization reports that throughout the world over a billion adults are overweight, and 300 million are obese (World Health Organization, 2003). Childhood and youth obesity has surpassed epidemic proportions in many countries throughout the world and is a leading public health issue (Mark & Janssen, 2011). Consequences of adolescent obesity are indisputable and place those youth at risk for numerous medical perils (Power et al.,

2010). According to Coates, Jeffery, and Slinkard (1981), “Changing children’s health habits may be a key element in promoting widespread adoption of a healthier life style that could lead to reduction of cardiovascular and risk behavior and disease events in the population” (p. 15).

Today, youth face a significant health problem in obesity (Power et al., 2010). According to the President’s Council on Physical Fitness and Sports (2006), it is clear that adult disease is a result of antecedent risk factors acting throughout the life-course, and there is evidence that certain early life exposures, such as childhood obesity, may result in later cardiovascular disease irrespective of the level of adult exposure. Obesity, in particular abdominal obesity, has substantially increased in the past two decades in children and adolescents (Li, Lee, & Solomon, 2007). Youth and children who are overweight and obese are more likely to suffer from type 2 diabetes and cardiovascular disease, and these risks including arthritis, stroke, liver disease, cancer, and lower life expectancy continue into adulthood (Riis, Grason, Strobino, Ahmed, & Minkovitz 2012). In 2000 obesity was the ultimate cause of 400,000 deaths each year and is not only a health concern but also an economic phenomenon (Mokad, Marks, Stroup, & Gerbding, 2000).

The economic and societal costs of obesity-related diseases continue to increase (Wang & Dietz, 2002). From 1998 to 2008, this increase represented a figure near 68 billion dollars (Finkelstein, Trogden, Cohen, & Dietz, 2009). The results of this study indicate that obesity imposes an economic burden on taxpayers that could be as high as \$147 billion dollars per year providing solid evidence that there is a profound link between obesity and rising medical spending. One might assume that the obesity

epidemic could jeopardize the future economic competitiveness and even military security of our nation. According to statistics published in 2012 by the U.S. Army Reserve, poor nutrition and obesity in young Americans affects military readiness. Health insurance agencies have recognized the calamity that lies ahead if health habits are not improved, and many companies actively encourage enrollment in health maintenance organizations that emphasize wellness rather than sickness (Merkle & Treagust, 1993). The childhood obesity epidemic is rapidly growing and affects all socio-economic levels and ethnicities (Strong et al., 2005).

Obesity seems to affect certain minority youth populations more than it does non-Hispanic whites (U.S. Dept. of Health and Human Services, 2005). African American adolescents are 21% more likely to be overweight than non-Hispanic whites while Mexican American adolescents are 23% more likely to be overweight than non-Hispanic whites (National Center for Health Statistics, 2003). Furthermore, between 1986 and 1998, there was a 120% increase in obesity among African Americans and Hispanics while the increase among non-Hispanic whites was 50% (Strauss & Pollack, 2001). Research by Liu et al. (2010) indicates that the increase in rates of obesity is prevalent across all ethnicities in the U.S., but minorities are disproportionately affected. Further, this research indicates that associated with the increase in obesity among U.S. youth is an increase in type 2 diabetes. Obesity can impact diabetes clinically in several ways. This study is the largest racially and ethnically diverse study of the relationship of overweight and obesity and diabetes among youth in the United States.

Although the causes of childhood obesity are not fully understood, physical inactivity is likely a major culprit (Janssen et al., 2005), and is leading to a global

epidemic of childhood obesity (World Health Organization, 2010). If we can grasp the causes of childhood and youth obesity, we can focus resources and interventions to areas that would most benefit addressing the problem (U.S. Dept. of Health and Human Services, 2005). This research also suggests that overweight in adolescents is a result of too little physical activity combined with too much caloric intake which could be caused by several factors: (1) socio-economic status; (2) race/ethnicity; (3) media and marketing; and (4) the physical environment. Another factor impacting the increase in obesity among youth is the increase in the number of dual income families as more women have entered the workforce, and, in some cases, have become the sole supporter for their families yet still bear the bulk of responsibility of caring for children (Sado & Bayer, 2001).

Koplan, Liverman, and Kraak, (2005) found that the underlying cause for the increase in obesity is inadequate daily energy expenditure without a decrease in caloric intake. The data from this research also indicates that 33% of youth get less than the recommended levels of activity, 10% of youth are completely inactive, and activity levels fall further as they age. Youth should be moderately to vigorously active daily for at least 60 minutes (Health Canada, Canadian Society for Exercise Physiology, 2002; Tremblay et al., 2011). There is little doubt that moderate to vigorous activity provides many health benefits for children and youth (Curtner-Smith & Weiyun, 1995).

Physical Activity's Benefits and Controlling Factors

Benefits

Exercise offers significant physical and psychological benefits (Blair & Connelly, 1996), but few people exercise enough for adequate health benefit, and some do not

exercise (Cameron, Craig, Stephens, & Ready, 2002). Leading a physically active lifestyle is an extremely important part of healthy living for children and youth (Janssen, 2007). Thompson et al. (2010) found that children and adults living in the United Kingdom and the United States do not meet current recommendations for physical activity even though benefits of regular physical activity are widely known. These researchers also indicate that the level of family activity improves the health of children and adults. Physically active adults and children seem less likely to experience chronic disease risk factors, to become obese, and to remain active throughout life as compared to those who are inactive (Fulton, Garg, Galuska, Rattay, & Caspersen, 2004). This research further notes that overweight children have a higher risk of developing adverse heart disease risk factors; are at greater risk for type 2 diabetes, and may remain overweight as adults causing them to fall in a risk category for adult morbidity and mortality from cardiovascular disease (Jeffery et al., 2000). Promotion of physical fitness in adolescence may be important in helping to postpone the development of cardiovascular disease in young adults (Boreham et al., 2002).

Physical inactivity is one of the leading causes of major chronic illness tracking from childhood into adulthood (Laframboise & deGraauw, 2011). During youth physical activity has the potential to influence adult health and fitness (Malina, 2006). Vigorous physical activity in addition to moderate physical activity may be an important cardio-protective health behavior (Soares-Miranda et al., 2011). Data from this research also suggests benefits may be most consistent for bone health. It seems that adults who are physically active as youth, particularly females, have better bone mineral content. This research also states that correlations of BMI between adolescence and adulthood are

greater than moderate, leading to the conclusion that many overweight and obese youth have an increased chance of being overweight and obese adults. Other evidence suggested that an association exists between adolescent aerobic exercise and diastolic blood pressure at approximately 50 years of age. According to Strong (1990), “A child is more likely to be an active adult if he or she was an active youth, especially if the child was taught lifetime sports and the joy of being physically active; therefore, it is most beneficial for children to learn physical activities, to enjoy them, and to understand their benefits to their health during their lifetime”. Strong also states that children and adolescents who have had pleasurable experiences learning motor skills as youth are more likely to be active as adults than those who have not.

Data strongly reveals that physical activity in youth provides benefits for adiposity, musculoskeletal health and fitness, cardiovascular health, blood pressure, lipoprotein levels, and mental health (Strong et al., 2005). Reviews of the effect of exercise on cardiovascular disease mortality and morbidity (Powell, Thompson, Casperson, & Kendrick, 1987) collectively suggest that sedentary living doubles the risk of dying from cardiovascular disease (Fox & Riddoch, 2000). The reduction of obesity, hypertension, lipoproteins, serum cholesterol, osteoporosis, Type 2 diabetes, depression, and anxiety is a result of regular physical activity (Dennison, Strauss, Mellitis, & Charney, 1988). There are also preventive benefits in relation to many diseases including cardiovascular disease, obesity, and cancer when one is physically active (Department of Health, 2004). McAuley and Rudolph (1995) stated that physical activity improves well-being and quality of life. Exercise training reduces cardiovascular events (Green, O’Driscoll, Joyner, & Cable, 2008). With such strong evidence for regular participation

in physical activity, one would think that activity levels would be on the increase; however, they are decreasing (Owen & Bauman, 1992).

In 2010, the World Health Organization stated that physical inactivity is the fourth leading risk factor for global mortality. Unfortunately, in the United States, rates of obesity have consistently climbed while rates of physical activity have decreased in such areas as walking to work; in leisure-time activities; and in physical activity in schools (Ferdinand, Sen, Rahurker, Engler, & Menachem, 2012). This research also indicates that, though obesity is caused by more energy intake than is expended, more than 50% of American adults fail to meet the recommended levels of overall physical activity.

Experts have increasingly attributed the rapid proliferation of a developed physical environment as a cause for the rapid increase of obesity in the United States (Hill & Peters, 1998). For example, neighborhood crime and poor street lighting may cause children to be reluctant to play outside (MacBeth, 1999). The percentage of trips to school that children walked declined from 20% in 1977 to 12% in 2001 (Sturm, 2005). Since it is now well established that participation in moderate to vigorous physical activity leads to considerable health benefits for children and youth (Curtner-Smith & Weiyun, 1995; Simons-Morton, Calfas, Oldenburg, & Burton, 1998) and that active youth grow into healthier adults, what is the key to inspiring youth to become more physically active?

Physical Activity and Youth

Adolescence is a transitional time marked by a major shift in thinking patterns in which youth begin considering future consequences and questioning how much control

they have over health (Cohen, Brownell, & Felix, 1990). In the United States in 2011, there were approximately 43 million youth from the ages of 10-19, 22 million of which ranged in age from 15-19 (U.S. Census Bureau, 2011). Many of these young people are active, but it is obvious that substantial numbers of our youth are not adequately active enough for health benefits (Biddle, Gorely, & Stensel, 2004b). This research indicates that current trends in juvenile obesity are a cause for concern. Sallis, Prochaska, Taylor, Hill, and Geraci (1999) also state that many young people are not physically active enough to reap important health benefits. Strong et al. (2005) performed a systematic review of the literature to evaluate the evidence linking physical activity to health and behavioral outcomes in school-aged children and youth and concluded that prescribing physical activity as part of a healthy lifestyle is an important component of clinical practice. Several factors lead to the conclusion that promoting physical activity in youth is desirable.

It is clear that adult disease is a result of antecedent risk factors acting throughout the life-course (Boreham et al., 2002). A lack of activity is a leading cause of chronic illness tracking from childhood into adulthood (World Health Organization, 2010). Exercise helps to control a myriad of risk factors for diseases such as diabetes, obesity, cardiovascular disease, and hypertension (Fletcher et al., 1996). Because research indicates that prevention of these and other diseases may begin at a young age, there is a need to understand the factors that affect the type, frequency, duration, and intensity of children's physical activity (Soares-Miranda et al., 2011).

Youth must deal with influences on a social level that impact their ability to pursue physically active leisure (Thompson, Rehman, & Humbert, 2005). Further, social

factors such as family and friends may facilitate or impede a young person's activity/participation. Achieving change in behavior among students outside of school hours is an unrealistic expectation without family and community intervention and support (Weschler, Devereaux, Davis, & Collins, 2000). Students spend only some of their time in schools and return every evening and weekends to environments that may send powerful alternative messages to what they receive at school (Resnicow, Robinson, & Frank, 1996). It is critical that interventions promoting increased physical activity in youth are designed to integrate changes across multiple levels and sites (Biddle et al., 2004b). When a child fails to learn age appropriate skills, that child tends to have a self-perception of being "klutzy" leading to his or her reluctance to participate in activities in which he or she is not proficient (Strong, 1990). North American children face a future in which experts expect that diminished opportunities for physical activity, both inside and outside the school day, will result in significant health problems (Janzen, 2003/2004).

Controlling Factors: Age, Gender, and Ethnicity

Improving intensity and quantity of physical activity in youth presents a daunting public health challenge (Sallis et al., 1999). In this research, a total of 54 studies of reasons for activity among youth from the ages of 13-18 years were reviewed. Over two thirds of these studies were published in the 1990. The finding most consistently reported was that boys were more active than girls; however, with both genders, a negative correlation between age and physical activity was reported. In the 1996 review, the most consistent modifiable correlates for physical activity were identified as self-efficacy, physical or sports competence, perceived benefits, perceived barriers, intention, enjoyment, physical education attitudes, parental encouragement, direct help from peers,

peer and sibling support, access to play spaces and equipment, and time spent outdoors. Those groups most at risk for inactivity were older adolescents and those in minority ethnic groups, though non-Hispanic whites were more active than other ethnic groups.

As McElroy (2002) states, the primary significance of economic status is that it determines life choices. The United States is becoming more culturally diverse at a faster rate than at any other time in history (Sparks & Wayman, 1993). In the United States, approximately 13 million youth between the ages 10-19 were considered as minorities in 2011. Between the years of 1986 and 1998, Strauss and Pollack (2001) found approximately 21.8% of Hispanic children and 21.5% of African American children were overweight compared to 12.3% of white children. Lindquist, Reynolds, and Goran (1999) wrote, "It is likely that much of the statistical influence of ethnicity on physical activity is actually due to the disproportionately lower socioeconomic status of racial and ethnic minorities" (p. 306). Because they are primary risk factors for coronary heart disease, accelerated inadequate physical activity and an increase of overweight in minorities presents a public health challenge for the United States (USHHHS, 2001). Children in single parent families are more likely to be overweight than children in two-parent families (Sado & Bayer, 2004), and a higher percentage of minority children are in single parent homes when compared to non-Hispanic white children. This fact relates to a child's physical activity because of time constraints and cost of physical activity that must be borne by a single parent (Thompson et al., 2005). Much research indicates the critical need for all youth, regardless of ethnicity or social class, to be physically active. Strong (1990) wrote,

In today's developed societies, especially North American societies, there are fewer opportunities to be active at school, the work site, or home. Mechanization, computerization, and technological advances all make life "simpler" and less physically demanding. In reality, this should provide increased leisure time that, if used properly, could enhance our physical well-being. (p. 1699)

If technology does increase leisure time among youth, it is important that we discover what motivates youth to become active.

In agreement with Sallis et al. (1999), Kahn et al. (2008) suggest that physical activity tends to decrease with age. This research indicates that both boys and girls begin declining in level of activity at about the age of 13, leading the researchers to state that age is a significant predictor of physical activity over time. Factors found to be positively associated with physical activity were athletic self-esteem, social self-esteem, and perceived peer attitudes about body shape and fitness. Results from this study imply that interventions to maintain or increase physical activity should occur before the age of 13. A review of activity patterns in North America suggests that the greatest decrease in participation in physical activity occurs in late adolescence where it falls abruptly from 66% to 29% in the 18 to 24 year old age group (Desmond, Price, Lock, Smith, & Stewart, 1990).

Few would doubt that in the case of young people, there are many changes that have occurred from the latter half of the 20th century that give cause for concern about the physically inactive nature of lifestyles (Biddle et al, 2004a). This research also states that factors which impact physical activity in young people include new technologies, greater availability of television, increased car use, unattractiveness of cycling and walking, and

other competing demands on young people's time. One of the fastest growing populations accessing the internet from their homes is families with children (Montgomery, 2000). From the ages of 14-20, the amount of leisure inactivity increases in U.S. children (Caspersen, Pereira, & Curran, 2000). Though all youth are at risk for inadequate physical activity, some groups are at higher risk than others; however, for any young person, the formation of identity and significant shifts in the life course occur during adolescence (Allender, Cowburn, & Foster, 2006). This research is in agreement with a majority of studies that indicate that fun, self-efficacy, and support from significant others motivate youth to participate in physical activity more than the desire to be healthy. Because an activity that is not enjoyed is not likely to be continued, the need to enjoy the activity is critical to the process of continuing them for a lifetime (Strong, 1990).

Exercise Motives

Specifically, motivation is defined as the direction and intensity of effort; thus a motivational perspective (a) identifies the factors that predict choice, effort, and persistence behaviors among youth and (b) offers a developmentally appropriate framework that describes and explains sources and mechanisms of change in physical activity behavior. (Stuntz & Weiss, 2010, p. 434)

These researchers narrow this definition more specifically to physical activity by stating that motivation for participating in physical activity can be identified in two ways: (1) self-determined motivation and (2) controlling motives. They explain that self-determined motivation includes engaging in physical activity for fun, engaging in physical activity to reinforce one's identity, and engaging in physical activity to

experience personal growth. They also state that controlling motives are a result of feeling pressure from others and from a self-imposed sense of pressure or guilt. This research further suggests that competence, autonomy, and relationships enhance self-determined motivation among youth resulting in a feeling of enjoyment and ensuring a more likely probability that youth will remain physically active. Finally, this study implies that maximizing positive feelings and minimizing negative ones augment a youth's motivation to be physically active.

Martens (2012) emphasized the motivational factors of self-worth, fun, and self-responsibility to inspire youth to become more physically active. He suggests that children need to feel competent, experience success, to feel worthy and in control. In fact, he indicates that these characteristics are powerful motivating factors for all humans. Further, he states that children initially try to move within their environment to become competent. If they have positive experiences when being physically active, the sense of accomplishment and success reinforce future participation. However, Martens indicates that children who have negative experiences often do not acquire a feeling of worthiness and find other activities to pursue. He emphatically states that enhancing feelings of self-worth is the most important principle to increase a child's participation in physical activity. He goes on to state that children are motivated to have fun, and, when adults over organize activities and impose their goals on children, they take the fun out of the activity. Martens also emphasizes that to change behavior people must perceive that they have control, and, when adults over-control, they take away the chance for children to become self-responsible.

In research by Humbert et al. (2006), high and low socio-economic status youth were examined to determine their greatest motivation to be physically active. This study measured motivating factors divided into three categories. In the first category listed as *intrapersonal*, fun, perceived competence, and time barriers were all motivating factors. In the second category listed as *social*, friends and adults were found to be the most significant motivating factors. The third category was *environmental*, in which motivating factors were proximity, and cost of the activity, appearance, and safety of the facility where the activity occurred. Most significantly this research indicates that the biggest motivating factor for youth to be physically active is a feeling of confidence that allows them to have fun.

Fairclough (2003) assessed the link between secondary students' levels of perceived competence, enjoyment, and health-enhancing physical activity. This study suggests that intrinsic motivation toward an activity is enhanced if one feels competent about the activity and if it is achieved with some self-determined choice. This research suggests that perceived competence can produce enjoyment and interest in a physical activity. Interestingly, because the students may have been less conscious of their higher exercise intensity, Fairclough found that they enjoyed participating in team games more than individual activity and that the intensity of their activity was increased during these games.

Parental modeling is necessary in establishing activity patterns among children as research indicates a strong relationship between patterns of exercise of parents and children; however, most parents do not realize how important it is to help children develop early exercise habits (McWhorter, Wallman, & Alpert, 2003). These researchers

also state that enjoyment, friend's support, and self-efficacy are critical aspects of motivating children to become physically active. This research implies that children should be allowed to set their own realistic goals toward self-improvement so that success is more easily attained. Parents influence their children's activity in many ways, but perhaps the two most important are impressing favorable opinions about their competence levels and influencing their behavior through role modeling (Kimiecik & Horn, 1998; Stuntz & Weiss, 2010).

Li et al. (2007) state that we must learn more about how to motivate students to become physically active. They suggest that high levels of self-perception are factors that cause students to be more motivated, to become active, and to increase effort and persistence. Their study also indicates that perception of task difficulty may affect perception of ability. Solomon's dissertation research (Solomon & Lee, 1996) provided clear evidence that students who had adequate skills and positive feelings about their competence were more likely to be involved in learning the activities assigned by the teacher. This research found that these competency beliefs vary as a function of age, gender, and the type of activity. It further suggests that young children remain optimistic about their success even after failure and believe ability can be developed with effort and persistence over time. However, according to the study, when students reach late elementary, they begin to understand the distinction between ability and effort and form a notion of ability as a stable capacity. Thus, it is important that at this age the student not become discouraged because he or she realizes a lesser degree of ability than may exist in others. McWhorter et al, (2003) wrote that, "According to the Social Cognitive Theory, children are motivated to exercise if they believe the targeted behavior will benefit them

(outcome expectancy) and if they believe that the intended behavior is attainable (self-efficacy)” (p. 14). Self-efficacy plays an important role in motivation and achievement behaviors (Bandura, 1997; Li et al., 2007; Pajares, 1997).

Theoretical Perspective

According to Skinner and Belmont (1993), “Research shows that across the preschool to high school years, children’s intrinsic motivation decreases and they feel increasingly alienated from learning (Harter, 1981)” (p. 2). What can help us to keep children motivated as they mature? Psychological research has focused on such factors for motivation as self-efficacy and perceived control while educational research has focused on such issues as modeling, guidance, and attention focusing, to name a few (Skinner & Belmont, 1993). These factors play a major role in keeping youth engaged enough to show persistent involvement in learning activities. There is a belief that learners are simply recipients of knowledge, but this is misleading because the role students play in their learning is vital (Lee, 2002).

Youth who are engaged in school earn better grades as well as show a greater degree of adjustment in the school environment (Skinner, Wellborn, & Connell, 1990). For a very long time, educators have been challenged to unravel the mystery of how to keep students engaged, (Klem & Connell, 2004). This research implies that engagement is as important to success as it is indefinable and solving the secret to get students engaged could help to solve the reasons why 40% to 60% of students become seriously disengaged during the high school years. Further, these researchers state that there is an emotional component of engagement which provides a student with a positive reaction upon the successful completion of a task; a cognitive component which allows a student

to understand why they are attempting the task; and a reactive component which determines if a student engages or withdraws when confronted with a challenging task.

Observational Learning Theory

Of the many studies for which Albert Bandura is famous, perhaps the most significant is the bobo doll studies from which he derived the Observational Learning Theory (Boeree, 1998). Bandura theorized that there are four observational learning processes: (1) Attention—In order to learn one needs to pay attention. One is far more likely to dedicate full attention to an interesting model; (2) Retention—Storing information is an important part of the learning process; (3) Reproduction—Performing the learned behavior observed and practicing that behavior leads to improvement and skill advancement; and (4) Motivation—Actions will weaken unless the perceived consequences of performing them are favorable to cause a repeated performance (Bandura, 1986; Yi & Davis, 2003).

Much information implies that observation before physical practice probably facilitates motor learning (Blandin, Lhuisset, & Proteau, 1999). Learning would be difficult if people could only use trial and error of their own efforts to learn, but, to our good fortune, we can learn chiefly by observing the actions of others (Bandura, 1977). This research states for modeled behavior to be effective, the model's behavior must be seen as useful, and the model must relate to the observer in a personal manner. Further, people will not be engaged or attentive if they cannot see themselves associated with or attracted to the model. According to Skinner and Belmont (1993), children's engagement is influenced by their perception of a model (teachers in this instance) and by that model's behavior.

Little influence will be wielded by observing a model if one does not retain what one observes (Bandura, 1977). This research implies that observational learning relies on two methods of recall to be used later: imagery and verbal coding. Also stated is that most observed events are retained as images or later remembered in verbal coding. Further, most of the processes controlling behavior are verbal; however, some skills are not easily taught verbally.

Once a physical activity or skill has been observed and retained, to be learned, they must be reproduced; however, reproduction will be initially faulty, which happens more times than not, if the learner does not possess the basic sub-skills required (Bandura, 1977). This research suggests that the learner must improve performance based on feedback acquired. Further, it is not easy to observe, retain, and then reproduce correctly without trial and error during persistent practice.

People will adopt modeled behavior if they see the outcome as valuable and rewarding (Bandura, 1977). For observational learning to be successful, the learner must be motivated to imitate the behavior observed. If the learner has a direct incentive, his or her motivation to continue reproduction of an activity may be enhanced (Bandura, 1977).

Self-Efficacy for Physical Activity

Peterson, Lawman, Wilson, Fairchild, and Van Horn (2012) wrote, “Social Cognitive Theory (Bandura, 1986) suggests that strong social support networks increase an individual’s self-efficacy to overcome barriers to being physically active” (p.1). The Social Cognitive Theory addresses properties of perceived self-efficacy, defined in brief as a person’s belief in their capabilities (Bandura, 2012). This research continues to state that -perceived self-efficacy is developed in four ways: (1) mastery experiences which

can determine resiliency in an individual; (2) social modeling which is seeing people similar to oneself succeed; (3) social persuasion which involves persuasion by others to convince an individual to persevere; and (4) choice processes which establishes the life-course an individual may take through choices made (Bandura, 2012). Further, this research suggests that, in the classroom, children learn self-efficacy by observing peer and teacher models.

Success at performing an activity gives a child a positive experience and a direct incentive to further participate in that activity (Martens, 2012). This research also states that a child will protect his self-worth and not be so inclined to participate in an activity during which he or she has had a negative experience. According to Feltz and Magyar (2006), “Bandura (1997) proposed that people obtain information about their self-efficacy for sport and physical activity primarily from their performance accomplishments” (p. 164). There is a link between previous experience and achievement and perceptions of task difficulty (Li et al., 2007). We sometimes ask children to participate in activities before they have the skills to do so insuring that they will meet with failure and see the task as too difficult to attempt to reproduce (Martens, 2012). In the past, physical education situations have often symbolized circumstances that may lead youth to see no purpose and fear failure (Sanford, Armour, & Warmington, 2006). Feltz and Magyar (2006) wrote, “Perceptions of successful mastery enhance self-efficacy in sport, whereas repetitive failure lowers it (Chase, 1998; Kane et al. 1996; Lee, 1986; Magyar & Feltz, 2003)” (p. 164).

Physical Education Environment

Janzen (2003/2004) stated that promoting healthy lifestyles through public school physical education is probably the single most effective way for society to meet its responsibilities to children. The Congressional Wellness Policy Mandate of 2004 encourages the passage of state school health policies; however, childhood obesity levels have remained stable despite increases in obesity prevention efforts (Riis et al., 2012).

Health-Related Fitness Knowledge

In math or English or music or art, the task of defining the content knowledge base is straightforward and clearly relates to the math, English, music, and art that prospective teachers learn in university; however, in physical education, the content knowledge is not so easily identified (Siedentop, 2002). This research implies that the health-related fitness knowledge that must be taught to achieve these standards in individuals is what seems to be most elusive. We know that more knowledgeable civilizations have long been dominant ones (Mandelbaum, 1955). Thus, knowledge is a key to improving the quality of life. Though knowledge is probably not enough to change behaviors, improving and developing mastery of health-related fitness knowledge might be the first step to the establishment of healthy physical activity behaviors (Keating et al., 2009).

The importance of physical activity taught in physical education classes in the schools has consistently emerged as a primary means to educate students to improve their health (Corbin, 2002a, 2002b; President's Council on Physical Fitness and Sports, 2006; USDHHS, 2000). The reasons to initiate quality physical education programs in our schools are many, but two are: (a) developing an active lifestyle is a learned behavior

and should be established as early as possible and (b) the carryover effects of physical activity habits developed in childhood are important in developing such patterns in adulthood (PCPFS, 2006).

In a study designed to enhance urban adolescents' physical activity through physical education, middle school students completed questionnaires assessing motivational constructs and leisure time exercise behavior (Bo, McCaughtry, Martin, & Fahlman, 2009). In this research, knowledge and cardio-respiratory fitness were also assessed. Findings suggest that students' development in physical education may depend upon a collective impact of changes in knowledge, physical activity ability, and sources of motivation. Knuth and Hallal (2009) discovered after conducting a 10 year study that activity levels are low world-wide in all age groups. This study found that, though leisure time activity levels among adults were increasing, physical activity for youth was decreasing including a lower level of physical activity in physical education classes. Because physical activity steeply declines during adolescence, health professionals think that school-centered interventions are promising avenues to promote physical activity for all school-aged children (Bo et al., 2009). Though physical education programs in schools may be the best means to disseminate health-related fitness knowledge, the quality of instruction is vital and impacts the amount of physical activity taught in class.

Most states and districts have adopted a policy stating that schools will teach physical education; however, few schools provide daily physical education, and many allow students to be exempt from participating in physical education (Lee et al., 2006). This information suggests that one should take into consideration that, even though NASPE and most states provide guidance for health-related fitness knowledge at all

educational levels, it is unknown how much health-related fitness knowledge is being taught in schools. Further, the proper teaching of health-related fitness knowledge rests on the notion that future health and physical education professionals should be knowledgeable about fitness; thus, these school systems should strive to hire conscientious instructors/teachers with solid subject content knowledge. In fact, this study states that the CDC recommends that health instruction come from teachers who have been trained to teach the subject. Teaching practices can influence student self-perceptions positively or negatively, and these perceptions impact performance (Lee, 2002). Keating et al. (2009) go so far as to recommend that student health-related fitness knowledge assessment be standardized for each grade in K-12 programs so that student knowledge learning can be well documented and cross-comparisons can be conducted.

Schools should recognize the importance of health-related physical activity and exercise within the National Curriculum, and ensure that the requirements are fully implemented in practice (Biddle et al., 2004b). The standards, assessment, and accountability movement in education began with the publication of *A Nation at Risk* (Gardner, 1983), which suggested that students in the United States could not compete academically with students from other countries (Zhu et al., 2011). This movement resulted in the development of content standards for determining what students should know and be able to do within a particular subject matter in a school. As a part of the standard-based education and assessment movements, the National Association for Sport and Physical Education published the first set of national content standards for physical education in 1995 (revised in 2004) with the intent to identify skills, knowledge, and attitudes students would need to lead a physically active lifestyle.

DeCorby, Halas, Dixon, Wintrup, and Janzen (2005) investigated the quality of physical education at two elementary schools, one in which generalist instructors taught physical education and one in which a physical education specialist delivered a school-wide program. Hardman and Marshall (2001) drew attention to an inescapable reality: Physical education as a curricular subject was facing a comprehensive threat to its existence. Their 2001 international survey research highlighted the deteriorating state of physical education in schools worldwide. The facts indicated a decreased time in curriculum, inadequate funding, inadequate personnel resources, low subject status and esteem, and marginalization by school authorities. While the process of instruction in physical education has received a great deal of attention, the products of instruction have not (Zhu et al., 2011). It is a problem that the quality and quantity of the premier physical activity delivery system for the overwhelming majority of our children is limited because adequate physical activity is unequivocally recognized as a requirement for children's health (Health Canada, 2002). De-emphasis on physical education directly relates to lack of instruction inspiring physical activity (Hardman and Marshall, 2001).

Keating et al. (2009) suggest that our nation's longtime failure to change student physical activity patterns might be the continuing use of a curriculum that incorporates little teaching of health related fitness knowledge. Their research indicates that because of the increasingly rapid proliferation of health problems caused by sedentary lifestyles, the failure to change student physical activity patterns could be due to neglecting the impartation of health related fitness knowledge. They propose that more research is needed to explore the relationship between student health-related fitness knowledge mastery and physical activity/fitness behavior establishment and maintenance. However,

their general consensus seems to be that teaching health-related fitness knowledge in physical education is, at the least, a vital first step for equipping youth with the knowledge needed to maintain a healthy lifestyle throughout all of life.

In fact, the importance of student health-related fitness knowledge has been recognized for more than 30 years (American Association for Health, Physical Education, and Recreation, 1969). Reports at all educational levels indicated that students lacked adequate health-related fitness knowledge (McArdle, Katch, & Katch, 1986; Placek & Griffith, 2001). Since fitness is not the sole focus of most physical education programs, and only 27% of students attend physical education daily, actually improving fitness levels during physical education class is problematic (Placek and Griffith, 2001). Thus, strengthening physical education classes so that learners grasp the concepts related to fitness seems particularly important as one aspect of encouraging students to embrace an active lifestyle. Based on rigorous review standards, there is strong evidence in support of school-based physical education as a strategy to increase physical activity in school children and adolescents (Hoehner et al., 2008).

Ninety five percent of young people in the United States are enrolled in schools (National Center for Education Statistics, 2005). This should allow us to impart health-related fitness knowledge through a school related program and should also make it easy to designate a school health coordinator and maintain an active school health council which could assess the school's health policies and programs and develop a plan for improvement (President's Council on Physical Fitness and Sports, 2006) The previous report suggests that such an action would strengthen the school's physical activity and nutrition policies, lead to the implementation of a high-quality school employee wellness

program, and a high-quality health education course of study. This report further states that an ideal physical education program teaches children: (a) how to become fit; and (b) how improved fitness affects long-term health. This research concludes that knowledge about exercise and health raises students' awareness, contributes to their beliefs and attitudes, and increases their ability to make informed decisions about physical activity.

The Heart Healthy Program is an education product developed for elementary school students (Coates et al., 1981). The program was designed to improve nutrition and increase the level of physical activity. This longitudinal program was implemented in 4th and 5th grades in two elementary schools. The evaluation consisted of direct observation of eating and exercise habits as well as paper and pencil measures of nutritional knowledge. One of the conclusions of this program was that primary prevention of cardiovascular disease may be dependent upon health education programs capable of promoting meaningful behavioral changes by teaching quality fitness knowledge.

Another similar program evaluated the impact of a school-based interdisciplinary health behavior intervention on diet and physical activity among children in grades four and five (Gortmaker et al., 1999). Intervention materials focused on decreasing consumption of foods high in total and saturated fat and increasing fruit and vegetable intake, as well as reducing television viewing and increasing physical activity. Interventions were delivered by classroom teachers, integrating units into math, science, language arts, and social studies classes including links to the school food service, physical education, teacher and other staff member wellness programs, families, and classroom-based campaigns. These lessons took place in physical education class for

those schools who had physical education. Recalls of physical activity in the past 24 hours were obtained immediately following the dietary interviews. Analysis of student knowledge concerning healthy diet and activity and choices indicated that, after controlling for baseline measures, dietary knowledge was increased in students in intervention schools with a similar impact on knowledge of healthy activities.

A study, conducted by Goldfine and Nahas (1993), evaluated effects of incorporating into the physical education program of selected classes, a conceptually oriented curriculum focused on health-related fitness concepts. The sample was from a mostly white, suburban middle and upper class secondary school. Students exposed to health-related fitness information displayed more positive attitudes about physical activity. It was found that one curriculum change that might produce higher levels of physical activity involves the addition of a time management lesson, with suggestions on how to fit exercise into one's schedule. Because so many children are enrolled in school, school-based programs represent an important channel for behavioral change and the potential to affect behaviors of children into adolescence and adulthood (Gortmaker et al., 1999).

Conclusion

Obesity is a significant health problem in the United States and even world-wide. In fact, it rages in epidemic proportions. From obesity such antecedent diseases as diabetes and cardio-vascular disease track from childhood into adulthood. Because of the myriad of harmful disorders resulting directly from obesity epidemic, the stability of our culture is threatened. Much research indicates that one of the major causes of overweight and obesity is a lack of inactivity.

Though exercise offers many physical and psychological benefits, few youth exercise enough to receive those benefits. Physically active youth have a greater possibility of becoming physically active adults, but, on the other hand, obese children are more likely to become obese adults. The World Health Organization has declared physical inactivity as the 4th leading cause of global mortality but recognizes that physical activity can be a preventive measure against disease. This knowledge gives us every reason to find methods that encourage youth to become more physically active.

Adolescence is a transitional time in which many youth are active but not active enough for health benefits. Because this is a critical age where influences tend to bring about a decline in activity, we are faced with a challenge to motivate youth to become physically active enough to gain health benefits. Improving their quality and quantity of physical activity is paramount. Some groups are more at risk than others, but all are at risk. Factors such as self-worth, fun, and self-responsibility as well as support from significant others inspire youth to become more physically active. It is important that youth not become discouraged, but, rather become encouraged when attempting physical activity if we expect them to become lifetime movers. Psychological research has focused on such motivating factors as self-efficacy and perceived control while educational research has focused on modeling, guidance, and attention focusing. Both constructs play important roles. Bandura's observational learning theory (1986) implies that attention, retention, reproduction, and motivation are critical components of the learning process providing a foundation for a line of attack against inactivity.

Probably the single most effective way to meet our responsibilities to children is to promote healthy lifestyles through public schools. The nation via its states recognizes

this fact; however, physical education curriculum and instructional methods have not progressed as far as academic areas chiefly because of a lack of emphasis on the program. Schools must rethink their traditional emphasis on physical education programs and employ qualified instructors in an effort to impart a greater knowledge of health-related fitness and the activity required to inspire youth to become lifetime movers.

CHAPTER III

METHODOLOGY

Overview

This chapter discusses the research design used for this study. Information concerning participants, sampling plan, sample, and instrumentation in this study are discussed as well as data analysis procedures. Identification of the variables as well as statistical assumptions are indicated. The pilot study preceding this project is also briefly examined. The purpose of this study is to examine the relationship between the following: (a) observational learning and self-efficacy for physical activity; (b) observational learning and health-related fitness knowledge; (c) self-efficacy for physical activity and self-reported physical activity; and (d) health-related fitness knowledge and self-reported physical activity.

Research Design

This research was a non-experimental design since a questionnaire and self-report was used to obtain data. It was predictive, correlational research examining relationships between the independent variables of observational learning, self-efficacy for physical activity, and health-related fitness knowledge in relation to the dependent variables of self-efficacy for physical activity, health-related fitness knowledge, and self-reported physical activity. There was not a control group. It was correlational research because the independent variables were not controlled, but there was an examination of the relationship between the independent and dependent variables.

Identification of the Population

The participants in this study were selected from high school students in the United States. Specifically, these participants were selected from 9th-12th graders currently taking physical education class at their high school.

Sampling

For the purposes of sampling, a multi-stage cluster sampling plan was used in this study. To identify the clusters, a school list was created using the Excel spreadsheets from the National Center for Education Statistics (NCES). The NCES reports K-12 school data based upon four regions: Northeast, South, West, and Midwest. These four regions were utilized in this study.

After creating an Excel spreadsheet for each region, schools were assigned a random number using the function in Excel and then exported into SPSS. Schools were sorted by random number to obtain the list of schools to contact. Specifically, the sample attempted to include a proportional amount indicative of each region's student population. Schools from the randomly selected list were then contacted (Appendix A).

Sampling Size

Based on an a priori power analysis, the target number of participants for this study was 119 9th-12th graders (approximate ages 14-19). This analysis was made using G-Power with alpha at 0.05 with an effect size set at .40. The sample size was large enough to yield a normal distribution. Miles and Shevlin (2001) recommend that anticipation of a medium effect requires a sample size of at least 100 with six or fewer predictor variables.

Instrumentation

The survey used for this research was composed of five sections. The first section was a questionnaire that gathered demographic data. It was followed by four instruments which were used to gather information measuring the four specific variables involved in this research. Differing iterations of the order of the questionnaires were provided within each school packet in an attempt to prevent test weariness.

Demographics

The first section of the questionnaire (see Appendix B) was used to obtain demographic information. Demographic information requested was name and location of school, gender, age, grade, and ethnicity.

Health-Related Fitness Knowledge

The second section of the questionnaire (see Appendix C) is about health-related fitness knowledge and was used to measure students' knowledge of health-related fitness. This questionnaire consisted of 29 multiple-choice items used to measure students' health-related knowledge. These questions are from a subsection of an instrument published by the National Association for Sport and Physical Education (NASPE). In 1995, NASPE created national content standards for physical education in an effort to identify components needed for students to lead a physically active lifestyle (Zhu, Rink, Placek, Graber, Fox, & Fuisette, 2011). Therefore, PE Metrics was developed as an item/assessment bank based on the latest testing theory and psychometric methods. The background of PE metrics can be found in two publications at the elementary level (NASPE, 2008, 2010). This instrument is available for public use. Neither validity nor reliability information were provided for this instrument.

Self-efficacy for Physical Activity

The third section (see Appendix D) was a questionnaire used to examine self-efficacy for physical activity. The section of the instrument measuring self-efficacy is an eight item instrument, Physical Activity Self-Efficacy Scale (PASES). Self-efficacy scores have been shown to correlate with vigorous activity in children (Strauss, Rodzilsky, Burdick, & Colin, 2001). This questionnaire has an established track record in research and has been deemed valid and reliable (Bartholomew, Loukas, Jowers, & Allua, 2006). The PASES had been developed and validated in a predominately African American population. Thus, Bartholomew, Loukas, Jowers, and Allua (2006) validated PASES using 1,113 Hispanic and Caucasian upper elementary students in Central Texas by using a one factor, eight-item model. Results showed that the model adequately fit data. All factor loadings for the eight-item model were significant ($p \leq 0.05$) and ranged from 0.50 to 0.83 (Bartholomew et al., 2006) and was determined sufficient for predictive validity. For this research, the eight-item questionnaire was modified to make the questions more polarizing for a five-point, Likert scale.

No mean level differences between the two groups were found by Bartholomew and colleagues (2006). Internal consistency reliability was adequate for Caucasian youth ($\alpha = .74$) and good for the Hispanic youth ($\alpha = .88$).

Observational Learning

The fourth section of the questionnaire (see Appendix E) will measure observational learning. This questionnaire has been previously used in computer software training and skill acquisition, and the researcher has received permission from the questionnaire's authors to adapt it for the purposes of this research. The research that

produced the original questionnaire was based on recent findings in information systems, human computer interaction, and social psychology and incorporates the motivation variables of self-efficacy, enjoyment, and learning goal orientation (Yi & Davis, 2003). The questionnaire was used to measure Bandura's (1986) four precepts of observational learning: (1) attention, (2) retention, (3) production, and (4) motivation (Yi & Davis, 2003). Yi and Davis (2003) validated this questionnaire using 95 students ranging in age from 18-26. The initial questionnaire contained 40 items assessing the four constructs of observational learning. All items exhibited high loadings (greater than .70) on their respective constructs in the 16 item questionnaire demonstrating strong convergent and discriminate validity (Yi & Davis, 2003). According to Yi and Davis (2003), all items loaded on the constructs they were intended to measure without exception. Internal consistency reliabilities were all at least .70. These internal consistencies were higher than the correlations between target constructs and other constructs (Yi & Davis, 2003). This implies that reliability in this questionnaire is adequate for research.

Physical Activity Recall

The final section of the questionnaire (see Appendix F) is used to examine students' physical activity recall. The Physical Activity Questionnaire for Adolescents (PAQA) is used to measure adolescent students' self-reported physical activity during a seven day period. It was developed to measure general physical activity of high school students ages 14 to 19 who were in grades 9-12 (Kowalski, Crocker, & Donan, 2004). PAQA is used to ask adolescents to recall how many times during the previous week they engaged in various sport and physical activities. The questionnaire includes a series of questions about an adolescent's activity during the physical education class, lunch

behavior, afternoon, evening, and weekend activities. It concludes with questions on how much of an adolescent's spare time is spent doing physical activities and how often an adolescent is engaged in those physical activities. The PAQA is available for public use and has established validity and reliability. Kowalski et al. also stated that the PAQA is sensitive to gender differences. This questionnaire was validated using 85 high school students. Kowalski, Crocker, and Kowalski (1997) found the PAQA to be "moderately correlated with other physical activity measures ... with the magnitude of correlations ranging from $r = .33$ to $.73$ ($p < .05$)" (p. 345). The validity of the PAQA with an activity rating was $r = .73$. Kowalski et al. indicated that the reason they conducted the convergent validity with the PAQA was because PAQA already had reliability coefficients. Kowalski and colleagues wrote, "Generalizability coefficients were $G = .90$ for three scores and $G = .85$ for two scores" (p. 343).

Pilot Study

Each questionnaire used in this instrument had been used in research; however, the questionnaires used to measure observational learning and self-efficacy for physical activity were adapted for this study. Though these specific two questionnaires had established validity and reliability, they were piloted along with the questionnaires measuring health-related fitness knowledge and self-reported physical activity. A group of high school students were conveniently sampled from a rural southeastern Mississippi high school to determine the questionnaires' reliability. The pilot group was also asked to report any issues with items and directions.

Chronbach's alphas internal consistency were run for items measuring each of the dependent variables in this study. The following coefficients were: self-efficacy for

physical activity, $\alpha = .579$; observational learning, $\alpha = .987$; self-reported physical activity, $\alpha = .761$; and health-related fitness knowledge $\alpha = .152$. The health-related fitness knowledge instrument is a broad-based knowledge battery.

Data Collection Procedures

For this study, the researcher collected the data from students at the participating high schools. Request for approval from the Institutional Review Board (IRB) at The University of Southern Mississippi to collect the data was submitted and granted (see Appendix G). Also, permission was obtained from the principals (See Appendix H) of the participating schools, and notification letters were sent to the parents (See Appendix I) of children who were asked to participate. If a parent did not want his or her child to participate, another activity in which that child could participate was provided.

Once the necessary permissions were obtained, teachers of the physical education courses were contacted and asked to administer the questionnaires to students at times where minimal instructional time would be lost. The teachers were asked to explain the purpose of the study to the students and then let the students participate if they chose to do so. If a student chose not to participate, she/he was allowed to engage in another activity. Students were given a cover letter (See Appendix J) explaining the purpose of the study.

Data Analysis Procedures

Linear regression models were used with an alpha level set at .05. The following effect-size measures was considered: (a) small is equal to 01; (b) medium is equal to .10; and (c) large is equal to .25 (Keith, 2005). R-values were constrained between 0 and 1. The following hypotheses were tested:

- H₀₁: There is no influence of observational learning on self-efficacy for physical activity, controlling for grade, gender, and ethnicity.
- H₀₂: There is no influence of observational learning on health-related fitness knowledge, controlling for grade, gender, and ethnicity.
- H₀₃: There is no influence of self-efficacy for physical activity on self-reported physical activity, controlling for grade, gender, and ethnicity.
- H₀₄: There is no influence of health-related fitness knowledge on self-reported physical activity, controlling for grade, gender, and ethnicity.

Statistical Assumptions

According to Osborne and Waters (2002), there are four statistical assumptions for utilizing regression. The variables examined were normally distributed. A linear relationship with the independent and dependent variables was found. Variables were reliably measured. The independent variables' variance of error was the same for all levels (Osborne & Waters, 2002).

CHAPTER IV

MANUSCRIPT 1: THE INFLUENCE OF OBSERVATIONAL LEARNING ON PHYSICAL ACTIVITY, SELF-EFFICACY, AND HEALTH-RELATED FITNESS KNOWLEDGE

Purpose and Background

Research indicates that substantial numbers of youth are not active enough for health benefits. Physical educators have repeatedly warned that emphasis on physical activity is needed now more than ever as sedentary, computer-based pursuits continue to occupy students' leisure time (Goodwin, Fitzpatrick, & Craigon, 1996). In fact, physical activity levels begin to decline early in childhood, and the decline continues throughout childhood and into adulthood (Calfas et al., 2000). The likelihood of adolescents continuing their involvement in physical activity into adulthood depends on how they navigate the highs and lows of their physical activity experiences (Feltz & Magyar, 2006). Age is not the only factor related to physical activity. Sallis, Prochaska, Taylor, Hill, and Geraci (1999) reported that boys were more active than girls, and, in both genders, there was a negative correlation between age and physical activity. The U.S. Department of Health and Human Services (2005) found ethnicity to be a possible factor in physical inactivity in youth. Though the reasons for physical inactivity in youth may be many, promoting healthy lifestyles through public school physical education is probably the single most effective way for society to meet multiple responsibilities to children (Janzen, 2003/2004).

Learning, particularly in physical education, would be difficult if people could only use trial and error to learn, but, to our good fortune, we can learn chiefly by

observing the actions of others (Bandura, 1977). Bandura terms this observational learning and theorized that there are four observational learning processes: (1) Attention—In order to learn one needs to pay attention; (2) Retention—Storing information is an important part of the learning process; (3) Reproduction—Performing the learned behavior observed and practicing that behavior leads to improvement and skill advancement; and (4) Motivation—Actions will weaken unless the perceived consequences of performing them are favorable to cause a repeated performance (Bandura, 1986; Yi & Davis, 2003). In a physical education environment, students are attending to multiple environmental and cognitive cues. The Observational Learning Theory suggests that students who attend to cues and use peers and teachers as models will attempt to reproduce those skills on their own. A critical piece of this theory is the final component, motivation. Motivation is necessary to inspire individuals to desire to demonstrate repeatedly the knowledge that they have acquired, therefore, strengthening the performance of the learned behavior.

Self-efficacy plays an important role in motivation and achievement behaviors (Bandura, 1997; Li, Lee, & Solomon, 2007; Pajares, 1997). Martens (2012) suggests that children need to feel competent, to experience success, to feel worthy and to be in control. Bandura (2006) describes self-efficacy as the beliefs one holds about his or her capability to produce results by actions. Viewed from a physical activity perspective, self-efficacy is the belief in one's capabilities to learn or perform motor skills to obtain a certain outcome (Feltz & Magyar, 2006). Self-efficacy has a relationship to each of the four components of Bandura's Observational Learning Theory (Bandura, 2006). One's perception of his or her ability is rooted in knowledge gained by attentively observing

and subsequently gaining and retaining knowledge which leads to attempts at reproduction. Success at reproduction encourages motivation. The perception of success in sport (physical activity) enhances self-efficacy in that sport, but recurring failure lowers it (Feltz & Magyar, 2006). It is important that youth not become discouraged, but, rather become encouraged when attempting physical activity if we expect them to become lifetime movers.

When a student learns and retains a skill or activity and successfully reproduces it, that student's experience should be motivation to repeat the activity or skill. McWhorter, Wallman, and Alpert (2003) state that self-efficacy is a critical aspect of motivating children to become physically active. Positive experiences performing physical activities should motivate students to more readily participate in physical activity. One would also assume that the more knowledge gained in the physical education classroom, the more physically active students in that class would become. Though knowledge alone is probably not enough to change behaviors, improving and developing mastery of health-related fitness knowledge might be the first step to the establishment of healthy physical activity behaviors. However, more examination is needed to explore the relationship between student health-related fitness knowledge mastery and physical activity/fitness behavior establishment and maintenance (Keating et al., 2009). One possible explanation for how all these variables interact is presented in Figure 1.

Figure 1 depicts Observational Learning Theory's influence on self-efficacy for physical activity, self-reported physical activity, and health-related fitness knowledge in the physical education classroom while accounting for grade, ethnicity, and gender.

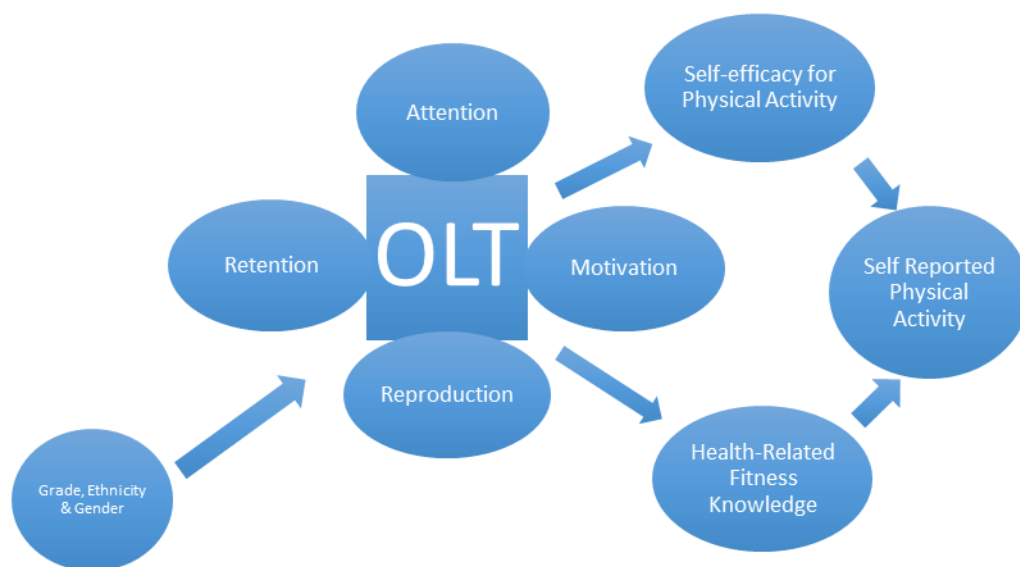


Figure 1. Observational Learning Theory’s influence on self-efficacy for physical activity, health-related fitness knowledge, and self-reported physical activity.

The purpose of this study was to examine how observational learning influences the physical education classroom. Specifically, observational learning, health-related fitness knowledge, self-efficacy for physical activity, and self-reported physical activity were assessed, controlling for gender, ethnicity, and grade to determine the applicability of Observational Learning Theory to the physical education classroom. This research measured observational learning’s influence on self-efficacy for physical activity and on health-related fitness knowledge. Further, the research attempted to determine if self-efficacy for physical activity and health-related fitness knowledge had influence on self-reported physical activity.

Methods

Sampling and Participants

For the purpose of this study high school students (9th-12th graders) from the four geographic regions of the United States (Northeast, South, West, and Midwest) were sampled. For the purposes of sampling, a multi-stage cluster sampling plan was used in this study. To identify the clusters, a school list was created using the Excel spreadsheets from the National Center for Education Statistics (NCES). After creating an Excel spreadsheet for each region, schools were assigned a random number using the function in Excel and then exported into SPSS. Schools were sorted by random number to obtain the list of schools to contact. Specifically, the sample attempted to include a proportional amount indicative of each region's student population.

Based on an a priori power analysis, the target number of participants for this study was 119 9th-12th graders (approximate ages 14-19). This analysis was made using G-Power with alpha at 0.05 with an effect size set at .40. The sample size was large enough to yield a normal distribution. Miles and Shevlin (2001) recommend that anticipation of a medium effect requires a sample size of at least 100 with six or fewer predictor variables. Once the power analysis was conducted, schools were selected randomly to ensure that a broad range of students in each geographic region had an opportunity to participate. After obtaining IRB permission, the primary investigator made contact with the principal or other school member with authority to grant access to the students to obtain permission for participation. The subject population was obtained from the aforementioned geographic regions and consisted of high school students participating in physical education classes, and all efforts were made to randomly sample

a proportional number of elements from each region. Data were collected for this paper/pencil survey in the physical education classroom under the oral instructions given by the test administrator.

Instrumentation

PE Metrics. A subset of 29 multiple choice items from the PE Metrics Exam was used to assess health-related fitness knowledge. PE Metrics is an item/assessment bank and was developed based on the latest testing theory and psychometric methods (Zhu et al., 2011). This instrument provides the teacher with assessment materials needed for standard-based physical education and is available for public use.

Physical Activity for Self-Efficacy Scale (PASES). Items measuring self-efficacy for physical activity came from an eight-item instrument, PASES, which has an established track record in research and has been deemed valid and reliable. For this research, the eight-item questionnaire was modified to make the questions more polarizing for a five-point, Likert scale. The original Likert-type scale offered three choices: (0) “No;” (1) “Not Sure;” and (2) “Yes.” The scale was modified into a five point scale as follows: (1) Strongly Disagree; (2) Disagree; (3) Uncertain; (4) Agree; and (5) Strongly Agree.

Observation Learning Questionnaire. The observational learning questionnaire contains 40 items based on Bandura’s (1986) four precepts of observational learning: (1) attention, (2) retention, (3) production, and (4) motivation (Yi & Davis, 2003). The questionnaire was adapted for use in physical education. The original questionnaire was developed to assess observational learning in a computer training session. The

statements were adapted to indicate observation in the physical education classroom rather than in computer training.

Physical Activity Questionnaire for Adolescents (PAQA). The PAQA is used to measure adolescent students' self-reported physical activity during a seven day period. PAQA asks adolescents to recall how many times during the previous week they engaged in various sport and physical activities. The questionnaire includes a series of questions about an adolescent's activity during the physical education class, lunch, afternoon, evening, and weekend activities. It concludes with questions about how much of an adolescent's spare time is spent doing physical activities and how often an adolescent is engaged in those physical activities. The PAQA is available for public use and has established validity and reliability.

Pilot Study

Each questionnaire used in this study has been previously used in research; however, two of the questionnaires were slightly adapted for this study. Though these specific questionnaires have established validity and reliability, they were piloted along with the questionnaires measuring health-related fitness knowledge and self-reported physical activity. A group of 112 high school students was conveniently sampled from a local high school to determine the questionnaires' reliability and validity. It took the students an average of 40 minutes to complete the entire questionnaire. The pilot data were screened, and eight cases were deleted due to missing data (at least three items missing per construct measured). The pilot group of 112 students was asked to report any issues with items and directions. No issues were reported.

Chronbach's alphas were run for items measuring each of the dependable variables in this study. Items measuring self-efficacy for physical activity had a Chronbach's alpha of .579. Items measuring observational learning had a Chronbach's alpha of .987. Items measuring self-reported physical activity had a Chronbach's alpha of .761, and items measuring health-related fitness knowledge had a Chronbach's alpha of .152. The health-related fitness knowledge instrument is a broad-based knowledge battery, so a low Alpha was expected.

Data Collection Procedures

For this study, data was collected from students at participating high schools. Request for approval from The University of Southern Mississippi's Institutional Review Board (IRB) to collect the data was granted. Also, permission was obtained from the principals of the participating schools, and notification letters were sent to the parents of children who were asked to participate. Letters were provided to students, and parents were asked to return a signed form should they wish that their child not participate. No letters of refusal for participation were returned to the researcher. Teachers were asked to provide reading material to students who did not participate; however, the researcher was not provided evidence from any teacher that students did not participate in the survey. Instructors were asked to administer the questionnaires to students at times where minimal instructional time was lost. A script was provided for teachers to aid in standardization of data collection.

Data Analysis Procedures

Linear regression models were used with an alpha level set at .05 to test the following null hypotheses:

H₀₁: There is no influence of observational learning on self-efficacy for physical activity, controlling for grade, gender, and ethnicity;

H₀₂: There is no influence of observational learning on health related fitness knowledge, controlling for grade, gender, and ethnicity;

H₀₃: There is no influence of self-efficacy for physical activity on self-reported physical activity, controlling for grade, gender, and ethnicity;

H₀₄: There is no influence of health-related fitness knowledge on self-reported physical activity, controlling for grade, gender, and ethnicity.

Results

Response Rates

Invitations to participate were sent to secondary schools in each of the four regions (Midwest, Northeast, South, and West). Eleven schools in the Midwest, 15 schools in the Northeast, 26 schools in the South, and 36 schools in the West were invited to participate. Three schools from the Midwest replied to the invitation, and two agreed to participate. Four schools from the Northeast replied to the invitation, and one agreed to participate. Eight schools from the South replied to the invitation, and two agreed to participate. Finally, six schools from the West replied to the invitation, but none agreed to participate. Students from five total schools; two in the Midwest and two in the South, and one in the Northeast; responded. Fifty two percent of all respondents were from the South. Thirty nine percent of all respondents were from the Midwest. Nine percent of all respondents were from the Northeast. There were no participants from schools in the West. Of the 300 surveys sent to the schools in the Midwest, South, and Northeast, 285 were returned. Thus, the overall response rate was 95%.

Data Entry, Screening, and Statistical Assumptions

Before data was analyzed, assessment of the variables (self-efficacy for physical activity, health-related fitness knowledge, and self-reported physical activity) was examined through various SPSS programs for accuracy of data entry, missing values, and the fit between their distributions and the assumptions of the statistical analyses. A review of the variable frequencies indicated 2% missing data for self-efficacy for physical activity and self-reported activity and 1% missing data for fitness knowledge and observational learning. Assumptions were tested before data was analyzed. Missing cases were determined to be missing at random and did not impact the generalizability of the results. One outlier case was found and was deleted, and all other cases were found to be reasonably normally distributed. The values for skewness and kurtosis were reasonable, and no issues with homoscedasticity were detected. Given these results with no major assumptions violated, analyses proceeded.

Observed Psychometric Properties

Internal consistency statistics were calculated for each of the dependent variables measured in the study using Chronbach's alpha. The reliability statistic was .603 for items measuring self-efficacy for physical activity, which was deemed acceptable. Items measuring observational learning were checked, and the Chronbach's alpha was .986, which was deemed highly reliable. Next, items measuring self-reported physical activity were measured for reliability. The resulting Chronbach's alpha for these items was .838, which was deemed acceptable. Items measuring health related-fitness knowledge were assessed for reliability, and the Chronbach's alpha was .463. The instrument used to measure this component of the study was the P.E. Metrics exam published by NASPE.

The Chronbach's alpha score of .463 does not change significantly if certain items are deleted. This is an indication that the health-related fitness knowledge instrument tests a broad base of knowledge. Thus, after reviewing the items on the health-related fitness knowledge instrument and considering the Chronbach's alpha, it was concluded that the instrument measured a broad range of health-related fitness knowledge for this sample.

Demographics

Twenty-three students from schools in the Northeast region participated along with 100 and 162 students from schools in the Midwest and South, respectively. Of the 285 participants, 145 reported being male while 138 reported being female. Two respondents did not report gender. One-hundred forty participants classified themselves as freshmen, 75 as sophomores, 41 as juniors, and 28 as seniors. One participant did not report classification. The majority of participants classified themselves as Caucasian (n=117). Eighty-six participants classified themselves as Spanish/Hispanic/Latino, 58 as African American, eight as Asian, four as American Indian or Alaskan Native, and two as Native Hawaiian or Pacific Islander. Nine participants classified their ethnicity as "other," and one respondent did not report ethnicity.

Null Hypothesis Testing

Analysis of null hypothesis #1. H_{01} : There is no influence of observational learning on self-efficacy for physical activity, controlling for grade, gender, and ethnicity. Linear regression was run to determine if observational learning had any influence on self-efficacy for physical activity, controlling for grade, gender, and ethnicity. In the first block of the model summary, the predictors of grade, gender, and ethnicity were entered. The results indicate that these factors have an insignificant influence on self-efficacy for

physical activity, $F(3, 272) = 1.22, p = .302$. The linear combination of ethnicity, gender, and grade accounted for 1.3% of the variance in self-efficacy for physical activity. In the second block, observational learning was added to the model as a predictor. The results for this block indicate that observational learning has a statistically significant influence on self-efficacy for physical activity, $F(4, 271) = 9.23, p < .001$. The amount of variability explained in self-efficacy for physical activity increased to 12% indicating a 10.7% change when observational learning was added as a predictor to the model. For every standard deviation increase in observational learning, the result was .33 increase in self-efficacy for physical activity, controlling for all other variables (see Table 1).

Table 1

Influence of observational learning on self-efficacy for physical activity, controlling for grade, gender, and ethnicity

	<i>Unstandardized</i>	β	<i>t</i>	sig	%
Observational Learning	0.027	0.328	5.729	< .001	12.0
Ethnicity	0.251	0.085	1.484	.139	
Gender	0.677	0.052	0.090	.369	1.3
Grade	-0.041	-0.006	-0.108	.914	

Analysis of hypothesis #2. H₀₂: There is no influence of observational learning on health-related fitness knowledge, controlling for grade, gender, and ethnicity. A linear regression was run to determine if observational learning has any influence on health-related fitness knowledge, controlling for grade, gender, and ethnicity. In the first block

of the model summary, the predictors of grade, gender, and ethnicity were entered. The results indicate that these factors have a statistically significant influence on health-related fitness knowledge, $F(3, 266) = 3.81, p = .011$. The linear combination of ethnicity, gender, and grade accounted for 4.1% of the variance in health-related fitness knowledge. The only statistically significant predictor in this block was grade ($p = .018$). For every year of increase in grade, there was a .713 point increase in health-related fitness knowledge. In the second block, observational learning was added to the model as a predictor. The results for this block indicate that observational learning has a statistically significant influence on health-related fitness knowledge, $F(4, 265) = 4.85, p = .001$. The amount of variability explained in health-related fitness knowledge increased to 6.8% indicating a 2.7% change when observational learning was added as a predictor to the model. For every standard deviation increase in observational learning, the result was .165 increase in health-related fitness knowledge, controlling for all other variables. The predictor of grade remained statistically significant in block two ($p = .021$). For every year of increase in grade, there was a .687 point increase in health-related fitness knowledge, controlling for all other variables (see Table 2).

Table 2

Influence of observational learning on health-related fitness knowledge, controlling for grade, gender, and ethnicity

Predictor	<i>Unstandardized</i>	β	<i>t</i>	sig	%
Observational Learning	0.010	0.165	2.772	.006	6.8
Ethnicity	0.221	0.100	1.683	.094	
Gender	-0.450	-0.046	-0.769	.443	4.1
Grade	0.687	0.139	2.323	.021	

Analysis of null hypothesis #3. H₀₃: There is no influence of self-efficacy for physical activity on self-reported physical activity, controlling for grade, gender, and ethnicity. A linear regression was run to determine if self-efficacy for physical activity has any influence on self-reported physical activity, controlling for grade, gender, and ethnicity. In the first block of the model summary, the predictors of grade, gender, and ethnicity were entered. The results indicated that these factors had an insignificant influence on self-reported physical activity, $F(3, 273) = .943, p = .420$. The linear combination of ethnicity, gender, and grade accounted for 1.0% of the variance in self-efficacy for physical activity. In the second block, observational learning was added to the model as a predictor. The results for this block indicated that self-efficacy for physical activity had a statistically significant influence on self-reported physical activity, $F(4, 272) = 20.02, p < .001$. The amount of variability explained in self-reported physical activity increased to 22.7% indicating a 21.7% change when self-efficacy for physical activity was added as a predictor to the model. For every standard deviation

increase in self-efficacy for physical activity, the result was .47 increase in self-reported physical activity (see Table 3).

Table 3

Influence of self-efficacy for physical activity on self-reported physical activity, controlling for grade, gender, and ethnicity

Predictor	<i>Unstandardized</i>	β	<i>t</i>	sig	%
Self-efficacy for physical activity	0.062	0.470	8.744	< .001	22.7
Ethnicity	-0.024	-0.063	-1.163	.245	
Gender	-0.200	-0.116	-2.162	.031	1.0
Grade	-0.031	-0.035	-0.654	.514	

Analysis of null hypothesis #4. H_{04} : There is no influence of health-related fitness knowledge on self-reported physical activity, controlling for grade, gender, and ethnicity. A linear regression was run to determine if health-related fitness knowledge has any influence on self-reported physical activity, controlling for grade, gender, and ethnicity. In the first block of the model summary, the predictors of grade, gender, and ethnicity were entered. The results indicated that these factors had an insignificant influence on self-reported physical activity, $F(3, 267) = .863, p = .461$. The linear combination of ethnicity, gender, and grade accounted for 1.0% of the variance in self-reported physical activity. In the second block, health-related fitness knowledge was added to the model as a predictor. The results for this block indicated that health-related fitness knowledge had a statistically significant influence on self-reported physical activity, $F(4, 266) = 2.55, p = .040$. The amount of variability explained in self-reported

physical activity increased to 3.7% indicating a 2.7% change when health-related fitness knowledge was added as a predictor to the model. For every standard deviation increase in health-related fitness knowledge, the result was .168 decrease in self-reported physical activity (Table 4).

Table 4

Influence of health-related fitness knowledge on self-reported physical activity, controlling for grade, gender, and ethnicity

Predictor	<i>Unstandardized</i>	β	<i>t</i>	sig	%
Health-related fitness knowledge	-0.030	-0.168	-2.744	.006	3.7
Ethnicity	0.012	0.031	0.516	.606	
Gender	-0.180	-0.105	-1.721	.086	1.0
Grade	0.011	0.013	0.212	.832	

Discussion

The purpose of this study was to examine observational learning theory in the physical education classroom. Specifically, relationships between observational learning, health related fitness knowledge, self-efficacy for physical activity, and self-reported physical activity were assessed in the study. As shown in the graphic in Figure 1; attention, retention, reproduction, and motivation are inter-related in the theory of observational learning. This study attempted to determine if observational learning in the physical education classroom would influence self-efficacy for physical activity and health related fitness knowledge, and, if the latter two variables would influence self-reported physical activity.

One of the most critical findings of the present study is the direct connection reported between self-efficacy and actual physical activity. Those who felt confident about themselves and their abilities to be active tended to report being more active. These findings support Feltz and Magyar's (2006) notion that central to navigating positive and negative experiences in physical activity is self-efficacy. In their research, Feltz and Magyar found that when one perceives mastery of a physical skill, one's self-efficacy is enhanced. Findings from the present study support Social Cognitive Theory (Bandura, 1986) and previous research (Bandura, 1997; Li et al., 2007; McWhorter et al., 2003; Pajares, 1997). McWhorter and colleagues (2003) stated that self-efficacy is a critical aspect of motivating children to become physically active and further implied that children should be allowed to set their own realistic goals toward self-improvement so that success is more easily attained. Findings from the present study would suggest potential for observational learning to influence the development of self-efficacy as well.

Another finding of interest in this study was the result that observational learning has a significant influence on self-efficacy for physical activity. Bandura (2012) emphasized that in the classroom children learn self-efficacy by observing peer and teacher models. Thus, after analyzing data, one could conclude that the importance of a physical education instructor utilizing Bandura's theory is vital to developing self-efficacy for physical activity with our students in PreK-12. Since self-efficacy does have an effect on physical activity (Martens, 2012), physical educators who pay heed to Bandura's (1986) theory of observational learning have a greater possibility of influencing a student's self-efficacy for physical activity and, subsequently, their actual physical activity.

Though it was found that observational learning has a significant influence on health-related fitness knowledge, the relationship is not strong. The National Association for Sport and Physical Education and most states provide guidance for health-related fitness knowledge at all educational levels, but it is unknown how much health-related fitness knowledge has been taught in schools (Lee, Burgeson, Fulton, & Spain, 2007). Regarding the preceding statement and taking into consideration that the present study found a relationship between observational learning and health-related fitness knowledge, it is possible, then, that instructors who intentionally structure their classroom using observational learning principles might garner more knowledge gains than those who do not.

Interestingly, this study found that knowledge and physical activity were not related as was proposed in Figure 1. The more accurate representation of the relationship among variables can be seen in Figure 2.

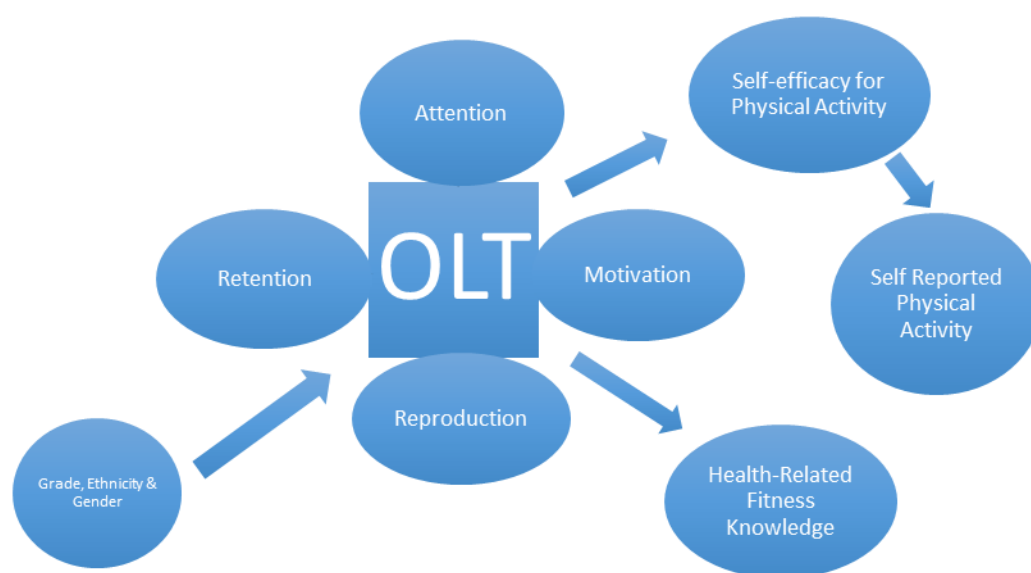


Figure 2. Observational Learning Theory's Influence on self-efficacy for physical activity, health-related fitness knowledge, and self-reported physical activity.

Though knowledge is probably not enough to change behaviors, improving and developing mastery of health related-fitness knowledge might be the first step to the establishment of healthy physical activity behaviors for students (Keating et al., 2009). Keating and his colleagues indicate that increasingly rapid proliferation of health problems caused by sedentary lifestyles, the failure to change student physical activity patterns could be due to neglecting the impartation of health-related fitness knowledge. However, the present study demonstrated a very small influence of health-related fitness knowledge on self-reported physical activity. In fact, health-related fitness knowledge had a slightly negative influence on self-reported physical activity. This surprising finding suggests that though students may know and understand concepts of health-related fitness knowledge, these students still do not always put this knowledge to use. Part of this may be explained by taking into consideration the age old human malady that though we know what is beneficial to us, we sometimes refuse to put that knowledge into practice. For example, a myriad of sources flood our population with information about the benefits of healthy eating habits, but the percentage of obese and overweight individuals in our population is alarming. Often, behavior of certain individuals does not change even when knowledge supports that change is beneficial. No attempt was made in this study to determine a relationship between health-related fitness knowledge and self-efficacy for physical activity.

The analysis conducted in this study also showed, as one might logically assume, that the grade level of a student did have a significant influence on health-related fitness knowledge. Maturation and experience should play a role in the amount of knowledge

one accumulates. Data indicated that as the grade level increases, health-related fitness knowledge also increases.

Future Research

The descriptive nature of the present study somewhat limits conclusions that can be drawn. Going forward, experimental research using interventions to examine the effectiveness of observational learning on health related-fitness knowledge and on self-efficacy for physical activity in the physical education classroom would be of interest. Further, a longitudinal study of the impact of health-related fitness knowledge taught using Bandura's (1986) Observational Learning Theory (1986) in the physical education classroom and its impact on physical activity through stages of the students' lives (such as the middle school to high school stage or high school to middle-age adulthood) would provide significant information regarding a means by which to inspire lifelong physical activity. As stated earlier, no attempt was made to determine a relationship between health-related physical activity and self-efficacy for physical activity; however, future research to determine if a relationship exists would be of interest.

REFERENCES

- Bandura, A. (1977). *Social learning theory*. Upper Saddle River, NJ: Prentice-Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (2006). Adolescent development from an agentic perspective. In F. Pajares & T. Urdan Eds.). *Self-efficacy beliefs of adolescents* (pp. 1-43). Greenwich, CT: Information Age Publishing.
- Bandura, A. (2012). On the functional properties of perceived self-efficacy revisited. *Journal of Management, 1*, 9-24.
- Bartholomew, J., Loukas, A., Jowers, E., & Allua, S. (2006). Validation of the physical activity self-efficacy scale: Testing measurement invariance between Hispanic and Caucasian children. *Journal of Physical Activity and Health, 3*, 70-78.
- Calfas, K. J., Sallis, J.F., Nichols, J. F., Sarkin, J.A., Johnson, M.F., Caparosa, S., & Alcaraz, J. (2000). Project GRAD: Two-year outcomes of a randomized controlled physical activity intervention among young adults. *American Journal of Preventive Medicine, 18*, 28-37.
- Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155-159.
- Corbin, C. B. (2002a). Physical education as an agent of change. *Quest, 54*, 181-195.
- Corbin, C.B. (2002b). Physical activity for everyone: What every physical educator should know about promoting lifelong physical activity. *Journal of Teaching in Physical Education, 21*, 128-144.

- Feltz, D., & Magyar, T. (2006). Self-efficacy and adolescents in sport and physical activity. In F. Pajares & T. Urda Eds.). *Self-efficacy beliefs of adolescents* (pp. 161-179). Greenwich, CT: Information Age Publishing.
- Goodwin, D. L., Fitzpatrick, D. A., & Craigon, I. (1996). Cut-backs to physical education consulting services: Consequences and concerns. *CAHPER Journal*, 62(2), 41-44.
- Janzen, H. (2003/2004). Daily physical education for K-12. Is government legislation in sight? *Physical Education and Health Journal*, 69(4), 4-12.
- Keating, X., Harrison, L., Chen, L., Xiang, P., Lambdin, D., Daunehauer, B., Rotich, W., & Pinero, J. (2009). An analysis of research on student health-related fitness knowledge in K-16 physical education programs. *Journal of Teaching in Physical Education*, 28, 333-349.
- Kowalski, K., Crocker, P., & Kowalski, N. (1997). Convergent validity of the physical activity questionnaire for adolescents. *Pediatric Exercise Science*, 9, 342-352.
- Li, W., Lee, A., & Solmon, M. (2007). The role of perceptions of task difficulty in relation to self-perceptions of ability, intrinsic value, attainment value, and performance. *European Physical Education Review*, 13(3), 301-318.
- Lee, S. M., Burgeson, C. R., Fulton, J. E., & Spain, C. G. (2007). Physical education and physical activity: results from the School Health Policies and Programs Study 2006. *Journal of School Health*, 77(8), 435-463.
- Martens, R. (2012). Turning Kids on to Physical Activity for a Lifetime. *Quest*, 48(3), 303-310.
- McWhorter, J., Wallmann, H., & Alpert, P. (2003). The obese child: Motivation as a tool for exercise. *Journal of Pediatric Health Care*, 17(1), 11-17.

- Miles, J., & Shevlin, M. (2001). *Applying regression and correlation: A guide for students and researchers*. London: Sage.
- Pajares, F. (1997). Current directions in self-efficacy research. *Advances in Motivation and Achievement, 10*, 1-49.
- President's Council on Physical Fitness and Sports. (2006). The role of schools in preventing childhood obesity. *Research Digest, 7*(3), 1-8.
- Sallis, J., Prochaska, J., Taylor, W., Hill, J., & Geraci, J. (1999). Correlates of physical activity in a national sample of girls and boys in Grades 4 through 12. *Health Psychology, 18*(4), 410-415. doi:10.1037/0278-6133.18.4.410.
- Strong, W., Malina, R., Blimkie, C., Daniels, S., Dishman, R., Gutin, B., & Trudeau, F. (2005). Evidence based physical activity for school-age youth. *The Journal of Pediatrics, 146*(6), 732-737.
- U.S. Department of Health and Human Services. (2000). *Healthy People 2010: Understanding and improving health* (2nd ed.). Washington, DC: U.S. Government Printing Office.
- Yi, M., & Davis, F. (2003). Developing and validating an observational learning model of computer software training and skill acquisition. *Information Systems Research, 14*(2), 146-169.
- Zhu, W., Rink, J., Placek, J., Graber, K., Fox, C., Fiset, J., ... & Raynes, D. (2011). PE Metrics: Background, Testing Theory, and Methods. *Measurement in Physical Education and Exercise Science, 15*(2), 87-99.

CHAPTER V

MANUSCRIPT 2: USING PRINCIPLES OF OBSERVATIONAL LEARNING TO
POSITIVELY INFLUENCE OUTCOMES IN THE
PHYSICAL EDUCATION CLASSROOM

Positively influencing youth in the physical education classroom is an objective of most physical educators. Given the charge of teaching and inspiring children to be active is a formidable challenge, but one that can be met. Physical activity during youth has the potential to influence health and fitness outcomes across the lifespan (Malina, 2006), and well-constructed physical education classes can set the ground work for youth to live active lives. The purpose of this article is to explore ways a physical educator can best lead students to become physically active throughout their lives by structuring the classroom according to the principles of Observational Learning Theory (Bandura, 1986).

Observational Learning Theory

In 1986 Albert Bandura published his Observational Learning Theory, a theory of learning that has become significantly influential in the K-12 educational environment. Four principles comprise the theory. In order to learn, one needs to pay *attention*. Storing information, or *retention*, is an important part of the learning process. Once the behavior is learned and retained, it must be *reproduced* in performance and practice. Finally, *motivation* to continue performance of the behavior ensues when perception of the performance is positive (Bandura, 1986; see Figure 3). Each phase of observational learning is related to the other, forming a cycle which enhances learning and ultimately results in the acquisition of knowledge and inspiration. Adhering to the theory in the

physical education classroom provides an opportunity for students to gain confidence and necessary skills to live a physically active life.

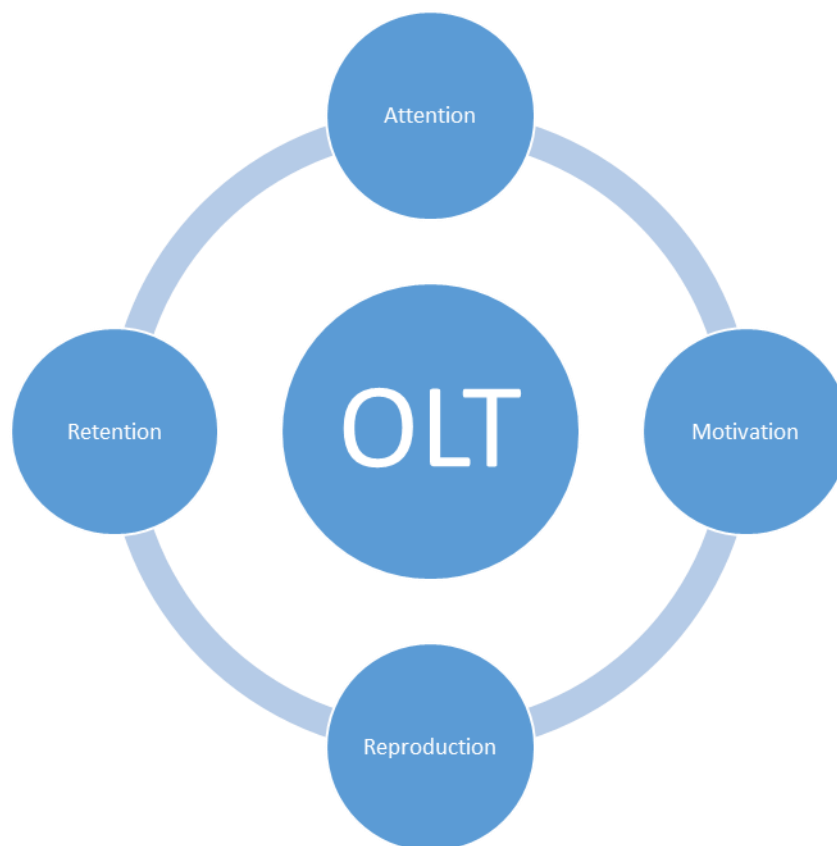


Figure 3. Representation of Albert Bandura's Observational Learning Theory adapted from Kihlstrom and Cantor (2000).

Physical education classroom teachers create lessons with some of these elements, in most cases, without even being aware of it. They use a variety of methods to encourage students to attentively observe modeled behavior, and they provide reinforcement tools which offer the student the opportunity to retain the observed behavior. Time is set aside for successful reproduction of the behavior giving the student motivation to reproduce it. However, OLT principles are most effective when all elements are incorporated into each lesson.

Observational Learning as a Structure for the Physical Education Class

The intentional process of incorporating all elements of OLT into each lesson requires the teacher to consider the overall objective of the lesson and how to best create opportunities for inclusion of OLT principles. As stated earlier, OLT is composed of four elements. Getting the students' *attention* to observe modeled behavior is necessary to initiate the learning process. Ensuring that the students *retain* knowledge observed is a second step. When students are successful at *reproducing* the retained knowledge, they become *motivated* to start the process again.

The examples provided in Table I, two for elementary and two for secondary, are a means by which one may use the OLT while teaching skills. Instructors may choose to adapt these examples to fit their needs for individual classes, but it's important that all elements of OLT are included in each lesson. As indicated in the left column, the skills suggested relate to standards published the National Association of Sport and Physical Education (NASPE).

Table 5

Examples of Practical Application of Bandura's Theory in the Physical Education Class

Theory ►	Attention	Retention	Reproduction	Motivation
Skill ▼				
Speed Stacking (Elementary) <i>NASPE 1,2,3, & 5</i>	Class will view video of world's fastest speed stacker. Instructor will demonstrate speed stacking while allowing students to time him or her.	Students will discuss video with instructor and recite steps required in a 3-3, 6-6, and 3-6-3 stacking cycle.	Unaided, students will practice each previously mentioned stacking cycle until successful and then move to more difficult cycles.	Students will participate in groups or pairs in a timed competition for speed stacking.
Volleying (Elementary) <i>NASPE 1,2,4, & 5</i>	High school or college players demonstrate volleying in class; present video of Olympic volleyball game; discuss how volleyball can be a fun family activity; etc.	Students will discuss demonstration by players and recite steps shown to volley to instructor.	Have students practice the skill of volleying in different ways and with different objects (to self in self-space, to self-traveling in general space, to a partner, in a small group, with a large group, and one on one with instructor). Practice, practice, practice.	Once successful volleying, move to other skills in volleyball. Celebrate success with competitive mini-volleying games (you make the rules) in groups or one on one.

Table 5 (continued).

Theory ►	Attention	Retention	Reproduction	Motivation
Skill ▼				
Cardiovascular Fitness (Secondary) <i>NASPE</i> 1,2,3,4, & 5	Show video of diseased and healthy hearts. Explain the formula for finding one's maximum heart rate, target heart rate, and exercising heart rate.	Students will each present a power point about the relationship between heart disease and exercise and, in the power point, will show their target heart rate and how they found it.	Students will demonstrate different forms of cardiovascular exercise; how to take one's heart rate while exercising; and develop a program to lower their exercising heart rate.	Throughout the duration of the semester/year, students will exercise to lower their heart rate to obtain a set goal.
Upper Body Muscle Strength and Endurance (Secondary) <i>NASPE</i> 1,2,3,4, & 5	Take class to local fitness gym or YMCA and have employee explain the importance of upper body strength and how to develop it with and without weights; Show video of athletes and non-athletes working on upper body strength. Give examples of daily tasks that require upper body strength.	Students will answer quiz questions about the relationship that upper body strength has in performing daily tasks involving upper body strength and how to improve one's upper body strength.	A certain time during each class will be set aside to work on upper body strength. Students will perform exercises previously demonstrated to increase upper body strength.	Students will be given a pre and post test to determine their improvement in upper body strength.

Implementation

When used as a teaching tool, the four components of Bandura's Observational Learning Theory not only relate to each other but are dependent on one another. A student's perception of his or her ability to perform a skill is rooted in knowledge gained through attentive observation of a model. Modeled behavior is only useful to the learner if the behavior relates to the learner, but the behavior will have little influence in the classroom if it is not retained. When students use the retained knowledge to reproduce what they observed in the modeled behavior and succeed in reproducing it, they are motivated to start the observational learning cycle again. Because these components are inter-related, instructors should view and apply the theory in its entirety so that students gain its maximum benefit.

To teach in the physical education classroom we must grab students' attention so they are watching the models we provide. Using questioning techniques and cue words for skill acquisition, instructors are further likely to foster an environment whereby students more readily retain the steps in a skill. Finally, providing adequate opportunity for students to reproduce these skills and encouraging students to focus on mastery and learning will increase motivation for the student to repeat the cycle.

Continually striving to optimize our classroom instruction in physical education has potential to impact lives of students. Physical educators can become more innovative to ensure that every minute in the classroom counts toward influencing students to learn health enhancing skills they can practice throughout life. By using the four related principles of Bandura's Observational Learning Theory: attention, retention,

reproduction, and motivation, physical education instructors have a vehicle by which to teach and inspire youngsters to live an active life.

REFERENCES

- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Kihlstrom, J. F., & Cantor, N. (2000). Chapter sixteen: Social intelligence. In R. J. Sternberg (Ed.), *Handbook of intelligence* (pp. 359-379). New York: Cambridge University Press.
- Malina, R. M. (2006). Youth Physical Activity: Implications For Adult Physical Activity And Health. *Studies in Physical Culture & Tourism, 13*, 29-33.

APPENDIX A

HIGH SCHOOL GATEKEEPER PERMISSION REQUEST LETTER

To Whom It May Concern:

I am a doctoral candidate seeking to obtain information about physical education and the impact that it may or may not have on adolescents' lifestyle. A questionnaire provided to adolescents will be used to obtain data. All information is completely anonymous. Nothing that is provided by an adolescent can be traced back to an individual. Potential participants may stop completing the questionnaire at any time. There are no adverse consequences if one chooses not to participate or finish the questionnaire. If permission is provided for this study, permission will also be requested from physical education (PE) instructors since only information is needed from adolescents who are in PE classes. Passive permission letters will be provided to be sent to parents concerning the study. One week after passive permission letters are sent home, a request will be made to provide the questionnaires to the adolescents who are in PE classes.

If you have any questions, please feel free to contact me. My contact information is cbullock@wmcarey.edu and/or 601-318-6558. Input about PE is important and valued in order to best meet the health needs of our youth. Your consideration to help in this research process is very much appreciated. Please contact me at the contact information provided below.

Sincerely,

Greg Bullock
Doctoral Candidate
University of Southern Mississippi
cbullock@wmcarey.edu
601-318-6558
Hattiesburg, Mississippi

APPENDIX B
DEMOGRAPHICS

Demographics. Please complete the following information.

Name of your school _____

State where you school is located _____

Gender Male Female

Age _____

Grade Ninth Tenth Eleventh Twelfth

Ethnicity

- | | |
|--|---|
| <input type="checkbox"/> Spanish/Hispanic/Latino | <input type="checkbox"/> Asian |
| <input type="checkbox"/> American Indian or Alaskan Native | <input type="checkbox"/> Black/African American |
| <input type="checkbox"/> Native Hawaiian or Pacific Islander | <input type="checkbox"/> White/Caucasian |
| <input type="checkbox"/> Other | If other, please specify |
- _____

APPENDIX C

HEALTH-RELATED FITNESS KNOWLEDGE QUESTIONNAIRE

Health-related Fitness Knowledge. Please circle the letter indicating the best answer.

1. A pedometer is usually used to record how physically active you are by:
 - A. Recording your peddling action while you ride your bike.
 - B. Measuring your average heart rate while you walk.
 - C. Counting the number of steps you take during physical activity.
 - D. Recording the number of physical activities in which you participate weekly.

2. Amy goes to school, does chores and homework and works as a waitress on weekends. Which would provide the most beneficial physical activity to be worked into her tight schedule?
 - A. Walking to school and working at least two days a week.
 - B. Performing a long physical activity workout once a week.
 - C. Walking as quickly as possible while waitressing.
 - D. Performing a personal fitness workout at least 5 days a week.

3. Which one of the following activities is both non-competitive and a proven moderate-to-vigorous physical activity?
 - A. Gardening.
 - B. Soccer.
 - C. Golf.
 - D. Archery.

4. You should choose activities for your personal physical activity plan that:
 - A. You can fit into your schedule.
 - B. You can perform with enjoyment.
 - C. Your friends enjoy doing.
 - D. Are provided by your local recreation program.

5. Which of the following are benefits of being physically fit?
 - A. Decreased heart rate and appetite.
 - B. Improved self-esteem and reduced stress.
 - C. Increased resting heart rate and lowered stress.
 - D. More energy and less need for sleep.

6. A physically active person accumulates up to 60 minutes a day of moderate-to-vigorous physical activity. Which of the following best describes a “physically active lifestyle?”

A. Walks to school, mows grass and rakes leaves, cleans house, completes a personal fitness workout 5 to 6 days a week, plays on the school tennis team.

B. Rides the bus to school, participates in PE class 2 days a week, works at the local grocery store stocking shelves on weekends.

C. Completes homework each day, completes chores at home, practices daily with the marching band at school, walks to school.

D. Participates in a bowling league 1 to 2 days a week, volunteers at the community library restocking books 2 to 3 days a week, runs a mile 3 days a week.

7. Which of the following plans demonstrates the most physically active lifestyle?

A. Work out at the local fitness center at least 3 days a week.

B. Swim or play soccer or tennis for 60 minutes at least 5 days a week.

C. Run a mile at least 2 days a week.

D. Perform a weight-lifting program at least 3 days a week.

8. Which group of activities would most likely help to improve all components of health-related physical fitness if added to your personal physical activity plan?

A. Biking, volleyball, swimming.

B. Soccer, basketball, softball.

C. Gymnastics, running, bowling.

D. Yoga, weight lifting, running.

9. Which group of activities is considered sedentary?

A. Reading, schoolwork, writing a paper.

B. Rowing, sit-ups, watching a basketball game.

C. Biking, golf, archery.

D. Treading water, reading, canoeing.

10. The percentages of fat, muscle, bone and water in the body are fitness components called:

A. Weight management.

B. Nutritional balance.

C. Body composition.

D. Physical structure.

11. Running for distance or time can be used to measure:

A. Flexibility.

B. Aerobic endurance.

C. Distance capacity.

D. Muscle strength.

12. Which activity is the **best** measure of arm strength?

- A. Bent-arm hang.
 - B. Shoulder stretch.
 - C. Jumping jacks.
 - D. Arm lift.
13. What 2 tests are intended to measure aerobic fitness?
- A. Stress test, sit-ups.
 - B. Shoulder stretch, mile run.
 - C. Mile run, PACER.
 - D. Shuttle run, step test.
14. You can increase the intensity of your workout by:
- A. Increasing distance & speed.
 - B. Decreasing speed & distance.
 - C. Increasing time & decreasing distance.
 - D. Increasing time & decreasing repetitions.
15. In the FITT guidelines, “frequency” refers to:
- A. How long you exercise.
 - B. How much time you allow between repetitions.
 - C. How often you exercise.
 - D. The number of weeks in a workout plan.
16. When you reach your initial goal for improved physical fitness, you should apply the principle of “progression” to safely adjust your work-out plan to continue fitness improvement by:
- A. Increasing the intensity of your workout.
 - B. Increasing the number of “no-workout” days per week.
 - C. Keeping your workout the same.
 - D. Work out at a lower level of intensity.
17. The type of activities to improve aerobic endurance must be able to _____ throughout the activity.
- A. Keep the heart rate at the target heart rate level.
 - B. Keep the heart rate at a resting level.
 - C. Change the heart rate.
 - D. Allow the heart rate to recover.

18. My goal is to lose weight safely and decrease my percentage of body fat in the next four weeks by _____.

A. Walking daily, reducing water consumption, eating more whole grain bread and eliminating fatty foods.

B. Walking 30 minutes daily, eating more fruit and vegetables, and consuming more water and fewer calories.

C. Jogging every other day, avoiding meat and bread, eating more fruit, and drinking 8 glasses of water each day.

D. Walking 3 times per week, cutting my calorie intake by 25 percent, eating more protein, and increasing my water intake daily.

19. My goal is to complete the mile run without stopping to rest by doing the following for four weeks:

A. Alternately run and walk at least 5 days a week, increasing the distance I run gradually.

B. Walk briskly for 1¼ miles at least 5 days a week.

C. Alternately run and walk at least every other day.

D. Walk 1 mile briskly 3 days the first week and add ½ mile each week after that.

20. You can improve your current level of shoulder flexibility by:

A. Stretching during warm-up twice per week.

B. Participating in activities that require a full range of motion twice per week.

C. Completing a specific shoulder-flexibility training workout every day.

D. Starting all workouts with flexibility training 3 times a week.

21. Sean was able to perform 20 curl-ups on a test for muscle endurance. His goal, within the next six weeks, is to perform 30 curl-ups without resting. Which of the following plans will **best** help to safely improve his score?

A. Every other day, complete 3 sets of up to 15 curl-ups each set, with a 1-minute rest between sets.

B. Three times a week, perform 3 sets of up to 10 curl-ups each set, with a no rest between sets.

C. Once a week, perform 3 sets of up to 15 curl-ups each set, with a 1-minute rest between sets.

D. Once a week, complete the curl-up test, adding 2 curl-ups on each trial for 6 weeks.

22. When planning your exercise program, you should start by:

A. Using a plan of physical fitness activities based on nationally set goals.

B. Keeping a log of your participation in all physical activities.

C. Reviewing your personal fitness test scores and setting personal fitness goals.

D. Deciding how much time you have to exercise.

23. When the length of a run is changed from 1 mile to 1¼ miles, what principle is being applied?

- A. Intensity.
- B. Specificity.
- C. Frequency.
- D. Progression.

24. Factors of age and maximum heart rate are two of several items used to determine your:

- A. Target heart rate zone.
- B. Aerobic capacity.
- C. Resting heart rate.
- D. Oxygen capacity.

25. When adjusting your workout to increase flexibility, stretch each muscle group beyond the distance required by your normal activities and until:

- A. You cannot stand the pain.
- B. The muscle becomes tight without painful discomfort.
- C. You reach the recommended distance for your age group.
- D. You reach your long-term goal distance.

26. A personal fitness workout plan for improving total health-related fitness should include goals based on:

- A. Personal evaluation, with specific activities to address body composition.
- B. Published charts of expectations for a person of your height and weight, with specific activities to address all fitness components.
- C. Personal test results, specific activities to address each component, and realistic expectations.
- D. Personal test results and desired achievement of specific sports skills.

Scenario: Goal-Setting. Use to answer questions 27 & 28.

Jamal wants to set up a fitness plan that will improve his fitness levels. He is 15 years old and is in high school. He appears to be healthy but is overweight. Below are his pre-test scores and goals for his fitness plan. Read the goals and answer the questions below.

Jamal's Goals for September through January 31.

Fitness Component	Pre-Test	Goal
Muscle endurance	Push-ups = 1	3
	Curl-ups = 12	20+
Body composition	32% body fat	32% body fat or less
Aerobic endurance	22-minute mile	18-minute mile

27. Jamal has set a goal for improving his push-up score. Which of the following work-out plans is most likely to help him reach his goal?
- A. Complete 3 sets of up to 10 modified push-ups each, with hands on a table and feet on the floor, every other day for 3 weeks.
 - B. Complete 3 sets of up to 10 modified push-ups each, with hands on a table and feet on the floor, at least 2 days a week for 3 weeks.
 - C. Complete 3 sets of up to 10 modified push-ups each, with hands on a table and feet on the floor, at least once a week for 3 weeks.
 - D. Complete as many push-ups as you can 3 days a week for 3 weeks.
28. Jamal has set a goal of improving his curl-up score by completing 3 sets of up to 10 curl-ups each, every other day for 3 weeks. If he reaches his goal of 20 curl-ups without rest, Jamal should adjust the goal and continue the workout for 3 more weeks, but:
- A. Increase the number of repetitions to up to 15 in each set.
 - B. Keep the number of repetitions in each set the same.
 - C. Decrease the number of repetitions and increase the number of sets in each workout.
 - D. Complete as many curl-ups as possible in each workout.
29. When designing a conditioning program to improve health-related fitness, you should first look at your current fitness test scores to determine realistic goals around which to create a workout plan. Which set of guidelines must you consider for each of the activities/exercises in the daily plan?
- A. Frequency, intensity, time and specific type of exercise needed to address each health-related fitness component.
 - B. Personal needs for sleeping, studying, working and eating.
 - C. Your physical activity level and interests.
 - D. Nutrition needs and eating habits.

APPENDIX D

PHYSICAL ACTIVITY SELF-EFFCACY SCALE

Self-Efficacy Scale. This section is used to obtain a better understanding of the kinds of things that are difficult for students. Please rate how certain you are that you can do each of the things described below by writing the appropriate number.

Please rate your degree of confidence by circling a number from 1 to 5 using the scale below:

1 = Strongly Disagree
2 = Disagree

3 = Uncertain

4 = Agree
5 = Strongly Agree

1.	I am certain I can be physically active most days after school.	1	2	3	4	5
2.	I am certain I cannot ask my parent/other adult to do physically active things with me.	1	2	3	4	5
3.	I am certain I would choose to be physically active even if I could watch TV/play video games.	1	2	3	4	5
4.	I would not be physically active when it is very hot or cold outside.	1	2	3	4	5
5.	I am certain I can be physically active even if I stay at home.	1	2	3	4	5
6.	I am certain I have the skills I need to be physically active.	1	2	3	4	5
7.	I am certain I would choose to be physically active no matter how busy my day is.	1	2	3	4	5
8.	I am certain I can ask my best friend to be physically active with me.	1	2	3	4	5

APPENDIX E

OBSERVATIONAL LEARNING QUESTIONNAIRE

Observational Learning. Please select a response to a question by making a mark in the box under number that best represents your agreement. 1 = “Strongly Disagree” and 10 = “Strongly Agree.”

Strongly Disagree *Neutral* *Strongly Agree*

ATTENTION

1. I paid close attention to the teacher’s PE demonstration.	1	2	3	4	5	6	7	8	9	10
2. I was able to accurately perceive the PE information demonstrated by the teacher.	1	2	3	4	5	6	7	8	9	10
3. I found the teacher’s demonstration salient and prominent.	1	2	3	4	5	6	7	8	9	10
4. I was able to concentrate on the teacher’s PE demonstrations.	1	2	3	4	5	6	7	8	9	10
5. I found the teacher’s demonstrations easy to follow.	1	2	3	4	5	6	7	8	9	10
6. I focused on the PE skills presented by the teacher.	1	2	3	4	5	6	7	8	9	10
7. The teacher’s PE demonstration held my attention	1	2	3	4	5	6	7	8	9	10
8. I was able to follow the detailed procedural steps demonstrated by the teacher.	1	2	3	4	5	6	7	8	9	10
9. The teacher’s PE demonstrations are interesting.	1	2	3	4	5	6	7	8	9	10
10. During the teacher’s demonstration, I am absorbed by the demonstrated activities.	1	2	3	4	5	6	7	8	9	10

RETENTION

11. I accurately remember the activities demonstrated by the teacher.	1	2	3	4	5	6	7	8	9	10
12. I can recall the demonstrated PE operations with specific procedural steps.	1	2	3	4	5	6	7	8	9	10
13. I remember the critical elements of the demonstrated PE skills.	1	2	3	4	5	6	7	8	9	10
14. I have not forgotten the essential parts of the teacher’s PE demonstration.	1	2	3	4	5	6	7	8	9	10
15. I can mentally visualize most of the demonstrated PE operations.	1	2	3	4	5	6	7	8	9	10
16. I can verbally express most of the demonstrated PE operations with specific procedural steps.	1	2	3	4	5	6	7	8	9	10
17. I remember the details of the PE teacher’s demonstrations.	1	2	3	4	5	6	7	8	9	10
18. I have accurate mental images of the skills demonstrated by the PE teacher.	1	2	3	4	5	6	7	8	9	10
19. I can recall the procedural steps that have been demonstrated by the teacher.	1	2	3	4	5	6	7	8	9	10
20. It will not be difficult for me to summarize the demonstrated PE operations.	1	2	3	4	5	6	7	8	9	10

PRODUCTION

21. I can accurately reproduce the demonstrated skills.	1	2	3	4	5	6	7	8	9	10
22. I can apply the learned PE skills to new problems.	1	2	3	4	5	6	7	8	9	10
23. I know how to combine the demonstrated PE skills to solve similar problems.	1	2	3	4	5	6	7	8	9	10
24. I can perform the demonstrated PE operations.	1	2	3	4	5	6	7	8	9	10
25. I will have no difficulty in using the learned PE skills.	1	2	3	4	5	6	7	8	9	10
26. I can put the learned PE skills to use for similar problems.	1	2	3	4	5	6	7	8	9	10
27. I know how to orchestrate component procedures to perform the demonstrated PE tasks.	1	2	3	4	5	6	7	8	9	10
28. I think I can interact with PE skills to perform the demonstrated PE operations	1	2	3	4	5	6	7	8	9	10
29. I had enough practice of the demonstrated PE skills.	1	2	3	4	5	6	7	8	9	10
30. I have a clear understanding of how to integrate the demonstrated PE skills to complete a similar PE task.	1	2	3	4	5	6	7	8	9	10

MOTIVATION

31. My motivation to use the learned PE skills is high.	1	2	3	4	5	6	7	8	9	10
32. My motivation to master PE learned skills is high.	1	2	3	4	5	6	7	8	9	10
33. Throughout the lessons, my motivation to learn the PE skills was high.	1	2	3	4	5	6	7	8	9	10
34. I have a strong determination to use the learned PE skills.	1	2	3	4	5	6	7	8	9	10
35. I have a strong determination to master the learned PE skills.	1	2	3	4	5	6	7	8	9	10
36. Throughout the lessons, I had a strong determination to learn the demonstrated PE skills.	1	2	3	4	5	6	7	8	9	10
37. Learning the demonstrated PE skills is important to me.	1	2	3	4	5	6	7	8	9	10
38. I think that others regard the demonstrated PE skills as important.	1	2	3	4	5	6	7	8	9	10
39. It will be rewarding if I master the demonstrated PE skills.	1	2	3	4	5	6	7	8	9	10
40. My situation requires me to learn the demonstrated PE skills.	1	2	3	4	5	6	7	8	9	10

APPENDIX F

PHYSICAL ACTIVITY QUESTIONNAIRE FOR ADOLESCENTS

Physical Activity Questionnaire. The information needed for this section is in relation to the **last seven (7) days only** (this past week). This includes sports or dance that make you sweat or make your legs feel tired, or games like tag, skipping, running, climbing, or any similar activity that makes you breathe hard.

There are no right or wrong responses. This is not a test. Please feel free to answer candidly. Again, your input is very important.

Directions:

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? Please mark only one response per row.

Type of Physical Activity	Frequency in Past 7 Days				
1. Skipping	No	1-2 times	3-4 times	5-6 times	7+ times
2. Rowing/Canoeing	No	1-2 times	3-4 times	5-6 times	7+ times
3. In-line skating	No	1-2 times	3-4 times	5-6 times	7+ times
4. Tag	No	1-2 times	3-4 times	5-6 times	7+ times
5. Walking for exercise	No	1-2 times	3-4 times	5-6 times	7+ times
6. Bicycling	No	1-2 times	3-4 times	5-6 times	7+ times
7. Jogging/Running	No	1-2 times	3-4 times	5-6 times	7+ times
8. Aerobics	No	1-2 times	3-4 times	5-6 times	7+ times
9. Swimming	No	1-2 times	3-4 times	5-6 times	7+ times
10. Baseball/Softball	No	1-2 times	3-4 times	5-6 times	7+ times
11. Dance	No	1-2 times	3-4 times	5-6 times	7+ times
12. Football	No	1-2 times	3-4 times	5-6 times	7+ times
13. Badminton	No	1-2 times	3-4 times	5-6 times	7+ times
14. Skateboarding	No	1-2 times	3-4 times	5-6 times	7+ times
15. Soccer	No	1-2 times	3-4 times	5-6 times	7+ times
16. Street hockey	No	1-2 times	3-4 times	5-6 times	7+ times
17. Volleyball	No	1-2 times	3-4 times	5-6 times	7+ times
18. Floor hockey	No	1-2 times	3-4 times	5-6 times	7+ times
19. Basketball	No	1-2 times	3-4 times	5-6 times	7+ times
20. Ice skating	No	1-2 times	3-4 times	5-6 times	7+ times
21. Cross-country skiing	No	1-2 times	3-4 times	5-6 times	7+ times
22. Ice hockey/ringette	No	1-2 times	3-4 times	5-6 times	7+ times
23. Other, what?	No	1-2 times	3-4 times	5-6 times	7+ times
24. Other, what?	No	1-2 times	3-4 times	5-6 times	7+ times

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

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

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

- 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

27. In the last 7 days, on how many day *right after school*, did you do sports, dance, or play games in which you were very active? Please check only one.

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

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

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

29. *On the last weekend*, how many times did you do sports, dance, or play games in which you were very active? Please check only one.

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

30. 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.

All or most of my free time was spent doing things that involved little physical effort.

I sometimes (1 – 2 times last week) did physical things in my free time (e.g., played sports, went running, swimming, bike riding, did aerobic)

I often (3 – 4 times last week) did physical things in my free time

I quite often (5 – 6 times last week) did physical things in my free time

I very often (7 or more times last week) did physical things in my free time

31. Mark how often you did physical activity (like playing sports, games, doing dance, or any other physical activity). Please check only one for each day of the week.

	None	A Little Bit	Medium	Often	Very Often
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					
Sunday					

32. Were you sick last week, or did anything prevent you from doing your normal physical activities? Please check only one.

Yes No

If yes, what prevented you?

APPENDIX G

UNIVERSITY OF SOUTHERN MISSISSIPPI INTERNAL REVIEW BOARD

APPROVAL

INSTITUTIONAL REVIEW BOARD

118 College Drive #5147 | Hattiesburg, MS
 39406-0001 Phone: 601.266.6820 | Fax:
 601.266.4377 | www.usm.edu/irb

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: **13071901**

PROJECT TITLE: **The Influence of Observational Learning on Self-Reported Physical Activity, Self-Efficacy for Physical Activity, and Health-Related Fitness Knowledge for Physical Activity** PROJECT TYPE: **New Project**

RESEARCHER(S): **Charles G. Bullock**

COLLEGE/DIVISION: **College of Health**

DEPARTMENT: **Human Performance**

and Recreation FUNDING

AGENCY/SPONSOR: **N/A**

IRB COMMITTEE ACTION: **Exempt Approval**

PERIOD OF APPROVAL: **07/31/2013 to 07/30/2014**

Lawrence A. Hosman, Ph.D.

Institutional Review Board

APPENDIX H
PRINCIPAL/PHYSICAL EDUCATION (PE) INSTRUCTOR
PERMISSION REQUEST LETTER

To Whom It May Concern:

I am a doctoral candidate seeking to obtain information about physical education and the impact that it may or may not have on adolescents' lifestyle. A questionnaire provided to adolescents will be used to obtain data. All information is completely anonymous.

Nothing that is provided by an adolescent can be traced back to an individual. Potential participants may stop completing the questionnaire at any time. There are no adverse consequences if one chooses not to participate or finish the questionnaire. Permission has been provided by the gatekeeper at your high school. If you agree to participate, parental permission letters will be provided to you to send home to the parents. After one week, you will be asked to provide the questionnaire to the students in your PE classes.

If you have any questions, please feel free to contact me. My contact information is cbullock@wmcarey.edu and/or 601-318-6558. Input about PE is important and valued in order to best meet the health needs of our youth. Your consideration to help in this research process is very much appreciated. Please contact me at the contact information provided below.

Sincerely,

Greg Bullock
Doctoral Candidate
University of Southern Mississippi
cbullock@wmcarey.edu
601-318-6558
Hattiesburg, Mississippi

APPENDIX I

SURVEY COVER LETTER FOR PARENTS

SURVEY ON PHYSICAL EDUCATION (PE)

I am a graduate student at The University of Southern Mississippi and am working on research to determine the influence of observational learning on self-efficacy for physical activity and health related fitness knowledge; the influence of self-efficacy for physical activity; and the influence of health related fitness knowledge on self-reported physical activity. It is very important to continue to examine what is being taught in our schools in order to provide the best possible practices for our students. Information received from the students is valuable and much needed. You, as the guardian, are being asked to provide consent for your child to participate in completing the survey.

All information provided by a student will be completely anonymous. Nothing that will be provided can be tied back to any individual student. Even if a student does have guardian consent, the student may still stop completing the survey at any time even if he/she begins the survey. There are no adverse consequences for a student who chooses not to participate.

If you have any questions, please feel free to contact me. My contact information is cbullock@wmcarey.edu and/or 601-318-6558. Your child's input about PE is important and valued. Your willingness to help in this research process is very much appreciated. ***Return this form with your signature only if you do not want your child to participate _____.***

Sincerely,

Greg Bullock
Doctoral Candidate
University of Southern Mississippi
Hattiesburg, Mississippi

Please keep this cover letter for your information.

APPENDIX J
SURVEY COVER LETTER FOR STUDENTS
SURVEY ON PHYSICAL EDUCATION (PE)

This survey is provided to obtain information about physical education and the impact that it may or may not have on your lifestyle. Please feel free to be candid in your responses. All information is completely anonymous. Nothing that you provide can be tied back to you. You can stop completing this survey at any time. There are no adverse consequences if you choose not to participate. If you do decide to complete and submit the survey, your consent will be assumed since you are being provided this survey only if you have a guardian's consent.

If you have any questions, please feel free to contact me. My contact information is cbullock@wmcarey.edu and/or 601-318-6558. Your input about PE is important and valued. Your willingness to help in this research process is very much appreciated.

Thank you for your valued input.

Sincerely,

Greg Bullock

Doctoral Candidate

University of Southern Mississippi

Hattiesburg, Mississippi

REFERENCES

- A Nation at Risk: The Imperative for Educational Reform. A Report to the Nation and the Secretary of Education.* United Department of Education by The National Commission on Excellence in Education. 1981.
- Allender, S., Cowburn, G., & Foster, C. (2006). Understanding participation in sport and physical activity among children and adults: a review of qualitative studies. *Health Education Research, 21*(6), 826-835.
- American Association of Health, Physical Education, and Recreation. (1969). *Knowledge and understanding in physical education.* Washington DC.
- Bandura, A. (1977). *Social learning theory.* Upper Saddle River, NJ: Prentice-Hall.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1990). Perceived self-efficacy in the exercise of personal agency. *Journal of Applied Sport Psychology, 2*, 128-163.
- Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York: Freeman.
- Bandura, A. (2006). Adolescent development from an agentic perspective. In F. Pajares & T. Urdan (Eds.), *Self-efficacy beliefs of adolescents* (pp. 1-43). Greenwich, CT: Information Age Publishing.
- Bandura, A. (2012). On the functional properties of perceived self-efficacy revisited. *Journal of Management, 1*, 9-24.
- Bartholomew, J., Loukas, A., Jowers, E., & Allua, S. (2006). Validation of the physical activity self-efficacy scale: Testing measurement invariance between Hispanic and Caucasian children. *Journal of Physical Activity and Health, 3*, 70-78.

- Biddle, S. J., Gorely, T., Marshall, S. J., Murdey, I., & Cameron, N. (2004a). Physical activity and sedentary behaviours in youth: Issues and controversies. *The Journal of the Royal Society for the Promotion of Health*, *124*(1), 29-33.
- Biddle, S., Gorely, T., & Stensel, D. (2004b). Health-enhancing physical activity and sedentary behaviour in children and adolescents. *Journal of Sports Sciences*, *22*(8), 679-701.
- Biddle, S., Gorely, T., Pearson, N., & Bull, F. (2011). An assessment of self-reported physical activity instruments in young people for population surveillance: Project ALPHA. *The International Journal Of Behavioral Nutrition And Physical Activity*, *8*1.
- Blair, S., & Connelly, J. (1996). How much exercise should we do? The case for moderate amounts and intensities of exercise. *Research Quarterly for Exercise and Sport*, *67*, 193-205.
- Blandin, Y., Lhuisset, L., & Proteau, L. (1999). Cognitive processes underlying observational learning of motor skills. *The Quarterly Journal of Experimental Psychology: Section A*, *52*(4), 957-979.
- Bo, S., McCaughtry, N., Martin, J. J., & Fahlman, M. (2009). Motivational profiles and their associations with achievement outcomes. *Journal Of Teaching In Physical Education*, *28*(4), 441-460
- Boeree, C. G. (1998). Albert Bandura: 1925-present. Personality theories. Retrieved November, 7, 2006.

- Boreham, C., Twisk, J., Neville, C., Savage, M., Murray, L., & Gallagher, A. (2002). Associations between physical fitness and activity patterns during adolescence and cardiovascular risk factors in young adulthood: The Northern Ireland Young Hearts Project. *International Journal of Sports Medicine*, 23(S1), S22-S26.
- Calfas, K.J., Sallis, J.F., Nichols, J.F., Sarkin, J.A., Johnson, M.F., Caparosa, S., Alcaraz, J., (2000). Project GRAD: Two-year outcomes of a randomized controlled physical activity intervention among young adults. *American Journal of Preventive Medicine*, 18, 28-37.
- Cameron, C., Craig, C., Stephens, T., & Ready, T. (2002). *Increasing physical activity: Supporting an active workforce*. Ottawa, Ontario, Canada: Canadian Fitness and Lifestyle Research Institute.
- Caspersen, C. J., Pereira, M. A., & Curran, K. M. (2000). Changes in physical activity patterns in the United States, by sex and cross-sectional age. *Medicine and Science in Sports and Exercise*, 32(9), 1601.
- Chase, M. A. (1998). Sources of self-efficacy in physical education and sport. *Journal of Teaching in Physical Education*, 18(1), 76-89.
- Chase, M.A. (2001). Children's self-efficacy, motivational intentions, and attributions in physical education and sport. *Research Quarterly for Exercise and Sport*, 72, 47-54.
- Coates, T. J., Jeffery, R. W., & Slinkard, L. (1981). Heart healthy eating and exercise: Introducing and maintaining changes in health behaviors. *American Journal of Public Health*, 71(1), 15-23.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159.

- Cohen, R., Brownell, K., & Felix, M. (1990). Age and sex differences in health habits and beliefs of schoolchildren. *Health Psychology, 9*(2), 208.
- Corbin, C. B. (2002a). Physical education as an agent of change. *Quest, 54*, 181-195.
- Corbin, C.B. (2002b). Physical activity for everyone: What every physical educator should know about promoting lifelong physical activity. *Journal of Teaching in Physical Education, 21*, 128-144.
- Curtner-Smith, M. D., & Weiyun, C. (1995). Health-related fitness in secondary school physical education: A descriptive-analytic study. *Educational Studies, 21*(1), 55-67.
- DeCorby, K., Halas, J., Dixon, S., Wintrup, L., & Janzen, H. (2005). Classroom teachers and the challenges of delivering quality physical education. *The Journal of Educational Research, 98*(4), 208-220.
- Dennison, B. A., Straus, J. H., Mellitis, E. D., & Charney, E. (1988). Childhood physical fitness tests: predictor of adult physical activity levels? *Pediatrics, 82*, 324-330.
- Department of Health. (2004). At least five a week: Evidence on the impact of physical activity and its relationship to health. A report from the chief medical officer. *London: Department of Health.*
- Desmond, S.M., Price, J.H., Lock, R.S., Smith, D., & Stewart, P.W. (1990). Urban black and white adolescents' physical fitness status and perceptions of exercise. *The Journal of School Health, 60*(5), 220-226.
- Fairclough, S. (2003). Physical activity, perceived competence and enjoyment during high school physical education. *European Journal of Physical Education, 8*(1), 5-18.

- Feltz, D. (1994). Self-confidence and performance. In D. Druckman & R. A. Bjork (Eds.), *Learning, remembering, believing* (pp. 173-206). Washington, DC: National Academy of Sciences.
- Feltz, D., & Lirgg, C. (2001). Self-efficacy beliefs of athletes, teams, and coaches. In R. N. Singer, H. A. Hausenblas, & C. M. Janelle (Eds.) *Handbook of sport psychology* (pp. 340-361). New York: John Wiley & Sons, Inc.
- Feltz, D., & Magyar, T. (2006). Self-efficacy and adolescents in sport and physical activity. In F. Pajares & T. Urda (Eds.), *Self-efficacy beliefs of adolescents* (pp. 161-179). Greenwich, CT: Information Age Publishing.
- Ferdinand, A., Sen, B., Rahurkar, S., Engler, S., & Menachemi, N. (2012). The relationship between built environments and physical activity: A systematic review. *American Journal of Public Health, 102*(10), e7-e13.
- Finkelstein, E., Trogon, J., Cohen, J., & Dietz, W. (2009). Annual medical spending attributable to obesity: Payer-and service-specific estimates. *Health Affairs, 28*(5), 822-831.
- Flegal, K., Carroll, M., Ogden, C., & Curtin, L. (2010). Prevalence and trends in obesity among US adults, 1999-2008. *JAMA, 303*(3), 235-241.
- Fletcher, G., Balady, G., Blair, S., Blumenthal, J., Caspersen, C., Chaitman, B., ... & Pollock, M. (1996). Statement on exercise: Benefits and recommendations for physical activity programs for all Americans: A statement for health professionals by the Committee on Exercise and Cardiac Rehabilitation of the Council on Clinical Cardiology, American Heart Association. *Circulation, 94*(4), 857-862.

- Fox, K., & Biddle, S. (1988). The use of fitness tests: Educational and psychological considerations. *Journal of Physical Education, Recreation, and Dance*, 59(2), 47-53.
- Fox, K., & Riddoch, C. (2000). Charting the physical activity patterns of contemporary children and adolescents. *Proceedings of the Nutrition Society*, 59, 497-504.
- Fulton, J. E., Garg, M., Galuska, D. A., Rattay, K., & Caspersen, C. J. (2004). Public health and clinical recommendations for physical activity and physical fitness: Special focus on overweight youth. *Sports Medicine*, 34(9), 581-599.
- Gardner, D. P. (1983). *A nation at risk*. Washington, DC: The National Commission on Excellence in Education, U.S. Department of Education.
- George, T. (1994). Self-confidence and baseball performance: A causal examination of self-efficacy theory. *Journal of Sport and Exercise Psychology*, 16, 381-399.
- Goldfine, B., & Nahas, M. (1993). Incorporating health-fitness concepts in secondary physical education curricula. *Journal of School Health*, 63(3), 142-146.
- Goodwin, D. L., Fitzpatrick, D. A., & Craigon, I. (1996). Cut-backs to physical education consulting services: Consequences and concerns. *CAHPER Journal*, 62(2), 41-44.
- Gortmaker, S., Cheung, L., Peterson, K., Chomitz, G., Cradle, J., Dart, H., ... Laird, N. (1999). Impact of a school-based interdisciplinary intervention on diet and physical activity among urban primary school children: Eat well and keep moving. *Pediatric Adolescent Medicine*, 153(9), 975-983.
- Green, D. J., O'Driscoll, G., Joyner, M. J., & Cable, N. T. (2008). Exercise and cardiovascular risk reduction: Time to update the rationale for exercise?. *Journal Of Applied Physiology*, 105(2), 766-768.

- Hardman, K., & Marshall, J. (2001). The state and status of physical education in schools in international context. *European Physical Education Review, 6*(3), 203-229.
- Harter, S. (1981). A model of mastery motivation in children: Individual differences and developmental change. *Aspects of the Development of Competence, 14*, 215-255.
- Health Canada, Canadian Society for Exercise Physiology. (2002). *Canada's physical activity guide for youth*. Ottawa: Minister of Public Works and Government Services Canada.
- Hill, J., & Peters, J. (1998). Environmental contributions to the obesity epidemic. *Science, 280*(5368), 1371-1374.
- Hoehner, C.M., Soares, J., Perez, D.P., Ribeiro, I.C., Joshu, C.E., Pratt, M., ... Brownson, R. (2008). Physical activity interventions in Latin America: A systematic review. *American Journal of Preventive Medicine, 34*(3), 224-233.
- Humbert, M., Chad, K., Spink, K., Muhajarine, N., Anderson, K., Bruner, M., ... & Gryba, C. (2006). Factors that influence physical activity participation among high-and low-SES youth. *Qualitative Health Research, 16*(4), 467-483.
- Janssen, I., (2007). Physical activity guidelines for children and youth. *Applied Physiology, Nutrition, and Metabolism, 32*, 109-121.
- Janssen, I., Katzmarzyk, P., Boyce, W., Vereecken, C., Mulvihill, C., Roberts, C., Currie, C., & Pickett, W. (2005). Comparison of overweight and obesity prevalence in school-aged youth from 34 countries and their relationships with physical activity and dietary patterns. *Obesity Reviews, 6*(2), 123-132.
- Janzen, H. (2003/2004). Daily physical education for K-12. Is government legislation in sight? *Physical Education and Health Journal, 69*(4), 4-12.

- Jeffery, R. W., Epstein, L. H., Wilson, G. T., Drewnowski, A., Stunkard, A. J., & Wing, R. R. (2000). Long-term maintenance of weight loss: current status. *Health Psychology, 19*(1S), 5.
- Kahn, J., Huang, B., Gillman, M., Field, A., Austin, S., Colditz, G., & Frazier, A. (2008). Patterns and determinants of physical activity in U.S. adolescents. *Journal of Adolescent Health, 42*(4), 369-377.
- Kane, T., Marks, M., Zaccaro, S., & Blair, V. (1996). Self-efficacy, personal goals, and wrestlers' self-regulation. *Journal of Sport and Exercise Psychology, 18*, 36-48.
- Kanter, R., & Ackerman, P. (1989). Motivation and cognitive abilities: An integrative/aptitude-treatment interaction approach to skill acquisition. *Journal of Applied Monograph, 74*, 657-690.
- Keating, X., Harrison, L., Chen, L., Xiang, P., Lambdin, D., Daunehauer, B., Rotich, W., & Pinero, J. (2009). An analysis of research on student health-related fitness knowledge in K-16 physical education programs. *Journal of Teaching in Physical Education, 28*, 333-349.
- Keith, T. (2005). *Multiple regression and beyond*. (1st Ed.). Boston, MA: Allyn & Bacon.
- Kihlstrom, J. F., & Cantor, N. (2000). Chapter sixteen: Social intelligence. In R. J. Sternberg (Ed.), *Handbook of intelligence* (pp. 359-379). New York: Cambridge University Press.
- Kimiecik, J. C., & Horn, T. S. (1998). Parental beliefs and children's moderate-to-vigorous physical activity. *Research Quarterly for Exercise and Sport, 69*(2), 163.
- Klem, A. M., & Connell, J. P. (2004). Relationships matter: Linking teacher support to student engagement and achievement. *Journal of School Health, 74*(7), 262-273.

- Knuth, A., & Hallal, P. (2009). Temporal trends in physical activity: a systematic review. *Journal of Physical Activity and Health, 6*(5), 548-559.
- Koplan, J., Liverman, C. T., & Kraak, V. I. (2005). *Preventing childhood obesity: health in the balance*. Washington, DC: National Academy Press.
- Kowalski, K., Crocker, P., & Donen, R. (2004). *The physical activity questionnaire for older children (PAQ-C) and Adolescents (PAQ-A) manual*. Saskatoon, Saskatchewan, Canada: University of Saskatchewan.
- Kowalski, K., Crocker, P., & Kowalski, N. (1997). Convergent validity of the physical activity questionnaire for adolescents. *Pediatric Exercise Science, 9*, 342-352.
- Laframboise, M. A., & deGrauw, C. (2011). The effects of aerobic physical activity on adiposity in school-aged children and youth: A systematic review of randomized controlled trials. *Journal of The Canadian Chiropractic Association, 55*(4), 256-268.
- Lee, A. (2002). Promoting quality school physical education: Exploring the root of the problem. *Research Quarterly for Exercise and Sport, 73*(2), 118-124.
- Lee, C. (1986). Efficacy expectations, training performance, and competitive performance in women's artistic gymnastics. *Behavior Change, 3*, 100-104.
- Lee, S. M., Burgeson, C. R., Fulton, J. E., & Spain, C. G. (2007). Physical education and physical activity: results from the School Health Policies and Programs Study 2006. *Journal of School Health, 77*(8), 435-463.
- Li, W., Lee, A., & Solmon, M. (2007). The role of perceptions of task difficulty in relation to self-perceptions of ability, intrinsic value, attainment value, and performance. *European Physical Education Review, 13*(3), 301-318.

- Lindquist, C., Reynolds, K., & Goran, M. (1999). Sociocultural determinants of physical activity among children. *Preventive Medicine, 29*(4), 305-312.
- Liu, L. L., Lawrence, J. M., Davis, C., Liese, A. D., Pettitt, D. J., Pihoker, C., & ... Kahn, H. S. (2010). Prevalence of overweight and obesity in youth with diabetes in USA: the SEARCH for Diabetes in Youth Study. *Pediatric Diabetes, 11*(1), 4-11.
doi:10.1111/j.1399-5448.2009.00519.x
- MacBeth, A. (1999). Bicycle lanes in Toronto. *ITE Journal, 69*, 38-46.
- Magyar, T., & Feltz, D. (2003). The influence of dispositional and situational tendencies on adolescent girls' sport confidence sources. *Psychological of Sport and Exercise, 4*, 175-190.
- Malina, R. M. (2006). Youth Physical Activity: Implications For Adult Physical Activity And Health. *Studies in Physical Culture & Tourism, 13*, 29-33.
- Mandelbaum, D. (1955). The study of complex civilizations. *Yearbook of Anthropology, 2*, 203-225.
- Mark, A., & Janssen, I. (2011). Influence of movement intensity and physical activity on adiposity in youth. *Journal of Physical Activity & Health, 8*(2), 164-173.
- Martens, R. (2012). Turning Kids on to Physical Activity for a Lifetime. *Quest, 48*(3), 303-310.
- McArdle, W., Katch, F., & Katch, V. (1986). *Exercise physiology: Energy, nutrition, and human performance* (2nd Ed.). Philadelphia: Lea & Febiger.
- McAuley, E., & Rudolph, D. (1995). Physical activity, aging, and psychological well-being. *Journal of Aging and Physical Activity, 3*, 67-98.

- McElroy, M. (2002). *Resistance to exercise: A social analysis of inactivity*. Champaign, IL: Human Kinetics.
- McWhorter, J., Wallmann, H., & Alpert, P. (2003). The obese child: Motivation as a tool for exercise. *Journal of Pediatric Health Care, 17*(1), 11-17.
- Merkle, D., & Treagust, D. (1993). Student knowledge of health and fitness concepts and its relation to locus of control. *School Science and Mathematics, 93*, 355-359.
- Miles, J., & Shevlin, M. (2001). *Applying regression and correlation: A guide for students and researchers*. London: Sage.
- Mokad, A., Marks, J., Stroup, D., & Gerbding, J. (2000). Actual causes of death in the United States. *JAMA, 291*, 1238-1245.
- Montgomery, K. (2000). Children's media culture in the new millennium: Mapping the digital landscape. *The Future of Children, 10*, 145-167.
- National Association for Sport and Physical Education. (2008). *PE Metrics: Assessing the national standards, standard 1: Elementary*. Reston, VA: Author
- National Association for Sport and Physical Education. (2010). *PE Metrics: Assessing the national standards 1-6 in elementary school*. Reston, VA: Author
- National Center for Education Statistics. (2005). *Digest of education statistics, 2004*. Retrieved May 23, 2006, from <http://nces.ed.gov/programs/digest/d04/>.
- National Center for Health Statistics. (2003). *Prevalence of overweight among children and adolescents: United States, 1999-2002*. Retrieved from <http://www.cdc.gov/inchs/products/pubd/hestats/overwght99.htm>.

- Osborne, J., & Waters, E. (2002). Four assumptions of multiple regression that researchers should always test. *Practical Assessment, Research and Evaluation*, (2)8.
- Owen, N., & Bauman, A. (1992). The descriptive epidemiology of a sedentary lifestyle in adult Australians. *International Journal of Epidemiology*, 21, 305-310.
- Pajares, F. (1997). Current directions in self-efficacy research. *Advances in Motivation and Achievement*, 10, 1-49.
- Peterson, M., Lawman, H., Wilson, D., Fairchild, A., & Van Horn, M. (2012). The Association of Self-Efficacy and Parent Social Support on Physical Activity in Male and Female Adolescents. *Health Psychology*. doi: 10.1037/a0029129.
- Placek, J., & Griffin, L. (2001). Chapter 1. The understanding and development of learners' domain-specific knowledge: Introduction. *Journal of Teaching In Physical Education*, 20(4), 299.
- Powell, K., Thompson, P., Casperson, C., & Kendrick, K., (1987). Physical activity and the incidence of coronary heart disease. *Annual Review of Public Health*, 8, 281-287.
- Power, T., Bindler, R., Goetz, S., & Daratha, K. (2010). Obesity prevention in early adolescence: Student, parent, and teacher views. *Journal of School Health*, 80(1), 13-19.
- President's Council on Physical Fitness and Sports. (2006). The role of schools in preventing childhood obesity. *Research Digest*, 7(3), 1-8.

- Resnicow, K., Robinson, T., & Frank, E. (1996). Advances and future directions for school-based health promotion research: Commentary on the CATCH intervention trial. *Preventive Medicine, 25*, 378-383.
- Riis, J., Grason, H., Strobino, D., Ahmed, S., & Minkovitz, C. (2012). State school policies and youth obesity. *Maternal & Child Health Journal, 16*, 111-118. doi:10.1007/s10995-012-1000-4
- Ross, J., & Pate, R. (1987). The National Children and Youth Fitness Study II: A summary of findings. *Journal of Physical Education, Recreation, and Dance, 58*, 51-56.
- Sado, S., & Bayer, A. (2001). Executive summary: The changing American family. *Population Resource Center*. August, 22, 2002.
- Sallis, J., Prochaska, J., Taylor, W., Hill, J., & Geraci, J. (1999). Correlates of physical activity in a national sample of girls and boys in Grades 4 through 12. *Health Psychology, 18*(4), 410-415. doi:10.1037/0278-6133.18.4.410.
- Sanford, R., Armour, K., & Warmington, P. (2006). Re-engaging disaffected youth through physical activity programmes. *British Educational Research Journal, 32*(02), 251-271.
- Schunk, D. (1995). Self-efficacy, motivation, and performance. *Journal of Applied Sport Psychology, 7*, 112-137.
- Siedentop, D., (2002). Content knowledge for physical education. *Journal of Teaching in Physical Education, 21*(4), 368-377.

- Simons-Morton, D., Calfas, K., Oldenburg, B., & Burton, N. (1998). Effects of interventions in health care settings on physical activity or cardiorespiratory fitness. *American Journal of Preventive Medicine, 15*(4), 413-430.
- Skinner, E., & Belmont, M. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology, 85*(4), 571.
- Skinner, E., Wellborn, J., & Connell, J. (1990). What it takes to do well in school and whether I've got it: A process model of perceived control and children's engagement and achievement in school. *Journal of Educational Psychology, 82*(1), 22.
- Soares-Miranda, L., Sandercock, G., Vale, S., Silva, P., Moreira, C., Santos, R., & Mota, J., (2011). Benefits of achieving vigorous as well as moderate physical activity recommendations: Evidence from heart rate complexity and cardiac vagal modulation. *Journal of Sport Sciences, 29*(10), 1011-1018.
- Solomon, M., & Lee, A. (1996). Entry characteristics, practice variables, and cognition: Student mediation of instruction. *Journal of Teaching in Physical Education, 15*, 135-150.
- Sparks III, W., & Wayman, L. (1993). Multicultural understanding in physical education: A comparison of urban and rural perspectives. *Physical Educator, 50*(2), 58.
- Strauss, R., & Pollack, H. (2001). Epidemic increase in childhood overweight, 1986-1998. *Journal of American Medical Association, 286*(22), 2845-2848.

- Strauss, R., Rodzilsky, D., Burack, G., & Colin, M. (2001). Psychological correlates of physical activity in children. *Archives of Pediatrics and Adolescent Medicine*, 155(8), 807-902.
- Strong, W., Malina, R., Blimkie, C., Daniels, S., Dishman, R., Gutin, B., ... & Trudeau, F. (2005). Evidence based physical activity for school-age youth. *The Journal of Pediatrics*, 146(6), 732-737.
- Strong, W. (1990). Physical activity and children. *Circulation*, 81(5), 1697-1701.
- Stuntz, C., & Weiss, M. (2010). Motivating children and adolescents to sustain a physically active lifestyle. *American Journal of Lifestyle Medicine*, 4(5), 433-444.
- Sturm, R. (2005). Childhood obesity-what we can learn from existing data on societal trends, part 2. *Preventing Chronic Disease*, 2(2).
- Thompson, A., Rehman, L., & Humbert, M. (2005). Factors influencing the physically active leisure of children and youth: A qualitative study. *Leisure Sciences*, 27(5), 421-438.
- Thompson, J., Jago, R., Brockman, R., Cartwright, K., Page, A., & Fox, K., (2010). Physically active families-debunking the myth? A qualitative study of family participation in physical activity. *Child: Care, Health & Development*, 36(2), 265-274.
- Torgan, C. (2002). Childhood obesity on the rise. *Word on Health: Consumer health information based on research from the National Institutes of Health*.
- Tremblay, M., Warburton, D., Janssen, I., Paterson, D., Latimer, A., Rhodes, R., Kho, M., Hicks, A., Leblanc, A., Zehr, L., Murumets, K., Duggan, M. (2011). New

physical activity guidelines. *Applied Physiology, Nutrition, and Metabolism*, 36, 36-46.

Troiano, R., Berrigan, D., Dodd, K., Mâsse, L., Tilert, T., & McDowell, M. (2008).

Physical activity in the United States measured by accelerometer. *Medicine and Science in Sports and Exercise*, 40(1), 181.

U.S. Census Bureau. (2011).

U.S. Department of Health and Human Services. (2000). *Healthy people 2010:*

understanding and improving health (2nd ed.). Washington, DC: U.S.

Government Printing Office.

U.S. Department of Health and Human Services. (2001). *The Surgeon Generals' call to*

action to prevent and decrease overweight and obesity. Rockville, MD: U.S.

Department of Health and Human Services, Public Health Service, Office of the Surgeon General: 2001

U.S. Department of Health and Human Services. (2005). *Childhood obesity*. Retrieved

from http://aspe.hhs.gov/health/reports/child_obesity.

Wang, G., & Dietz, W. (2002). Economic burden of obesity in youths aged 5 to 17 years:

1979-1999. *Pediatrics*, 109, E81-E86.

Weschler, H., Devereaux, R., Davis, M., & Collins, J. (2000). Using the school

environment to promote physical activity and healthy eating. *Preventive*

Medicine, 31, S121-S137.

World Health Organization. (2003). *Global strategy on diet, physical activity, and health*.

- World Health Organization. (2010). *Global strategy on diet, physical activity and health. Obesity and overweight*. 2010. URL: [http://www. WHO.int/dietphysicalactivity/publications/facts/obesity/en](http://www.WHO.int/dietphysicalactivity/publications/facts/obesity/en).
- Yi, M., & Davis, F. (2003). Developing and validating an observational learning model of computer software training and skill acquisition. *Information Systems Research*, 14(2), 146-169.
- Zapata, L., Bryant, C., McDermott, R., & Hefelfinger, J. (2008). Dietary and physical activity behaviors of middle school youth: The youth physical activity and nutrition survey. *Journal of School Health*, 78(1), 9-18. doi:10.1111/j.1746-1561.2007.00260.x
- Zhu, W., Rink, J., Placek, J., Graber, K., Fox, C., Fisette, J., & Raynes, D. (2011). PE Metrics: Background, Testing Theory, and Methods. *Measurement in Physical Education and Exercise Science*, 15(2), 87-99.