INTERNAL VERSUS EXTERNAL MOTIVATION FOR PHYSICAL ACTIVITY IN SEVENTH GRADE GIRLS

by

Anne Kathryn Weingartner

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Thesis Committee:

Chair: Dr. Don Belcher

Dr. Tina Hall

I dedicate this paper to my parents who have supported and encouraged me throughout the completion of this degree. I thank “my girls” at Harpeth Hall for enabling me to love getting up to go to work each day, and for allowing me into their lives through teaching and coaching. Finally, I thank God for opening doors and guiding me to a career in which I see rich blessings with every step that I take.

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ABSTRACT

The aim of this study was to examine if locus of control impacted adolescents girl's participation level in three different activities. Participants in the study were 12 or 13 year old females (n-41) from an affluent private girls school in the southeastern United States. Rotter's Locus of Control scale was used to determine if the participants had an internal or external Locus of Control. Heart rate monitors were used to determine physical activity levels while participating in a fitness circuit, soccer and dance. A Likert scale questionnaire was administered to determine the participant's perceptions of their motivators. A repeated measure ANOVA was performed to check for significance in activity levels between groups. The internally motivated locus of control group had a higher average heart rate but was not significantly different from the externally motivated group. Peer influence and type of activity were identified as factors worthy of further study.

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CHAPTER I: INTRODUCTION

The rise in obesity across the United States is something that has become a major concern. Many call it a health epidemic. While many factors play into the weight gain of Americans, one of the biggest factors is a decrease in physical activity. Sedentary lifestyles are no longer reserved for older adults, as children are becoming sedentary. In a world in which young people are spending hours in front of televisions and computers, and consuming more fast food than ever before, the job of physical educators has become increasingly difficult. As noted by Kimm et al. in 2002, "since the early 1960's, the prevalence of obesity in female children and adolescents in the United States has more than doubled" (p. 709).

Teaching students the skills and values that are necessary to live a life of wellness is an important job of physical educators. However, determining what motivates young people in mandatory physical education, may be important to understand in order to provide them with the proper tools to become physically fit and healthy for their entire life. Without proper motivation, students may be unlikely to continue physical activity once their time in physical education class is finished. The desired outcome is that students will be internally motivated to be physically active since any external factors that may be in place during their school years will likely be gone in adulthood. In addition, external factors to not participate in physical activity, such as time restraints and availability of space, might also increase after schooling. For this reason physical education is extremely important in creating healthy lifestyles prior to adulthood.

The National Association for Sport and Physical Education states, "The goal of physical education is to develop physically educated individuals who have the knowledge, skills, and confidence to enjoy a lifetime of healthful physical activity" (National PE Standards). All the five 2014 NASPE National Standards for Physical Education, focus on lifetime physical activity

and helping students to become physically literate. Ntoumanis, (2001) in his study on understanding motivation in physical education, found that the intention to be physically active after the school years was positively predicted only by intrinsic motivation, so while taking the advice of these NASPE recommendations, it becomes important that we determine how to become more internally motived.

This study focused on determining whether internal or external factors influence adolescent girls to work towards reaching optimal fitness levels. Studies such as a 2006 study done by Kimm, Glynn, McMahon, Voorhees, Striegel-Moore, and Daniels, have shown that the highest increases in sedentary lifestyle occur in girls during their teenage years. Physical Education classes play perhaps the most important role in helping to stress the importance of a physically active lifestyle and determining whether or not girls will continue to work towards a healthy lifestyle. As argued by Sallis & McKenzie (1991), positive experiences in Physical Education could influence children in how they live as active or inactive adults which in turn can impact public health. They go on to discuss the importance in understanding the motivational, cognitive, and affective processes that determine the value, or lack thereof, that children find in physical education class. Using Rotter's Locus of Control Scale, this study will determine the internal verses external motivation of adolescent girls. Heart rate monitors will then be used to measure the physical activity of the subjects as compared to previous activity levels, and questionnaires will be used to determine their individual ideas about what motivates them to participate in Physical Education class. The study examined the relationship between Locus of Control, physical activity, and self-perceived characteristics of motivation. This may give insights into helpful and necessary actions to take in order to achieve the desired goals for physical activity from adolescent girls.

CHAPTER II: LITERATURE REVIEW

In order to better understand the basis for motivation for physical activity in girls, this section will review physical activity trends in girls, physical education for girls, as well as motivational constructs. In addition to these areas, locus of control and heart rate monitor usage will also be reviewed since these instruments will play a large role in this study.

Physical Activity Trends in Girls

Despite the numerous benefits of physical activity (PA), girls tend to be less physically active than boys across all age groups. Furthermore, research suggests a decline in PA from childhood into adolescence for both genders, but this trend is more prominent for girls. In a 5 year longitudinal study done by Brodersen, Steptoe, Boniface, and Wardle in 2007, it was noted that of the British students who were studied from the age of 11 or 12 until the age of 15 or 16, there were marked reductions in physical activity and increases in sedentary behavior. The decline in physical activity for girls was 46 percent compared to 23 percent for the boys. While the mean number of days of physical activity declined for both genders, there was a much steeper average decline for girls.

Similarly, in 2002, Kimm et al. followed 1,213 black girls and 1,166 white girls from the age of 9 or 10 until the age of 18 or 19 to measure their leisure-time physical activity. By the age of 16 or 17 years, 56 percent of black girls and 31 percent of white girls reported that they did not have any habitual leisure-time physical activity. This study looked at and compared factors that lead to this decline. Race was a clear factor since black girls had a decline that was almost twice that of white girls. Other factors included, behavior risk factors like smoking and pregnancy, single-parent households, and current weight (heavier girls had a greater decline in

activity). Annual household income was one factor that did not prove to be associated with the decline in physical activity.

In looking back at the differences in physical activity levels between boys and girls, the causes remain unclear, but several factors have been suggested which contribute to lower PA levels that are commonly observed in girls, including low self-esteem and body image, lack of motivation, enjoyment, interest or valuation of PA, low athletic competence, and lack of parental and peer support (Debate, Gabriel, Zwald, Huberty, & Zhang, 2009). Physical activity commitment has been construed as a global psychological construct reflecting the 'binding force' that supports continued exercise involvement. Because the factors previously stated vary significantly from those of boys, programs designed to engage and maintain girls in PA should "provide instruction and experiences that focus on increasing self-esteem, developing a positive body image, valuation of PA, motivation to be physically active, and develop a sense of commitment to be physically active by providing social environments that involve a range of fun activities that girls enjoy" (Debate et al., 2009, p.475).

Epidemiological studies consistently indicate that males are involved in more total and vigorous daily physical activity than females, and this is true during adolescence as well. Some reports suggest that the decline in habitual physical activity during the teen years is steeper in girls (Rowland, 1999). A study done by Beighle, Morgan, Le Masurier, & Pangrazi (2006) found that "boys spent 78% and girls spent 63% of their recess time engaged in physical activity, outside of school, girls spent 20% and boys spent 25% of their time engaged in physical activity" (2006, p. 1). In addition, boys accumulated 58% and girls 56% of their daily physical activity outside of the school day. This suggests that physical activity outside of the school can make a substantial contribution to the daily physical activity level of children (Beighle et al., 2006, p. 1).

According to the Center for Disease Control, children and adolescents should have 60 minutes or more of physical activity each day. As noted by Wikinson and Bretzing (2011), only 27% of high school girls exercise for at least 60 minutes a day as compared to 43% of high school boys. They postulate that this may be due to the fact that during adolescent years, a high percentage of girls do not enjoy physical education classes. Given that most studies show that girls are less physically active than boys, it is important to continue to search for ways to increase girls' physical activity motivation levels.

Girls in Physical Education

Prior to exploring motivational constructs, it is important to examine the differences between boys and girls and what it is that they desire to accomplish in physical education classes. In their study, Gibbons and Humbert (2008), looked closely at what it is that girls wanted to receive from physical education. They found that there were four factors that seemed to be common trends. These four factors were, "the need for experiencing fun and enjoyment, a positive social environment that allowed being with friends and protection from harassment, choice and variety of physical activities with an emphasis on individual lifetime activities, and the opportunity to develop meaningful physical skills and personal fitness" (2008, p.168). Fortunately, if these things can be accomplished in physical education, all of these factors will be beneficial in providing girls with avenues to continue physical activity into adulthood.

The idea of making physical education (PE) "girl-friendly" was also examined by Gibbons and Humbert (2008). Girl-friendly PE had the following seven attributes: "(1) Gender separation opportunities exist in classes (2) Students are physically active in PE classes (3) Noncompetitive activities are offered (4) Lifelong physical activity is emphasized (5) Classes are fun and enjoyable (6) Appropriate instructional methods are used (7) Behavior skills for PE are

taught" (2008, p.171). Through individual interviews with their participants, Gibbons and Humbert were able to uncover reasons for dissatisfaction with physical education classes among girls. This dissatisfaction seemed to lead to a lack of desire to participate. The girls wanted to have a variety of activities and wanted the activities to be those in which they could participate for a lifetime. An example of this dissatisfaction is displayed well in a quote by one student who said, "I don't like basketball now, I'm not going to like it when I'm old, so why can't I do something I might do when I'm old like swimming or aerobics?" (2008, p.176). The girls also felt that they were more likely to participate in activities in which they felt competent. Oftentimes, physical education activities are considered to be a "male" activity or a "female" activity. As discussed by Gibbons and Humbert, girls are often required to participate in "male" activities while boys are either not required to participate in "female" activities, or that activity is left out of the curriculum entirely.

A more recent study by Wilkinson and Bretzing (2011), which aimed at helping physical educators to create a curriculum that was appealing to girls, found that 74 percent of girls preferred fitness units to sports. They addressed the need to help girls develop the desires and abilities to enjoy lifetime physical activity. The high school girls in their study preferred current fitness trends such as kickboxing and Pilates over traditional sports. They were able then able to identify eight different themes for why the girls preferred the fitness activities. The strongest theme was the health benefits that the girls felt they received from the fitness activities as opposed to sports. This speaks volumes since it is the health benefits that are the greatest reasoning for physical activity. Other themes with high percentages were fun/enjoyment. They felt that the fitness activities were more physically active than sports, were easier than the sports, and were activities they would use later in life. While physical activity may commonly be

associated with sports, it is important to create opportunities for girls who are not athletic or have no interest in sports.

In their study of young women leading sedentary lifestyles, Kimm et al. (2006) found that 46% of girls ages 16 or 17 were sedentary. By the time those young women were 17 or 18, 55% were sedentary, and the next year when they were 18 or 19 years old, 59% had been deemed sedentary. When questioned, the young women gave the following reasons for not being physically active: "I don't have time", "I'm too tired", "It doesn't interest me", "There is no place to exercise", and "I am bad at it" (p.536). Physical education teachers have the ability to combat most of these excuses when girls are in their classes so that by the time they are adults they will have the proper motivation to overcome all of these rationals for not being physically active. Most would argue that the best way to do this would be to ensure that the motivation becomes internal and personally valued as opposed to external. Nowicki, Adame, Johnson, and Cole (1997) found that college women who had a lower value for physical health and a lower value for physical fitness had significantly lower overall physical fitness than those who valued them. The next puzzle is determining where these motivations come from and how to classify them.

Motivational Constructs

Dividing motivation into the categories of internal verses external is the broadest way to look at motivation. Within these two broad categories, many researchers and educators have added additional methods for breaking down motivation. The use of Deci and Ryan's 1985 self-determination theory has long been a successful perspective to apply to education and sport. Within the self-determination theory, Deci and Ryan define three types of behavior: intrinsically motivated, extrinsically motivated, and amotivated. They define them in the following way:

> Intrinsically motivated behaviors can occur without external rewards, are undertaken out of interest in the activity itself rather than the outcomes of the activity, and are optimally challenging. Extrinsically motivated behaviors are evident when the activity is carried out as a means to an end and not for its own sake. Amotivated behavior can be found in situations where individuals are neither intrinsically nor extrinsically motivated. Amotivation refers to situations where individuals perceive no contingencies between outcomes and their actions, where they experience feelings of incompetence and uncontrollability (as cited in Ntoumanis, 2001, p. 226).

Given that these categories are still quite broad, Deci and Ryan further divide external motivation into four categories and place them in order from lower to higher levels of self-determination: Amotivation is fulfilled by outside rewards or punishments. Introjected regulation are behaviors in which one is beginning to internalize, but does not believe that they are fully self-determined. Identified regulation sees one feel less pressure and behaviors that are more self-determined. Integrated regulation is entirely ones choice and is performed in order to bring reason for oneself. Finally intrinsic motivationis entirely ones choice and performed for individual gains (Ntoumanis, 2001, p. 227). Knowing this hierarchy is important because in examining physical activity settings, research suggests that individuals' perception of their physical competence has a significant effect on their performance, behavior cognition, and affect (Ntoumanis, 2001).

Using the self-determination theory, Biddle and Wang (2003) explored motivation and self-perception in adolescent girls and physical activity. They closely examined how young people define success and compared the achievement goal orientations of task and ego goals. They define the two as, "a task-oriented person is more likely to define success of construe

competence in terms of mastery or task improvement and an ego-oriented person is more likely to define success of construe competence in normative terms, such as through winning or outperforming others" (Biddle & Wang, 2003, p. 688). They noted that oftentimes physical self-worth may play a role in a young person's willingness to participate in physical activity. As cited by Biddle and Wang, research done in 1989 by Fox and Corbin found that in adults, "physical self-worth is comprised of perceptions of sport competence, body attractiveness, perceived strength, and physical condition" (p. 690). If this holds true for adolescents, then perhaps physical education classes should aim to give students the ability to be confident about themselves in those four areas.

Chen and Ennis (2004) looked at achievement-goal constructs and differentiate between ego and task-goal orientation by noting that learners with task-goal orientation want to be able to complete tasks while learning and developing competence within the particular domain, while learners with ego-goal orientation are more concerned with showing competence relative to their peers. With this in mind, they explore the difference between two different instructional climates in physical education. "A mastery climate refers to an instructional environment that emphasizes competence development and task completion. A performance climate refers to an instructional environment that emphasizes the demonstration of superior ability through interpersonal comparisons" (Chen & Ennis, 2004 p. 330). While it is possible for students to possess both task and ego goal orientations, research has shown that in physical education, learners with high task-oriented goals perceive success and failure in learning as associated with effort, report high likelihood to select more challenging learning tasks, and frequently enjoy learning experiences. This is the attitude that is most sought after by physical education teachers. If they can instill

these task-oriented goal ideals in their students then they are more likely to produce students with a lifelong dedication to fitness.

Locus of Control. Locus of control, as originally conceptualized by Julian Rotter, refers specifically to "people's perceptions of control over access to reinforcements" (Anderson, Hattie & Hamilton, 2005, p. 517). Conceptually as related to Physical Education, these reinforcements may be either internal reinforcements (healthy behavior) or external reinforcements (a reward). Rotter postulates that individuals have differing ideas when it comes to reinforcement. People with an internal locus of control believe that outcomes are dependent on their own behavior. The outcome is in their own hands and their actions can determine the path of their life. Those with an external locus of control believe that outcomes are out of their control and no matter what they do, their life is filled with chance, luck, or fate (Lange & Tiggemann, 1981, p. 398).

In order to determine the difference between internal and external locus of control, Rotter developed a measure of this internal-external control construct by developing a 29-item forced choice scale labeled the I-E scale. While Rotter's theories have been incorporated into other theories, the locus of control scale is no longer a widely used test. However, it can still serve a valuable purpose for finding the most basic divisions between internal and external locus of control in an individual. Decades ago when the scale was extensively used it was said that, "This scale has been widely used in research as a measure of internal-external control expectancies, leading to the confirmation of the locus of control construct as an important personality variable. The I-E scale is designed to sample behavior from a wide range of life areas such as love and affection, dominance, social-political events, social recognition, academic recognition and general life philosophy" (Lange & Tiggemann, 1981, p. 398).

Another definition of locus of control says that locus of control is “the extent that people believe that reinforcement is contingent upon their own behavior” (Davis & Phares, 1967, p. 547). It is an expectation about one's ability to influence others and affects attitudes about one's self in relation to others. Locus of control is a personality trait that affects communication motivation and behavior. Internals feel they control events in their lives and expect to control a situation. Reinforcement is contingent upon their behavior. They are seen as being assertive, extroverted, and self-directed. They see themselves as being responsible for the outcomes of their actions and interactions. They have a tendency toward pro-social and competent behavior such as achievement and relationship development (Nowicki and Duke, 1983).

On the other hand, externals attribute their condition and see life events as dependent on luck, chance, or powerful others. They feel powerless and fatalistic. Externals need affiliation and are more dependent on others than are internals. Because they see outcomes as less dependent on their own actions, externals have a reduced need to seek information. They tend to feel anxious about communicating with others and tend to find communication less rewarding and less satisfying than externals (Davis and Phares p. 549). Locus of Control interacts with motivation when seeking to achieve specific outcomes (Rubin, 1993, p.162).

In 1997, Nowicki et al. looked at Rotter’s social learning theory and its association with physical fitness. Knowing that Rotter assumed that the potential for a certain behavior was a function of expecting a reinforcer, and the amount of value that the subject placed on that reinforcer, Nowicki et al. predicted that one with an internal locus of control who highly valued physical fitness, would be greatly fit. Their prediction that internal locus of control would be positively related to good fitness was based on the fact that “People with internal control expectancies are more likely than those with external control expectancies to believe that

engaging in the types of physical activities that will enhance physical fitness will also result in improved health" (Nowicki et al., 1997, p. 550). This type of innate motivation makes it interesting to compare locus of control scores with actual internal and external motivators for physical activity and also subject's perceptions of what they think motivates them.

Heart Rate Monitors

Heart rate monitors have become a popular method for measuring physical activity levels and have become increasingly popular in the physical education setting in the past several years. In physical education, heart rate monitors provide an objective means for measuring a student's physical activity level. Not only does this provide teachers with the ability to assess students, it provides students with the ability to set measureable goals which can provide a great means of motivation.

In order to know where one's heart rate should be during exercise for optimal gain, a range by age was developed. The global target heart rate zone for girls who are 12 years old is 125-166. The American Heart Association identifies this number by first finding one's maximum heart rate which is 220 minus their age. According to Youth in Physical Activity Guidelines, the target zone is between 60 and 80 percent of that number. (U.S. Department of Health and Human Services)

Research has proven that heart rate monitors are in fact a valid method for measuring heart rate. "The Polar monitor yielded HR values that closely corresponded to the readings obtained using ECG, suggesting that the Polar monitor provided readings that are valid for tracking HR changes during laboratory stressors" (Goodie, Larkin, & Schauss, 2000, p. 163).

In an attempt to understand the perception of high school students' use of heart rate monitors in physical education, Partridge, King, and Bian (2011) did a study collecting data

using focus groups of students who used heart rate monitors. The study found three major themes which impacted the students' perceptions of monitor usage: "(1) the use of heart rate monitors to determine physical education class grades, (2) students' perceptions of fitness levels, and (3) the consistency with which physical education instructors used heart rate monitors" (p. 1). One thing to consider when exploring the use of heart rate monitors in physical education is that monitors are a form of external motivation which is not necessarily the type of motivation that is desired for students to have in physical education. As discussed by Partridge et al., (2011) a specific extrinsic motivator (i.e., the number of beats per minute recorded on the heart rate monitors) is seen as a means to an end (i.e., a good grade), which provides motivation to achieve the correct number of beats per minute, but does not allow for the individual to achieve an internalized level of motivation for the task. Cognitive evaluation theory states that use of extrinsic motivators has been found to lower levels of intrinsic motivation (Deci & Ryan 1985). This can be seen as a major problem since a goal of physical education is to foster a desire to live with lifetime wellness in mind.

Sex Typing

After the passing of Title IX by federal legislation in 1972, the way in which females participated in sports began to change. A rise in female sport participation in general began to occur and females were especially more likely to participate in vigorous physical activity. The expectation for women to act in a feminine manner, coupled with the rise of female participation in masculine activities, lead to studies that focused on females in sports and specifically sex-typing of sports.

Prior to the passing of Title IX, Eleanor Metheny (1965) identified sports as, "not appropriate," "may be appropriate," and "wholly appropriate" for female participation (p.51).

Metheny defined the categories in the following ways: “Not appropriate” sports involve bodily contact, applying force to heavy objects, and projecting the body into or through space over long distances. “May be appropriate” sports involve moderate distances, weight, and displaying strength in controlling body movement. “Wholly appropriate” sports involve moving the body in aesthetically pleasing patterns, using light force and light objects, and competing where a physical barrier is present. (p.51) While the categories created by Metheny left room for debate on sports and their sex-typing, Sherri Matteo (1984) examined 68 different sports in and ranked them 1-68 in order of feminine to masculine, further classifying them into three categories: feminine, neutral, and masculine. These classifications were determined by asking male and female undergraduate students at Cornell University to rate the 68 sports as masculine, feminine, or neutral based on society’s view of each activity.

Csizma, Wittig, and Schurr (1988) used undergraduate students from Ball State University to further explore the 68 sports that Matteo had classified. They had one group of students rate the 68 sports on masculinity vs. femininity and simplicity vs. complexity and another group rate how socially acceptable it is for a male to play each sport and how socially acceptable it is for a female to play each sport. While the rankings for the 68 sports did differ in Csizma, Wittig, and Schurr’s study in comparison to Matteo’s study, only 8 of the total 68 sports changed in ranking significantly enough to qualify for a different category (masculine, neutral, or feminine). It was determined that mean ratings for masculinity and femininity in the two studies were highly correlated, but there was very little correlation between masculinity-femininity and simplicity-complexity. It is apparent that society’s perception of individual sports being able to be classified as masculine, neutral, or feminine was strong when the study was conducted.

For the purpose of this study, three different activities were chosen for the subjects to participate in during the research. Three very different activities were chosen, and each activity falls into a different category as defined by Matteo. Soccer is identified as a masculine sport, a fitness circuit which contains components of running and moderate lifting and strengthening falls into the neutral category, and dance (of all forms) falls into the feminine category. While all of the subjects in the study were female, these three differing activities were chosen in attempts to provide each student with at least one lesson which they enjoy, and also to provide a measure for which activity (and classification) produces the most participation and high level of heart rate from the participants.

Limitations

There are several limitations to this study that warrant discussion. The small sample size and uneven numbers in both the control and treatment group and the Internal and External Locus of Control groups, was a limiting factor. The Likert Scale questionnaire that was used was very broad, and it is possible that students answered without giving much thought to their response. The reward of a free day in physical education class may not have been seen as a valuable reward by the participants. When examining this study, it is also important to remember that Rotter's Locus of Control Scale was first developed in 1966 and serves as a means to determine one's perception of their own control over reinforcements. It is possible that participants in this study view internal and external motivation differently than Rotter when he developed this questionnaire and scale.

Summary

With all of the information that has been reviewed, this study will aim to answer three different questions. Does internal or external Locus of Control translate into increased effort in

adolescent girls, as measured by heart rate? To what extent does Rotter's Locus of Control translate to ones perception of their own internal or external motivation? To what extent do adolescent girls perceive themselves to be motivated by their peers, the type of activity in which they are participating, or the value that they place on physical activity? Finding productive motivators within physical education classes may help lead to better lifetime wellness for women once they are finished with physical education requirements.

CHAPTER III: METHODOLOGY

Participants

The participants were seventh grade physical education students at an affluent private all-girls school in Nashville, Tennessee. All of the participants were age 12 or 13. The students were members of three chosen seventh grade physical education classes who met four times within a seven day rotating schedule for classes lasting 50 minutes. During these 50 minute classes, about 30 minutes were active minutes in which the students participated in the class activity. All of the 41 participants were taught by the same teacher and therefore, it was a convenience sampling representing about 50 percent of the 7th grade students at the school. Physical education classes at this school are ungraded and do not impact the student's grade point averages. Approximately 90 percent of middle school students at the school participate on at least one extra-curricular athletic team. Written consent was obtained from the parents of the participants prior to data collection. Verbal assent was also obtained from each participant prior to any data collection. IRB approval was granted by Middle Tennessee State University.

Measures

Locus of Control. The participant's locus of control was determined using Rotter's Locus of Control Scale (Appendix A). The twenty nine question survey was given to the participants prior to treatment conditions. Of the 29 questions, only 23 were scored per the scoring instructions from the original test. While the original test states that a high score proves and external locus of control and a low score proves an internal locus of control without giving an exact score identification, for the purpose of this study, participants were categorized as having an internal locus of control if they scored 12 or below on the test, and an external locus of control if they scored above 12 on the test.

Heart Rate. The participant's heart rate was measured using Polar E600 Heart Rate monitors and software. The students had been using these monitors for several months, were comfortable wearing the monitors, and were familiar with how they function. Prior to this study (at the beginning of the school year), the physical education teachers told the students that their target heart rate zone for teach class should be 140-170 beats per minute. This is slightly higher than the global target heart rate zone for girls who are 12 years old which is 125-166. The heart rate data that was recorded for each subject was their total average heart rate for the day. The watches were set to read the subject's heart rate every five seconds.

Likert Scale Questionnaire. The participants were asked to answer 5 questions on a 5 point scale that were used to determine their self-perceptions of what motivates them in physical education class. The questions were written to determine whether the students thought they were intrinsically or extrinsically motivated and what external motivators most affect them; valuing PA, their peers, or the type of activity.

Procedures

Baseline heart-rate data was gathered on each of the participants for approximately three months in order to calculate their average heart rate during all physical education classes prior to data collection. During these three months, the student's participated in flag football, soccer, racket sports, and fitness games units. The students were only required to wear the monitors during class activities in which it was feasible to keep their heart rate in the target zone with appropriate participation. Upon recieving consent from parents and assent from participants, the participants took Rotter's Locus of Control test. This determined whether the student holds an internal locus of contol or an external locus of control.

Each of the three classes participated in a series of three lessons on three consecutive class days. Class A and B were told that if their average heart rate during the three lessons was higher than their average heart rate leading up to that point in the school year, they would receive a special free day during PE class. Class C was told that their average over the three lessons would be calculated and they should desire to make personal improvements in their average heart rate during class. Heart rate data was recorded for each of three lessons. After the three lessons were complete, each student answered a questionairre about their motivations for participation in the lessons (Appendix B).

The three lessons in which the participants participated were small sided soccer, a fitness circuit, and Just Dance on the Wii. Each activity was selected in order to have a range of types of activities for the research. Each activity also were chosen becaues they are cardiovascular activities in which the subjects can get their heart rate into the target zone. In small sided soccer, the class was divided into four even teams of three or four players. The gym floor was divided into two small soccer fields for the teams to play. Using soccer skills that they were taught earlier in the year, the students played three, eight minute games of soccer. Each team played the other three teams once and no goalies were allowed to keep from any players remaining stationary. This activity was chosen as an activity representative of a typically classified “male” sport which also requires team play.

During the fitness circuit, students rotated through ten different stations three times. Each station required the students to do a different fitness related activity (jumping jacks, push-ups, line jumps, crunches, mountain climbers, elbow dips, lunge walks, jump rope, sit-ups, and body squats) for 50 seconds, leaving 10 seconds to move between stations. This activity was used

because emphasis is placed on fitness as opposed to skills. This activity is viewed as more gender neutral.

During the Just Dance lesson, students held either a controler or a 1 pound dumbbell in their hand while they danced for thirty minutes according to what they see on the television screen. These three lessons were chosen to give a variety of activities in hopes that at least one of the activities appealed to each student. This dance lesson was chosen as a typically "female" activity that also follows advances in technology and new physical education trends.

Data Analysis

A repeated measure ANOVA was performed to check for significance in pre and post heart rate between the control and exprimental groups as well as the internal and external Locus of Control groups. In addition to the statistical analysis, descriptive data was gathered and will be presented on reward motivation, goal motivation, value of physical activity, peer influence, and activity influence from the participants. Descriptive data on heart rate based on the three activities (soccer, fitness circuit, and dancing) will also be provided.

CHAPTER IV: RESULTS

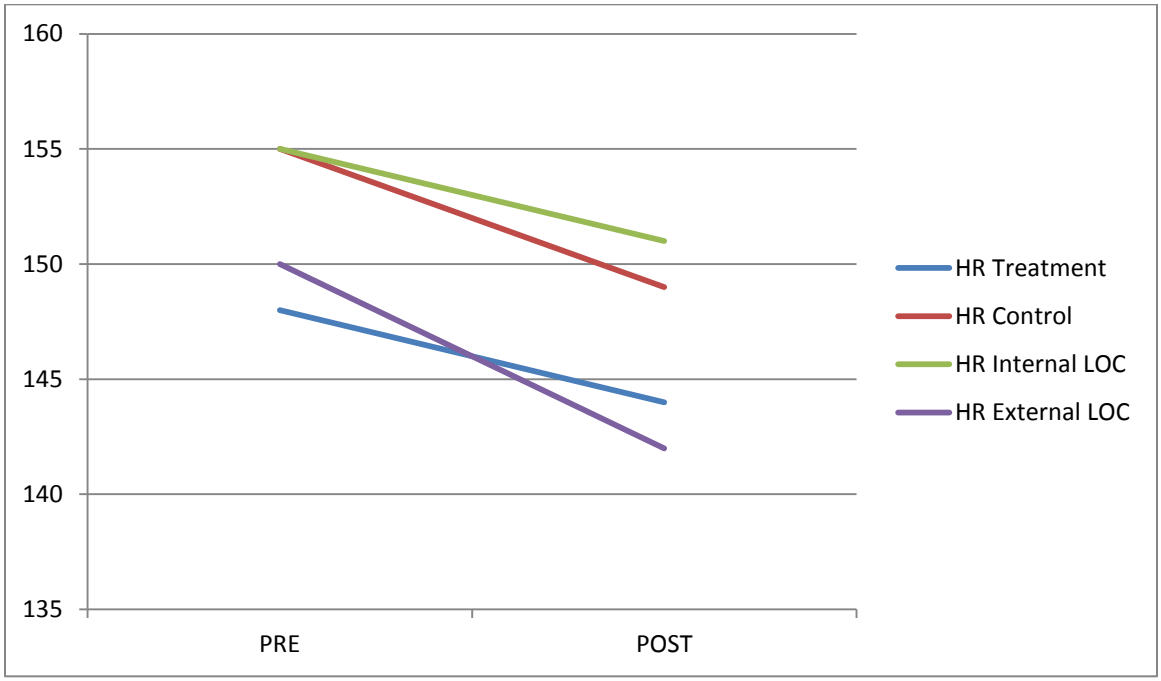
The control and treatment groups were formed based on which class each participant was in for physical education. Two classes were used for the treatment group and one class was used for the control group. Table 1 shows the number of participants from both the control and treatment group who were classified as internal LOC and external LOC.

Table 1: Internal and External LOC by Group

	Control Group	Treatment Group
Internal Locus of Control	**5**	**16**
External Locus of Control	**10**	**10**

Data was examined to compare the average heart rate of the subjects prior to data collection and post data collection. The repeated measures ANOVA shows that while there is a significant difference in pre and post heart rate among all participants (p-value .002, F=10.808), there were no other significant interactions. Next, examination occurred to determine if there was a difference between pre and post heart rate between the internal and external LOC groups. Heart rate based on LOC had a p-value of .106 and F=2.746. Another ANOVA examined pre and post heart rate between the treatment or control group. Heart rate based on the group had a p-value of .203 and F=1.681. Both of these ANOVA test shows that there is no significant difference among groups based on Internal vs. External Locus of Control or Treatment vs. Control Group.

Table 2: Average Pre and Post Heart Rate



As seen in Table 2, the average heart rate declined for all participants between the pre gathered heart rate average and the heart rate average during data collection. Table 3 shows the number of subjects with internal LOC versus the number of subjects with external LOC who fell into different percentage categories of the target heart rate zone based on their average heart rate from the three activities.

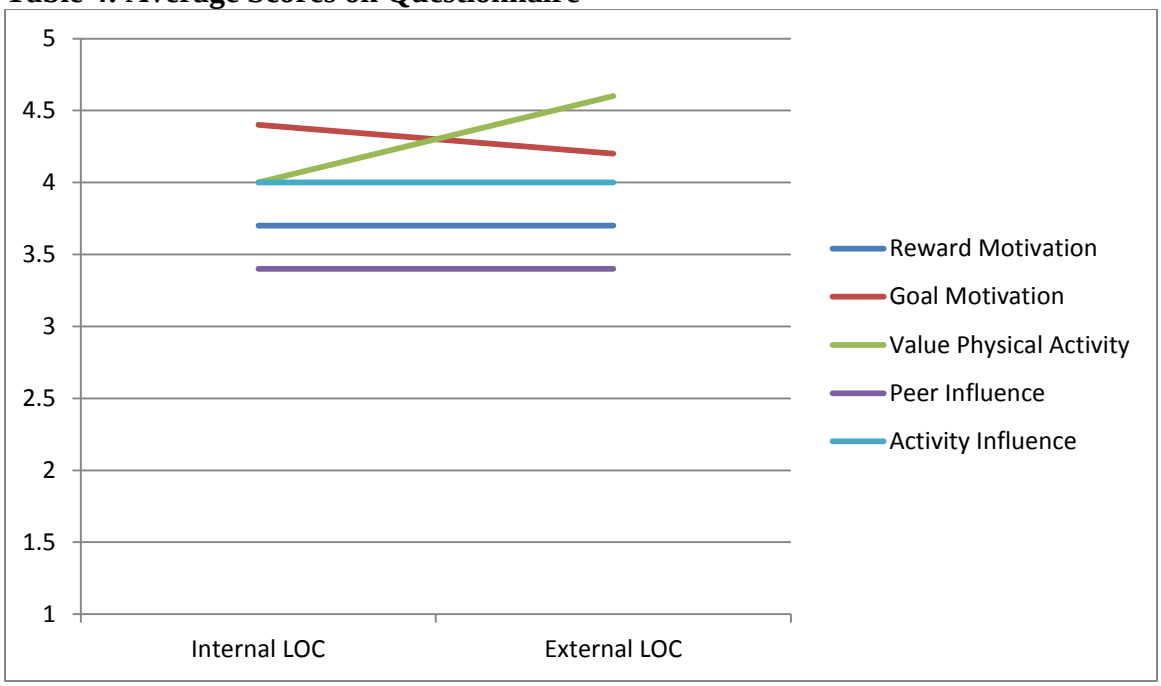
Table 3: Number of Internal and External LOC Subjects by Heart Rate Percentage

	Internal LOC	External LOC
Less than 60% of max HR (<125 BPM)	**0**	**0**
60-65% of max HR (125-134 BPM)	**0**	**1**
65-70% of max HR (135-144 BPM)	**4**	**7**
70-75% of max HR (145-154 BPM)	**9**	**6**
75-80% of max HR (155-164 BPM)	**5**	**6**
Greater than 80% of max HR (>165 BPM)	**3**	**0**

As seen in the Likert Scale data shown in Table 4, the average response score was the exact same for internal and external LOC subjects on reward motivation, activity influence, and peer influence. The score on valuing physical activity was lower for those with an internal LOC

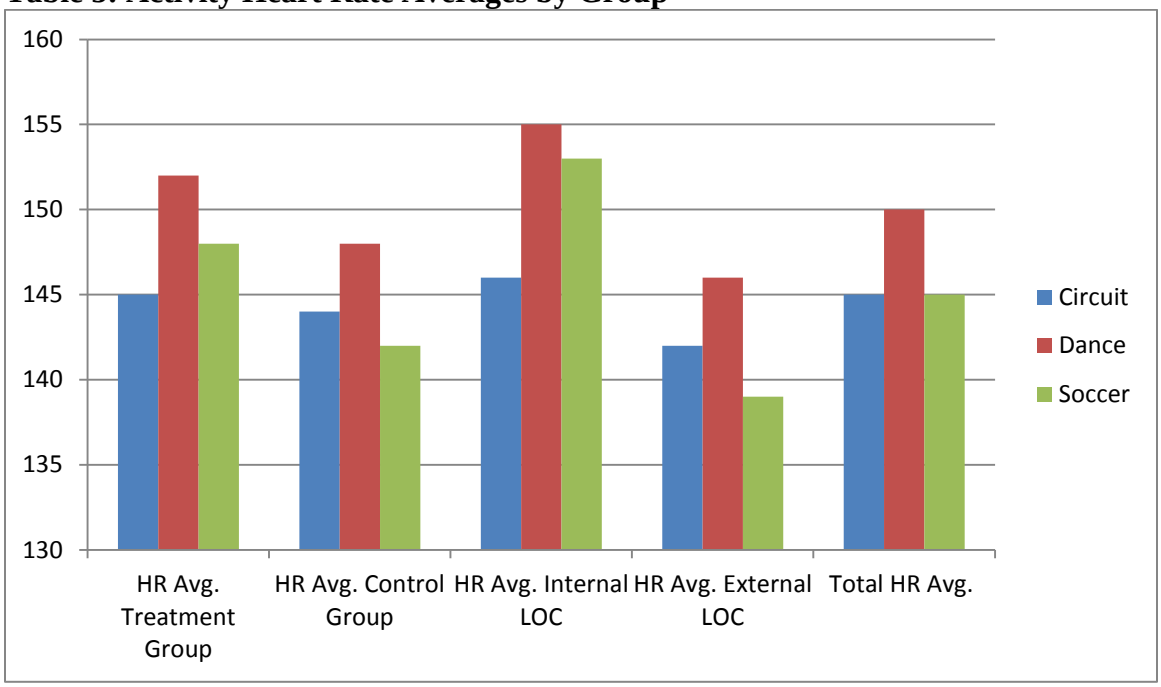
than for this with an external LOC. Likewise, the score for goal motivation was higher for those with an internal LOC than those with an external LOC.

Table 4: Average Scores on Questionnaire



Finally, Table 5 displays the average heart rate for each activity by the various groups. The internal LOC group had the highest overall heart rate average and also had the highest average heart rate for each of the three individual activities. The dance activity produced the highest average heart rate in each group. The average heart rate for the fitness circuit stays the most consistent across all groups. Soccer had the widest range of heart rate among groups.

Table 5: Activity Heart Rate Averages by Group



CHAPTER V: CONCLUSIONS

This study investigated whether internal or external locus of control influences adolescent girls to increase effort in physical activity during Physical Education class. It also examined whether student's scores on Rotter's Locus of Control test were in line with student's perceptions of their own motivations. Finally, the study looked at the girls perceptions of which of three external motivators (peer, activity, and value of PA) influenced their participation the most. Initial quantitative data showed that there were no significant differences among groups based on internal and external locus of control or based on control vs. treatment group. Furthermore, the thought that students with internal motivation who were in the control group would increase their average heart rate, and students with external motivation who were in the treatment group would increase their average heart rate, was proven insignificant because the average heart rate decreased for all groups (Treatment and Control, and Internal and External LOC) from baseline data to the data gathered during the 3 test activities. Therefore, based on this study, one's locus of control results do not help predict their effort in physical education. However, it is interesting that during each of the three activities in which the subjects participated for data collection, the average heart rate for those with an internal LOC was the highest. Although not statistically significant, this does point to those subjects being more motivated to participate and increase their heart rate.

In more closely examining Table 1, the control group had a steeper decline in heart rate, so with more participants or more measured activities, the control group and treatment group would possibly converge and have a similar average. Furthermore, the average pre heart rate for participants in the internal LOC group was five beats per minute higher than those in the external LOC group. This makes sense since based on Rotter's test, those participants are believed to be

more internally motivated before the study even began. The average post heart rate for internal LOC was almost ten beats per minute higher than the external LOC group, proving that the internal LOC group did not have as drastic of a decline. So again, over time or with more activities, this different would possibly become even more significant.

Some interesting and useful data came from the Likert scale questionnaire which the participant's responded to after the activities in regard to their perceptions of their individual motivators. Those who were identified to have an Internal Locus of Control were more likely to say that they were motivated by setting personal goals than those who were determined to have an External Locus of Control. Meanwhile, both groups had the same response (3) when asked about motivation for an external reward. As a whole, the group of participants responded with a higher likelihood of being motivated by a personal goal than by a reward. As Deci and Ryan defined extrinsically motivated behaviors, "they are evident when an activity is carried out as a means to an end and not for its own sake" (as cited in Ntoumanis, 2001 p. 226). It is very likely that the participants did not consider that many times they are participating in activities in physical education class simply to pass the class. To adolescents this likely does not occur to them as external motivation, but it is in fact the means to an end that Deci and Ryan point to. Another important factor to point to, is that oftentimes adolescents attain motivation by ranking themselves amongst their peers as opposed to personal growth and mastery. Two previous studies point to differences in internal and external motivation in this regard. Biddle and Wang (2003) define the difference between a task-oriented person and an ego-oriented person. An ego-oriented person feels competence through winning or outperforming others which is often what leads to successful thoughts in young people. Chen and Ennis (2004) point to learners being concerned about demonstrating competence relative to their peers.

Participants selected a high number when asked about their participation being dependent on the activity that they were being asked to perform. The average number for participation depending on peer influence was much lower. This idea of girl's willingness to participate in physical activity based on the activity showed up in numerous other studies. Enjoyment of the activity is extremely important for girls. No matter what their motivation, girls are more likely to do something if they think it is "fun". Two of the four common trends that were found by Gibbons and Humbert in their study about what girls are looking for in physical education were "the need for experiencing fun and enjoyment, and choice and variety of physical activities" (2008, p.168). Gibbons and Humbert also listed "classes are fun and enjoyable" as one of their seven attributes for making PE "girl friendly (2008, p.171). Creating an environment that involves several various activities that girls enjoy and also provide room for being social was a major point of emphasis for Debate et al. 2009, in their study looking at ways to keep girls engaged in physical activity.

When examining the average heart rate within each activity, the dance activity proved to have the highest overall heart rate average. Not only that, but in looking at groupings (treatment, control, internal LOC, external LOC) the dance activity proved to have the highest average heart rate of the three activities for each of the aforementioned groups. These findings are in line with what many studies have found showing that girls are more eager to participate in physical education classes that include "female" activities as opposed to the typical male activities that are centered around sports. It is also important to note that the subjects in this study participate in a separate dance class, so they may have felt a higher competence level during the dance activity than the other activities. The fitness circuit garnered the same overall heart rate average as the small sided soccer games and the two split when comparing the averages between groups. Soccer

had the widest range of heart rate, likely based on student's desire to participate. The students are members of a school with a strong soccer program, so many students likely enjoyed participating in the soccer unit and felt competent in doing so, while others follow societal stereotypes and view soccer as a masculine sport, thus having little desire to participate.

Another interesting finding was that participants with an external Locus of Control, had a much higher average in their response to valuing physical activity. This is an attention-grabbing finding and quite different than what was found in the study done by Nowicki in 1997 where it was believed that "people with internal control expectancies are more likely than those with external control expectancies to believe that engaging in the types of physical activities that will enhance physical fitness will also result in improved physical health" (Nowicki p. 550). This could perhaps could be seen as a limitation to the study. If students who are generally externally motivated in other areas (which were in question during the LOC test) already value physical activity, then they may not require as much external motivation in physical education class. On the other hand, the participants with Internal LOC who recorded scores saying that they do not value physical activity as much, may require more methods of motivation in class. Whatever the reason for motivation, it is important to remember that the end goal is for physical education class to help jumpstart girls into a lifetime of physical activity. Kimm et al. (2006, p.536) listed "I don't have time" and "There is no place to exercise" as two reasons young women gave for not exercising. Throughout their schooling, physical education classes can provide a solution to these problems and help women to combat these excuses after they have finished school.

Implications for Teaching Practice

The biggest implication for teaching that can be drawn from this study is that girls are motivated by a wide variety of factors and there is no simple test or questionnaire that accurately

states what motivates an individual. Some students perceive themselves to be internally motivated, but do not realize that external factors, such as grades, are what really drive them. Each student is different, so teachers face the challenging task of creating a course that caters to a wide variety of needs. However, it remains important that whether the end goal is to increase fitness levels within that class, to increase students' desire for physical activity for life, or to simply provide fun physical activity, that teachers must take into consideration what motivates each member of their class to achieve the goal not only in the class, but after they leave the formal physical education setting. This can be a daunting task, but much like classroom teachers must adapt to different learners, physical educators must prepare and adapt for a variety of skill levels and motivations. As physical education trends change, focus seems to be going away from sports and towards individual, lifelong activities and pursuits. As educators we must see our students as individuals and not as a whole class. Frequent conversations with students and learning about what they enjoy and how best to keep them active is an important step to take.

Drawing from what was learned from this study, it will be important to me going forward to get to know my students on a personal level early on in the school year. Both through brief questionnaires and personal dialogue, I will work to understand what motivates each individual. While Rotter's Locus of Control scale worked for the purpose of this study, it did not prove to be a reliable method for determining specific motivators for individual students. Utilizing a more useful measure for understanding each student's motivation will be important. In planning curriculum I will be sure to encompass a wide variety of activities and even within each activity, I will search for ways to provide motivation in different manners. Constant communication about why we are doing what we are doing and how it leads to better health and wellness will become a more prominent component to teaching. The more the students understand the benefits, perhaps

the more likely they will be to "buy-in". Finally, helping my students to set personal goals and to aim to better themselves as opposed to being better than others will be crucial. To help with this we will set goals and provide ample opportunities to measure improvement. Sometimes being able to see personal improvements being made in a tangible form can motivate girls to keep working to see more gains. Overall, I will be playing close attention to individual needs to ensure that all students are able to find a form of motivation that inspires them to work on their desire to maintain physical activity for a lifetime.

Further Research

This study could prove to be much more useful if it were recreated on a larger scale using multiple schools with a variety of demographics. The small number of participants did not provide any significance, but it did seem to provide enough interesting information that a similar study with a much larger and broad population could find significance. The study asked basic questions to help determine what students perceived as their biggest motivators. However, the questions were very broad and did not give much insight into the student's thoughts or reasons for answering the way in which they did. Requiring an explanation as to why students do or do not feel they are motivated by peers or activity type and why they do or do not value physical activity would help to better understand how to motivate.

Questioning how the participants defined success and comparing it to their LOC scores would be an interesting addition to this study and perhaps would more clearly define their true motives. In addition, since students often measure success by comparison to their peers, grouping subjects by ability level during class activities could be a way to draw motivation, or at the very least might be another form of motivation to examine.

Further research is needed to best understand what motivates individuals, especially young people, to be physically active. Developing a standard questionnaire that teachers could give at the beginning of the year and then use to shape their lessons might be the best start. The chance to jumpstart a healthy future for each child, while not solely in our hands, does lie in front of us and it begins with finding the correct motivation.

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APPENDICES

APPENDIX A

Parental Assent Form

Middle Tennessee State University Institutional Review Board
Proposal for Research Using Human Participants
Assent Document for Research Study

Principal Investigator: Anne Weingartner
Study Title: Internal vs. External Motivation for Physical Activity in Middle School Girls
Institution: Middle Tennessee State University

Name of Participant: _____ Age:_____

The following information is provided to inform you about the research project and your child's participation in it. Please read this form carefully and feel free to ask any questions you may have about this study and the information given below.

Your child's participation in this research study is voluntary. She is also free to withdraw from this study at any time. In the event new information becomes available that may affect the risks or benefits associated with this research study or your willingness to participate in it, you will be notified so that you can make an informed decision whether or not to continue your participation in this study.

For additional information about giving consent or your rights as a participant in this study, please feel free to contact the MTSU Office of Compliance at (615) 494-8918.

1. **Purpose of the study**:
   Your child is being asked to participate in a research study because she is a middle school student who will allow us to better understand their motivations for participation in physical activity.

2. **Description of procedures to be followed and approximate duration of the study:**
   The study will take place during a 4 week period as a part of your child's normal physical education class.

3. **Expected costs:**
   There are no costs for your child to participate.

4. **Description of the discomforts, inconveniences, and/or possible risks that can be reasonably expected as a result of participation in this study:**
   Because this study takes place during your regular physical education time and consists of activities commonly done during PE, there is no additional risk.

5. **Compensation in case of study-related injury:**
   MTSU will not provide compensation in the case of study related injury.

6. **Anticipated benefits from this study:**
   a.) The potential benefits to humankind that may result from this study are a better understanding of what will motivate students to become more physically active.

b.) The potential benefits to your child from this study it a better understanding of what motivates them.

7. **Alternative treatments available:**
   Not applicable

8. **Compensation for participation**:
   No compensation will be made for your child to participate.

9. **Circumstances under which the Principal Investigator may withdraw you from study participation:**
   Your child will only be withdrawn from the study if they are physically incapable of participating

10. **What happens if you choose with withdraw from study participation:**
    There are no issues if your child decides to withdraw from the study. They will still perform the activities as assigned by the teacher, but no data will be collected or utilized by the researcher.

11. **Contact Information**. If you should have any questions about this research study or possible injury, please feel free to contact Anne Weingartner or my Faculty Advisor, Dr. Don Belcher at (615) 898-2904.

12. **Confidentiality**. All efforts, within reason, will be made to keep the personal information in your child's research record private, but total privacy cannot be promised. Your information may be shared with MTSU of the government, such as the Middle Tennessee State University Institutional Review Board, Federal Government Office for Human Research Protections, *if* you or someone else is in danger or if we are required to do so by law.

13. **STATEMENT BY PERSON AGREEING TO PARTICIPATE IN THIS STUDY**
    I have read this informed consent document and understand the material contained in it. I understand each part of the document, all my questions have been answered, and I give permission for my child to participate in the study.

_____ _____

Date Signature of patient/volunteer

Consent obtained by:

_____ _____

Date Signature

_____

Printed Name and Title

APPENDIX B

Student Verbal Assent Script

Verbal Assent from Students

Script

I am working on completing my Master's degree from Middle Tennessee University and I am doing a thesis project to learn more about motivation for physical activity. In order to complete my project I will be gathering some data from our Physical Education classes. I will be asking you to complete a couple of surveys throughout the next month, and I will also be using data that we gather from your heart rate monitors. In order for my project to be successful, I need you to answer any surveys and questionnaires as honestly and accurately as possible. If at any time you decide that you do not want to be a part of this study, you are welcome to let me know and I will not use your information. Also, if you have any questions about the study, please let me know. There will be no risks involved with this study and you will not be compensated, but it will be a big help to me!

APPENDIX C

Locus of Control Test

Rotter's Locus of Control Scale

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1. a. Children get into trouble because their parents punish them too much.
   b. The trouble with most children nowadays is that their parents are too easy with them.

2. a. Many of the unhappy things in people's lives are partly due to bad luck.
   b. People's misfortunes result from the mistakes they make.

3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.
   b. There will always be wars, no matter how hard people try to prevent them.

4. a. In the long run people get the respect they deserve in this world
   b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries

5. a. The idea that teachers are unfair to students is nonsense.
   b. Most students don't realize the extent to which their grades are influenced by accidental happenings

6. a. Without the right breaks one cannot be an effective leader.
   b. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. a. No matter how hard you try some people just don't like you.
   b. People who can't get others to like them don't understand how to get along with others.

8. a. Heredity plays the major role in determining one's personality
   b. It is one's experiences in life which determine what they're like.

9. a. I have often found that what is going to happen will happen.
   b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

10. a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
    b. Many times exam questions tend to be so unrelated to course work that studying in really useless.

11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
    b. Getting a good job depends mainly on being in the right place at the right time.

12. a. The average citizen can have an influence in government decisions.
    b. This world is run by the few people in power, and there is not much the little guy can do about it.

13. a. When I make plans, I am almost certain that I can make them work.
    b. It is not always wise to plan too far ahead because many things turn out to- be a matter of good or bad fortune anyhow.

14. a. There are certain people who are just no good.
    b. There is some good in everybody.

15. a. In my case getting what I want has little or nothing to do with luck.
    b. Many times we might just as well decide what to do by flipping a coin.

16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
    b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
    b. By taking an active part in political and social affairs the people can control world events.

18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.
    b. There really is no such thing as "luck."

19. a. One should always be willing to admit mistakes.
    b. It is usually best to cover up one's mistakes.

20. a. It is hard to know whether or not a person really likes you.
    b. How many friends you have depends upon how nice a person you are.

21. a. In the long run the bad things that happen to us are balanced by the good ones.
    b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22. a. With enough effort we can wipe out political corruption.
    b. It is difficult for people to have much control over the things politicians do in office.

23. a. Sometimes I can't understand how teachers arrive at the grades they give.
    b. There is a direct connection between how hard I study and the grades I get.

24. a. A good leader expects people to decide for themselves what they should do.
    b. A good leader makes it clear to everybody what their jobs are.

25. a. Many times I feel that I have little influence over the things that happen to me.
    b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. a. People are lonely because they don't try to be friendly.
    b. There's not much use in trying too hard to please people, if they like you, they like you.

27. a. There is too much emphasis on athletics in high school.
    b. Team sports are an excellent way to build character.

28. a. What happens to me is my own doing.
    b. Sometimes I feel that I don't have enough control over the direction my life is taking.

29. a. Most of the time I can't understand why politicians behave the way they do.
    b. In the long run the people are responsible for bad government on a national as well as on a local level.

Score one point for each of the following:

2.a, 3.b, 4.b, 5.b, 6.a, 7.a, 9.a, 10.b, 11.b, 12.b, 13.b, 15.b, 16.a, 17.a, 18.a, 20.a,

21.a, 22.b, 23.a, 25.a, 26.b, 28.b, 29.a.

A high score = External Locus of Control

A low score = Internal Locus of Control

Locus of Control

Locus of Control refers to the extent to which individuals believe that they can control events that affect them. Individuals with a high *internal locus of control* believe that events result primarily from their own behavior and actions. Those with a high *external locus of control* believe that powerful others, fate, or chance primarily determine events. Those with a high *internal locus of control* have better control of their behaviour and tend to exhibit more political behaviors than *externals* and are more likely to attempt to influence other people; they are more likely to assume that their efforts will be successful. They are more active in seeking information and knowledge concerning their situation than do *externals.*The propensity to engage in political behavior is stronger for individuals who have a high *internal locus of control* than for those who have a high *external locus of control.*

APPENDIX D

Subject Post Test Questionnaire

NAME:_____

Circle the number that best answers the question for you.

1= Not at All 2= Very Little 3= Somewhat 4= Quite a Bit 5=Greatly

1. To what extent does a reward motivate you?

1 2 3 4 5

2. To what extent foes a personal goal motivate you?

1 2 3 4 5

3. To what extent for you value physical activity?

1 2 3 4 5

4. To what extent do your peers influence your participation in PE?

1 2 3 4 5

5. To what extent does the type of activity influence your participation in PE?

1 2 3 4 5

APPENDIX E

AVERAGE BASELINE AND ACTIVITY HEART RATE BY SUBJECT

Group	Baseline Heart Rate Average	Data Collection Heart Rate Average	Increase or Decrease
Treatment	150	151	Increase
Treatment	149	140	Decrease
Treatment	156	150	Decrease
Treatment	155	157	Increase
Treatment	142	156	Increase
Treatment	149	133	Decrease
Treatment	148	136	Decrease
Treatment	175	170	Decrease
Treatment	145	140	Decrease
Treatment	155	151	Decrease
Treatment	160	138	Decrease
Treatment	151	134	Decrease
Treatment	164	165	Increase
Treatment	158	150	Decrease
Treatment	159	143	Decrease
Treatment	137	149	Increase
Treatment	166	162	Decrease
Treatment	145	136	Decrease
Treatment	172	146	Decrease
Treatment	150	140	Decrease
Treatment	149	146	Decrease
Treatment	162	147	Decrease
Treatment	142	136	Decrease
Treatment	156	158	Increase
Treatment	159	154	Decrease
Treatment	174	176	Increase
Control	135	138	Increase
Control	147	125	Decrease
Control	141	121	Decrease
Control	137	133	Decrease
Control	144	144	Same
Control	140	143	Increase
Control	164	162	Decrease
Control	147	154	Increase
Control	157	147	Decrease
Control	148	141	Decrease
Control	151	151	Same
Control	141	136	Decrease
Control	163	167	Increase
Control	145	147	Increase
Control	160	154	Decrease