

VIRTUAL VS. BRICK AND MORTAR SCHOOLS: EXAMINING THE IMPACT OF
SCHOOL TYPE ON OUT-OF-SCHOOL TIME ACTIVITIES

by

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I dedicate this research to my wife Jorden and our daughter Keegan.

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ABSTRACT

Changing education philosophies and technological advancement have altered the way in which educational content can be delivered to students. Numerous alternate school models are gaining in popularity, with internet based, virtual, institutions at the forefront. Although the 20-year anniversary for the virtual format is rapidly approaching, little information exists as to how the shift from a traditional brick and mortar environment to a virtual one impacts the out-of-school time activities of the students. The purpose of this study is to determine how the type of school a high student attends impacts their out-of-school time recreation and physical activities and those factors, which hinder their participation. One hundred and fifteen high school age students attending brick and mortar and virtual institutions completed a survey regarding their recreation participation, physical activity participation, sedentary behavior, and leisure constraints. The results indicate that the type of school did impact all of these variables suggesting that those students who attend virtual institutions are more likely to participate in recreation activities, more likely to be physically active, and more likely to be sedentary when compared to brick and mortar school students. Further, some virtual school students were found more likely to be constrained in their leisure participation; although those feelings declined the longer a student attended school virtually. While these results were interesting, future studies must be completed with a larger, more diverse, sample to determine the generalizability of the results and confirm the findings.

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CHAPTER I

INTRODUCTION

In years past, high school aged students divided their time between the hours they were in a classroom and those times when they were not in a classroom. Now, changing educational philosophies and technological advancements have altered the way in which educational content can be delivered to students. Gone are the days when sitting at a desk, in a school, is the only accepted educational format. Now, a variety of alternate models are gaining in popularity and prominence. One such option are internet based, virtual schools offering more personalized, flexible, learning plans presented by highly qualified teachers, and available at any location with an internet connection. This combination has led to an annual growth rate of thirty percent among participants since the introduction of the format in 1997, causing a rapid expansion across the United States (Watson, et al., 2009).

Just as important as the knowledge gained in a classroom, be it an in person or virtual one, are the many physical, social, and psychological benefits associated with out-of-school time activities. Traditionally, these benefits are attained through school sanctioned sports teams, bands, clubs, and unstructured, non-sanctioned, activities between friends (Klieber, Walker, & Mannell, 2007). But, the traditional activities are changing and often directly compete with computer and video based gaming, streaming video, and fantasy sports, to name a few. In addition, alternative schools offer opportunities for in person contact through class fieldtrips and social events, and state legislation allows students attending alternate schools to participate in sanctioned activities within their districts (Equal Access to Interscholastic Activities Act, 2012), thus

new factors in other realms are beginning to appear which could influence participation further.

At present, there has yet to be a leisure based investigation examining how the type of school a student attends influences the activities in which they participate. Therefore, the purpose of this study was to determine how the type of school a high school student attends impacts their out-of-school time activities. Specifically, we sought to determine what activities students are participating in and what might be constraining participation when compared to brick and mortar students. Although other types of schools exist, the study only used brick and mortar students and virtual school students as comparison groups.

The investigation consisted of three areas of inquiry, out of school recreational participation, physical activity level, and factors constraining physical activity and recreation participation. Using a web based and in person delivery method, surveys were given to students attending brick and mortar and virtual high schools guided by three research questions, which also guided data analysis. The questions were:

1. What are the differences in recreation participation between virtual school and brick and mortar students?
2. What are the differences in physical activity participation between virtual school students and brick and mortar students?
3. What are the differences in constraints to participation between virtual school students and brick and mortar students?

In conjunction with the research questions were the following null hypotheses.

1. There will be no difference between the type of school students attend and the likelihood of recreation participation.
2. There will be no difference between virtual school and brick and mortar students in relation to participation in team centered recreational activities
3. There will be no difference in individual recreation activity participation between brick and mortar school students and virtual school students.
4. There will be no difference in organized recreation activity participation between brick and mortar school students and virtual school students.
5. There will be no difference in sedentary behavior between brick and mortar and virtual school students.
6. There will be no difference in physical activity levels between virtual and brick and mortar students.
7. There will be no difference between the type of school students attend and the factors, which inhibit leisure participation.

The findings were divided into three articles each pertaining to the subject area presented in each research question, recreation participation, physical activity participation, and leisure constraints respectively. The first article described the differences in recreational activity participation between brick and mortar and virtual high school students and address sub questions related to organized and unorganized activity participation, and team and individual activities. The second examined physical activity and sedentary behavior and how the type of school a student attends impacts

each. The third and final article pertained to leisure constraints and if they differ between the two groups.

As alternative education becomes more common, an examination of the impact a shift from a traditional brick and mortar to online environment may have on the out-of-school time activities of students is warranted. To date, there has not been a line of inquiry from the perspective of recreation examining the recreational habits of virtual school students. Thus, to expand the body of literature in leisure scholarship and allow school administrators, teachers, and recreation professionals to make informed decisions regarding in school physical education and out of school recreation programming the information produced in this study is essential. Perhaps equally important is to understand what is constraining for participation in recreational activities and if there are differences based on the type of learning environment.

Literature Review

In an effort to provide context to the study, it is important to introduce relevant terms, concepts, related studies, and the theoretical construct central to the work. The following pages will help define the parameters of the study by providing working definitions of each concepts, an explanation and review of the selected theoretical framework, and a brief history of the development of the education system in America to demonstrate how the current system came into place.

Education in America

Educators define the concept of brick and mortar schools and virtual schools as separate entities, even though they teach largely the same curriculum. The evolution of the brick and mortar school format and the advancement of communication technology

led to the formation of virtual schools, which are a major component of this study. The following section is a brief history of education in America and how each subsequent step led to the current education landscape. Notably, virtual school administrators take offense if non-virtual schools are referred to as “traditional” schools. Thus, this study utilizes the descriptors of brick and mortar and virtual to delineate between the two types of schools.

Brick and Mortar Schools

Beginning in Colonial America education was privately taught to upper class students and focusing on reading, writing, math, poems, and religious content (Chesapeake, 2014). However, this began to change as the system progressed during the late Colonial era at which time the New England Colonies established districts in an effort to reach more students of varying social class. The focus of this effort, although extremely limited in access, was to teach basic reading, writing, and arithmetic to all children of schooling age.

This was the case until the early 1800s during which time the foundations of the public education system we know today were put in place. While the parents of children still had the ultimate authority over whether their child would attend the school the government began encouraging the establishment of school districts and utilizing public funds taken from taxes to support them (Ornstein & Levine, 1984), a model which existed into the early 1850s.

By the mid-1850s the government began to require the establishment of school districts and directed that specific taxes be collected to fund schools and that an established curriculum for students be put into place, thus shifting away from parental control of education (Coulson, 1999). This was the case until 1925, when the Supreme

Court limited governmental authority in the landmark decision of *Pierce v. Society of Sisters* injecting additional parental authority into the education system.

The 1980s began a radical change in the education options available to students in the United States. Beginning in 1982 homeschooling became a permissible option for education, eventually expanding to all 50 states by the mid-1990s (Coulson, 1999). This change continued into the 1990s with the establishment of charter schools, vouchers, and scholarships continued accessibility and options for students and paving the way for the creation of virtual education.

Virtual Schools

Virtual schools in the United States originated in 1997 thanks to a \$7.4 million federal grant allowing the Virtual High School (VHS) and Florida Virtual School (FLVS) to be established (Barbour & Reeves, 2009). Since that time, the implementation of schools with an online based curriculum can be found in all 50 states, and internationally through multiple education providers. The types of school often fall into one of the following categories as described by Clark (2001):

1. State sanctioned/state level: These are virtual schools sanctioned by the government of the state to be used as an extension of the public school system.
2. College and university based: These are university based programs which are offered as continuing education opportunities for students with an online school background.
3. Consortium and regionally based: A virtual school consortia allows national, multi-state, state, and regional courses to be offered at the Kindergarten (K) through 12th grade (12) level.

4. Local education agency-based: As the technology advances a large number of public schools have created their own virtual curriculum to supplement, or act as an alternative to, their traditional curriculum. They also serve as a mediator to home school populations.
5. Virtual charter schools: State-chartered entities include public school districts, nonprofit and for profit organizations.
6. Private virtual schools: These schools are similar to local public schools as the courses supplement traditional courses, except they are associated with privately run institutions.
7. For-profit providers: These companies are largely responsible for the expansion of virtual schools as they offer the tools for expanded delivery of virtual school curriculum.

Research in the Schools

Research conducted with brick and mortar students as the primary participants has been prevalent in recreation and leisure research in the areas of constraints, participation, and physical activity covering a myriad of topics related to this work. This has provided a deep pool of accessible knowledge related to these areas, thus framing and sustaining a considerable foundation. While the thousands of studies cannot all be cited, such works such as the negotiation of leisure constraints in both junior high and high school students (Allison, Dwyer, Makin, 1999, Jackson & Rucks, 1995;), physical activity patterns of students (Heath, Pratt, & Warren, 1994), and studies supplementary to the increased health crisis related to obesity and inactivity (CDC, 2011; CDC, 2013; Hohepa, Schofield, & Kolt, 2006). Provide a glimpse into the ways in which high school aged

students spend their out-of-school time, the activities in which they engage, and the factors which are hindering their participation. Even topics such as deviant leisure have been the subject of inquiry (Hartmann & Massoglia, 2007; Wegner, Floser, Muller, & Lombard, 2006;) and add depth to the background of this study. However, the plethora of works pertaining to this particular group of participants highlights the glaring omission of those students achieving their education in non-traditional formats, such as virtual schools.

As virtual schools are fairly new commodities in the world of education, much of the research over the past seventeen years has come in distinct waves of topics and tone. The infancy of the schools bred explanatory studies introducing the world to the distance learning phenomenon. Scholars like Clark (2001), Cavanaugh (2004), and Revenaugh (2005) all providing insight into what virtual schools are, the best practices to govern the curriculum and students, the potential of the new medium served as a more appropriate alternative to reach students on their level, and offering them up as a glimpse to the future evolution of education. As the newness and novelty began to wane, research began to evolve as researchers were able to better ascertain the benefits and potential pitfalls of attending school online (Barbour & Reeves, 2008; Repetto et al., 2010; Russell, 2004). Now, as the 20-year anniversary of their inception approaches, researchers are beginning to look to the future in an effort to expand educational choice and improve the quality and efficiency of public education in the United States (Molnar, et al., 2014). During this time, however, no research directly related to recreation has been conducting involving virtual school students.

Leisure

This study limits the discussion of leisure to the social psychological perspective whereby some parameters are becoming more uniform and describe the ways in which leisure can be considered (Hurd & Anderson, 2010). As this study deals predominately with recreation and views the two concepts as separate entities, it is important to provide the three most prominent views in social psychological leisure scholarship to differentiate between the concepts. Three of the prominent views of leisure regularly discussed are the notions of leisure as time, leisure as activity, and leisure as state of mind, all of which will be briefly explained in the following section.

Leisure as time. Defines leisure as free from the obligations of daily life. It is the time when one does not engage in work, be it paid or unpaid, or the obligations of living, such as sleep and eating (Hurd & Anderson, 2010). Leisure is “left-over” time in nonworking hours in this school of thought.

Leisure as activity. Leisure can also be described by the activities in which people engage during their free time (Hurd & Anderson, 2010). These activities are not related to work or obligation in any way. The motivations for participation varies from person to person, but are often related to relaxation, competition, or personal growth (Hurd & Anderson, 2010). The activity itself is of no consequence as long as it is engaged in freely and unrelated to obligation.

Leisure as a state of mind. The most abstract of the definitions, leisure as a state of mind considers an individual’s perception of an activity rather than the activity itself (Hurd & Anderson, 2010). Central to this notion are the concepts of perceived freedom, control and intrinsic motivation (Hurd & Anderson, 2010). Conceptually simple, freedom

is an extremely complex phenomenon comprised of many dimensions steeped in political, social, and philosophical perceptions (Kleiber, Walker, & Mannell, 2011). In our everyday lives, thousands of activities are performed in the personal, professional, and social realm of the individual, some of which are viewed as compulsory, while others voluntary. The common thread between these experiences is the subjective perception of freedom. Neulinger (1981) described this perceived freedom as a state in which the person feels that what she or he is doing is done by choice. Pertinent to this definition is the importance placed on the feeling of choice and control that is essential to the individual. When a person feels constrained by an authority figure dictating action, he or she will not feel in control of their own behavior which detracts from the human experience. This is based on the notion of free choice, in which there are multiple options from which to choose, however, there are some barriers such as time, finances, recreation skills, and the availability of friends which often times constrain leisure for the individual. These constraints to freedom are negative; however some may help define the parameters of an activity which enhance its enjoyment.

In social psychology perceived control is an important component to the human experience and essential to health, and well-being (Klieber, Walker, & Mannell, 2011). It could be argued that those with an unrealistic optimism regarding the future tend to exaggerate the amount of control they have over uncontrollable life event, resulting in significant effects in life and leisure among all age groups, both positively and negatively (Klieber, Walker, & Mannell, 2011). In contrast, there are those that people may alter variables in an attempt to gain control of a situation. According to Weisz, Rothbaum, and Blackburn (1984), there are two types of control in these situations; first, primary control

which occurs when an individual enhances their rewards by influencing existing realities, and secondary control, which occurs when individuals enhance their rewards by accommodating to existing realities. When these elements are applied, what may be regarded as leisure for one person is not leisure for another based on their state of mind and varying factors of the activity (Hurd & Anderson, 2010).

Recreation

Recreation was defined as an activity in which people engage during their free time (Hurd & Anderson, 2010). The activity is enjoyed by the participants, and is widely recognized as having socially redeeming values (Hurd & Anderson, 2010). Recreation itself may be viewed as very individualistic, thus allowing participants to consider any activity important in an effort to provide balance to their lives in a non-work setting (Hurd & Anderson, 2010). Some examples may include sports, attending an event, traveling, as well as more sedentary activities such as reading, writing, and many other pursuits.

Physical Activity

The clinical definition of physical activity is any movement of the body occurring as a result of the contraction of muscles which increases energy expenditure above a base level (Physical Activities Guideline Committee, 2008). In more simple terms, physical activity is simply getting up from a sedentary position and moving. For this study, physical activity was defined in this way.

Participation

Participation in recreation and physical activities takes many forms with the type of activities being influenced by social, economic, environmental, and emotional factors in a person's life. For the purpose of this study, the focus was primarily on participation as it applies to high school aged students during their time outside of school hours.

Out of school time. While research pertaining discussing the link to education is wide ranging covering a myriad of topics including adaptive recreation for people with disabilities, physical education, and sport. The majority (Dale, Corbin, & Dale, 2000; McKenzie, et al., 2000; Sallis et al., 1997) focus on the activities which are thought to compensate for the extended periods of sedentary behavior during school hours, taking place after the school day is completed. Known as out of school time, this refers to the hours in which school-aged children are not in school (Wellesley, 2003), and marked by a lack of specific structure, schedule, or duration in place for the activities in which students are participating.

In the United States, children spend less time studying in a formal school setting than other nations and primarily spend their days in four areas of activity (Hofferth & Sandberg, 2001). These areas according to Hofferth and Sandberg (2001) are school and day care, discretionary time in free play or organized activities, spending time in out of school learning activities, and family activities. The type of each activity varies with age affecting choices as a child moves through development (Hofferth & Sandberg, 2001).

The most typical times for out of school activities are after school or during summer months, however, non-traditional students, such as those enrolled in virtual

schools, are able to engage in out of school time activities during non-traditional times due to the flexibility of the virtual school setting.

Benefits of participation. The social psychological and physical benefits of being physically active and participating in recreational and leisure activities are evident throughout the lifespan and take various forms during each stage of development (Kleiber, Walker, & Mannell, 2011). As children, play serves a means to explore the environment, develop cognitive function, and aid in social interactions (Kleiber, Walker, & Mannell, 2011). In adolescence, recreation provides a means to established identity and a sense of freedom. For adults, recreation participation can fill the void of an unsatisfying work life, provide a social outlet, aid in stress management, and prevent the stagnation and isolation that can be associated with changing life roles (Kleiber, Walker, & Mannell, 2011). Physical activity has been strongly associated with better physical health helping to alleviate diabetes, obesity, hypertension, bone and joint disease, and physical manifestations of depression (Warburton, Nicol, & Bredin, 2006). Physically active children experience a small gain in grade point average and positively influence concentration, memory, and behavior in the classroom (Trudeau & Shephard, 2008).

The recreational habits and choices of students in traditional education settings indicate there are ample opportunities for participation exploring interests, hobbies, and past experiences provided by the programming options provided through public recreation organizations, such as community recreation centers, for profit organizations, private organizations, and school sponsored activities. Public recreation entities are made available to all, and fees can be paid to access private entities, but for virtual school

students, it is unknown whether they are accessing the same recreation and physical activities made available to students in traditional education settings, or not.

Constraints to participation. Just as some elements encourage participation, there are also those which keep an individual from taking part in recreational activities, known as constraints. Leisure constraints are broadly defined as barriers, which hinder an individual's ability to participate in a chosen activity (Samdahl & Jekubovich, 1997; Sweeney & Barcelona, 2012). Understanding what keeps people or groups from taking part in leisure activities (Buchanan & Allen, 1985; Jackson & Searle, 1985; Searle & Jackson, 1985a, 1985b). Not all constraints fall under the same description. Some constraints prevent, reduce, or modify participation (Henderson, 1997). Others constraints may include time commitment, a lack of skills, or interpersonal relationships influence the ability of a participant to enjoy an activity, and are categorized as antecedent constraints. Both intervening and antecedent constraints are able to be imposed on an internal or external basis, but are able to be overcome or negotiated by the participant (Jackson & Scott, 1997). The following section will expand upon these ideas to better explain three common constraints to recreation participation and the ways in which they might influence students participating in this study.

Intrapersonal constraints. Intrapersonal constraints were initially defined to represent psychological states residing in the psyche of an individual which. These states interact with the leisure preferences of the individual, influencing the types of activities in which they participate and the frequency in which they do so (Hinch, et al., 2005). Considered to be the first step in the constraints hierarchy, intrapersonal constraints may manifest as stress, anxiety, depression, and could influence of socialization on

participation, eliminating the benefits associated with physical activity and recreation participation (Samdahl & Jekubovich, 1997). In addition, the effect on the life of the person resulting from these states could be detrimental to personal relationships leaving the individual isolated and creating a barrier to recreation participation.

Interpersonal constraints. Following intrapersonal constraints in the constraints hierarchy, interpersonal constraints refer to personal relationships between participants and how the positive or negative nature of the relationship influences leisure (Samdahl & Jekubovich, 1997). Constraints may be viewed in a singularly negative fashion; however, negative connotations are not always necessary. In fact, positive constraints are just as prominent and likely in a person's life.

Structural constraints. While intrapersonal and interpersonal constraints are more abstract, dealing with the feelings of the individual and social interactions, structural barriers are more tangible directly inhibiting an individual's leisure preferences, meaning choices, and participation (Samdahl & Jekubovich, 1997). In the example above, the lack of household income for the family of the student requires them to take a part job to help contribute to the financial stability of their family. In doing so, the student's time is monopolized leaving no additional period for recreation. Similarly, a student who has health related issues may be unable to participate due to the inherent risks to themselves and other children, although it is something they desire. Both of these instances illustrate the concept of structural barriers and demonstrate the ways in which they are different from intrapersonal and interpersonal constraints discussed in the former sections.

Theoretical Framework

As important as the physical tools used to collect data, the theory applied to a study acts as a framework, allowing critical evaluation of findings through a specific lens. It also provides the researcher a link to existing knowledge and previous studies, all while guiding hypotheses formation and the choice of research methods (University of Southern California, 2014). Finally, selecting the proper theory and accurately articulating its assumptions provides an avenue by which to move from the simple description of an event to answering questions about the phenomenon (University of Southern California, 2014). For this study, the Theory of Planned Behavior (TPB) was selected to guide discussion and analysis. The purpose of this section is to offer an explanation of the theory and provide examples of ways in which it has been used previously in recreation research.

Theory of Planned Behavior

The Theory of Planned Behavior (TPB) was initially known as the Theory of Reasoned Action (TRA) and applied to predict the behavior intentions of an individual to engage in a behavior (Ajzen, 2006). It was expanded to explain the behaviors in which a person was able to exert self-control and how behavioral intentions were influenced by how the expected outcome of a behavior and the consequences of the outcome itself (Ajzen, 2006). Based on this notion, TPB postulates that human action is guided by three types of considerations: 1) beliefs about the consequences of a behavior (behavioral beliefs); 2) beliefs about the normative expectations of others (normative beliefs); and 3) a belief that factors are present which may enable or hinder the performance of a behavior, (control beliefs) (Hrubes, Ajzen, & Daigle, 2001). The defining characteristic

of the theory, which also separates it from reasoned action theory, is the perceived control of an individual over a behavior. Six constructs represent this control (Ajzen, 2006).

First, attitudes are the degree to which a person has a favorable or unfavorable evaluation of a behavior. This requires consideration of the outcome of performing a behavior.

Second, behavioral intentions are the motivational factors that influence a behavior. The stronger the intention to perform a behavior, the more likely the behavior will be

performed. Third, subjective norms are the beliefs of an individual about whether most people will approve or disapprove of a chosen behavior, particularly peers and important people in the lives of the individual. Fourth, social norms refer to the traditional code of

conduct of a society. Fifth, the perceived power of an individual which provides the perception of factors which facilitate or impede performance of a behavior and the ability of an individual to control these factors. Finally, perceived behavioral control is the perceived ability of a person to perform a behavior. These concepts are represented below in Figure 1 (Ajzen, 2006).

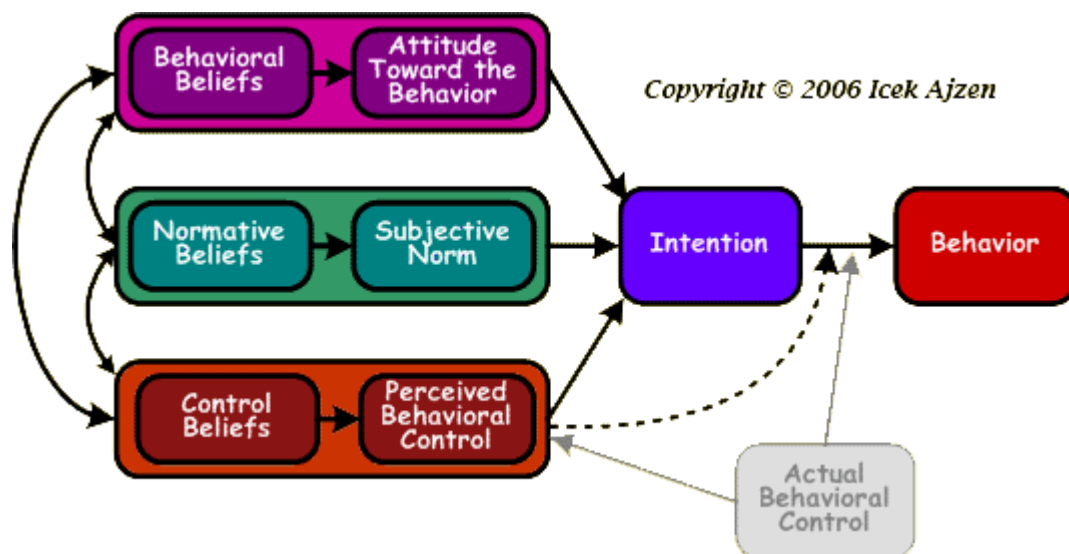


Figure 1 Theory of Planned Behavior

Application of TPB. From its inception, the Theory of Planned Behavior has been used to investigate a variety of phenomena in recreation research. From predicting leisure participation (Ajzen & Driver, 1991) to patrons being willing to pay for a service (Hrubes et al., 2001). Leisure researchers have sought to predict an individual's intention to engage in a behavior and what influences them to do so. In the realm of education TPB has been used to predict intent of minority students to complete high school (Davis et al., 2002) as well determine the willingness of teachers to utilize technology in their classrooms (Lee, Cerreto, & Lee, 2010).

The work that most closely resembles the goals of this investigation is that of Ajzen and Driver (1992) who attempted to apply the theory of planned behavior to leisure choice. The main study was conducted among 140 students who utilized the questionnaire conducted during the pilot study. The results were used to assess all of the variables in which the researchers were interested for the present study. Upon completion of data collection, results were analyzed using regression analysis. Using TPB as a framework, they investigated how psychological aspects of outdoor recreation when an economic measure, cost, was introduced.

Ajzen and Driver (1992) began their study with a pilot test of 60 students who identify perceived costs and benefits associated with certain outdoor pursuits selected based on frequency of participation. In addition a series of open-ended questions were asked to discern the beliefs of the participant in the areas of cost and benefits, the pleasant and unpleasant features of each activity, the expectations of others in respects to engaging in the activity, and the resources needed to perform the activity. Finally, participants were asked to cite how much they would be willing to pay to participate in

each activity. Based on these responses, a comprehensive questionnaire was constructed, a step which did not take place in the research regarding virtual school students. This model provides a potential blueprint for both data collection and data analysis regarding virtual school students and their recreation habits when compared to traditional school students, as well as how attending the type of school influences the motivation to participate in these activities.

Framing the Study

TPB was used to aid in contextualizing the results of the analysis of variance (ANOVA) for each article. Analyzing the results of the survey measuring recreation habits, physical activity, and leisure constraints of high school students attending both virtual and brick and mortar schools, the lens of the theory allowed us to postulate how the actions of the students' are guided by the considerations of TPB (Hrubes, Ajzen, & Daigle, 2001). As research has indicated, these factors, along with behavioral control, have a strong association with intent to participate as well as actually doing so (Cunningham & Kwon, 2003; Hagger et al., 2002). When taking into account the dependent variable of type of school attended by each student, it may shed light on how the type of school influences recreation habits. Further, similar to the work of Ajzen and Driver (1992) the type of leisure constraints of each group could have an effect on the leisure choice of the participants.

Summary

In summary, the intent of this section was to provide context to the study as it pertains to relevant terms and the theoretical framework. A social psychological perspective of leisure was expressed, which views leisure in three categories: leisure as

time, leisure as activity, and leisure as state of mind. While the intent of this study is not to determine whether a person is experiencing leisure, or not, it is important to demonstrate the variability in perspectives to account for participant responses during data collection. Similarly, the establishment of an operational definition referring to recreation as an activity is engaged in during free time, or in the case of the students; out of school time, is an important differentiation to make as it creates established parameters for time while remaining intentionally vague to encompass a wide range of activities.

As important as the recognition of recreation, leisure, and the benefits associated with these activities is, the recognition and exploration of the constraints which prevent, reduce, modify, or influence the ability of a participant to enjoy an activity, is also needed. By examining these phenomena, it is possible to determine how the type of school environment impacts these variables, if at all.

Finally, an explanation of the Theory of Planned Behavior (TPB) outlined a rationale for why the theory was selected, identified and explained terminology relevant to the theory and concluded with examples of how the theory has been used previously in recreation, leisure and education research.

CHAPTER II

BRICK AND MORTAR VS. VIRTUAL SCHOOLS: EXAMINING THE IMPACT OF SCHOOL TYPE ON RECREATION PARTICIPATION IN HIGH SCHOOL STUDENTS

At one time there was the perception that if you were between the ages of 5 and 17 in the United States the majority of your time would be spent in the walls of a school. From the time the first bell rang until the final bell released students at the end of the day, young minds would be filled with knowledge that would prepare them for life after high school. However, an evolving education system, coupled with rapid technological advancements, has shifted the way in which content can be delivered to the students. Gone are the days when sitting at a desk is a student's only educational option as a variety of alternate models have become acceptable. One such option gaining popularity among students and parents alike are Internet based virtual schools offering the convenience of a quality education from home at the pace of the student. The option also eliminates the structured format of the brick and mortar school instead incorporating flexible school hours, and a personalized learning plan enables students to customize their learning experience, within reason. These attributes, along with others, have caused students to flock to virtual schools as they have grown a staggering thirty percent annually since 1997 (Watson, et al., 2009).

Key catalysts for development are the out-of-school time recreational activities, which provide opportunities for socialization, exercise, and interaction between classmates. While school sanctioned sports teams, band, clubs, and non-sanctioned

unstructured activities between friends are still prominent, activities such as video based gaming, internet streaming, and fantasy sports continue to gain in popularity (Klieber, Walker, & Mannell, 2007). Further, although some states have passed legislation allowing non-brick and mortar students access to traditional school sponsored extracurricular activities, (Equal Access to Interscholastic Activities Act, 2012), and local and national initiatives spotlight the value of play, concerns have grown among parents, teachers, and administrators as to how students engaging in alternate education options, virtual schools in particular, are spending their out of school hours, when compared to brick and mortar students.

At present, there has yet to be a recreation-based study examining this phenomenon. Therefore, the purpose of this study is to determine how the type of school a student attends impacts their recreational participation. The study employed brick and mortar students and virtual school students as comparison groups, and sought to determine the types of activities in which each engaged and if their engagement, or lack thereof, was affected by the type of school they attend. However, before analyzing findings, it was important to introduce relevant terms, related studies, and establish a central theoretical construct to guide analysis.

Literature Review

Brick and Mortar Schools

The evolution of the brick and mortar school format and the advancement of communication technology led to the formation of virtual schools. Although the delivery methods differ, state and national curriculum mandates guide curriculum for both institutions. The foundations of our modern education system are rooted in Colonial

America where school was privately taught to upper class students (Chesapeake, 2014). This began to change during the late Colonial era when districts were established in the New England Colonies in an effort to reach children of varying social class. Although extremely limited in access the intent was to teach basic reading, writing, and arithmetic to all children of schooling age.

This was the case until the early 1800s during which the public education system we know today began to take shape. While the parents of children still had the ultimate authority over whether their child would attend school the government began encouraging the establishment of school districts and utilizing public funds taken from taxes to support them (Ornstein & Levine, 1984). This model existed into the early 1850s.

By the mid-1850s the government began to require the establishment of school districts and directed that specific taxes be collected to fund schools and an established curriculum put into place, thus shifting away from parental control of education (Coulson, 1999). This was the case until 1925, when the Supreme Court limited governmental authority in the landmark decision of *Pierce v. Society of Sisters* injecting additional parental authority into the education system.

The 1980s saw a radical shift in the education options for students in the United States. Beginning in 1982 homeschooling became a permissible option for education, eventually expanding to all 50 states by the mid-1990s (Coulson, 1999). Charter schools, vouchers, and scholarships soon followed paving the way for the creation of virtual education.

Virtual Schools

Virtual schools in the United States originated in 1997 thanks to a \$7.4 million federal grant allowing the Virtual High School (VHS) and Florida Virtual School (FLVS) to be established (Barbour & Reeves, 2009). Since that time, schools with an online-based curriculum can be found in all 50 states. Virtual schools often fall into one of the following categories (Clark, 2001):

1. State sanctioned/state level: Virtual schools sanctioned by the government of the state to be used as an extension of the public school system.
2. College and university based: These university based programs offer continuing education opportunities for students with an online school background.
3. Consortium and regionally based: A virtual school consortia allows national, multi-state, state, and regional courses to be offered at the Kindergarten (K) through 12th grade (12) level.
4. Local education agency-based: A large number of public schools have created their own virtual curriculum to supplement, or act as an alternative to, their traditional curriculum. These agencies also serve as a mediator to home school populations.
5. Virtual charter schools: State-chartered entities include public school districts, nonprofit and for profit organizations.
6. Private virtual schools: These schools are similar to local public schools as the courses supplement traditional courses, except they are associated with privately run institutions.

7. For-profit providers: These companies are largely responsible for the expansion of virtual school curriculum by offering the tools for needed to reach a larger group of students.

Research in the schools. Until now, brick and mortar students have served as the primary participants in recreation and leisure research pertaining to constraints, participation, and physical activity, as well as a myriad of other topics related to this work. While the thousands of studies cannot all be cited, such works such as the negotiation of leisure constraints in both junior high and high school students (Jackson & Rucks, 1995; Allison, Dwyer, Makin, 1999), physical activity patterns of students (Heath, Pratt, & Warren, 1994), and studies supplementary to the increased health crisis related to obesity and inactivity (CDC, 2011; CDC, 2013; Hohepa, Schofield, & Kolt, 2006). These studies provide a glimpse into the ways in which high school aged students spend their out-of-school time, the activities in which they engage, and the factors which are hindering their participation. Even topics such as deviant leisure have been the subject of inquiry (Hartmann & Massoglia, 2007; Wegner, Floscher, Muller, & Lombard, 2006) providing examples of the individualistic nature of recreation. However, all of these works highlight the glaring omission of those students achieving their education in non-traditional formats.

Much of the research pertaining to virtual schools over the past seventeen years has come in distinct waves of topic and tone. The infancy of the virtual format bred explanatory studies introducing the world to the distance learning platform. Scholars like Clark (2001), Cavanaugh (2004), and Revenaugh (2005) all provided insight into

describing the schools, determining best practices for curriculum and student development, the potential of the new medium to serve as a more appropriate alternative to student learning; and hypothesizing about the impact of the schools on the future evolution of education. As the newness and novelty began to wane, research began to evolve as researchers were able to better assess the benefits, and potential pitfalls of attending school online (Barbour & Reeves, 2008; Repetto et al., 2010; Russell, 2004;). Now, as the 20-year anniversary of the development of the medium approaches, researchers are beginning to look to the future in an effort to expand educational choice and improve the quality and efficiency of public education in the United States (Molnar, et al., 2014). At this time, however, no research directly related to recreation has been conducting involving virtual school students.

Recreation

Central to this study is the concept of recreation, which was defined as an activity in which people engage during their free time, which they enjoy, and is widely recognized, as having socially redeeming values (Hurd and Anderson, 2010). Recreation is very individualistic in nature with the types activities as wide ranging as the participants themselves. Some examples include sports, attending concerts or other events, playing board or card games, traveling, reading, writing, and any number of other pursuits. Regardless of the activity, participants often see them as important in the hope a balance to their lives in a non-work setting will be provided (Hurd & Anderson, 2010).

Recreation Participation in High School Students

Participation in recreational activities takes many forms with the type of activities being influenced by social, economic, environmental, and emotional factors in a person's life, however, some patterns did emerge (Council, 2012). Team sports are popular among teens, but did not match participation in individual sports. Interestingly, fitness participation boasted the most participants with winter, water, and racquet sports drawing the least amount of interest of active participants (Council, 2012). For those who rarely participate in recreational activities, interest in fitness based activities, swimming and outdoor sports were very high. High interest activities among teens include hiking, camping, shooting sports, fishing, and canoeing, however interest does not imply active participation as these trends only reflect intent to participate (Council, 2012). Among more sedentary recreational activities, 91% of children between the ages of 2 and 17 reported regularly playing computer based, web, portable, or console video games (NPD Group, 2011). Gaming systems, such as the PlayStation4, X-Box1, Nintendo 3DS, and WiiU were the most popular generating billions of dollars in console and game sales (Kain, 2014).

Out of school time. Typically American children spend their days in four areas of activity (Hofferth and Sandberg, 2001); school or day care, discretionary time in free play or organized activities, school learning activities, and family activities. While research discussing the link of recreation to education is wide ranging, covering topics such as adaptive recreation for people with disabilities, physical education, and sport, the majority (Dale, Corbin, & Dale, 2000; McKenzie, et al., 2000; Sallis et al., 1997) focus

on the activities which are thought to compensate for the extended periods of sedentary behavior during school hours, taking place after the school day is completed.

Appropriately referred to as “out-of-school time”, the concept specifically refers to the hours in which school-aged children are not in school (Wellesley, 2003). Out-of-School time is marked by a lack of specific structure, schedule, or duration in place for the activities in which students are participating. Traditionally, such activities are reserved for after school or during summer months, however, non-traditional students, such as those enrolled in virtual schools, are able to engage in out of school time activities during non-traditional times due to the flexibility of the virtual school setting.

Benefits Participation

The social psychological and physical benefits of being physically active and participating in recreational activities are evident throughout the lifespan and take various forms during each stage of development (Kleiber, Walker, & Mannell, 2011). As children, play serves a means to explore the environment, develop cognitive function, and aid in social interactions (Kleiber, Walker, & Mannell, 2011). In adolescence, recreation provides a means to established identity and a sense of freedom. For adults, recreation participation can fill the void of an unsatisfying work life, provide a social outlet, aid in stress management, and prevent the stagnation and isolation that can be associated with changing life roles (Kleiber, Walker, & Mannell, 2011). Physical activity has been strongly associated with better physical health helping to alleviate diabetes, obesity, hypertension, bone and joint disease, and physical manifestations of depression (Warburton, Nicol, & Bredin, 2006). Physically active children experience a small gain in

grade point average and positively influence concentration, memory, and behavior in the classroom (Trudeau & Shephard, 2008).

The recreational habits and choices of students in traditional education settings indicate there are ample opportunities for participation exploring interests, hobbies, and past experiences provided by the programming options provided through public recreation organizations, such as community recreation centers, for profit organizations, private organizations, and school sponsored activities. Public recreation entities are made available to all, and fees can be paid to access private entities, but for virtual school students, it is unknown whether they are accessing the same recreation and physical activities made available to students in traditional education settings, or not. Most virtual schools do not have school sanctioned extracurricular activities, and the laws put in place granting access to interscholastic activities have not returned data gauging the success of the measure.

Theoretical Framework

The theoretical foundation selected for a study provides the researcher a link to existing knowledge and previous studies, all while guiding hypotheses formation and the choice of research methods (University of Southern California, 2014). For this study, the Theory of Planned Behavior (TPB) was selected. The purpose of this section is to offer an explanation of the theory and provide examples of ways in which it has been used in recreation research.

Theory of Planned Behavior

TPB postulates that human action is guided by three types of considerations: beliefs about the consequences of a behavior (behavioral beliefs), beliefs about the

normative expectations of others (normative beliefs), and a belief that factors are present which may enable or hinder the performance of a behavior, (control beliefs) (Hrubes, Ajzen, & Daigle, 2001). The defining characteristic of the theory, however, is the perceived control of an individual over a behavior.

There are six constructs representing control, which will be discussed (Ajzen, 2006). First, attitudes are the degree to which a person has a favorable or unfavorable evaluation of a behavior. To make this evaluation requires consideration of the outcome of performing a behavior. In other words, what will happen if the individual engages in said activity? Second, behavioral intentions are the motivational factors that influence a behavior. The stronger the intention to perform a behavior, the more likely the behavior will be performed. Third, subjective norms are the beliefs of an individual about whether most people will approve or disapprove of a chosen behavior, particularly peers and important people in the lives of the individual. Fourth, social norms refer to the traditional code of conduct of a society. Fifth, the perceived power of an individual, which provides the perception of, factors which facilitate or impede performance of a behavior and the ability of an individual to control these factors. Finally, perceived behavioral control is the perceived ability of a person to perform a behavior.

Framing the Study

TPB will be used to aid in contextualizing the results of the analysis of variance (ANOVA) outlined in the methods section. Analyzing the results of the survey measuring recreation habits of high school students attending both virtual and brick and mortar schools, the lens of the theory will allow us to postulate how the actions of the students' are guided by the three considerations of TPB (Hrubes, Ajzen, & Daigle, 2001). As

research has indicated, these factors, along with behavioral control, have a strong association with intent to participate as well as actually doing so (Cunningham & Kwon, 2003; Hagger et al., 2002). When taking into account the independent variable of type of school attended by each student, it may shed light on how the type of school influences recreation habits.

Methods

The purpose of this study was to describe the relationship between the type of school attended and various aspects of recreational activity participation. To achieve this goal, a non-experimental comparative research design was used. The design allowed students to retrospectively examine their participation in recreational activities through the self-reported survey with the results analyzed to compare the responses.

Data Collection and Sample

In total, two virtual high schools in the East Central portion of the United States and one brick and mortar high school in the Midwestern portion of the United States allowed their students to participate in data collection. Surveys were distributed during the month of January, 2015 two weeks following a scheduled winter break.

In total, 115 high school aged students from the three schools answered questions pertaining to their regular weekly recreation habits. The brick and mortar school, a public high school located in the Midwestern portion of the United States, was comprised of four grade levels, freshmen through seniors with a total enrollment of 784 students at the time of data collection (U.S. News, 2014). Demographically, the school is 96% white with only 4% total minority enrollment (U.S. News, 2014). For this investigation, 73 students or 10 % of the total school population completed the survey.

The two participating virtual schools in this study are state sanctioned institutions located in the East Central portion of the United States. At the time of data collection, they had a combined enrollment of 110 students, 85 at the first institution and 25 at the second. However, these figures can change rapidly as some students use the virtual medium as a short term education alternative causing enrollment in virtual institutions to fluctuate more frequently than many brick and mortar schools. At the time of the study, 94% of students within the schools were white with 6% minority enrollment (Tennessee Department of Education, 2014).

Data collected occurred for both institutions during the month of January approximately one to two weeks following a scheduled winter break. Each participant completed a modified version of the Physical Activity Questionnaire (PAQ-C) containing variables related to recreation activities completed over the previous seven day period, as well as those related to school sponsored activities, even if they were not currently in season. Due to the unique nature of school construction, the delivery method for the survey differed based on the type of school students currently attended. For brick and mortar students, surveys were administered in person by the researcher. Participants were those students in attendance in both physical education and health courses. Students were allowed one hour to complete the survey, and permitted to ask clarifying questions regarding survey content.

Surveys for virtual students were distributed by school administrators via the internet, with students allowed immediate access. One the surveys were distributed students were given two weeks to complete the measure. There were no restrictions based on age, sex, race, or any other factors as all were encouraged to participate.

Instrumentation

The modified version of the Physical Activity Questionnaire for older children was used to collect data related to recreation participation. The self-administered questionnaire asks participants to recall moderate to vigorous physical activity over a seven-day period (Crocker et al., 1997). The scale itself is made up of two components. The first includes demographic information; race and gender, which was modified to include questions pertaining to education and virtual schools. These questions regard current academic standing (freshman through senior) and number of years attending their respective institutions. The second section measures physical activity, frequency of participation, and sedentary behavior for the previous seven days. Some questions in this section were also edited to include more current technological options, such as the inclusion of modern video gaming systems, computers, and entertainment platforms, such as internet based video streaming.

This scale is an appropriate measure of physical activity levels to be used by older children in a school setting (Janz, et al., 2008), however, the diversity of the responses allows for further examination of the differences in recreation participation between virtual school students and brick and mortar students. Based on the operational definition of recreation, the responses in the second section can be analyzed to evaluate the type of activities in which a student is engaging.

This version of the PAQ-C has been deemed suitable for high school aged students for administration during the school year (Janz, et al., 2008). Evidence was also collected in separate studies and reported by Crocker, et al. (1997) and Kowalski, Crocker, & Donen (2004), which supported the PAQ-C as a valid and reliable measure of

physical activity. The first study examined the item and scale properties by administering the questionnaire to 99 girls and 125 boys on the same day. Item scale correlations were all above .30 with the scale reliability for females ($\alpha = 0.83$) and males ($\alpha = 0.80$) being acceptably reliable (Crocker, et al., 1997). A second study was conducted to assess the test-retest reliability, internal consistency, and sensitivity to gender differences (Crocker et al., 1997). Administered to 43 boys and 41 girls twice in the same school day over the period of a week the PAQ-C was found to be relatively stable (males, $r = 0.75$ and females, $r = .82$). The internal consistency was found to be slightly different with first $\alpha = 0.79$ and the second $\alpha = 0.89$. Overall, the study provided support of the test-retest reliability and mirrored the results recognizing gender differences in physical activity levels (Crocker et al., 1997). Finally, the PAQ-C scores of 98 boys and 102 girls were analyzed to examine the reliability of the averages as a yearly activity score for participants (Crocker et al., 1997). The results of this third study suggested that the use of 3 and 2 PAQ-C scores as a yearly activity composite score were reliable for the participants ($G = 0.86$ and $G = 0.80$ respectively) and older participants ($G = 0.90$ and $G = 0.85$ respectively). Sex, $F(1,199) = 20.22$, $p < 0.01$, and time, $F(2,398) = 34.34$, $p < 0.01$, effects were found. The marginal mean male activity score (3.11) was higher than females' (2.71) (Crocker et al., 1997).

Variables

Dependent variable. There were three dependent variables in this study related to the research questions. For the first, recreation participation, respondents were able to choose from twenty options representing twenty separate recreational activities. Each was asked to choose the number of times he or she had engaged in the activity during the past

week, or if the activity was related to a school or club sponsored, but not currently in season. For the second, organized and unorganized recreation activities, students were asked to choose from the same list of activities, but select whether their chosen pursuits were organized by a school or organization, or independently by friends. Finally, the responses were categorized by team or individual activities for analysis.

Independent variable. The independent variable for all research questions was the type of school students' currently attended at the time of data collection. This item was able to be measured categorically based on two responses of "Brick and Mortar High School" and "Virtual (Online) High School" respectively.

Control variables. Sex and number of years attending their current school were selected as control variables. Both were established as categorical variables, with sex divided into two groups, male and female, and years attending their current school into four groups ranging from one year to four years, or more.

Results

The Statistical Package for the Social Sciences (SPSS) was used to analyze the data. First, the data collected via online and hard copy were entered in a data table for input. Each item was coded separately and given a numeric value corresponding to a text response option. The 20 response options for active recreational activities used primarily in this article were each regarded as separate items and labeled based on the activities they portray: "Baseball, Basketball, Football, Running, Bike, Dance, Golf, Gymnastics, Horse, Martial Arts, Roller, Soccer, Swim, Climb, Racquet, Volley, Walk, Weights, Wrestle, and Other." For these items, five options for frequency of participation in a given week were available ranging from zero to 7 or more days per week. Each student

was then asked to indicate whether the activity in which they engaged was organized, that is run or supervised by a professional agency or school, or unorganized. In total, three analyses of variances were conducted relating to the three research questions. The following section will provide the results of the analysis pertaining to each research question, and an explanation of how each was performed.

Descriptive Statistics

Descriptive statistics were used to define the demographic information of the study participants. The total response rate of the survey was 62.8%, 97.2% of brick and mortar students completed the in person survey compared to 38.1% of virtual students online. The results of the analysis showed a vast majority of the 115 participants (n=84.3%, n=97) were white. A slight majority were female, 53.9% (n=62) compared to 42.6% (n=49), who identified themselves as male. Four participants (3.5%), declined to answer this question. 73 students (63.5%) attend a brick and mortar high school while 36.5% (n=42) receive their education at a virtual school. Overall, the students had not attended their respective school for an extended period of time with only 5.2% (n=6) reporting that they were in their third year, and 5.2% (n=6) stating that they had attended their current location for four or more years. First year students dominated the survey (51.3%, n=59), with second year attendees following behind at 35.7% (n=41). However, these responses are not indicative of class standing, which, while still skewing towards underclassmen, 33% freshman (n=38), 36.5% sophomore (n=42) did include upper-class juniors and seniors, 13.9% (n=16) and 9.6% (n=11) as well. The full results of the analysis can be found in Table 1.

Table 1

Demographic Information of Participants (N=115)

Characteristic	<i>n</i>	%
Gender		
Male	49	42.6
Female	62	53.9
Prefer Not to Answer	4	3.5
Race		
White	97	84.3
Hispanic or Latino	10	8.7
Asian	6	5.2
American Indian or Alaska Native	2	1.7
School Type		
Brick and Mortar	73	63.5
Virtual	42	36.5
Number of Years Attending Current School		
1 year	59	51.3
2 years	41	35.7
3 years	6	5.2
4 or more years	6	5.2
Class Standing		
Freshman	38	33
Sophomore	42	36.5
Junior	16	13.9
Senior	11	9.6

Recreational Activities

Using the frequency count function, a percentage of activity participation for the combined population of virtual and brick and mortar students (n=115) was taken for each of the 20 recreational activity selections on the PAQ-C. This was done to achieve an accurate count of the overall participation for each activity to interpret which activities were the most popular, and which activities were the least popular.

Based on the analysis, 22.5% of students (n=26) reported running or jogging at least one day per week, making it the most popular among the population. This was followed closely by walking for exercise (20.9%, n=24). A drop off in percentage occurred to the next group which included; dance (16.6% n=19), the “Other” designation, which served as an indicator of those activities which were not included in the survey, (13.2%, n=15), and weight lifting (12.1%, n=14). The next group of the variables all received a response rate of less than 10%, but more than 5%. Riding a bicycle or scooter and playing soccer were each participated in by 8.7% of the students (n=10), followed by basketball (6.9%, n=8). Swimming and Gymnastics each had 6 participants, but were slightly different in overall percentage, 5.2% and 5.1% respectively, due to the distribution of the number of times per week each activity was engaged in by participants. The remaining activities all had less than a 5% participation rate. Racquet sports, such as tennis and racquetball, and wrestling each came in at 4.3% participation (n=5), while 3.5% (n=4) reported their participation in martial arts and skating sports, such as skateboarding or rollerblading, followed closely by baseball and softball at 3.4% (n=4). Horseback riding and volleyball (1.8% n=2), and golf and rock climbing (.9%,

n=1) were the least frequently participated in activities in the group. These results can be found in Table 2.

Table 2

Recreation Participation for All Students (N=115)

Characteristic	<i>n</i>	%
Recreation Activity		
Running or Jogging	26	22.5
Walking for Exercise	24	20.9
Dance	19	16.6
Other	15	13.2
Weight Lifting	14	12.1
Riding a Bicycle or Scooter	10	8.7
Soccer	10	8.7
Basketball	8	6.9
Swimming	6	5.2
Gymnastics	6	5.1
Racquet Sports	5	4.3
Wrestling	5	4.3
Martial Arts	4	3.5
Skating Sports	4	3.5
Baseball/Softball	4	3.4
Horseback Riding	2	1.8
Volleyball	2	1.8
Golf	1	.9
Rock Climbing	1	.9

The population was then divided by school type, and the same frequency count function used to determine the percentage of activity participation for virtual and brick and mortar students. This was done to achieve an accurate count of the most and least popular recreational activities in the comparison groups.

Based on this analysis, 40.5% (n=17) of virtual school students reported walking for exercise at least once per week making it the most popular among the sample. This was followed closely by dance (38.1%, n=16). A slight drop off occurred to the next group which included running or jogging for exercise (26.2%, n=11) and the “Other” designation (21.4%, n=9). Riding a bike or scooter (14.3%, n=6) was the only activity which garnered a double digit participation percentage. The remaining variables, gymnastics (9.7%, n=5), skating sports, swimming, soccer, and weight lifting, all represented a 7.2% participation rate (n=3). Basketball, football, martial arts, racquet sports, and wrestling were just below a 5% participation rate, 4.8% for all activities (n=2). Golf, horseback riding, rock climbing, and volleyball, each had only 1 participant (2.4%), while baseball and softball were the least popular options with no participants in the sample. The complete results can be found in Table 3.

Table 3

Recreation Participation for Virtual Students (N=42)

Characteristic	<i>n</i>	%
Recreation Activity		
Walking for Exercise	17	40.5
Dance	16	38.1
Running or Jogging	11	26.2
Other	9	21.4
Riding a Bike or Scooter	6	14.3
Gymnastics	5	9.7
Skating Sports	3	7.2
Swimming	3	7.2
Weight Lifting	3	7.2
Soccer	3	7.2
Basketball	2	4.8
Football	2	4.8
Martial Arts	2	4.8
Racquet Sports	2	4.8
Wrestling	2	4.8
Golf	1	4.2
Horseback Riding	1	2.4
Rock Climbing	1	2.4
Volleyball	1	2.4
Baseball/Softball	0	0

Brick and mortar students had different results, with 20.6% (n=15) running or jogging for exercise during the previous week. This percentage dropped to 15.1% (n=11) for weight lifting with the remaining options all commanding less than a 10% participation rate in the sample. Soccer and walking for exercise each had 7 participants (9.6%), followed closely by basketball and the “other” designation with 6 participants (8.2%). Football (6.8%, n=5) was next, with riding a bike or scooter (5.5%, n=4) and baseball or softball (5.4%, n=4) only separated by a slight increase in frequency of

participation. The same was true for racquet sports (4.2%, n=3), dance, swimming, and wrestling, which all boasted 3 participants and a participation percentage of 4.1%. Gymnastics and martial arts, 2.8% (n=2) and 2.7% (n=2) respectively, leading the group with an under 3% participation rate. Horseback riding, skating sports, and volleyball were the last activities with at least 1 response (1.4%). Rock climbing and golf had the distinction of having no participants among brick and mortar students, making them the least popular option. Complete results of this count can be found in Table 4.

Table 4

Recreation Participation for Brick and Mortar Students (N=73)

Characteristic	<i>n</i>	%
Recreation Activity		
Running or Jogging	15	20.6
Weight Lifting	11	15.1
Soccer	7	9.6
Walking for Exercise	7	9.6
Basketball	6	8.2
Other	6	8.2
Football	5	6.8
Riding a Bike or Scooter	4	5.5
Baseball/Softball	4	5.4
Racquet Sports	3	4.2
Dance	3	4.1
Swimming	3	4.1
Wrestling	3	4.1
Gymnastics	2	2.8
Martial Arts	2	2.7
Horseback Riding	1	1.4
Skating Sports	1	1.4
Volleyball	1	1.4
Rock Climbing	0	0
Golf	0	0

Recreation Participation

An Analysis of Variance (ANOVA) was conducted to measure the impact of type of school attended on recreation participation. To measure recreation participation, an index, or scale, was created using the twenty recreational activity items found in the modified PAQ-C. To ensure the scale items did have the same factors in common a factor analysis was performed. This was followed by a reliability analysis to determine how the items “hung together (Towson, 2014).” Cronbach’s Alpha in the “reliability statistics” table was .7, indicating that the included scale variables were acceptable. Once this was completed, the “Rec Scale,” as it was labeled, was used as the dependent variable while school type and the control variables of sex and number of years attending their current school served as independent variables. A p-value of .05 was incorporated to determine significance.

A full interaction model was run, revealing no significant interactions between variables, thus eliminating them from the analysis. A main effects model was then used exclusively, with each main insignificant main effect sequentially eliminated. This resulted in school type ($F=7.85, 1df$) as the only remaining significant variable, although the model was not of good fit ($R\text{-Squared}=.065$). These results indicate that the effect of school attendance on recreation participation is different for virtual school students and brick and mortar students when controlling for the number of years attending their school and sex. Virtual school students ($B=.089, p=.006$) were found to be more likely to participate in recreation activities than their brick and mortar counterparts. The full results can be viewed in Table 5.

Table 5

Analysis of Variance of Recreation Participation

Characteristic	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>
				1	26.80	<.001
Main Effect (School Type)				1	7.85	0.01
Brick and Mortar	1.10	0.22	73			
Virtual	1.19	0.12	42			

$\eta^2 = .065$ for Main Effects ($p = .006$)

Organized Participation

A similar template was followed to determine the effect of school type on participation in organized or unorganized activities. First, an organizational activity scale was created using the question bank in which students were asked to indicate whether the activities in which they participated were organized or unorganized. Once this was completed, an ANOVA was run with the “Org Scale” serving as the dependent variable and school type, sex, and number of years attending their current school as the independent variables. The results indicated that no main effects or interactions were significant ($r\text{-square} = .042$), meaning that the type of school attended by students does

not affect the likelihood of participating in organized or unorganized activities, when controlling for sex and the number of years attending a school.

Team vs. Individual Activities

Finally, an ANOVA was run to determine how attending a virtual or brick and mortar school might affect participation in team or individual recreational activities. As was done in previous sections, an index of individual and team sports, named “Team Scale” and “Individual Scale” respectively, was created to be used as dependent variables. Included in the team scale were the variables: “Baseball, Basketball, Football, Soccer, Volleyball, and Other.” The individual scale included the remaining items of: “Running, Biking or riding a scooter, Dance, Golf, Gymnastics, Horseback riding, Martial Arts, Roller sports, Swimming, Climbing, Racquet sports, walking for exercise, lifting weights, wrestling, and other.” Interestingly, there was no significant effect on participation in team activities. However, the analysis revealed that when controlling for sex and the number of years attending their current school, that there was a significant difference between virtual school and brick and mortar school students in participation in individual activities ($F=14.80, 1df$). The results showed that virtual school students were more likely to participate in individual activities ($B=.138, p<.001$) than were brick and mortar students.

Table 6

Analysis of Variance of Individual Recreation Participation

Characteristic	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>
					Between subjects	
Source: Main Effects Model				1	47.68	<.001
Main Effect (School Type)				1	14.80	<.001
Brick and Mortar	1.09	1.09	73			
Virtual	1.23	0.26	42			
Within-group error				113		
$\eta^2 = .116$ for Main Effects ($p < .001$)						

Discussion

Analysis of the data yielded several interesting results. First, virtual school students were found more likely to participate in recreational activities than were brick and mortar students ($F=7.85, 1df$). Second, the type of school that a student attends, their sex, or the length of time a student had attended their current institution did not affect their participation in organized or unorganized activities. The same was true with team-based activities; however, virtual school students were found to be more likely to participate in individual activities than their brick and mortar counterparts.

At the onset of this study, it was hypothesized that virtual school students would be more likely to pursue recreation activities. The hypothesis was supported by the results of the ANOVA. Looking through the lens provided by the Theory of Planned behavior, the results could be based on the principles of the theory designed to explain behavioral intent. TPB postulates that human action is guided by three types of considerations, normative beliefs, behavioral beliefs, and control beliefs. These beliefs allow a person to take into account the expectations of others, the consequences of a behavior, and a belief that there are factors, which will hinder the performance of a behavior when making the decision to act. In turn, the beliefs then influence a person's attitude toward a behavior, subjective norms, and perceived behavioral control, which influence the intentions of the individual, in this case, intention to participate in recreational activities, and ultimately the behavior itself. Future, research should seek to build upon the findings of this study and apply data directly into the TPB model.

The unique nature of the virtual school, and the flexibility it provides, makes it possible that the students are more likely to engage in recreational pursuits. Unlike brick and mortar students, there are fewer restrictions on when school work is completed, as long as it is completed in a timely manner, as such, the actual control a students had over the activities in which they engage, and when they engage, is greater than other students. While their brick and mortar counterparts are contained in their respective high schools, these students are able to spend sections of that time engaging in recreational activities. While this does buck social norms in American society which still maintains a Puritan view of recreation, the social norms of the virtual community may conflict with this ideology. While others view their behavior as unorthodox, the flexibility of the school

makes it acceptable, although one could assume gaining a favorable attitude toward these social norms may take time when coming from the brick and mortar environment.

Finally, attitudes toward recreational activities are favorable, given the results. When speaking to administrators of virtual schools, it became apparent the value they place in out of school time activities for their students. Many recognize the potential isolation of working from home, and encourage their students to interact with their classmates, and others, when possible. This type of encouragement, coming from a person in position of authority, could influence the results.

The lack of influence the variables had on organized, unorganized and team based activities are of note, although they do confirm the findings of current recreation research which showed that teens are less inclined, as a population, to participate in team activities, while individual activity participation is on the rise (Council, 2012). Further, these results do not mean to suggest that there is a decrease in organized or unorganized activities. Rather, there are other variables not included in the scope of this study which are influencing this behavior. Subjectively, these results demonstrate how truly alike the students are, although they attend different schools, are of different socioeconomic status, and live in different geographic regions. All of these teens are exposed to the same cultural trends through the media, social media, and entertainment. Thus, results indicating that they are just as likely to participate or not participate in these types of activities should not be surprising.

Finally, finding that virtual school students are more likely to participate in individual activities than are brick and mortar school students may reflect the individualistic nature of an online education. As virtual students are widely outside the

social norms of brick and mortar schools the team and school sponsored activities associated with that environment are largely unavailable. Thus, the individual nature of their education could be spilling over into their recreation leading to a more favorable association of individual activities than team activities. Further, an increased amount of behavioral control allows a person to want to dictate their participation, which is something individual activities provide.

Conclusion

In conclusion, the results of this study reveal virtual school students are more likely to participate in recreational activities than are brick and mortar students. For virtual schools this is an important finding as it shirks preconceived notions of the virtual environment and demonstrates a clear interest in recreation activities, including traditionally sponsored school activities. This could a shift in policy and justify the expansion of school sponsored, out-of-school time, extracurricular activities. While there has been hesitation in the past, these results confirm the possibility should be explored.

For brick and mortar schools, these results do not imply that their students are not participating, however, making activities sponsored by the school more accessible to students in both brick and mortar and virtual schools could be beneficial in bridging any gaps between institutions, and combat an ever shrinking emphasis on physical education. Clearly, the interest is there from students, and for the schools, especially those situated in a single county where distance is less of a barrier to participation, there is an opportunity to influence the health and development of their students in a positive way.

Technological advancement has altered the way in which educational content is delivered, as students who once only had brick and mortar schools as attendance options

continue to find non-traditional means of obtaining their education. A key catalyst for student development are the opportunities provided by out-of-school time recreational activities including school sanctioned sports teams, band, and clubs as well as non-sanctioned unstructured activities between classmates (Klieber, Walker, & Mannell, 2007). This research sought to explain how attending a brick and mortar school compared to a virtual one impacts a student's recreational habits. The results found that school type does influence the likelihood of recreation participation and the type of activities in which as student engages. These results could be beneficial to students and schools alike and help to influence out-of-school time pursuits.

Limitations

There were some limitations to the conclusions drawn from this study. First, the small sample size, and singular application of the survey, may affect the validity of the instrument, leading to bias, and negatively affect the ability of the results to be generalized. Generalizability, however, may also be affected by the newness of virtual school students to a line of inquiry with a recreation concentration. Until additional research is conducted, we are unable to be sure if the results are representative of the sample. There were also limitations linked to the response options of the survey itself. Namely, the data relating to recreation participation was only collected based on a seven day participant recall. Thus, results only reflect the seven days prior to data collection and may change if readministered. Further, the schools for this study are located in different geographic regions in the United States, the Midwest and East Central portion, specifically. Further, the schools for this study were located in different geographic regions in the United States, the Midwest and East Central portion, specifically. Data

collected occurred for both institutions during the month of January when temperatures in the East Central U.S. ranged from the low and mid-30s to the 60s Fahrenheit during the day. At that time, however, the Midwest was being subjected to bitterly cold temperatures well below freezing, 32 degrees Fahrenheit, and routinely dipping into the single digits. Therefore, the weather could have affected the ability of the brick and mortar students to engage in recreation activities during the seven days prior to data collection. Although it may be assumed that the same activities will be available in each region, the weather could have an impact on recreation opportunities being offered by schools, local recreation agencies, and unstructured settings.

Finally, it must be assumed that all subjects participating in this study will be truthful and attempt to provide an accurate reflection of their lives. To achieve this, we must also assume that each question is being read and accurately responded to, in kind. While this can never be entirely ensured, it must be considered a limitation.

Future Research

The immediate future of this line of inquiry must be the replication of this study with a greater number of participants. Doing so will confirm the validity of the findings and give a more accurate representation of the phenomena. An exploration of virtual school student's affiliation with structured social groups and the impact of these groups on recreational activity could help to provide insight and depth.

A similar study could also be done to include varying age groups, including online college students and how attending a college or university virtually impacts recreational behavior when compared to a traditional college student. In addition, a qualitative study delving deeper into the statistical findings of this article could provide

context to the survey responses. Finally, expanding beyond the scope of recreation based research; the development of a scale specifically related to the Theory of Planned behavior could be an undertaking of great value to multiple fields. Developing such an instrument could allow social scientists to better understand the decision making process of the individual.

REFERENCES

- Allison, K. R., Dwyer, J. J., & Makin, S. (1999). Perceived barriers to physical activity among high school students. *Preventive Medicine, 28*(6), 608-615.
- Barbour, M. K., & Reeves, T. C. (2009). The reality of virtual schools: A review of the literature. *Computers & Education, 52*(2), 402-416.
- Cavanaugh, C. (2004). *Development and management of virtual schools: Issues and trends*. Hershey, PA: IGI Global.
- Center for Disease Control. (2014). Childhood obesity facts. Retrieved in August 2014 from <http://www.cdc.gov/obesity/data/childhood.html>.
- Centers for Disease Control. (2013). Make a difference at your school. *Chronic Disease Paper 31*. Retrieved from <http://digitalcommons.hsc.unt.edu/disease/31>.
- Centers for Disease Control and Prevention (CDC). (2011). Physical activity levels of high school students --- United States, 2010. *MMWR: Morbidity and Mortality Weekly Report, 60*(23), 773-777.
- Clark, T. (2001). Virtual schools: Trends and issues. A report for Distance Learning Resource Network at WestEd. San Francisco, CA. Retrieved from <http://www.wested.org/cs/we/view/rs/610>.
- Coulson, A. J. (1999). *Market education: The unknown history* (Vol. 21) New Brunswick, NJ: Transaction Publishers.

- Council, P. A. (2012). *Participation report: The Physical Activity Council's annual study tracking sports, fitness and recreation participation in the USA*. Retrieved December, 2014 from <http://www.physicalactivitycouncil.com/PDFs/2012PACReport.pdf>.
- Crocker, P. R., Bailey, D. A., Faulkner, R. A., Kowalski, K. C., & McGrath, R. (1997). Measuring general levels of physical activity: Preliminary evidence for the Physical Activity Questionnaire for Older Children. *Medicine and Science in Sports and Exercise*, 29(10), 1344-1349.
- Cunningham, G. B., & Kwon, H. (2003). The Theory of Planned Behavior and intentions to attend a sport event. *Sport Management Review*, 6(2), 127-145.
- Dale, D., Corbin, C. B., & Dale, K. S. (2000). Restricting opportunities to be active during school time: Do children compensate by increasing physical activity levels after school? *Research Quarterly for Exercise and Sport*, 71(3), 240-248.
- Davis, L. E., Ajzen, I., Saunders, J., & Williams, T. (2002). The decision of African American students to complete high school: An application of the Theory of Planned Behavior. *Journal of Educational Psychology*, 94(4), 810.
- Hagger, M. S., Chatzisarantis, N. L., & Biddle, S. J. (2002). A meta-analytic review of the Theories of Reasoned Action and Planned Behavior in physical activity: Predictive validity and the contribution of additional variables. *Journal of Sport & Exercise Psychology*, 24 (1), 3-32.

- Hartmann, D., & Massoglia, M. (2007). Reassessing the relationship between high school sports participation and deviance: Evidence of enduring, bifurcated effects. *The Sociological Quarterly, 48*(3), 485-505.
- Heath, G. W., Pratt, M., Warren, C. W., & Kann, L. (1994). Physical activity patterns in American high school students: Results from the 1990 Youth Risk Behavior survey. *Archives of Pediatrics & Adolescent Medicine, 148*(11), 1131-1136.
- Hofferth, S. L., & Sandberg, J. F. (2001). How American children spend their time. *Journal of Marriage and Family, 63*(2), 295-308.
- Hohepa, M., Schofield, G., & Kolt, G. S. (2006). Physical activity: What do high school students think? *Journal of Adolescent Health, 39*(3), 328-336.
- Hrubes, D., Ajzen, I., & Daigle, J. (2001). Predicting hunting intentions and behavior: An application of the Theory of Planned Behavior. *Leisure Sciences, 23*(3), 165-178.
- Hurd, A. R., & Anderson, D. M. (2010). *The park and recreation professional's handbook*. Champaign, IL: Human Kinetics.
- Jackson, E. L., & Rucks, V. C. (1995). Negotiation of leisure constraints by junior-high and high-school students: An exploratory study. *Journal of Leisure Research, 27* (1), 85-105.

Janz, K. F., Lutuchy, E. M., Wenthe, P., & Levy, S. M. (2008). Measuring activity in children and adolescents using self-report: PAQ-C and PAQ-A. *Medicine and Science in Sports and Exercise*, 40(4), 767-772.

Kain, E. (2014). NPD hardware sales numbers leak for June 2014. Retrieved from <http://www.forbes.com/sites/erikkain/2014/07/18/npd-hardware-sales-numbers-leak-for-june-2014/>.

Klieber, D. A., Walker, G. J., & Mannell, R. C. (2011). *A social psychology of leisure* (2nd ed.). State College, PA: Venture Publishing Inc.

Kowalski, K. C., Crocker, P. R., & Donen, R. M. (2004). The Physical Activity Questionnaire for Older Children (PAQ-C) and adolescents (PAQ-A) manual. *College of Kinesiology, University of Saskatchewan*, 82, 2-37.

McKenzie, T. L., Marshall, S. J., Sallis, J. F., & Conway, T. L. (2000). Leisure-time physical activity in school environments: An observational study using SOPLAY. *Preventive Medicine*, 30(1), 70-77.

Molnar, A., Huerta, L., Rice, J. K., Shafer, S. R., Barbour, M. K., Miron, G., Horvitz, B. (2014). Virtual schools in the US 2014: Politics, performance, policy, and research evidence. Boulder, CO: National Education Policy Center. Retrieved August, 2014 from <http://nepc.colorado.edu/publication/virtual-schools-annual-2014>.

NPD Group. (2011). The video game industry is adding 2–17-Year-Old gamers at a rate higher than that age group’s population growth [press release]

<https://www.npd.com/wps/portal/npd/us/news/press-releases/>.

Ornstein, A. C., & Levine, D. U. (1984). *An introduction to the foundations of education* (3rd ed.). Boston: Houghton Mifflin.

Repetto, J., Cavanaugh, C., Wayer, N., & Liu, F. (2010). Virtual schools: Improving outcomes for students with disabilities. *Quarterly Review of Distance Education*, *11*(2), 91-104.

Revenaugh, M. (2005). K-8 Virtual Schools: A glimpse into the future. *Educational Leadership*, *63*(4), 60.

Sallis, J. F., Johnson, M. F., Calfas, K. J., Caparosa, S., & Nichols, J. F. (1997). Assessing perceived physical environmental variables that may influence physical activity. *Research Quarterly for Exercise and Sport*, *68*(4), 345-351.

Equal access to interscholastic activities act, A203, R212, S149, May 31, 2012 Cong. (2012).

Tennessee Department of Education. (2014). Virtual education report: July 2014.

Retrieved in April 2015 from

https://www.tn.gov/education/data/doc/virtual_education_report_2014.pdf.

- The University of Southern California Libraries. (July 28, 2014). Organizing your social sciences research paper: Theoretical framework. Retrieved from <http://libguides.usc.edu/content.php?pid=83009&sid=618409>.
- Townson University. (2014). Creating scales in SPSS (PASW). Retrieved from <http://pages.towson.edu/jgarczyn/scalesspss.pdf>.
- Trudeau, F., & Shephard, R. J. (2008). Physical education, school physical activity, school sports and academic performance. *The International Journal of Behavioral Nutrition and Physical Activity*, 5, 5doi:10.1186/1479-5868-5-10.
- U.S News & World Report. (2014). Poland Seminary High School overview. Retrieved in April 2015 from <http://www.usnews.com/education/best-high-schools/ohio/districts/poland-local/poland-seminary-high-school-15613>.
- Warburton, D. E., Nicol, C. W., & Bredin, S. S. (2006). Health benefits of physical activity: The evidence. *CMAJ : Canadian Medical Association Journal = Journal De l'Association Medicale Canadienne*, 174(6), 801-809.
- Watson, J. (2005). Keeping pace with K-12 online learning: A review of state-level policy and practice. *Learning Point Associates / North Central Regional Educational Laboratory (NCREL)*.
- Wegner, L., Flisher, A. J., Muller, M., & Lombard, C. (2006). Leisure boredom and substance use among high school students in South Africa. *Journal of Leisure Research*, 38(2), 249-266.

Wellesley Coll., M. T. (2003). Making the case: A fact sheet on children and youth in out-of-school time. Retrieved from www.niost.org/Factsheet_2003.PDF.

CHAPTER III

BRICK AND MORTAR VS. VIRTUAL SCHOOLS: EXAMINING THE IMPACT OF SCHOOL TYPE ON PHYSICAL ACTIVITY PARTICIPATION IN HIGH SCHOOL STUDENTS

To live in the United States in the year 2015 is to live a life of privilege. A Starbucks sits on every corner, the internet, social media, and global news networks connect the world like never before. Yet, despite readiness of information, knowledge, and government funded initiatives, a significant percentage of the people living in this country live an unhealthy lifestyle (CDC, 2014). More than one-third of adults, 78.6 million people, are considered obese (CDC, 2014). In children the news is equally discouraging, as 12.7 million kids between the ages of 2 and 19 are obese, while type 2 Diabetes, once thought only to affect adults, is diagnosed with disturbing regularity (CDC, 2014).

For high school students, these statistics are largely explained by a lack of physical activity across the spectrum. The U.S. Department of Health and Human Services recommends at least 60 minutes of physical activity per day for students between the ages of 6 and 17 (U.S. Department of Health and Human Services, 2008). However, only 27.1% of the high school students studied achieve the recommended sixty minutes of physical activity per day (CDC, 2013), a number which research has shown, declines with age (Troiano et al., 2008). The factors, which influence a lack of physical activity participation, are many including: access to activities (Samdahl & Jekubovich, 1997), social or psychological barriers (Hinch, et al., 2005), and environment (Tucker et al., 2009).

For children, home and school are two of the most common environments to which they are exposed. But, advancements in education technology have provided students with additional opportunities outside of the traditional brick and mortar environment. One of the most prevalent are virtual that is to say, online, schools, which allow students to complete their schoolwork from home in a web base institution.

However, in an already digital world, there has yet to be research, which examines how the change from a brick and mortar to virtual environment impacts the physical activity levels of the students. Thus, the purpose of this study was to discover if the type of school a student attends influences physical activity and sedentary behavior in teens.

The Evolution of the American Education System

In an effort to provide context to this study, and explain the differences in school types, it is important to give a brief description of how the American education system arrived at its current construction. The education system began in Colonial America to teach upper class students reading, writing, math, poems, and religious content (Chesapeake, 2014). However, this began to change as the New England Colonies established school districts in an effort to reach more students of varying social class, with a focus on basic reading, writing, and arithmetic to all children of schooling age. In the early 1800s saw the federal government begin to encourage the establishment of school districts, and for the first time, public funds taken from taxes to support them (Ornstein & Levine, 1984). By the mid-1850s the governmental suggestion became a requirement, and tax funded school districts with an established curriculum were put into place (Coulson, 1999). This was the case until 1925, when the Supreme Court limited

governmental authority in the landmark decision of *Pierce v. Society of Sisters* injecting addition parental authority into the education system.

Beginning in 1982 homeschooling became a permissible option for education, eventually expanding to all 50 states (Coulson, 1999). Changes continued well into the 1990s with the establishment of charter schools, vouchers, and scholarships increasing school options for students and paving the way for virtual education.

Virtual schools in the United States began in 1997 thanks to a \$7.4 million federal grant allowing the Virtual High School (VHS) and Florida Virtual School (FLVS) to be established (Barbour & Reeves, 2009). Since that time, the implementation of schools with an online based curriculum can be found in all 50 states through multiple education providers, including: state sanctioned schools, college or university based programs, multi-state regionally based courses, local public schools, virtual charter schools, private virtual schools, and for-profit education companies.

Research in the Schools

In physical activity research, brick and mortar students have served as the primary participants in scholarly work. While the thousands of studies cannot all be cited, such works such as the physical activity patterns of students (Heath, Pratt, & Warren, 1994), and studies supplementary to the increased health crisis related to obesity and inactivity (CDC, 2011; CDC, 2013; Hohepa, Schofield, & Kolt, 2006) provide a glimpse into the ways into the activities in which high school students engage. Noticeably absent from these works are those students achieving their education in non-traditional formats, such as virtual schools.

The infancy of virtual schools bred explanatory studies designed to introduce the distance-learning format. Scholars provided insight into what virtual schools are, the best practices to govern the curriculum and students, the potential of the new medium served as a more appropriate alternative to reach students on their level, and offering them up as a glimpse to the future evolution of education (Cavanaugh, 2004; Clark, 2001; Revenaugh, 2005). As the novelty began to fade, research began to evolve to better ascertain the benefits and potential pitfalls of attending school online (Barbour & Reeves, 2008; Repetto et al., 2010; Russell, 2004). Now, as the 20-year anniversary of their inception approaches, researchers are beginning to look to the future in an effort to expand educational choice and improve the quality and efficiency of public education in the United States (Molnar, et al., 2014).

Physical Activity

The clinical definition of physical activity is any movement of the body occurring as a result of the contraction of muscles, which increases energy expenditure above a base level (Physical Activities Guideline Committee, 2008). In more simple terms, physical activity is simply getting up from a sedentary position and moving. For this study, physical activity was defined in this way.

Sedentary Behavior

The antithesis of physical activity is sedentary behavior. Sedentary behavior refers to activities which do not require increased expenditure of energy when compared to resting activities such as sleeping, sitting, or lying down (Pate, O'Neill, & Lobelo, 2008). In the United States, participation in these types of activities is exploding in

popularity among high school aged students. Television has always been popular, of course, but 91% of children between the ages of 2 and 17 reported regularly playing computer based, web, portable, or console video games (NPD Group, 2011). Gaming systems, such as the PlayStation4, X-Box1, Nintendo 3DS, and WiiU were the most popular generating billions of dollars in console and game sales (Kain, 2014).

Theory of Planned Behavior

The Theory of Planned Behavior (TPB) was initially known as the Theory of Reasoned Action (TRA) and applied to predict the behavior intentions of an individual to engage in a behavior (Ajzen, 2006). The theory was expanded in an effort to explain personal behavior through self-control and the influence of an expected outcome of a behavior, and its consequences (Ajzen, 2006). Based on this notion, TPB postulates that three types of considerations guide human action: behavioral beliefs, normative beliefs, and control beliefs. Behavioral beliefs refer to the beliefs of an individual regarding the consequences of a behavior. Normative beliefs are those beliefs about the expectations of others, while control beliefs are the factors, which may enable or hinder the performance of a behavior (Hrubes, Ajzen, & Daigle, 2001).

The defining characteristic of TPB, however, is the perceived control of an individual over a behavior. Six constructs represent this control (Ajzen, 2006). First, attitudes are the degree to which a person has a favorable or unfavorable evaluation of a behavior. This requires consideration of the outcome of performing a behavior. Second, behavioral intentions are the motivational factors that influence a behavior. The stronger the intention to perform a behavior, the more likely the behavior will be performed. Third, subjective norms are the beliefs of an individual about whether most people will

approve or disapprove of a chosen behavior, particularly peers and important people in the lives of the individual. Fourth, social norms refer to the traditional code of conduct of a society. Fifth, the perceived power of an individual, which provides the perception of, factors which facilitate or impede performance of a behavior and the ability of an individual to control these factors. Finally, perceived behavioral control is the perceived ability of a person to perform a behavior.

Application of TPB. From its inception, the TPB has been used to investigate a variety of phenomena in recreation research; from predicting leisure participation (Ajzen & Driver, 1991) to patrons being willing to pay for a service (Hrubes et al., 2001). Leisure researchers have sought to predict an individual's intention to engage in a behavior and what influences them to do so. In the realm of education TPB has been used to predict intent of minority students to complete high school (Davis et al., 2002) as well determine the willingness of teachers to utilize technology in their classrooms (Lee, Cerreto, & Lee, 2010). In this study, TPB was used to interpret the results of the statistical analysis to better explain differences physical activity participation between brick and mortar and virtual school students.

Methods

The modified version of the Physical Activity Questionnaire for older children (PAQ-C) is a self-administered questionnaire which asks participants to recall moderate to vigorous physical activity in older children over a seven day period, and was used to collect data related to physical activity (Crocker et al., 1997). Based on the works of Sallis (1993) the original scale was developed by Kowalski (2004) and colleagues and

utilized in a number of studies pertaining to health and leisure. The scale itself is made up of two components. The first includes demographic information; race and gender, which was modified to include questions pertaining to education and virtual schools. These questions regard current academic standing (freshman through senior) and number of years attending their respective institutions. The second section measures physical activity, frequency of participation, and sedentary behavior for the previous seven days. Options in question fifteen pertaining to sedentary activities were also modified to remove dated technological references and replace them with more current offerings, such as modern video gaming systems, computers, and entertainment platforms, such as internet based video streaming.

This scale was selected, as it is an appropriate measure of physical activity levels to be used by older children in a school setting (Janz, et al., 2008). Based on the operational definition of physical activity, the responses in the second section, measuring physical activity participation and sedentary behavior, can be analyzed concurrently to measure the overall physical activity levels in participants for the previous week.

Participant Settings

The brick and mortar school in this study was a public high school located in the Midwestern portion of the United States. There were four grade levels, freshmen through seniors with a total enrollment of 784 students at the time of data collection (U.S. News, 2014). Demographically, the school is 96% white with only 4% total minority enrollment (U.S. News, 2014). For this investigation, 73 students or 10 % of the total school population completed the survey.

At present, there are seven types of virtual schools in the United States (Clark, 2001). Some, such as college and university based programs, offer continuing education opportunities for students with previous online schooling experience. While others, such as consortium and regionally based schools, provide national, multi-state, and regional courses for students in Kindergarten through the Twelfth grade. At the state and local level, education-agency based schools serve as a supplement to brick and mortar education and as a bridge between a local school district and home schooled students, and state backed virtual charter schools are often included in local school districts, or as nonprofit or for profit organizations. Private virtual schools serve as an online supplement to in classroom learning for private institutions. Finally, state sanctioned schools, are authorized by the state government for use as an extension of the public school system. Providing tools and content for some of the schools discussed above are large, for profit, education providers specializing in expanded delivery of a virtual curriculum.

The two participating virtual schools in this study are state sanctioned institutions located in the East Central portion of the United States. At the time of data collection, they had a combined enrollment of 110 students, 85 at the first institution and 25 at the second. However, these figures can change rapidly as some students use the virtual medium as a short term education alternative causing enrollment in virtual institutions to fluctuate more frequently than many brick and mortar schools. Although the demographic information may change as shifts in enrollment occur, at the time of the study, 94% of students within the schools were white with 6% minority enrollment (Tennessee Department of Education, 2014).

Data collected occurred for both institutions during the month of January approximately one to two weeks following a scheduled winter break. Surveys for virtual students were distributed by school administrators via the internet, with students allowed immediate access. Once the surveys were distributed students were given two weeks to complete the measure.

For brick and mortar students, surveys were administered in person by the researcher. Participants were those students in attendance in both physical education and health courses. Students were allowed one hour to complete the survey, and permitted to ask clarifying questions regarding survey content.

Results

The Statistical Package for the Social Sciences (SPSS) was used to analyze the data. First, the data collected via online and hard copy were entered in a data table for input. Each item was coded separately and given a numeric value corresponding to a text response option. Indexes were then created to measure physical activity and sedentary behavior in the participants.

Descriptive Statistics

Descriptive statistics were used to define the demographic information of the study participants. The total response rate of the survey was 62.8%. Of the 115 participants, 84.3% (n=97) self-identified as white. A slight majority was female, 53.9% (n=62) compared to 42.6% (n=49), who identified themselves as male, four participants (3.5%), declined to respond. Seventy-three students (63.5%) attended a brick and mortar high school while 42 (n=36.5%) received their education at a virtual school, at the time of the survey. First year students dominated the survey (51.3%, n=59), with second year

attendees following behind at 35.7% (n=41) and only 5.2% (n=6) and 5.2% (n=6) stating that they had attended their current location for three or four years respectively. Class standing, did skew towards underclassmen, 33% freshman (n=38), 36.5% sophomore (n=42), but did include upper-class juniors and seniors, 13.9% (n=16) and 9.6% (n=11). The full results of the analysis can be found in Table 1.

Table 1

Demographic Information of Participants (N=115)

Characteristic	<i>n</i>	%
Gender		
Male	49	42.6
Female	62	53.9
Prefer Not to Answer	4	3.5
Race		
White	97	84.3
Hispanic or Latino	10	8.7
Asian	6	5.2
American Indian or Alaska Native	2	1.7
School Type		
Brick and Mortar	73	63.5
Virtual	42	36.5
Number of Years Attending Current School		
1 year	59	51.3
2 years	41	35.7
3 years	6	5.2
4 or more years	6	5.2
Class Standing		
Freshman	38	33
Sophomore	42	36.5
Junior	16	13.9
Senior	11	9.6

Physical Activity

An Analysis of Variance (ANOVA) was conducted to measure the impact of type of school attended on physical activity participation. An index, or scale, was created using the twenty physical activity items found in the modified PAQ-C where the

responses of each individual were condensed to form an overall average participation score for each participant. To ensure the scale items did have the same factors in common a factor analysis was performed, followed by a reliability analysis to determine that the items were properly related. Cronbach's Alpha in the "reliability statistics" table for the scale was .7, indicating that the included scale variables were acceptable. Once this was completed, the scale was used as the dependent variable while school type and the control variables of sex and number of years attending their current school served as independent variables. A p -value of .05 was incorporated to determine significance.

Physical Activity Main Effects Model

A full interaction model was run, revealing no significant interactions thus eliminating the interactions from the analysis. A model only including variables with no interactions, or main effects model, was then used exclusively (R -Squared=.065). The variables of sex ($F=.244$, 2 df) and attendance ($F=.511$, 3 df) were sequentially eliminated. Leaving only school type ($F=7.85$, 1 df) as the only significant variable. These results indicate that the effect of school attendance on physical activity participation is different for virtual school students and brick and mortar students. Virtual school students ($B=.089$, $p=.006$) were found to be more likely to participate in physical activities than their brick and mortar counterparts.

Table 2

Analysis of Variance of Physical Activity Participation

Characteristic	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>P</i>
					Between subjects	
Source: Main Effects Model				1	26.80	<.001
Main Effect (School Type)				1	7.85	0.01
Brick and Mortar	1.10	0.22	73			
Virtual	1.19	0.12	42			
Within-group error				113		
$\eta^2 = .065$ for Main Effects ($p = .006$)						

Sedentary Behavior

Similar to the measure of physical activity, an index was created to measure sedentary behavior. Each of the 11 variables measuring the number of hours spent in each activity, watching television, watching movies either online or on DVD, surfing the internet, talking on the phone or texting, listening to music, playing video based and board games, engaging in art activities, reading, writing, or napping, were included. The index then served as the dependent variable while sex, school type, and number of years of attendance served as the independent variables in an analysis of variance (ANOVA). Results of the ANOVA revealed that the interaction of sex of the students and the school they attended was significant ($p=.039$). The model was not of good fit (R-Squared=.155).

To explain the results of the significant interaction, the sample was divided and a separate analysis of variances conducted.

Sedentary Behavior Main Effects Model

The sample was divided by gender, with boys placed in one group and girls in another. For boys (R-Squared=.31), the main effects of school ($F=5.57$, 1 df) and attendance ($F=4.34$, 3df) were significant. This demonstrates that the effect of school type and length of attendance on sedentary behavior is different for virtual and brick and mortar students, and among the students, different by the number of years they attended the school. Specifically, boys who attend virtual schools ($B=.772$, $p=.023$) were more likely to be sedentary than were boys who attend a virtual school.

The model for girls (R-Squared=.047) yielded difference results. The main effect of school ($F=.88$, 1df) and attendance ($F=.78$, 3df) were not significant. Thus, unlike boys, the effect of the type of school a student attends, and the number of years which they attend their respective school, does not affect sedentary behavior in girls.

Table 3

Analysis of Variance of Sedentary Behavior in Boys (N=49)

Characteristic	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>
					Between subjects	
Source: Reduced Model				3	41.62	<.001
Main Effect (School)				1	5.57	0.02
Brick and Mortar	1.33	0.79	43			
Virtual	2.04	0.98	6			
Main Effect (Attendance)				3	4.38	0.01
1 year	1.05	0.62	21			
2 years	1.80	0.98	20			
3 years	0.81	0.57	4			
4 or more years	1	0.1963	4			
Within-group error				44	0.55	

Residual Analysis

Analysis of the residuals in the interaction model was not significant. Levene's test ($F=.879$) was not significant, indicating that the variables were homogeneous.

Results of the Kolmogorov-Smirnov test (Asymp. Sig. = 012) shows that the variables are not normally distributed.

Discussion

The results of the analysis showed that virtual school students were more likely to participate in physical activities than were brick and mortar students. Analysis of the sedentary scale, however, yielded different results. Boys attending virtual institutions were more likely to be sedentary; however, the number of years spent in the school was also significant.

Physical Activity

Virtual school students were found more likely to engage in physical activity than were brick and mortar school students, an interesting finding when the nature of their schooling requires extended hours in front of a computer. However, it is the long hours, which may be the variable spurring these teenagers to action.

TBT tells us that a person's attitude toward a behavior, in this situation, being physically active, could be influenced by attitudes toward a behavior. In this case, extended hours in front of a computer screen, being sedentary, could lead students to have a more favorable evaluation of physical activity behavior. Perhaps they recognize the effects that sitting for hours on end are having on them physically and seek out physical activity in order to have a more positive outcome. By being more engaged, they notice more energy, increased alertness, higher grades, and better overall performance. This, of course, assumes a greater amount of actual behavioral control, whereby they are easily able to be more physically active and choose to do so. Given the flexible nature of

the virtual environment, it is plausible that the students would be able to easily access physical activities on a frequent basis.

An alternative theory is that an authority figure, such as a parent or guardian values physical activity, is compensating for sedentary nature of the schoolwork by pushing more active pursuits on their children during out-of-school time. In this scenario, the extrinsic motivational factors will influence behavioral intention and give a more favorable evaluation of physical activity given the importance placed on participation by the authority figure (Anderssen & Wold, 1992; Trost, et al., 2003). Again, the ease of access would propel participation.

Finally, the potential influence of social norms cannot be ignored in this outcome. While the reason for attending a virtual school varies from student to student, the solitary nature of the format might cause a student to feel more isolated from society. In an effort to reconnect he or she might view physical activity participation, which has garnered positive tension by media outlets and in popular culture for its health benefits, as a means to do so. Thus, in participating in physical activity equates to a stronger intention to participate.

Sedentary Behavior

Over 90% of teens in the United States regularly engage in video based gaming, streaming movies, and talking on cell phones (NPD Group, 2011). However, many would postulate that students engaging in a virtual environment, adding on to an already digital lifestyle would be more likely to engage in sedentary behaviors, as it is merely an extension of their current habits. On the surface, the results would confirm that assumption, however, analysis of the significant interactions reveals the nuances of the

finding. For girls, the type of school they attend, and the length in which they attend, does not significantly influence their sedentary behavior. It is the boys attending virtual schools which are making the interaction significant, and the greater number of years attending the school results in increased sedentary behavior.

An examination of social norms regarding teenage boys and the activities they pursue bring these findings into focus. Video games, fantasy sports, online gaming, and television programs are widely utilized among the male teenage demographic. Coupling educational flexibility with easily accessible gaming consoles, televisions, and the internet, could result in increased sedentary behavior. Subjective norms of the age group would suggest that the majority would approve of this behavior, thus influencing a teens belief about peer acceptance of a behavior in a positive way. Interestingly, the results show a steady increase in sedentary behavior as a student spends more time in the format. This suggests that as the students become more comfortable and confident that their actions will not result in negative consequences, and the cycle of sedentary behavior is perpetuated.

It must be noted that these findings seem to be in direct contradiction of those related to physical activity, where virtual school students were also found to be more physically active than their brick and mortar counterparts, with several possible factors contributing to the inconsistencies. First, the instrumentation utilized to determine levels of physical activity and sedentary behavior are independent and not in absolute terms. Since the comparison was the level of physical activity and sedentary behavior between groups in relative terms one group, virtual school students had both higher physical activity and sedentary behavior than the brick and mortar students. There are multiple

ways that the participants could be spending their discretionary time not measured as part of this study, such as completing homework, working a part time job, or other voluntary pursuits to name a few.

Second, as the scales used to measure the sedentary behavior and physical activity levels are independent, the ways in which they are measured vary as well. While physical activity is measured in the number of times a student participates in a given week, sedentary behavior is measured in hourly consumption of the medium. Therefore, the analysis of physical activity does not take into consideration duration of activity participation, thus the number of times a student participates may be greater but the length of the participation could be less.

Finally, the information collected in this survey is based on a seven day recall of participant physical activity and sedentary behavior. It is possible that in this timeframe an individual could be both more active and more sedentary than other participants. However, this does not determine the physical activity levels and sedentary behavior over the long term. Thus, to obtain an accurate representation each measure, the survey should be administered multiple times.

Conclusion

In conclusion, results of the analysis of variance (ANOVA) showed that virtual school students were more likely to participate in physical activities than were brick and mortar students. Analysis of the sedentary scale, however, yielded different results suggesting that boys attending virtual institutions were more likely to be sedentary. In addition, the ANOVA also demonstrated that the longer a boy attends a virtual school, the more likely they were to be sedentary. Using the Theory of Planned Behavior (TPB)

as a lens to examine each result, it was determined that a number of factors could influence the findings including, social norms and attitudes associated with sedentary behaviors and the value placed on physical activity by the student or an authority figure. Future, research should seek to build upon the findings of this study and apply data directly into the TPB model.

Limitations

There were some limitations to the conclusions drawn from this study. First, the small sample size may affect the validity of the instrument, leading to bias, and negatively affect the ability of the results to be generalized. Similarly, the measure was only administered a single time, which allowed students to recall their physical and sedentary activities over a seven-day period. A repeated application may yield different results. Generalizability is also affected by the newness of the group being studied, namely, virtual school students. Until more research is conducted, we are unable to be sure if the results are representative of the sample.

There were also limitations to the response options of the survey itself. Namely, the data relating to physical activity participation and sedentary behavior was limited to a seven day participant recall. Thus, results only reflected the seven days prior to data collection and may change if readministered. Further, the schools for this study were located in different geographic regions in the United States, the Midwest and East Central portion, specifically. Data collected occurred for both institutions during the month of January approximately one to two weeks following a scheduled winter break. Temperatures in the East Central U.S. during the data collection period ranged from the low and mid-30s to the 60s Fahrenheit during the day. At that time, the Midwest was

being subjected to bitterly cold temperatures well below freezing, 32 degrees Fahrenheit, and routinely dipping into the single digits. On the day data was collected from the public school, there were over 10 inches of snow on the ground. Therefore, the weather could have affected the ability of the brick and mortar students to be physically active during the week leading up to data collection. Although it may be assumed that the same activities will be available in each region, the weather could have an impact on recreation opportunities being offered by schools, local recreation agencies, and unstructured settings.

Finally, it must be assumed that all subjects participating in this study will be truthful and attempt to provide an accurate reflection of their lives. To achieve this, we must also assume that each question is being read and accurately responded to, in kind. While this can never be entirely ensured, it must be considered a limitation.

Future Research

Future research in this line of inquiry should include the replication of this study with a greater number of participants to confirm the validity of the findings. Additional works should also include a longitudinal application of the PAQ-C over an extended period to gain a more accurate representation of physical activity and sedentary behavior. Finally, an exploration of virtual school student's affiliation with structured social groups and the impact of these groups on physical activity could help to provide insight and depth to the findings.

The template for this study could also be modified and replicated to include college age students presently attending a college or university virtually and how doing so impacts physical activity participation, when compared to the traditional college

student. This topic could be of great importance as the education landscape continues to change, and the avenues for research will continue to expand. Finally, future, research should seek to build upon the findings of this study and apply data directly into the TPB model.

REFERENCES

- Ajzen, I. (2006). Constructing a TpB questionnaire: Conceptual and methodological considerations. Retrieved from <http://www.unix.oit.umass.edu/tpb.measurement.pdf>.
- Ajzen, I., & Driver, B. L. (1992). Application of the Theory of Planned Behavior to leisure choice. *Journal of Leisure Research*, 24 (3), 207-224.
- Anderssen, N., & Wold, B. (1992). Parental and peer influences on leisure-time: Physical activity in young adolescents. *Research Quarterly for Exercise and Sport*, 63(4), 341-348.
- Barbour, M. K., & Reeves, T. C. (2009). The reality of virtual schools: A review of the literature. *Computers & Education*, 52(2), 402-416.
- Cavanaugh, C. (2004). *Development and management of virtual schools: Issues and trends*. Hershey, PA: IGI Global.
- Center for Disease Control. (2014). Childhood obesity facts. Retrieved in August 2014 from <http://www.cdc.gov/obesity/data/childhood.html> .
- Centers for Disease Control. (2013). Make a difference at your school. *Chronic Disease Paper 31*. Retrieved from <http://digitalcommons.hsc.unt.edu/disease/31/>.
- Chesapeake College. (2014). The history of education in America. Retrieved from http://www.chesapeake.edu/Library/EDU_101/eduhist.asp .

- Clark, T. (2001). Virtual Schools: Trends and issues. A report for Distance Learning Resource Network at WestEd. San Francisco, CA. Retrieved from <http://www.wested.org/cs/we/view/rs/610>.
- Coulson, A. J. (1999). *Market education: The unknown history* (Vol. 21) New Brunswick, NJ: Transaction Publishers.
- Crocker, P. R., Bailey, D. A., Faulkner, R. A., Kowalski, K. C., & McGrath, R. (1997). Measuring general levels of physical activity: Preliminary evidence for the Physical Activity Questionnaire for Older Children. *Medicine and Science in Sports and Exercise*, 29(10), 1344-1349.
- Davis, L. E., Ajzen, I., Saunders, J., & Williams, T. (2002). The decision of African American students to complete high school: An application of the Theory of Planned Behavior. *Journal of Educational Psychology*, 94(4), 810.
- Heath, G. W., Pratt, M., Warren, C. W., & Kann, L. (1994). Physical activity patterns in American high school students: Results from the 1990 Youth Risk Behavior Survey. *Archives of Pediatrics & Adolescent Medicine*, 148(11), 1131-1136.
- Hinch, T., Jackson, E. L., Hudson, S., & Walker, G. J. (2005). Leisure Constraints Theory and sports tourism. *Sport in Society: Cultures, Commerce, Media, Politics*, 8(2), 142-163.
- Hohepa, M., Schofield, G., & Kolt, G. S. (2006). Physical activity: What do high school students think? *Journal of Adolescent Health*, 39(3), 328-336.

- Hrubes, D., Ajzen, I., & Daigle, J. (2001). Predicting hunting Intentions and behavior: An application of the Theory of Planned Behavior. *Leisure Sciences, 23*(3), 165-178.
- Janz, K. F., Lutuchy, E. M., Wenthe, P., & Levy, S. M. (2008). Measuring activity in children and adolescents using self-report: PAQ-C and PAQ-A. *Medicine and Science in Sports and Exercise, 40*(4), 767-772.
- Klieber, D. A., Walker, G. J., & Mannell, R. C. (2011). *A social psychology of leisure* (2nd ed.). State College, PA: Venture Publishing Inc.
- Kowalski, K. C., Crocker, P. R., & Donen, R. M. (2004). The Physical Activity Questionnaire for Older Children (PAQ-C) and adolescents (PAQ-A) manual. *College of Kinesiology, University of Saskatchewan, 82*, 2-37.
- Lee, J., Cerreto, F. A., & Lee, J. (2010). Theory of Planned Behavior and teachers' decisions regarding use of educational technology. *Educational Technology & Society, 13*(1), 152-164.
- Molnar, A., Huerta, L., Rice, J. K., Shafer, S. R., Barbour, M. K., Miron, G., Horvitz, B. (2014). Virtual schools in the US 2014: Politics, Performance, Policy, and Research Evidence. Boulder, CO: National Education Policy Center. Retrieved August, 2014 from <http://nepc.colorado.edu/publication/virtual-schools-annual-2014>.
- NPD Group. (2011). The video game industry is adding 2–17-Year-Old Gamers at a rate higher than that age group's population growth [press release] <https://www.npd.com/wps/portal/npd/us/news/press-releases/>.

- Ornstein, A. C., & Levine, D. U. (1984). *An introduction to the foundations of education* (3rd ed.). Boston: Houghton Mifflin.
- Pate, R. R., O'Neill, J. R., & Lobelo, F. (2008). The evolving definition of "sedentary". *Exercise and Sport Sciences Reviews, 36*(4), 173-178.
- Physical Activity Guidelines Advisory Committee. (2008). Physical activity guidelines advisory committee report, 2008. *Washington, DC: US Department of Health and Human Services, 2008, A1-H14.*
- Repetto, J., Cavanaugh, C., Wayer, N., & Liu, F. (2010). Virtual schools: Improving outcomes for students with disabilities. *Quarterly Review of Distance Education, 11*(2), 91-104.
- Revenaugh, M. (2005). K-8 virtual schools: A glimpse into the future. *Educational Leadership, 63*(4), 60.
- Samdahl, D. M., & Jekubovich, N. J. (1997). A critique of leisure constraints: comparative analyses and understandings. *Journal of Leisure Research, 29*(4), 430-452.
- Tennessee Department of Education. (2014). Virtual education report: July 2014.
Retrieved from
https://www.tn.gov/education/data/doc/virtual_education_report_2014.pdf.

Towson University. (2014). Creating scales in SPSS (PASW). Retrieved from <http://pages.towson.edu/jgarczyn/scalespss.pdf>.

Troiano, R. P., Berrigan, D., Dodd, K. W., Masse, L. C., Tilert, T., & McDowell, M. (2008). Physical activity in the United States measured by accelerometer. *Medicine and Science in Sports and Exercise*, 40(1), 181.

Trost, S. G., Sallis, J. F., Pate, R. R., Freedson, P. S., Taylor, W. C., & Dowda, M. (2003). Evaluating a model of parental influence on youth physical activity schools. *American Journal of Preventative Medicine*, 25(4), 277-282.

Tucker, P., Irwin, J. D., Gilliland, J., He, M., Larsen, K., & Hess, P. (2009). Environmental influences on physical activity levels in youth. *Health & Place*, 15(1), 357-363.

U.S News & World Report. (2014). Poland Seminary High School overview. Retrieved in April, 2015 from <http://www.usnews.com/education/best-high-schools/ohio/districts/poland-local/poland-seminary-high-school-15613>.

CHAPTER IV

BRICK AND MORTAR VS. VIRTUAL SCHOOLS: EXAMINING THE IMPACT OF SCHOOL TYPE ON LEISURE CONSTRAINTS IN HIGH SCHOOL STUDENTS

Constraints to leisure participation have been, and continue to be, the most researched topic in academic literature in our field (Sweeney & Barcelona, 2012). As physical activity declines, and the worldwide obesity epidemic continues to expand researchers should seek to better understand the factors which hinder regular participation in recreation and leisure activities. Participation, however, is subjective, taking many forms with the type of activities being influenced by social, economic, environmental, and emotional factors in a person's life. Similarly, the factors constraining the individual vary, and can include the environment (Tucker et al., 2009), access (Samdahl & Jekubovich, 1997), and multiple social or psychological barriers (Hinch, et al., 2005). Never is this more apparent than the high school years of a person's life. High school is that magical time when physical and psychological development are in full force, often the opportunities provided by out-of-school time activities including school sanctioned sports and clubs and well as non-sanctioned unstructured activities between classmates act as a catalyst for development (Klieber, Walker, & Mannell, 2007). But, what is keeping students from participating in these important events, and how does the type of school the students attend factor in to the decision making process?

Background Information

The education landscape in the United States is rapidly changing as schools utilize cutting edge technology to offer increased options for effective learning and student

development. At the forefront of the movement has been an internet-based institutions known as virtual schools. Since their creation in 1997, the number of students utilizing the format has continued to expand annually in the United States thanks to the more flexible schedule and personalized curriculum (Barbour & Reeves, 2009). At present, there are seven types of virtual schools in the United States (Clark, 2001). Some, such as college and university based programs, offer continuing education opportunities for students with previous online schooling experience. While others, such as consortium and regionally based schools, provide national, multi-state, and regional courses for students in Kindergarten through the Twelfth grade. At the state and local level, education-agency based schools serve as a supplement to brick and mortar education and as a bridge between a local school district and home schooled students, and state backed virtual charter schools are often included in local school districts, or as nonprofit or for profit organizations. Private virtual schools serve as an online supplement to in classroom learning for private institutions. Finally, state sanctioned schools, are authorized by the state government for use as an extension of the public school system. Providing tools and content for some of the schools discussed above are large, for profit, education providers specializing in expanded delivery of a virtual curriculum.

However, a change from a traditional brick and mortar school to an online format allows youth in an increasingly sedentary society to live their academic lives online, as well (Council, 2012; Lenhart et al., 2008). As a result, concerns have arisen from teachers and parents alike as to how this shift from a traditional school environment to a virtual one is affecting students outside of the classroom. As other articles have sought to determine how recreation and physical activity are affected, the purpose of this article is

to examine the factors that inhibit participation and determine if the type of school a student attends impacts the variables that constrain their leisure.

This research will purposively sample students currently enrolled in grades 9 through 12 in a virtual or brick and mortar school to understand if there is a difference in the leisure constraints between the two groups. The knowledge gained from this study will seek to address the concerns of extracurricular participation, expand the body of literature in the leisure field, and aid in enhancing the leisure experience of the students. The article will begin with a literature review to introduce relevant terms, concepts, related studies, and the theoretical construct central to the work. It will then describe the methods used for data collection, analysis, and final results. The article will conclude with a discussion of these findings as well as recommendations for future research in this area.

Leisure

In order to accurately document the elements that might constrain leisure, it is important to include a brief description as to how the concept will be operationalized for this research. To that point, this article limited the discussion of leisure to that of a social psychological perspective of leisure, whereby the parameters are becoming more uniform in describing the ways in which leisure can be considered (Hurd & Anderson, 2010). As this study deals predominately with those factors constraining leisure participation, it is important to provide a brief description of the three most prominent views in social psychological leisure scholarship. This will help to differentiate between the impacts each constraint might have on the individual during the discussion section of this article. The

three views of leisure regularly discussed are the notions of leisure as time, leisure as activity, and leisure as state of mind.

Leisure as time. Leisure as time defines leisure as free from the obligations of daily life. It is the time when one does not engage in work, be it paid or unpaid, or the obligations of living, such as sleep and eating (Hurd & Anderson, 2010). Leisure is “left-over” time in nonworking hours in this school of thought.

Leisure as activity. Leisure can also be described by the activities in which people engage during their free time (Hurd & Anderson, 2010). These activities are not related to work or obligation in any way. The motivations for participation varies from person to person, but are often related to relaxation, competition, or personal growth (Hurd & Anderson, 2010). The activity itself is of no consequence as long as it is engaged in freely and unrelated to obligation.

Leisure as a state of mind. The most abstract of the definitions, leisure as a state of mind considers an individual’s perception of an activity rather than the activity itself (Hurd & Anderson, 2010). Central to this notion are the concepts of perceived freedom, control and intrinsic motivation (Hurd & Anderson, 2010). Conceptually simple, freedom is an extremely complex phenomenon comprised of many dimensions steeped in political, social, and philosophical perceptions (Kleiber, Walker, & Mannell, 2011). In our everyday lives, thousands of activities are performed in the personal, professional, and social realm of the individual, some of which are viewed as compulsory, while others voluntary. The common thread between these experiences is the subjective perception of freedom. Neulinger (1981) described this perceived freedom as a state in which the person feels that what she or he is doing is done by choice. Pertinent to this definition is

the importance placed on the feeling of choice and control that is essential to the individual. When a person feels constrained by an authority figure dictating action, he or she will not feel in control of their own behavior which detracts from the human experience. This is based on the notion of free choice, in which there are multiple options from which to choose, however, there are some barriers such as time, finances, recreation skills, and the availability of friends which often times constrain leisure for the individual. These constraints to freedom are negative; however some may help define the parameters of an activity which enhance its enjoyment.

In social psychology perceived control is an important component to the human experience and essential to health, and well-being (Klieber, Walker, & Mannell, 2011). It could be argued that those with an unrealistic optimism regarding the future tend to exaggerate the amount of control they have over uncontrollable life event, resulting in significant effects in life and leisure among all age groups, both positively and negatively (Klieber, Walker, & Mannell, 2011). In contrast, there are those that people may alter variables in an attempt to gain control of a situation. According to Weisz, Rothbaum, and Blackburn (1984), there are two types of control in these situations; first, primary control which occurs when an individual enhances their rewards by influencing existing realities, and secondary control, which occurs when individuals enhance their rewards by accommodating to existing realities. When these elements are applied, what may be regarded as leisure for one person is not leisure for another based on their state of mind and varying factors of the activity (Hurd & Anderson, 2010).

Constraints to Participation

Just as some elements encourage participation, there are also those, which keep an individual from taking part in leisure activities. Broadly defined as barriers, which hinder an individual's ability to participate in a chosen activity (Samdahl & Jekubovich, 1997; Sweeney & Barcelona, 2012), leisure constraints are those elements which prevent, reduce, or modify participation in some fashion (Henderson, 1997). Able to be imposed on an internal or external basis, constraints take many forms including, the time commitment of an activity, a lack of skills to adequately perform, or the interpersonal relationships that influence the ability of a participant to enjoy an activity. These, and many other, phenomena have been rigorously studied by leisure researchers to achieve a better understanding of what keeps people or groups from taking part in leisure activities (Buchanan & Allen, 1985; Jackson & Searle, 1985; Searle & Jackson, 1985a, 1985b).). The following section will expand upon these ideas to better explain three common constraints to recreation participation and the ways in which they might influence virtual school students participating in this study.

Intrapersonal constraints. Intrapersonal constraints were initially defined to represent psychological states residing in the psyche of an individual which. These states interact with the leisure preferences of the individual, influencing the types of activities in which they participate and the frequency in which they do so (Hinch, et al., 2005). Considered to be the first step in the constraints hierarchy, intrapersonal constraints may manifest as stress, anxiety, depression, and could influence of socialization on participation, eliminating the benefits associated with physical activity and recreation participation (Samdahl & Jekubovich, 1997). In addition, the effect on the life of the

person resulting from these states could be detrimental to personal relationships leaving the individual isolated and creating a barrier to recreation participation.

Interpersonal constraints. Following intrapersonal constraints in the constraints hierarchy, interpersonal constraints refer to personal relationships between participants and how the positive or negative nature of the relationship influences leisure (Samdahl & Jekubovich, 1997). Constraints may be viewed in a singularly negative fashion; however, negative connotations are not always necessary. In fact, positive constraints are just as prominent and likely in a person's life.

Structural constraints. While intrapersonal and interpersonal constraints are more abstract, dealing with the feelings of the individual and social interactions, structural barriers are more tangible directly inhibiting an individual's leisure preferences, meaning choices, and participation (Samdahl & Jekubovich, 1997). In the example above, the lack of household income for the family of the student requires them to take a part job to help contribute to the financial stability of their family. In doing so, the student's time is monopolized leaving no additional period for recreation. Similarly, a student who has health related issues may be unable to participate due to the inherent risks to themselves and other children, although it is something they desire. Both of these instances illustrate the concept of structural barriers and demonstrate the ways in which they are different from intrapersonal and interpersonal constraints discussed in the former sections.

Theory of Planned Behavior

Utilization of a specific theory strengthens a study and permits the reader to evaluate the work that has been done critically through the assumptions of the chosen

framework. Selecting the proper theory and accurately articulating its assumptions provides an avenue by which to move from the description of an event to a deeper analysis of a phenomenon. For this study, the Theory of Planned Behavior (TPB) was selected. The purpose of this section is to offer an explanation of the theory and provide an explanation of the ways in which TPB was used in the analysis of the findings.

The Theory of Planned Behavior was initially known as the Theory of Reasoned Action and applied to predict the behavior intentions of an individual to engage in a behavior (Ajzen, 2006). It was expanded to explain the behaviors in which a person was able to exert self-control and how behavioral intentions were influenced by how the expected outcome of a behavior and the consequences of the outcome itself (Ajzen, 2006). Based on this notion, TPB postulates that human action is guided by three types of considerations: 1) beliefs about the consequences of a behavior (behavioral beliefs); 2) beliefs about the normative expectations of others (normative beliefs); and 3) a belief that factors are present which may enable or hinder the performance of a behavior, (control beliefs) (Hrubes, Ajzen, & Daigle, 2001). The defining characteristic of the theory, which also separates it from reasoned action theory, is the perceived control of an individual over a behavior. Six constructs represent this control (Ajzen, 2006). First, attitudes are the degree to which a person has a favorable or unfavorable evaluation of a behavior. This requires consideration of the outcome of performing a behavior. Second, behavioral intentions are the motivational factors that influence a behavior. The stronger the intention to perform a behavior, the more likely the behavior will be performed. Third, subjective norms are the beliefs of an individual about whether most people will approve or disapprove of a chosen behavior, particularly peers and important people in the lives of

the individual. Fourth, social norms refer to the traditional code of conduct of a society. Fifth, the perceived power of an individual, which provides the perception of, factors which facilitate or impede performance of a behavior and the ability of an individual to control these factors. Finally, perceived behavioral control is the perceived ability of a person to perform a behavior.

Application of Theory of Planned Behavior

From its inception, the Theory of Planned Behavior has been used to investigate a variety of phenomena in recreation research. From predicting leisure participation (Ajzen & Driver, 1991) to patrons being willing to pay for a service (Hrubes et al., 2001). Leisure researchers have sought to predict an individual's intention to engage in a behavior and what influences them to do so. In the realm of education TPB has been used to predict intent of minority students to complete high school (Davis et al., 2002) as well determine the willingness of teachers to utilize technology in their classrooms (Lee, Cerreto, & Lee, 2010).

Framing the study

TPB was used to aid in contextualizing the results of the analysis of variance (ANOVA) outlined in the methods section. Analyzing the results of the survey measuring leisure constraints of high school students attending both virtual and brick and mortar schools, the lens of the theory will allow us to postulate how the actions of the students' are guided by the three considerations of TPB (Hrubes, Ajzen, & Daigle, 2001). As research has indicated, these factors, along with behavioral control, have a strong association with intent to participate as well as actually doing so (Cunningham & Kwon, 2003; Hagger et al., 2002). When taking into account the dependent variable of type of

school attended by each student, it may shed light on how the type of school influences those elements which constrain participation. Similar to the work of Ajzen and Driver (1992) the type of leisure constraints of each group could have an effect on the leisure choice of the participants.

Methods

The purpose of this study was to describe the relationship between the type of school attended and leisure constraints. To achieve this goal, a non-experimental comparative research design was used. The design allowed students to retrospectively examine those factors which constraint their participation in leisure activities through the self-reported survey. The results of this survey were analyzed in order to ascertain the differences between the two groups.

Data Collection and Sample

One hundred fifteen high school aged students from one brick and mortar school and two virtual schools answered questions pertaining to possible factors negatively impacting their leisure experience. The brick and mortar school was a public high institution located in the Midwestern portion of the United States. Four grade levels, freshmen through seniors, comprised a total enrollment of 784 students at the time of data collection (U.S. News, 2014). Demographically, the school is 96% white with only 4% total minority enrollment (U.S. News, 2014). For this investigation, 73 students or 10 % of the total school population completed the survey.

The two participating virtual schools were state sanctioned institutions located in the East Central portion of the United States. At the time of data collection, they had a combined enrollment of 110 students, 85 at the first institution and 25 at the second.

However, these figures can change rapidly as some students use the virtual medium as a short term education alternative causing enrollment in virtual institutions to fluctuate more frequently than many brick and mortar schools. Although the demographic information may change as shifts in enrollment occur, at the time of the study, 94% of students within the schools were white with 6% minority enrollment (Tennessee Department of Education, 2014).

Data collected occurred for both institutions during the month of January approximately one to two weeks following a scheduled winter break. Participants completed the leisure constraints index containing variables related to factors that commonly constrain leisure participation. Due to the differing school formats, the delivery method for the survey differed based on the type of school students currently attended. For brick and mortar students, surveys were administered in person by the researcher, to students in attendance in both physical education and health courses. Students were allowed one hour to complete the survey, and permitted to ask clarifying questions regarding survey content.

In contrast, surveys for virtual students were distributed by school administrators via the internet, with students allowed immediate access. Once the surveys were distributed students were given two weeks to complete the measure. There were no restrictions based on age, sex, race, or any other factors as all were encouraged to participate

Instrumentation

Leisure constraints scale. A shortened version of the twenty-nine item scale developed by Alexandris and Carroll (1997) was used to measure leisure constraints of

the participants. Using a seven-point Likert scale, participants were asked to evaluate the importance of statements as limiting factors in their physical activity participation. The items were divided into sections based on the type of constraint: time, psychological factors, knowledge, access to resources or facilities, accessibility or cost, transportation, partners, and interest. All of which fall into the three categories of leisure constraints, intrapersonal, interpersonal, or structural respectively (Hinch et al., 2005; Samdahl & Jekubovich, 1997).

Variables

Dependent variable. The dependent variable for this study was leisure constraints. Respondents were able to choose from seven options representing the importance of each statement as it applied to constraining their leisure pursuits. Each respondent was asked to choose one response when answering the question.

Independent variable. The independent variable for all research questions was the type of school students' currently attended at the time of data collection. This item was able to be measured categorically based on two responses of "Brick and Mortar High School" and "Virtual (Online) High School" respectively.

Control variables. Sex and number of years attending their current school were selected as control variables. Both were established as categorical variables, with sex divided into two groups, male and female, and years attending their current school into four groups ranging from one year to four years, or more.

Results

The Statistical Package for the Social Sciences (SPSS) was used to analyze the data. First, the data collected via online and hard copy were entered in a data table for

input. Each leisure constraint item was coded separately and given a numeric value corresponding to a text response option. The items are divided based on the type of constraint; time, psychological factors, knowledge, access to resources or facilities, accessibility or cost, transportation, partners, and interest, but an index was created including all the variables for an overall leisure constraint scale. This was used as the dependent variable in an ANOVA where the independent variables were school type, sex, and years of attendance.

Descriptive Statistics

Descriptive statistics were used to define the demographic information of the study participants. The total response rate of the survey was 62.8%. The results of the analysis showed a vast majority of the 115 participants (n= 84.3%, n=97) were white. A slight majority were female, 53.9% (n=62) compared to 42.6% (n=49), who identified themselves as male. Four participants (3.5%), declined to answer this question. Overall, the students had not attended their respective school for an extended period of time with only 5.2% (n=6) reporting that they were in their third year, and 5.2% (n=6) stating that they had attended their current location for four or more years. First year students dominated the survey (51.3%, n=59), with second year attendees following behind at 35.7% (n=41). However, these responses are not indicative of class standing, which, while still skewing towards underclassmen, 33% freshman (n=38), 36.5% sophomore (n=42) did include upper-class juniors and seniors, 13.9% (n=16) and 9.6% (n=11) as well. The full results of the analysis can be found in Table 1.

Table 1

Demographic Information of Participants (N=115)

Characteristic	<i>n</i>	%
Gender		
Male	49	42.6
Female	62	53.9
Prefer Not to Answer	4	3.5
Race		
White	97	84.3
Hispanic or Latino	10	8.7
Asian	6	5.2
American Indian or Alaska Native	2	1.7
School Type		
Brick and Mortar	73	63.5
Virtual	42	36.5
Number of Years Attending Current School		
1 year	59	51.3
2 years	41	35.7
3 years	6	5.2
4 or more years	6	5.2
Class Standing		
Freshman	38	33
Sophomore	42	36.5
Junior	16	13.9
Senior	11	9.6

Leisure Constraints

An Analysis of Variance (ANOVA) was conducted to measure the impact of type of school attended on leisure constraints. Results of the ANOVA revealed that the interaction of the school students attended by the number of years they attended the

school was significant (5.01, 2df). The model was not of good fit (R-Squared=.113). To explain the results of the significant interaction, the sample was divided by the type of school, with brick and mortar students in one group and virtual school students in the other, and separate analyses of variance conducted.

Main Effects Models

Virtual schools. For virtual school students the main effects of sex ($F=4.65$, 1df) and attendance ($F=16.23$, 2df) were significant. The analysis showed that the boys attending the virtual school were more likely to be constrained in their leisure participation ($B=111.6$, $p=.038$). However, the longer a student attended the school, the less likely they were to be constrained in their leisure activities. Comparatively, students who were in their first year attending the school ($B=-450.9$, $p<.001$) were more constrained than those students in their second year attending the school ($B=-476.70$, $p<.001$) a noticeable decline.

Brick and mortar schools. For brick and mortar students, neither sex ($F=.224$, 2df) or attendance ($F=.251$, 3df) were significant. Unlike virtual school students, these variables did not significantly affect leisure constraints in brick and mortar students.

Residual Analysis

Analyses of the residuals in the interaction model were not significant. The Levene's test for school ($F=3.19$) was not significant, indicating that the variables were homogeneous, while sex ($F=11.10$) and attendance ($F=3.27$) were not homogeneous. Results of the Kolmogorov-Smirnov test (Asymp. Sig. = $<.001$) shows that the variables are not normally distributed.

Table 2

Analysis of Variance of Leisure Constraints for Virtual School Students

Characteristic	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>
Between subjects						
Source: Reduced Model				3	14.76	<.001
Main Effect (Sex)				1	4.65	0.04
Male	167.34	407.43	6			
Female	1.26	0.93	35			
Main Effect (Attendance)				2	16.23	<.001
1 year	1.24	0.87	29			
2 years	1.18	1.23	10			
3 years	25.56	705.42	2			
Within-group error				37		

Structural Constraints

Separate scales measuring the interpersonal, intrapersonal, and structural constraints were created. An Analysis of Variance (ANOVA) was conducted to measure the impact of type of school attended on each of the three types of leisure constraints. Results of the ANOVA revealed that the no variables were significant in relation to interpersonal or structural constraints. However, the main effect of school type was significant in relation to structural constraints ($F=3.8, 1df$). The model was not of good fit ($R\text{-Squared}=.035$). The analysis showed that virtual school students ($B=87.87, p=.05$)

were more likely to be constrained by structural variables than were brick and mortar students.

Table 3

Analysis of Variance of Structural Constraints

Characteristic	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>
					Between subjects	
Source: Main Effects Model				1	3.799	.054
Main Effect (School Type)				1	3.799	.054
Brick and Mortar	999.0	0	40			
Virtual	911.13	284.5	68			
Within-group error					113	
$\eta^2 = .035$ for Main Effects ($p < .054$)						

Discussion

Results of the ANOVA revealed that the interaction of the school students attended by the number of years they attended the school was significant. To explain the results of the significant interaction, the sample was divided by the type of school, so that brick and mortar students were in one group and virtual school students in the other. Once this was completed a separate analyses of variance conducted on each group. For

brick and mortar students neither the main effects of sex nor length of attendance was significant.

However, for virtual school students, the main effects of sex, and attendance were significant, with boys more likely to be constrained than were girls. Meaning, for boys attending a virtual school, their intention to perform leisure activities is negatively affected, thus inhibiting the behavior itself. In the construct of TPB, this indicates that the factors measured in the Leisure Constraint Scale could be negatively influencing boy's attitude, feelings towards subjective norms, and perceived behavioral control toward leisure participation in a negative way.

Many factors can influence this evaluation, the circumstances by which they enter the school, a lack of social connection due to the isolation of the virtual environment, among other possible situations, could impact the psychological state of the student in a negative way. However, additional analysis of the three types of constraints determined that virtual students were more likely to be constrained by the tangible hindrances of structural constraints. While intrapersonal and interpersonal constraints are more abstract, and thus require more conjecture, structural constraints are more easily identified. As virtual schools are often located across counties or states, the physical distance could cause a lack of participation as the students are simply not able to access the activities they desire. As many teens may not be able to have access to a vehicle, or be legally permitted to drive, this factor could be insurmountable. Similarly, many of the students attending virtual schools do so as a result of health related issues, or pursuit of a career. Thus, even if the student desired to participate in an activity they would be precluded from doing so based on treatment options or a work schedule.

Despite these findings, it was also discovered that the longer a student attended a virtual school, the less constrained they became. Meaning, the immediate change from a brick and mortar environment to a virtual one did, by some measure, did constrain leisure participation. However, as students adjusted to the new construct of the online school, they felt less constrained by the factors explored in the measure and more likely to exert self-control, as is specified in TPB. Meaning, their intention to perform leisure would be less constrained by attitudes, subjective norms, and a lack of perceived behavioral control, thus allowing more of an opportunity to engage in leisure participation. This could be a significant as it dispels the notion that attending a virtual school causes an increase in the barriers to leisure participation. In fact, quite the opposite is true.

Conclusion

In conclusion, results of the ANOVA revealed that the interaction of the school students attended by the number of years they attended the school was significant. To explain the results of the significant interaction, the sample was divided by the type of school, with brick and mortar students in one group and virtual school students in the other, and separate analyses of variance conducted. For virtual school students, the main effects of sex, and attendance were significant, with boys more likely to be constrained. As the constraints found in the measurement instrument represented intrapersonal, interpersonal, and structural constraints as they relate to more physically oriented leisure activity pursuits, an attempt to interpret the results by examining of each type of constraint was included. However, the longer a student attended a virtual school, the less constrained they became, lending credence to the notion that the students were able to

acceptably address and overcome the constraints. For brick and mortar students neither sex nor length of attendance was significant.

What we can conclude from these findings is that attending a virtual school does not permanently constrain a student from participating in leisure activities. Rather, after initially feeling constrained, the format allows students to exert more control over their behavior actually lessening the effects of leisure constraints.

Limitations

There were some limitations to the conclusions drawn from this study. First, the small sample size may affect the validity of the instrument, leading to bias, and negatively affect the ability of the results to be generalized. The issue of the generalizability, however, is also affected by the newness of the group being studied, namely, virtual school students. Until more research is conducted, we are unable to be sure if the results are representative of the sample. There were also limitations to the response options of the survey itself. The schools for this study are located in different geographic regions of the United States, the Midwest and East Central, specifically. Although it may be assumed that the same constraints will be prevalent in each region, the setting could affect those variables. Finally, it must be assumed that all subjects participating in this study will be truthful and attempt to provide an accurate reflection of their lives. To achieve this, we must also assume that each question is being read and accurately responded to, in kind. While this can never be entirely ensured, it must be considered a limitation.

Future Research

The immediate future of this line of inquiry must be the replication of the study with an expanded participant group including a greater number of students and varying geographic locations. Doing so will further validate these findings and give a more accurate representation of the phenomena. In addition, supplementing quantitative data with qualitative data will allow us to delve into what is constraining each group of students, and why these factors changes over time. Using this format, a similar study could also be done to examine online college students and how attending a college or university virtually impacts leisure constraints when compared to a traditional college student.

REFERENCES

- Ajzen, I. (2006). Constructing a TpB questionnaire: Conceptual and methodological considerations. Retrieved from <http://www.unix.oit.umass.edu/tpb.measurement.pdf>.
- Ajzen, I., & Driver, B. L. (1992). Application of the Theory of Planned Behavior to leisure choice. *Journal of Leisure Research*, 24 (3), 207-224.
- Barbour, M. K., & Reeves, T. C. (2009). The reality of virtual schools: A review of the literature. *Computers & Education*, 52(2), 402-416.
- Buchanan, T., & Allen, L. (1985). Barriers to recreation participation in later life cycle stages. *Therapeutic Recreation Journal*, 19(3), 39-50.
- Carroll, B., & Alexandris, K. (1997). Perception of constraints and strength of motivation: Their relationship to recreational sport participation in Greece. *Journal of Leisure Research*, 29(3), 279-299.
- Center for Disease Control. (2014). Childhood obesity facts. Retrieved in August, 2014 from <http://www.cdc.gov/obesity/data/childhood.html>.
- Council, P. A. (2012). *Participation Report: The Physical Activity Council's annual study tracking sports, fitness and recreation participation in the USA*. Retrieved December, 2014.
- Crocker, P. R., Bailey, D. A., Faulkner, R. A., Kowalski, K. C., & McGrath, R. (1997). Measuring general levels of physical activity: Preliminary evidence for the Physical

- Activity Questionnaire for Older Children. *Medicine and Science in Sports and Exercise*, 29(10), 1344-1349.
- Cunningham, G. B., & Kwon, H. (2003). The Theory of Planned Behavior and intentions to attend a sport event. *Sport Management Review*, 6(2), 127-145.
- Davis, L. E., Ajzen, I., Saunders, J., & Williams, T. (2002). The decision of African American students to complete high school: An Application of the Theory of Planned Behavior. *Journal of Educational Psychology*, 94(4), 810.
- Hagger, M. S., Chatzisarantis, N. L., & Biddle, S. J. (2002). A meta-analytic review of the Theories of Reasoned Action and Planned Behavior in physical activity: Predictive validity and the contribution of additional variables. *Journal of Sport & Exercise Psychology*, 24 (1), 3-32.
- Henderson, K. A. (1997). A critique of Constraints Theory: A response. *Journal of Leisure Research*, 29(4), 453-457.
- Hinch, T., Jackson, E. L., Hudson, S., & Walker, G. J. (2005). Leisure Constraints Theory and sports tourism. *Sport in Society: Cultures, Commerce, Media, Politics*, 8(2), 142-163.
- Hrubes, D., Ajzen, I., & Daigle, J. (2001). Predicting hunting intentions and behavior: An application of the Theory of Planned Behavior. *Leisure Sciences*, 23(3), 165-178.

- Hurd, A. R., & Anderson, D. M. (2010). *The park and recreation professional's handbook*. Champaign, IL: Human Kinetics.
- Jackson, E., & Searle, M. S. (1985). Recreation non-participation and barriers to participation: Concepts and models. *Loisir & Société*, 8(2), 693-707.
- Janz, K. F., Lutuchy, E. M., Wenthe, P., & Levy, S. M. (2008). Measuring activity in children and adolescents using self-report: PAQ-C and PAQ-A. *Medicine and Science in Sports and Exercise*, 40(4), 767-772.
- Klieber, D. A., Walker, G. J., & Mannell, R. C. (2011). *A social psychology of leisure* (2nd ed.). State College, PA: Venture Publishing Inc.
- Kowalski, K. C., Crocker, P. R., & Donen, R. M. (2004). The Physical Activity Questionnaire for Older Children (PAQ-C) and Adolescents (PAQ-A) manual. *College of Kinesiology, University of Saskatchewan*, 82, 2-37.
- Lenhart, A., Kahne, J., Middaugh, E., Macgill, A. R., Evans, C., & Vitak, J., & Pew Internet & American Life, P. (2008). Teens, video games, and civics: Teens' gaming experiences are diverse and include significant social interaction and civic engagement. *Pew Internet & American Life Project*.
- Neulinger, J. (1981). *To leisure: An introduction*. Boston, MA: Allyn & Bacon, c1981.

- Samdahl, D. M., & Jekubovich, N. J. (1997). A critique of leisure constraints: Comparative analyses and understandings. *Journal of Leisure Research*, 29(4), 430-452.
- Searle, M. S., & Jackson, E. L. (1985). Socioeconomic variations in perceived barriers to recreation participation among would-be participants. *Leisure Sciences*, 7(2), 227-249.
- Sweeney, T. P., & Barcelona, R. J. (2012). An integrative review of published research in the *Recreational Sports Journal*, 1998-2010 *Recreational Sports Journal*, 37(1).
- Tennessee Department of Education. (2014). Virtual education report: July 2014. Retrieved from https://www.tn.gov/education/data/doc/virtual_education_report_2014.pdf.
- Towson University. (2014). Creating scales in SPSS (PASW). Retrieved from <http://pages.towson.edu/jgarczyn/scalesspss.pdf>.
- Tucker, P., Irwin, J. D., Gilliland, J., He, M., Larsen, K., & Hess, P. (2009). Environmental influences on physical activity levels in youth. *Health & Place*, 15(1), 357-363.
- U.S News & World Report. (2014). Poland Seminary High School overview. Retrieved in April 2015 from <http://www.usnews.com/education/best-high-schools/ohio/districts/poland-local/poland-seminary-high-school-15613>.

Weisz, J., Rothbaum, F., & Blackburn, T. (1984). Standing out and standing in: The psychology of control in America and Japan. *American Psychologist*, 39, 955-969.

CHAPTER V

CONCLUSION

In conclusion, changing education philosophies and technological advancement have altered the way in which educational content can be delivered to students.

Numerous alternate school models are gaining in popularity, with internet based, virtual, institutions at the forefront. Although the 20-year anniversary for the virtual format is rapidly approaching, little information exists as to how the shift from a traditional brick and mortar environment to a virtual one impacts the out-of-school time activities of the students. The purpose of this study was to determine how the type of school a high student attends impacts their out-of-school time recreation and physical activities and those factors, which hinder their participation. One hundred fifteen high school age students attending brick and mortar and virtual institutions completed a survey regarding their recreation participation, physical activity participation, sedentary behavior, and leisure constraints.

Three research questions guided data analysis as well as the formation of the three article construction. The first sought to determine if there were differences in recreation participation between brick and mortar and virtual school students. The second examined the differences between physical activity participation between the two groups. While the third pertained to constraints to participation, and if the type of school a student attended had an impact on how constrained a student felt. The data revealed some very interesting findings related to all three questions.

First, virtual school students were found more likely to participate in recreational activities than were brick and mortar students. This result was hypothesized at the onset

of the study and supported by the results of the ANOVA. Within the construct of recreational activities, however, none of the variables, sex, type of school, or length of time attending a school, significantly impacted participation in organized or unorganized activities, or team activities. However, virtual school students were more likely to participate in individual recreational pursuits than their brick and mortar peers.

Looking through the lens provided by the Theory of Planned behavior, these results could be explained by behavioral intent, whereby human action is guided by three types of considerations, normative beliefs, behavioral beliefs, and control beliefs. As is explained, control beliefs allow a person to take into account the expectations of others, the consequences of a behavior, and a belief that there are factors, which will hinder the performance of a behavior when making the decision to act. These same beliefs allow a person to take into account the expectations of others, the consequences of a behavior, and a belief that there are factors, which will hinder the performance of a behavior when making the decision to act. Thus, a person's attitude toward a behavior, subjective norms, and perceived behavioral control, which influence intention to participate in recreational activities, are affected resulting in increased likelihood of participation.

Second, virtual students were found more likely to be physically active, an interesting find given the nature of the format an extended hours in front of a computer. However, somewhat contradictory results indicated that boys attending a virtual school were also more likely to be sedentary, and longer attendance coincided with increased sedentary behavior. While this is puzzling when compared to the initial results, an examination of the social norms and social constructs associated with team culture could provide some insight in the findings.

Finally, an analysis of variance revealed that boys attending virtual schools were more likely to be constrained in their leisure, when compared to girls attending a virtual school and the students attending a brick and mortar institution. But, this was not found to be a permanent malady as the same analysis found the longer a student attended a virtual school, the less constrained they became.

Both of these results are interesting, and could be explained by several factors. For the boys, the findings suggest indicates that the factors measured in the Leisure Constraint Scale could be negatively influencing boy's attitude, feelings towards subjective norms, and perceived behavioral control toward leisure participation in a negative way, within the parameters found in TPB. However, as students adjusted to the new construct of the online school, they felt less constrained by the factors explored in the measure and more likely to exert self-control. This could mean, their intention to perform leisure would be less constrained by the same attitudes, subjective norms, and a lack of perceived behavioral control as time progresses, thus offering more of an opportunity to engage in leisure participation. Future, research should seek to build upon the findings of the present investigation and apply the data directly into the TPB model.

Discussion

The results of this study could be applicable to the areas of recreation and leisure studies, as well as to the education field. For leisure scholars, the emergence of a new population allows for the continued advancement of scholarship and additional social variables, which could influence many aspects of participation, constraints, and development. For educators, these insights may provide additional insight into policy formation as it pertains to non-traditional student groups, and end any stigma related to

non-traditional education methods and how they impacts out of school time socialization and participation.

The intent of this research was not to champion one method of education over another, or to shed a positive light on any one institution. These results will, hopefully, begin a dialog between groups as it pertains to recreation and physical activity participation among high school students.

Limitations

First, it must be assumed that all subjects participating in this study were truthful and provide an accurate reflection of their experiences in their responses. Therefore, it was assumed that each question was being read and responded to, accurately. While this can never be entirely ensured, it must be considered a limitation. Second, the measure of recreation participation and physical activity participation only allowed for a seven day recall. While an accurate representation of a previous week, it may not be indicative of the overall recreation and physical activity participation of the individual long term. Many of the remaining limitations stem from a relatively small sample size of virtual and brick and mortar school students. As a result of only 115 participants it is unknown if they results are generalizable to the population. Consequently, the validity of the measure is affected, also negatively impacting the generalizability of the research.

Future Research

The newness of this line of inquiry lends it to a wide range of future research possibilities. However, the immediate future should be the replication of the study to include more participants in both brick and mortar and virtual school groups. This expansion should include varying geographic areas, increased racial diversity, and could

take socioeconomic status into consideration. In addition, the inclusion of the control variable “age” could provide added diversity into the findings.

The study may also be replicated to include other alternative schooling populations, and even expanded to include varying non-traditional student groups including adult education, online college students, and those attending a college or university virtually, and how it impacts out-of-school behavior when compared to traditional college students.

Beyond replication, a corresponding qualitative study based on quantitative responses will provide added depth and understanding to those findings reported here. The utilization of any number of qualitative methods will readily give this data and is a path that should be considered.

Finally, the creation of a recreation and leisure based measure of the Theory of Planned Behavior could allow social scientists in the field to better understand the decision making process of many age groups. Although this is a daunting undertaking, doing so will allow many of the findings in this, and other, studies to be applied directly to the TPB model.

REFERENCES

- Ajzen, I. (2006). Constructing a TpB questionnaire: Conceptual and methodological considerations. Retrieved from <http://www.unix.oit.umass.edu/tpb.measurement.pdf>.
- Ajzen, I., & Driver, B. L. (1991). Prediction of leisure participation from behavioral, normative, and control beliefs: An application of the Theory of Planned Behavior. *Leisure Sciences, 13*(3), 185-204.
- Ajzen, I., & Driver, B. L. (1992). Application of the Theory of Planned Behavior to leisure choice. *Journal of Leisure Research, 24* (3), 207-224.
- Allison, K. R., Dwyer, J. J., & Makin, S. (1999). Perceived barriers to physical activity among high school students. *Preventive Medicine, 28*(6), 608-615.
- Anderssen, N., & Wold, B. (1992). Parental and peer influences on leisure-time physical activity in young adolescents. *Research Quarterly for Exercise and Sport, 63*(4), 341-348.
- Barbour, M. K., & Reeves, T. C. (2009). The reality of virtual schools: A review of the literature. *Computers & Education, 52*(2), 402-416.
- Buchanan, T., & Allen, L. (1985). Barriers to recreation participation in later life cycle stages. *Therapeutic Recreation Journal, 19*(3), 39-50.

- Carroll, B., & Alexandris, K. (1997). Perception of constraints and strength of motivation: Their relationship to recreational sport participation in Greece. *Journal of Leisure Research*, 29(3), 279-299.
- Cavanaugh, C. (2004). *Development and management of virtual schools: Issues and trends*. Hershey, PA: IGI Global.
- Center for Disease Control. (2014). Childhood obesity facts. Retrieved from <http://www.cdc.gov/obesity/data/childhood.html>.
- Centers for Disease Control. (2013). Make a difference at your school. *Chronic Disease Paper 31*. Retrieved from <http://digitalcommons.hsc.unt.edu/disease/31/>.
- Centers for Disease Control and Prevention (CDC). (2011). Physical activity levels of high school students --- United States, 2010. *MMWR: Morbidity and Mortality Weekly Report*, 60(23), 773-777.
- Chesapeake College. (2014). The history of education in America. Retrieved from http://www.chesapeake.edu/Library/EDU_101/eduhist.asp.
- Clark, T. (2001). Virtual schools: Trends and issues. A report for Distance Learning Resource Network at WestEd. San Francisco, CA. Retrieved from <http://www.wested.org/cs/we/view/rs/610>.
- Coulson, A. J. (1999). *Market education: The Unknown History* (Vol. 21) New Brunswick, NJ: Transaction Publishers.

- Council, P. A. (2012). *Participation Report: The Physical Activity Council's annual study tracking sports, fitness and recreation participation in the USA*. Retrieved December, 2014 from <http://www.physicalactivitycouncil.com/PDFs/2012PACReport.pdf>.
- Crocker, P. R., Bailey, D. A., Faulkner, R. A., Kowalski, K. C., & McGrath, R. (1997). Measuring general levels of physical activity: Preliminary evidence for the physical activity questionnaire for older children. *Medicine and Science in Sports and Exercise*, 29(10), 1344-1349.
- Cunningham, G. B., & Kwon, H. (2003). The Theory of Planned Behavior and intentions to attend a sport event. *Sport Management Review*, 6(2), 127-145.
- Dale, D., Corbin, C. B., & Dale, K. S. (2000). Restricting opportunities to be active during school time: Do children compensate by increasing physical activity levels after school? *Research Quarterly for Exercise and Sport*, 71(3), 240-248.
- Davis, L. E., Ajzen, I., Saunders, J., & Williams, T. (2002). The decision of African American students to complete high school: An application of the theory of planned behavior. *Journal of Educational Psychology*, 94(4), 810.
- Hagger, M. S., Chatzisarantis, N. L., & Biddle, S. J. (2002). A meta-analytic review of the theories of reasoned action and planned behavior in physical activity: Predictive validity and the contribution of additional variables. *Journal of Sport & Exercise Psychology*, 24 (1), 3-32.

- Hartmann, D., & Massoglia, M. (2007). Reassessing the relationship between high school sports participation and deviance: Evidence of enduring, bifurcated effects. *The Sociological Quarterly, 48*(3), 485-505.
- Heath, G. W., Pratt, M., Warren, C. W., & Kann, L. (1994). Physical activity patterns in American high school students: Results from the 1990 Youth Risk Behavior Survey. *Archives of Pediatrics & Adolescent Medicine, 148*(11), 1131-1136.
- Henderson, K. A. (1997). A critique of Constraints Theory: A response. *Journal of Leisure Research, 29*(4), 453-457.
- Hinch, T., Jackson, E. L., Hudson, S., & Walker, G. J. (2005). Leisure Constraints Theory and sports tourism. *Sport in Society: Cultures, Commerce, Media, Politics, 8*(2), 142-163.
- Hofferth, S. L., & Sandberg, J. F. (2001). How American children spend their time. *Journal of Marriage and Family, 63*(2), 295-308.
- Hohepa, M., Schofield, G., & Kolt, G. S. (2006). Physical activity: What do high school students think? *Journal of Adolescent Health, 39*(3), 328-336.
- Hrubes, D., Ajzen, I., & Daigle, J. (2001). Predicting hunting intentions and behavior: An application of the Theory of Planned Behavior. *Leisure Sciences, 23*(3), 165-178.
- Hurd, A. R., & Anderson, D. M. (2010). *The park and recreation professional's handbook*. Champaign, IL: Human Kinetics.

- Jackson, E. L., & Rucks, V. C. (1995). Negotiation of leisure constraints by junior-high and high-school students: An exploratory study. *Journal of Leisure Research, 27* (1), 85-105.
- Jackson, E. L. (2000). Will research on leisure constraints still be relevant in the twenty-first century? *Journal of Leisure Research, 32*(1), 62-68.
- Jackson, E., & Searle, M. S. (1985). Recreation non-participation and barriers to participation: Concepts and models. *Loisir & Société, 8*(2), 693-707.
- Janz, K. F., Lutuchy, E. M., Wenthe, P., & Levy, S. M. (2008). Measuring activity in children and adolescents using self-report: PAQ-C and PAQ-A. *Medicine and Science in Sports and Exercise, 40*(4), 767-772.
- Kain, E. (2014). NPD hardware sales numbers leak for June 2014. Retrieved from <http://www.forbes.com/sites/erikkain/2014/07/18/npd-hardware-sales-numbers-leak-for-june-2014/>
- Kowalski, K. C., Crocker, P. R., & Donen, R. M. (2004). The Physical Activity Questionnaire for Older Children (PAQ-C) and Adolescents (PAQ-A) manual. *College of Kinesiology, University of Saskatchewan, 82*, 2-37.
- Lee, J., Cerreto, F. A., & Lee, J. (2010). Theory of Planned Behavior and teachers' decisions regarding use of educational technology. *Educational Technology & Society, 13*(1), 152-164.

- Lenhart, A., Kahne, J., Middaugh, E., Macgill, A. R., Evans, C., & Vitak, J., & Pew Internet & American Life, P. (2008). Teens, video games, and civics: Teens' gaming experiences are diverse and include significant social interaction and civic engagement. *Pew Internet & American Life Project*.
- McKenzie, T. L., Marshall, S. J., Sallis, J. F., & Conway, T. L. (2000). Leisure-time physical activity in school environments: An observational study using SOPLAY. *Preventive Medicine, 30*(1), 70-77.
- Molnar, A., Huerta, L., Rice, J. K., Shafer, S. R., Barbour, M. K., Miron, G., Horvitz, B. (2014). Virtual schools in the US 2014: Politics, performance, policy, and research evidence. Boulder, CO: National Education Policy Center. Retrieved August, 2014 from <http://nepc.colorado.edu/publication/virtual-schools-annual-2014>.
- Neulinger, J. (1981). *To leisure: An introduction*. Boston, MA: Allyn & Bacon, c1981.
- NPD Group. (2011). *The video game industry is adding 2–17-year-old gamers at a rate higher than that age group's population growth* [press release] <https://www.npd.com/wps/portal/npd/us/news/press-releases/>.
- Ornstein, A. C., & Levine, D. U. (1984). *An introduction to the foundations of education* (3rd ed.). Boston: Houghton Mifflin.
- Pate, R. R., O'Neill, J. R., & Lobelo, F. (2008). The evolving definition of "sedentary". *Exercise and Sport Sciences Reviews, 36*(4), 173-178.

- Physical Activity Guidelines Advisory Committee. (2008). Physical Activity Guidelines Advisory Committee report, 2008. Washington, DC: US Department of Health and Human Services, 2008, A1-H14.
- Repetto, J., Cavanaugh, C., Wayer, N., & Liu, F. (2010). Virtual schools: Improving outcomes for students with disabilities. *Quarterly Review of Distance Education*, *11*(2), 91-104.
- Revenaugh, M. (2005). K-8 virtual schools: A glimpse into the future. *Educational Leadership*, *63*(4), 60.
- Rhea, D. J. (2011). Virtual physical education in the K-12 setting. *Journal of Physical Education, Recreation & Dance*, *82*(1), 5-50.
- Sallis, J. F., Johnson, M. F., Calfas, K. J., Caparosa, S., & Nichols, J. F. (1997). Assessing perceived physical environmental variables that may influence physical activity. *Research Quarterly for Exercise and Sport*, *68*(4), 345-351.
- Samdahl, D. M., & Jekubovich, N. J. (1997). A critique of leisure constraints: Comparative analyses and understandings. *Journal of Leisure Research*, *29*(4), 430-452.
- Searle, M. S., & Jackson, E. L. (1985). Socioeconomic variations in perceived barriers to recreation participation among would-be participants. *Leisure Sciences*, *7*(2), 227-249.

Equal access to interscholastic activities Act, A203, R212, S149, May 31, 2012Cong. (2012).

Sweeney, T. P., & Barcelona, R. J. (2012). An integrative review of published research in the *Recreational Sports Journal*, 1998-2010 *Recreational Sports Journal*, 37(1).

The University of Southern California Libraries. (July 28, 2014). Organizing your social sciences research paper: Theoretical framework. Retrieved from <http://libguides.usc.edu/content.php?pid=83009&sid=618409>.

Tennessee Department of Education. (2014). Virtual education report: July 2014. Retrieved in April 2015 from https://www.tn.gov/education/data/doc/virtual_education_report_2014.pdf.

Towson University. (2014). Creating scales in SPSS (PASW). Retrieved from <http://pages.towson.edu/jgarczyn/scalesspss.pdf>.

Troiano, R. P., Berrigan, D., Dodd, K. W., Masse, L. C., Tilert, T., & McDowell, M. (2008). Physical activity in the United States measured by accelerometer. *Medicine and Science in Sports and Exercise*, 40(1), 181.

Trost, S. G., Sallis, J. F., Pate, R. R., Freedson, P. S., Taylor, W. C., & Dowda, M. (2003). Evaluating a model of parental influence on youth physical activity schools. *American Journal of Preventative Medicine*, 25(4), 277-282.

Trudeau, F., & Shephard, R. J. (2008). Physical education, school physical activity, school sports and academic performance. *The International Journal of Behavioral Nutrition and Physical Activity*, 5, doi:10.1186/1479-5868-5-10.

Tucker, P., Irwin, J. D., Gilliland, J., He, M., Larsen, K., & Hess, P. (2009). Environmental influences on physical activity levels in Youth. *Health & Place*, 15(1), 357-363.

U.S News & World Report. (2014). Poland Seminary High School overview. Retrieved in April 2015 from <http://www.usnews.com/education/best-high-schools/ohio/districts/poland-local/poland-seminary-high-school-15613>.

Warburton, D. E., Nicol, C. W., & Bredin, S. S. (2006). Health benefits of physical activity: The evidence. *CMAJ : Canadian Medical Association Journal = Journal De l'Association Medicale Canadienne*, 174(6), 801-809.

Watson, J. (2005). Keeping pace with K-12 online learning: A review of state-level policy and practice. *Learning Point Associates / North Central Regional Educational Laboratory (NCREL)*.

Wegner, L., Flisher, A. J., Muller, M., & Lombard, C. (2006). Leisure boredom and substance use among high school students in South Africa. *Journal of Leisure Research*, 38(2), 249-266.

Weisz, J., Rothbaum, F., & Blackburn, T. (1984). Standing out and standing in: The psychology of control in America and Japan. *American Psychologist*, 39, 955-969.

Wellesley Coll., M. T. (2003). Making the case: A fact sheet on children and youth in out-of-school time. Retrieved from www.niost.org/Factsheet_2003.PDF.

APPENDICES

APPENDIX A

Physical Activity Questionnaire for Children (PAQ-C)

Recreation and Physical Activity Survey

<https://docs.google.com/forms/d/1GY3PX0cKZZha4obu-PSs3Asc...>

Recreation and Physical Activity Survey

Welcome!

* Required

1. Please read before you begin *

Thank you for taking the time to complete this survey! Keep in mind, you are free to leave questions blank if you feel uncomfortable answering them, or withdraw from this study at any time. You are being asked to participate in this research study because of your enrollment in a virtual or brick and mortar high school. The purpose of this study is to determine how the type of school you attend influences your recreation and physical activity habits. There are no risks, academically or otherwise, involved with this study. Some of the information collected could be personally sensitive in nature, however, every step will be taken to ensure complete confidentiality of the participants. You will have the right to withdraw without penalty, at any time during the course of this survey. You also may elect to leave questions blank, without penalty, if you do not feel comfortable answering those questions. If you should have any questions about this research study, please feel free to contact Tom Sweeney at thomas.sweeney@mtsu.edu or my Faculty Advisor, Dr. Joey Gray at joey.gray@mtsu.edu. All efforts, within reason, will be made to keep the personal information in your research record private but total privacy cannot be promised. Your name will not be used nor will you be identified personally in any way at any time. The final report may be published in academic journals upon completion, and the participant may request a copy of these findings from the researcher.

Mark only one oval.

- I have read this informed consent document and the material contained in it has been explained to me. By continuing, I agree to further participation in this study.
- I do not wish to participate further in this study. *Stop filling out this form.*

Demographic Information

2. What is your gender?

Mark only one oval.

- Male
- Female
- I prefer not to answer

3. How do you describe yourself?*Mark only one oval.*

- American Indian or Alaska Native
- Asian
- Black or African American
- Hispanic or Latino
- Native Hawaiian or Other Pacific Islander
- White
- Other: _____

4. What type of school do you attend?*Mark only one oval.*

- Brick and Mortar High School
- Virtual (Online) High School

5. How long have you attended your current school?*Mark only one oval.*

- 1 year
- 2 years
- 3 years
- 4 or more years

6. What is your current class standing?*Mark only one oval.*

- Freshman
- Sophomore
- Junior
- Senior

Recreational and Physical Activity

We would like to know about the recreational and physical activities you have done in the last 7 days. This includes sports or dance that made you sweat or feel tired, or games that made you out of breath. Please include school sports teams even if they are not currently in season.

REMEMBER: There are no right or wrong answers- this is not a test. It is OK to ask for help while answering these questions. PLEASE ANSWER ALL QUESTIONS AS HONESTLY AND ACCURATELY AS YOU CAN- THIS IS VERY IMPORTANT.

Recreation and Physical Activity Survey

<https://docs.google.com/forms/d/1GY3PX0cKZZha4obu-P8s3Asc...>

7. Have you done any of the following activities in the LAST 7 DAYS? If yes, select the circle that matches how many times per week you did each individual activity. If you play a school, league, or club sponsored sport, please include it in your response, even if it is currently not in season.

Mark only one oval per row.

	0	1 to 2	3 to 4	5 to 6	7 or more
Baseball/Softball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Basketball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Football	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Running/Jogging/Hiking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bicycling/Scooter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Golf	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gymnastics/Tumbling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Horseback Riding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Martial Arts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Skateboarding/Rollerblading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Soccer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Swimming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Climbing/Rock Climbing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tennis/Badminton/Racquetball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Volleyball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Walking (for exercise)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Weight Lifting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wrestling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. For the activities you selected, please indicate which were organized (run by a school, league, recreation center, etc) and which were not organized. If you did not participate in an activity, leave the response blank.
 Mark only one oval per row.

	Organized	Not Organized
Baseball/Softball	<input type="radio"/>	<input type="radio"/>
Basketball	<input type="radio"/>	<input type="radio"/>
Football	<input type="radio"/>	<input type="radio"/>
Running/Jogging/Hiking	<input type="radio"/>	<input type="radio"/>
Bicycling/Scooter	<input type="radio"/>	<input type="radio"/>
Dance	<input type="radio"/>	<input type="radio"/>
Golf	<input type="radio"/>	<input type="radio"/>
Gymnastics/Tumbling	<input type="radio"/>	<input type="radio"/>
Horseback Riding	<input type="radio"/>	<input type="radio"/>
Martial Arts	<input type="radio"/>	<input type="radio"/>
Skateboarding/Rollerblading	<input type="radio"/>	<input type="radio"/>
Soccer	<input type="radio"/>	<input type="radio"/>
Swimming	<input type="radio"/>	<input type="radio"/>
Climbing/Rock Climbing	<input type="radio"/>	<input type="radio"/>
Tennis/Badminton/Racquetball	<input type="radio"/>	<input type="radio"/>
Volleyball	<input type="radio"/>	<input type="radio"/>
Walking (for exercise)	<input type="radio"/>	<input type="radio"/>
Weight Lifting	<input type="radio"/>	<input type="radio"/>
Wrestling	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>

9. Have you done any of the following activities in the past 7 days? If yes, for how many hours?
 Mark only one oval per row.

	0	1-2 hours	3-4 hours	5-6 hours	9-10 hours	11 hours or more
Watch TV	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch Movies/DVDs /Streaming online	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surf the internet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talk on the phone/text	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to music	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Play computer/video games (PlayStation, XBOX, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Boardgames/Cards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drawing/Art	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reading for fun	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Writing for fun (Journalism, Blog, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Taking a nap	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. In the last 7 days , what did you do most of the time DURING THE MORNING, or if you were doing school work, during a morning break? Morning means the time after waking and before lunch. Mark only one.

Mark only one oval.

- Sat down (talking, reading, doing school work, talking on the phone)
- Stood around or walked around
- Ran or engaged in a recreational activity
- Worked out
- Other: _____

11. In the last 7 days, what did you normally DO AT LUNCH (besides eating)? Mark only one.

Mark only one oval.

- Sat down (talking, reading, doing school work, talking on the phone)
- Stood around or walked around
- Ran or engaged in a recreational activity
- Worked out
- Other: _____

12. In the last 7 days, on how many days DURING THE AFTERNOON, did you play sports, dance, workout or play games in which you were active? Afternoon means the time after lunch and before dinner. Mark only one.

Mark only one oval.

- None
- 1 afternoon in the last week
- 2 to 3 afternoons in the last week
- 4 to 5 afternoons in the last week
- 6 to 7 afternoons in the last week

13. In the last 7 days, on how many EVENINGS did you play sports, dance, workout or play games in which you were active? Evenings mean the time after dinner. Mark only one.

Mark only one oval.

- None
- 1 evening in the last week
- 2 to 3 evenings in the last week
- 4 to 5 evenings in the last week
- 6 to 7 evenings in the last week

Recreation and Physical Activity Survey

<https://docs.google.com/forms/d/1GY3PX0cKZZha4obu-P8s3Asc...>

14. How many times did you play sports, dance, workout or play games in which you were very active LAST WEEKEND (Saturday and Sunday)? Mark only one.

Mark only one oval.

- None
- 1 time last weekend
- 2 to 3 times last weekend
- 4 to 5 times last weekend
- 6 or more times last weekend

15. In the last 7 days DURING YOUR PHYSICAL EDUCATION (P.E.) CLASSES, how often were you very active (playing hard, running, jumping, and throwing) ?

Mark only one oval.

- I didn't do P.E. in the last seven days
- Hardly Ever
- Sometimes
- Quite often
- Always

16. How many hours per day did you WATCH TELEVISION in the last week? Include the time you spent watching movies, DVDs, or streaming online. Do not count television or videos watched for school.

Mark only one oval.

- Less than 1 hour per day or not at all
- At least 1 hour per day, but less than 2 hours
- At least 2 hours per day, but less than 3 hours
- At least 3 hours per day, but less than 4 hours
- 4 hours or more per day

17. How many hours per day did you play video, computer, or electronic games in the last week?

Mark only one oval.

- Less than 1 hour per day or not at all
- At least 1 hour per day, but less than 2 hours
- At least 2 hours per day, but less than 3 hours
- At least 3 hours per day, but less than 4 hours
- 4 hours or more per day

18. How many hours per day did you spend on social media, checking email, or browsing the web last week? Do not count school or work-related computer use.

Mark only one oval.

- Less than 1 hour per day or not at all
- At least 1 hour per day, but less than 2 hours
- At least 2 hours per day, but less than 3 hours
- At least 3 hours per day, but less than 4 hours
- 4 hours or more per day

19. How many MINUTES per day did you talk on the phone in the last week? Do not count school or work-related phone use.

Mark only one oval.

- Less than 15 minutes or not at all
- At least 15 minutes per day, but less than 30 minutes
- At least 30 minutes per day, but less than 1 hour
- At least 1 hour per day, but less than 2 hours
- 2 or more hours per day

20. Which ONE of the following five statements describes you best for the last 7 days? Read all 5 before deciding on the one answer that describes you.

Mark only one oval.

- All or most of my free time was spent doing things that involved little physical effort, for example, watching TV/DVDs/Streaming online, doing homework, spending time on social media/internet, or playing video/computer/electronic games.
- I sometimes (1 to 2 times in the last week) did physical things in my free time, for example, played sports, went running, swimming, bike riding, hiking, or working out.
- 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.

21. Were you sick in the last week, or did anything prevent you from doing your normal physical activities?

Mark only one oval.

- Yes
- No

Barriers to Participation

APPENDIX B

Leisure Constraints Scale

People have many reasons for not participating in **physical** activities. Also, there are factors that prevent one from taking part in physical activities to the extent to which he/she would like. We would like from you to evaluate the importance of the following statements as limiting or prohibiting factors for your participation in physical activities.

Scale 1-7

Very Important ----- Not Important

Individual Items	1	2	3	4	5	6	7
Time							
I do have time because of my work commitments							
I do not have time because of my family commitments							
I do not have time because of my social commitment							
I do not want to interrupt my daily schedule							
The timetable does not fit with mine							
Psychological							
Exercise makes me feel tired							
I am afraid of getting hurt							
I feel too tired to exercise							
I have health problems							
I am not fit enough							
I am not skilled enough							
I do not feel confident to exercise							
I do not like exercising in a public place							
Knowledge							
I do not know where to participate							
I do not have anyone to teach me the activities I like							
I do not know where I can learn the activities I like							
Resources / Facilities							
The facilities are of poor quality							
I do not like the activities offered							

The facilities are inadequate

The facilities are crowded

Accessibility / Cost

Transportation takes too much time

I have no opportunities to exercise near my home

I do not have transportation

I cannot afford

Partners

I have nobody to do exercise with

My friends do not have time to do exercise

My friends do not like exercising

My friends are not interested in exercising

Interest

I am not interested in exercising

I participated in exercise programs in the past and I did not like it

I do not like doing exercise

APPENDIX C

Informed Consent Form

Principal Investigator: Thomas P. Sweeney

Study Title: Examining the Impact of School Type on Out-of-School Time Recreational Activities of High School Students Institution: Middle Tennessee State University

The following information is provided to inform you about the research project and your 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. You will be given an opportunity to ask questions, and your questions will be answered. Also, you will be given a copy of this consent form.

Your participation in this research study is voluntary. You are 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:

You are being asked to participate in a research study because of your enrollment in a virtual or brick and mortar high school. The purpose of this study is to determine how the type of school you attend influences your recreation and physical activity habits.

2. Description of procedures to be followed and approximate duration of the study:

If you choose to participate, you will be asked to complete one round of online surveys requiring less than 30 minutes of your time.

3. Expected costs:

There are no costs associated with participants of this study.

4. Description of the discomforts, inconveniences, and/or risks that can be reasonably expected as a result of participation in this study:

There are no risks, academically or otherwise, involved with this study. Some of the information collected in this study could be personally sensitive in nature. However, every step will be taken to ensure complete confidentiality of the participants.

5. Anticipated benefits from this study:

a) The results of this study could provide valuable information regarding how different academic environments affect your recreation participation. It will also bring to light any factors which could keep you from participating in an activity or activities. This information could influence future recreation programming, policies, and activities which will better serve you as a student.

6. Compensation for participation:

No incentives are being offered to participate in this study, at this time.

7. What happens if you choose to withdraw from study participation:

You will have the right to withdraw from this study without penalty, at any time during the course of the study. You also may elect to leave survey questions blank, without penalty, if you do not feel comfortable answering those questions.

8. **Contact Information.** If you should have any questions about this research study or possible injury, please feel free to contact **Tom Sweeney** at **330-519-4924** or my Faculty Advisor, **Dr. Joey Gray** at **615-904-8359**
9. **Confidentiality.** All efforts, within reason, will be made to keep the personal information in your research record private but total privacy cannot be promised. Your name will not be used nor will you be identified personally in any way or at any time. The final report may be published in academic journals upon completion, and the participant may request a copy of these findings from the researcher.

10. STATEMENT BY PERSON AGREEING TO PARTICIPATE IN THIS STUDY

I have read this informed consent document and the material contained in it has been explained to me. By continuing, I agree to further participation in this study.