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High School Teacher and Administrator Perceptions of Student Health Promotion: An Exploratory Study

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A dissertation submitted in partial fulfillment of the requirements for the Doctor of Philosophy in Education, Educational Psychology at Virginia Commonwealth University.

by

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Dedication

This dissertation is dedicated to my husband, Billy Gould. Thanks for you unwavering support and dedication. Most importantly, thanks for being patient and always encouraging me to do the same.

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Abstract

HIGH SCHOOL TEACHER AND ADMINISTRATOR PERCEPTIONS OF HEALTH PROMOTION: AN EXPLORATORY STUDY

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A dissertation submitted in partial fulfillment of the requirements for the Doctor of Philosophy in Education, Educational Psychology at Virginia Commonwealth University.

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Researchers and health professionals are concerned about the high rates of childhood obesity. This concern is especially high for adolescents ages 12-19, because overweight and obesity rates are highest within this age group. The current study explored the high school health promotion environment with regards to physical activity, nutrition, and sedentary behaviors from the perspective of high school health and physical education teachers and administrators. Specifically, potential strategies for a prevention program to promote student physical activity participation and healthy eating, and decrease student sedentary time were explored.

Individual semi-structured interviews were conducted with physical education teachers to explore potential strategies to promote student health behaviors. Next, interviews were conducted with high school administrators to determine the feasibility of recommended strategies. Teachers and administrators in the current study expressed a need for strategies that target student health at the high school level; however, educators felt taxed and overburdened,

and cited the current state of public education as a barrier to implementing strategies. Additional barriers to implementing health-based strategies included funding, transportation, supervision, facilities, and logistics or regulations. Participants explained the school lunch program has improved, with schools now offering healthier food. Unfortunately, the perceived number of students buying lunches has decreased and educators still feel the lunch options could be improved.

Although there were many barriers to implementing the extracurricular initiatives discussed, the following strategies were considered the most feasible by teachers and administrators in the current study: intramurals, open gym times, fitness classes or group exercise classes, fitness apps, and improving the school lunches. Teachers and administrators held mixed views about policy changes that have the greatest potential to influence student health behaviors. Educators called for parent and community partnerships to help overcome the hurdles associated with implementing extracurricular school-based health activities. Findings illustrated the necessity of a multi-faceted approach to implementing health-based strategies at the high school level.

Chapter One: Introduction

Over the past three decades there has been a growing concern among researchers and health professionals about childhood obesity rates and the health consequences associated with obesity. Data from nationally representative samples of US children and adolescents show an increase in body mass index (BMI), especially during adolescence (Ogden, Carroll, Kit, & Flegal, 2012; Ogden, Flegal, Carroll, & Johnson, 2002; Ogden, Carroll, Curtin, McDowell, Tabak, & Flegal, 2006). There are many short and long term health consequences associated with being overweight and obese, including increased risk for type II diabetes, high blood pressure, and high cholesterol (US Department of Health & Human Services, 2010). Further, overweight or obese children and adolescents are more likely to become overweight adults (Freedman, Mei, Srinivasan, Berenson, & Dietz, 2007).

Ogden and colleagues conducted a series of studies examining the prevalence and trends in BMI using data from the National Health and Nutrition Examination Survey (Ogden et al., 2012; Ogden et al., 2002; Ogden et al., 2006). Researchers examined trends in BMI (calculated as weight in kilograms divided by the square of height in meters; Ogden et al., 2002) in youth ages 2-19 and reported figures by age group and gender. Of particular importance to the current study is the 12-19 age group, or adolescence. The following statistics represent overweight as a BMI $\geq$ 85% and obese as a BMI $\geq$ 95% (Ogden & Flegal, 2010). In 1999-2000, the prevalence of obesity in children was highest among 12-19 year olds at 15.5% (Ogden et al., 2002). Similarly, the prevalence of overweight in children was highest among 12-19 year olds at 30.4%.

These results suggested a 10% increase in obese adolescents from the 1976-1980 National Health and Nutrition Examination Survey. Rates of obesity and overweight have continued to rise; most recent data suggests that 18.4% of adolescents are obese (Ogden et al., 2012). Rates of obesity were higher among adolescent males (19.6%) compared with adolescent females (17.1%). Although the rate at which overweight and obesity rates have increased has slowed since the 1980s and 1990s, approximately 1/3 (33.6%) of adolescents are still considered overweight or obese (Ogden et al., 2012). Similar results were found when examining data from the National Youth Physical Activity and Nutrition Study (NYPANS). Nineteen percent of students in grades 9-12 were considered obese and 17.8% were considered overweight based on BMI-for age (Lowry, Lee, Fulton, Demissie, & Kann, 2013). This is problematic considering the health and emotional consequences associated with being an overweight or obese adolescent.

Overweight and obese adolescents are more likely to have cardiovascular risk factors, as well as lower emotional well-being (Freedman et al., 2007; Loth, Mond, Wall, & Neumark-Sztainer, 2010). In a longitudinal study examining cardiovascular risk factors among children and adolescents, Freedman et al. (2007) found that children and adolescents with high BMIs were more likely to have multiple risk factors, excess adiposity, and a high risk for adult obesity. Results were especially pronounced for individuals with a BMI at the 99th percentile. Relatedly, Cook, Weitzman, Auinger, Nguyen, & Dietz (2003) found that 30% of overweight adolescents met the criteria for metabolic syndrome, which frequently progresses to type II diabetes during adulthood.

The health consequences related to obesity are apparent and also impact emotional well-being (Loth et al., 2010). Loth et al. (2010) conducted a longitudinal study examining the relation between weight status and emotional well-being. Their results indicated that at baseline

overweight participants had lower body satisfaction and decreased self-esteem compared with normal weight participants. Further, the longitudinal results showed that the relation between overweight and emotional well-being persisted into young adulthood. Male participants demonstrated an increase in depressive mood between early and middle adolescence.

The evidence illustrating the negative influence childhood obesity has on individual physical and emotional health as well as public healthcare costs has prompted prevention efforts aimed at decreasing the rates of childhood obesity. Many clinical and community programs have been implemented with children and adolescents to encourage healthy weight-related behaviors, such as increasing physical activity, promoting healthy eating, and decreasing sedentary behaviors (Foster et al., 2012; Lloyd-Richarson et al., 2012; Sweat et al., 2011). The responsibility also has been placed on schools due to the resources available and the amount of time students spend in this setting (Budd & Volpe, 2006; Story, 1999). Although schools cannot solve the problem alone, Story, Nanney & Schwartz (2009) suggested that it is "unlikely" the problem will be solved without strong school-based policies and programs to encourage healthy eating and physical activity. Schools are an ideal place to implement obesity prevention and intervention programs that address weight related behaviors, such as physical activity, nutrition, and sedentary behaviors. By extension, teachers and administrators become important players in the fight against childhood obesity.

Overview and Rationale of the Study

The high rates of obesity during adolescence have drawn attention to elementary and middle schools as settings to implement prevention programs. Although both elementary and middle schools are ideal places for prevention programs, there has been little research that explores high schools as a setting for obesity prevention programs (Neumark-Sztainer, Story,

Hannan, & Rex, 2003). The few programs that have been implemented have targeted females (Neumark-Szatiner et al., 2003), one weight-related behavior, such as nutrition or physical activity, (Fulkerson, French, Story, Nelson, & Hannan, 2003; Pate et al., 2005), or individual influences on health behaviors but not school-wide influences such as advertising (Mauriello et al., 2010; Whitemore, Jeon, & Grey, 2013).

It is possible high schools have not received the same level of attention as elementary and middle schools because some scientists believe students have developed their health habits by the time they reach adolescence, making it less likely that a behavior change will occur. As such, some researchers suggest programs and initiatives target children while they are still developing their health habits (Waters et al., 2011). For school-based programs, this specifically means pre-school or elementary settings. One cannot argue against the rationale that programs should target students as they develop healthy eating and physical activity behaviors. However, if youth are not provided with support throughout their schooling they might not maintain the behaviors they have developed. Further, adolescence represents a transition between childhood and young adulthood, which is marked by substantial physical and social changes (Christine & Viner, 2005). During this time, youth behaviors may be malleable as they make changes to fit into social groups (Leifer & Hartston, 2004). These changes may promote or thwart the behaviors which adolescents have adopted. Providing students with support throughout the transition from childhood to young adulthood is necessary to encourage students to make healthy decisions when they have greater independence.

Further, high school represents a critical time period because high school students take part in a variety of unhealthy weight-related behaviors. For example, many high school students fail to meet recommendations for physical activity and fruit and vegetable consumption (Gordon-

Larsen, Nelson, & Popkin, 2004), and student computer and/or video game use increases, factors influencing student sedentary time (Kann et al., 2014). In addition to unhealthy weight-related behaviors, there are a number of developmental considerations that influence high school students' behavior, such as increased autonomy (Hair, Park, Ling, & Moore, 2009) and a decrease in parental support (Bauer, Laska, Fulkerson, & Neumark-Sztainer, 2011). Peer groups also become more influential during high school years, which has the potential to influence health behaviors both positively and negatively (Leifer & Hartston, 2004). The combination of these health and developmental changes has been shown to influence adolescent decision-making, especially with regard to risk-taking behaviors (Somerville, Jones, & Casey, 2010). Resources are needed to help adolescents as they become more autonomous and transition to making their own life decisions, including those regarding health behaviors.

Additionally, high school may be the last chance to expose a large number of individuals to a prevention program before they transition to young adulthood, which also marks a time of significant changes and increased independence. Moreover, young adulthood is a high risk time for unhealthy behaviors, weight gain, and obesity (Anderson, Shapiro, & Lundgren, 2003). For example, using longitudinal data, researchers found that physical activity participation decreases an average of 24% across the transition from adolescence to early adulthood (Kwan et al., 2012). Not only is a high school program needed to sustain behaviors developed in childhood, but it also targets students before they become independent adults.

Researchers have found mixed results about the effectiveness of school-based programs. One meta-analysis of school-based programs demonstrated efficacy for reducing the prevalence of childhood obesity (Gonzalez-Suarez, Worley, Grimmer-Somers, & Dones, 2009), whereas other researchers were more cautious about drawing conclusions on school-based programs due

to the varied methodologies employed during interventions (Kropski, Keckley & Jensen, 2008). However, researchers agree that programs are more likely to be successful for the target population when formative research is conducted with stakeholders (Gittelsohn et al., 2006; Healy & Zimmerman, 2010; Kumanyika et al., 2003). The Center for Disease Control and Prevention (CDC) states teachers and administrators are key stakeholders involved in coordinated school health programs (CDC, 2011a). Formative work is conducted to explore stakeholder beliefs, perceptions, and behaviors with the intent of developing culturally appropriate interventions (Sussman et al., 2013). Hesketh, Waters, Green, Salmon, and Williams (2005) suggested the opinions of stakeholders have been overlooked in health promotion program development. Thus, the current study explored high school teacher and administrators perceptions regarding weight-related behaviors, specifically physical activity, nutrition, and sedentary behaviors, which are often targeted in prevention programs. An additional aim was to explore the feasibility, according to administrators, of teacher recommended strategies to promote these health behaviors.

Research Questions

1. How do teachers and administrators perceive the current high school environment with regard to student health promotion, specifically student physical activity, nutrition, and sedentary behaviors?
2. What are teacher and administrator perceived barriers and facilitators for high school student sedentary behaviors and participation in physical activity and healthy eating?
3. What strategies do teachers recommend for a prevention program targeting high school students' physical activity, nutrition and sedentary behaviors?
4. What is the feasibility of teacher recommended strategies according to administrators?

Design and Methods

This qualitative study used in-depth semi-structured interviews following the recommendations of Rubin and Rubin (2012). Participants were recruited from high schools in a large Mid-Atlantic school district. Data analysis occurred through the constant comparative method outlined by Corbin and Strauss (2008). Inductive qualitative methodology was used to allow data to emerge that was not constrained to pre-determined notions of what successful high school programs may entail.

Definition of Terms

1. Physical Activity (PA) – Physical activity is any bodily movement that results in energy expenditure (Casperson, Powell, & Christenson, 1985).
2. Nutrition science – the study of food systems, foods and drinks, and their nutrients and other constituents (Beauman et al., 2005).
3. Sedentary behavior – "A distinct class of behaviors (e.g., sitting, watching TV, driving) characterized by little physical activity movement and low energy expenditure (≤1.5 METs)" (Tremblay, Colley, Saunders, Healy, & Owen, 2010, p.727).
4. Obesity – BMI-for-age greater than 85th percentile and less than 95th percentile (Ogden & Flegal, 2010).
5. Obese – BMI-for-age greater than 95th percentile (Ogden & Flegal, 2010).
6. Adolescence – Children ages 12-19 (Ogden et al., 2012).

Chapter 2: Literature Review

The rationale and methods for this study were informed by different components of the literature. Thisliterature review is organized around the following sections: weight-related behaviors of high school students, school health programs, the role of teachers, the role of administrators, program development, theoretical framework (ecological model, social cognitive theory, and social marketing), and the current study. Each section contributed to the methodological decisions and/or content of the protocol. Findings from these areas of literature were used to develop main protocol questions and probes. Databases used to search for literature included PsychInfo, PubMedline, and Academic Search Complete. Combinations of the following search terms were entered: teacher, administrator, principal, student, qualitative, physical activity, nutrition, sedentary, high school, adolescent, obesity prevention, school policy, peer-led, social cognitive, ecological model, social marketing, and messages.

Weight-Related Behaviors of High School Students

Research shows that promoting energy balance behaviors, that is, targeting weight-related behaviors in an effort to balance energy intake and energy expenditure, is important for prevention programs (Driskell, Dyment, Mauriello, Castle, & Sherman, 2008; Hill, Wyatt, & Peters, 2012). Energy balance occurs when the amount of energy expenditure equals the amount of energy intake, generally resulting in a stable body weight (Hill et al., 2012). As such, promoting energy balance behaviors is appropriate for prevention programs because the goal is to prevent weight gain, not reduce body weight. The Academy of Nutrition and Dietetics

recommends including both nutrition and physical education in school-based primary prevention programs (Hoelscher, Kirk, Richie, & Cunningham-Sabo., 2013). Additionally, in a review of population-based interventions conducted in schools to prevent adolescent obesity Sharma (2006) recommended prevention programs target both physical activity and nutrition. Moreover, research has called for interventions that also focus on decreasing sedentary behaviors (Schmitz et al., 2002).

Previous research suggests a correlation between adolescents' physical activity, nutrition, and sedentary behaviors. For example, Driskell et al. (2008) examined the percentage of elementary, middle, and high school students at risk for not meeting recommended criteria for physical activity, fruit and vegetable consumption, and TV viewing. Findings indicated that physical activity and fruit and vegetable consumption significantly declined as students progressed through school. Most noteworthy, high school students who were at risk for inadequate fruit and vegetable consumption were nearly three times more likely to be at risk for inadequate physical activity. Although TV viewing declined with age, high school students who did not limit their TV viewing watched significantly more TV than elementary and middle school students. Similarly, findings by Sanchez et al. (2007) revealed that 36% of adolescents reported having two weight-related risk factors and 48.2% reported more than three risk factors. The number of students reporting multiple risk factors, and the association between risk factors further highlights the need for programs that address multiple weight-related behaviors. Based on previous research on adolescent weight-related behaviors and school-based programs student nutrition, physical activity, and sedentary behaviors were explored.

Physical Activity

Researchers often measure physical activity levels by the number of days an individual has met recommended levels. For youth ages 6-17, the federal recommendation by the Center for Disease Control and Prevention (CDC) for aerobic physical activity is 60 minutes or more each day, and the recommendation for muscle strengthening is 60 minutes or more for at least three days a week (CDC, 2011b). Currently, less than 20% of adolescents meet these recommendations for physical activity (US Department of Health and Human Services, 2014).

Both cross-sectional and longitudinal data show that physical activity levels decline during adolescence, especially during late adolescence. Dumith, Gigante, Domingues and Kohl (2011) conducted a pooled analysis of longitudinal studies examining changes in physical activity (PA) during adolescence (10-19 years). Twenty-six studies were reviewed and authors concluded that the mean percentile of change in PA was minus seven percent a year, resulting in approximately a 60-70% decrease throughout adolescence. Similar, longitudinal data from Project EAT (Eating Among Teens) was used to examine the physical activity patterns of adolescents in early adolescence (11-15 years), mid adolescence (15-18 years), and late adolescence/young adulthood (18-23 years) (Nelson, Neumark-Sztainer, Hannan, Sirard, & Story, 2006). Findings indicated that for girls, Moderate to Vigorous Physical Activity (MVPA) declined from 5.9 to 4.9 hours/week during the transition from early to mid adolescence, and then declined again to 3.5 hours a week during mid-to late adolescence. For boys, there was no significant decline in MVPA from early to mid adolescence, however there was a significant decline in boys from 6.5 to 5.1 hours from mid to late adolescence.

Using cross-sectional data from the National Health Interview Survey—Youth Risk Behavior Survey (NHIS-YRBS) researchers examined changes in physical activity across

participants/adolescents in three age groups, 12-15, 15-18, and 18-21 (Casperson, Pereira, & Curran, 2000). Results showed that physical activity patterns declined during adolescence and "eroded" most during the 15-18 year time frame, which represents the age range for high school students. More recent, the CDC examined physical activity data in relation to the Healthy People 2020 objectives for youth physical activity participation. Physical activity objective three states "increase the proportion of adolescents who meet current federal physical activity guidelines for aerobic physical activity and for muscle-strengthening activity" (US Department of Health and Human Resources, 2014). Data from the 2010 National Youth Physical Activity and Nutrition Study (NYPANS) were examined for students in grades 9-12 nationwide. Results revealed that 15.3% of students met the aerobic objective, 51% met the muscle-strengthening objective, and 12.2% met the objective for both aerobic and muscle-strengthening (Fulton et al., 2011). For each objective, a higher percentage of male students met the objective than females, and the percentage of students meeting each objective declined from 9th grade through 12th grade (Fulton et al., 2011). For students who were not obese, 16.2% participated in daily physical activity, and only 10.6% of obese students participated in daily physical activity (Lowry et al., 2013). Taken together, these findings from nationally representative data sets illustrate the low percentage of high school students who meet physical activity recommendations. Strategies are needed to encourage physical activity participation among all high school students.

Nutrition

Cross-sectional and longitudinal data also have been used to examine nutrition behaviors of high school students. Longitudinal data from Project EAT (Eating Among Teens) suggest that healthy eating declines during adolescence. For example, data showed that average daily fruit and vegetable consumption decreased from early adolescence to mid adolescence by .7 servings

for girls, and .8 servings for boys, and decreased again by .6 servings from mid to late adolescence for both genders (Larson, Neumark-Sztainer, Hannan, & Story, 2007). Breakfast eating also declined as students progressed through adolescence. Additionally, whole-grain intake was lower than recommended (Larson, Neumark-Sztainer, Story & Burgess-Champoux, 2010).

This is especially problematic as other studies have found an increase in adolescent consumption of fast food, soda, and sugar-sweetened beverages as students progressed through school (Nelson, Neumark-Sztainer, Hannan, & Story, 2009). Soda consumption for males increased from .38 servings to .55 servings/day from early to mid adolescence, and from .94 to 1.25 servings for sugar-sweetened beverages. For females, sugar-sweetened beverages increased from .86 servings in middle school to .97 in high school. Alcohol consumption increased across all age groups and for both genders, whereas milk, fruit juice, and diet soda consumption decreased with age. Similar findings were revealed when examining cross-sectional data from the NYPANS survey. Students reported their beverage consumption per day for the previous seven days and approximately 24% of high school students consumed a serving of soda, 16.1% consumed a sports drink serving, and 16.9% consumed a serving of another sugar-sweetened beverage (Brener et al., 2011).

Sedentary Behaviors

Data also suggest sedentary behaviors, such as television viewing and playing on the computer, increase during adolescence. For example, longitudinal data from Project EAT demonstrated that computer use significantly increased among females by 3.7 hours during the transition from mid to late adolescence, and leisure computer use significantly increased from 10.4-14.2 hours/week for males (Nelson et al., 2006). Similarly, nationally representative data

from the 2013 Youth Risk Behavior Survey shows that 41.3% of high school students played video or computer games, or used a computer for something non-school related for three or more hours a day (Kann et al., 2014). Additionally, data indicates that the percentage of students who spend more than 3 hours on a computer/video game has increased by 20% since 2003. Further, 32.5% of high schools reported watching television three or more hours per day on an average school day (Kann et al., 2014). Unlike computer use, there has been a linear decrease in the percentage of students who watch more than three hours of a television a day. Although this is promising, approximately one third of high school students still watch more than three hours of TV/day.

Findings from longitudinal and cross-sectional data show that adolescent weight-related behaviors are alarming. Additionally, findings show that all adolescents, not just overweight or obese adolescents, report low levels of physical activity participation, poor nutrition habits, and increased sedentary time. Prevention programs are needed that promote energy balanced behaviors and prevent greater declines in physical activity and nutrition behaviors through adolescence and into young adulthood for all high school students. The goal of this study was to develop recommendations for a school-based primary prevention program that encourages healthy, energy balanced behaviors of high school students.

School Health Programs

Schools are the only establishment that reaches almost all youth, therefore they play a crucial role in promoting positive health behaviors among children and adolescents (Fischer et al., 2003). Schools have implemented a variety of programs, including obesity intervention and prevention programs targeting weight-related behaviors such as physical activity, nutrition, sedentary behaviors, TV viewing, and unhealthy weigh-related behaviors. A notable trend

across school-based reviews and meta-analyses was the lack of high school programs. For example, none of the 14 studies in the Kropski et al. (2008) review of school-based obesity prevention programs were conducted with a high school population, and one of fourteen randomized controlled trials (RCTs) was conducted at the high school level in a review by Budd and Volpe (2006) and this program targeted reducing risks for heart disease. Similarly, out of 11 adolescent interventions reviewed by Sharma (2006) only one targeted high school students and the program solely targeted females. Additionally, two of sixteen programs were high school-based in a review of school-based programs that targeted multiple weight-related behaviors, and one was a female only program (Zenzen & Kridli, 2009). Finally, out of 24 programs reviewed in a content analysis of school-based nutrition interventions, only one program targeted high school students (Roseman, Riddell, & Haynes, 2011). The lack of high school programs warrants research that explores strategies for a primary prevention program for high school students.

High School Programs

There have been a few high school-based health programs that target physical activity and nutrition behaviors (Mauriello et al., 2010; Neumark-Sztainer et al., 2003; Whittemore, Jeon, & Grey, 2013). Programs used different modes of delivery, such as online or interactive programs and all girl interventions through PE classes. These programs serve as a frame of reference for potential prevention program strategies aimed at the general student population. New Moves, Health in Motion, and HEALTH[E]TEEN are most related to the goals of the current study and are detailed in the following section. The New Moves program was an obesity intervention that targeted females through physical education courses. Two prevention programs, Health in Motion and HEALTH[E]TEEN, utilized an interactive approach to deliver

lessons on physical activity and nutrition. Components of programs that targeted one weight-related behavior also are discussed (French, Story, Fulkerson, & Hannan, 2004; Pate et al., 2005).

New Moves. New Moves, an obesity intervention that targeted high school girls who were overweight or at risk for becoming overweight due to low levels of physical activity, is perhaps the most well known and comprehensive high school program to date (Neumark-Sztainer et al., 2003). New Moves utilized a social cognitive framework, and targeted socioenviornmental factors (supportive atmosphere), personal factors (self-efficacy) and behavioral factors (goal setting). More specifically, physical activity was offered four times a week and social support and nutrition were offered every other week. School PE teachers, guidance counselors, and members of the New Moves research team implemented the intervention.

There were relatively few statistical differences between intervention and control schools related to health behaviors (Neumark-Sztainer et al., 2003). Intervention schools did report a progression of change in their stage of physical activity, whereas the control group regressed. However, there were no differences in BMI, actual physical activity level, sedentary activity, fruit/vegetable intake, soda pop intake, or breakfast and fast food behaviors. Further, there were no differences in personal factors (self-efficacy for physical activity, enjoyment of physical activity, self-worth), and no differences in socio environmental factors (parent, peer or staff support). To examine the impact of the program further, interviews were conducted with PE teachers, principals, parents, and participants. Both physical educators and principals reported strong support for New Moves. One challenge that PE teachers noted was balancing the time allotted during the class between key concepts, and providing time to be active. Ninety-one

percent of girls were satisfied with the overall program, 85% with the physical activity component, 89% with the nutrition component, and 86% with the social support sessions. Interviews and surveys with participants showed that girls expressed a positive influence of the program on physical activity levels, eating patterns, and self-image. New Moves illustrated that a high school program for overweight and obese female adolescents was well received by participants, school members, and teachers regardless of the lack of statistically significant behavior changes.

Health in Motion. As opposed to targeting students at-risk of overweight, Mauriello et al. (2010) tested the efficacy of an interactive computer tailored obesity prevention program, Health in Motion, for all high school students. Using a transtheoretical model of behavior change, individually tailored messages were provided for physical activity, fruit and vegetable consumption, and TV viewing. Participants completed a 30-minute online program where feedback was provided to participants based on their self-reported behavior stage. Three intervention sessions were conducted at baseline, one month, and two months, as well as a six and 12 month follow up session.

Compared with the control group, the intervention group reported more days of participating in at least 60 minutes of physical activity at two months, and eating significantly more servings of fruit and vegetables at all time points. Similarly, more participants in the treatment group progressed to action or maintenance stages for physical activity at two months, fruit and vegetable consumption at two and six months, and limited TV viewing at two months. Significantly more participants remained in the action or maintenance stage for physical activity and TV viewing at two months, and fruit and vegetable at all time points. Participants in the control group also reported significantly fewer risks (defined as being in the pre-action stage) at

all time points. Further, analyses indicated that a change in one behavior increased the likelihood of a change in another behavior for the treatment group but not the control. Each behavior pair exhibited significant co-variation at two and six months, and this remained true between physical activity and fruit and vegetable consumption at 12 months. The control group did not exhibit co-variation among any behavior pairs at any time point. There was a significant difference between participants who moved to overweight status at two months, however, it disappeared when controlling for school.

The findings from the Health in Motion prevention program illustrate many important points. First, an interactive computer tailored intervention was successful at targeting behavior risks, each weight-related behavior immediately following the intervention, and fruit and vegetable consumption across all time points. Further, findings revealed a co-variation of behavior change, which illustrates the importance of targeting multiple health behaviors within prevention programs. In addition, a computer intervention has the potential for greater dissemination because fewer resources are needed to reach a large population. Finally, Health in Motion targeted all adolescents, not just students at risk of being overweight or obese.

HEALTH[e]TEEN. The HEATLH[e]TEEN program also utilized an interactive internet-based prevention program for high school students (Whittemore et al., 2013). Researchers examined the impact of the HEALTH[e]TEEN and the HEATLH[e]TEEN + CST (coping skills training) program on BMI, nutrition, physical activity, sedentary behaviors, and self-efficacy at three and six months with high school students enrolled in biology or physical education courses. The program consisted of four main components: lessons targeting nutrition, physical activity, metabolism, and portion control; goal setting; self-monitoring; and health coaching and social networking. The health coaching and social networking provided an

opportunity for participants to communicate with a health coach (graduate nursing student) and peers. The HEALTH[e]TEEN + CST included an additional four lessons on coping skills training.

Researchers examined the impact of both programs on BMI, sedentary behavior, physical activity, nutrition behavior, self-efficacy, satisfaction, and usage. There were no differences between the two versions of the program. Over six months, students reported a significant increase in self-efficacy, healthy eating behavior, fruit and vegetable intake, moderate and vigorous physical activity, stretching exercises, as well as decreases in sugar-sweetened drinks, junk food, and sedentary behavior. There was no significant decrease in BMI, however there was a marginally significant decrease in body weight. Participant satisfaction and completion of the program was high. This program also illustrates the potential for an internet-based prevention program for high school students. Although it was not implemented school-wide, the program demonstrates that providing individualized feedback through an interactive program was well received by high school students and beneficial for weight-related behaviors and self-efficacy.

High School Programs Targeting a Single Weight-Related Behavior. Other programs targeted a single weight-related behavior. For example, results from the physical activity intervention LEAP (Lifestyle Education for Activity Program) showed that it is possible to prevent the decline in physical activity among ninth grade girls (Pate et al., 2005). Follow up data when participants were in 12th grade revealed that females who were in schools which most fully integrated and maintained LEAP were more likely to participate in one or more 30-minute blocks of vigorous physical activity a day (Pate et al., 2007). Programs also have targeted nutrition behaviors. The TACOS (Trying Alternative Cafeteria Options in Schools) program

implemented in ten high schools, used student-based promotions to influence student nutrition choices (French et al. 2004; Fulkerson et al., 2003). Results indicated that after two years, the intervention schools had significantly greater sales of lower-fat foods in both years, and students perceived a greater availability of lower-fat foods than control schools. In addition, students in the intervention schools reported more perceived adult support to buy low-fat foods, greater number of peers who usually bought lower-fat foods, and that it was easier to identify and buy lower-fat foods. There were no significant differences between self-reported food choices.

These studies illustrate components that may be successful for a high school prevention program. However, the lack of statistical differences in health behaviors found in some programs warrants more research to determine how to promote and maintain changes in physical activity and nutrition behaviors. Multiple programs targeted females exclusively or one single weight-related behavior. Although there was one program that targeted the entire student body and one program that targeted the general population through biology or physical education courses, neither program focused on changes in the school environment. This study fills that gap by exploring strategies for a comprehensive program for the entire study body that targets individual and school-related factors. Strategies employed in the previous programs, such as implementing new physical activities in physical education courses, environmental changes to promote physical activity and nutrition, web-based or interactive interventions, and student-based promotions may be useful in a high school prevention program aimed at the general population. As such, these strategies were explored with high school teachers.

Peer-led Programs

In addition to the modes of delivery utilized in previous programs, (web-based and classroom/teacher-led) the possibility of using peer leaders was explored. A peer-led program

may be one strategy to increase participation given that peers are so influential during the high school years. This is not to say teachers would not be involved, but their role would shift to that of a facilitator or sponsor. Research suggests teachers are still needed to provide feedback and reinforcement that promotes quality implementation (Story, Lytle, Birnbaum, & Perry, 2002). Peer leaders have been implemented in one high school program, middle school programs, and international programs with mixed findings.

Food on the Run (FOR) was a high school-based intervention program organized by California Project LEAN (Leaders Encouraging Activity and Nutrition) to promote healthy nutrition and physical activity (Agron, Takada, & Purcell, 2002). Student advocates were recruited from 20 high schools in California and trained in nutrition, physical activity, and steps to encourage environmental and policy changes using the materials provided. The advocates then conducted five to seven school- and community-based activities based on their assessment of their high schools' needs to raise awareness, educate, and promote environmental and policy changes. Results indicated that at the end of the nine month school year, advocates experienced a significant increase in knowledge and positive attitudes about physical activity and nutrition. Advocates also made a significant change in their nutrition behaviors, however, there were no significant differences in physical activity behaviors. Behavior changes were measured only for the peer advocates and not the student body. An environmental evaluation showed there was also a significant improvement in healthy food options, but no improvement for physical activity. These findings demonstrate that a peer-led program may be influential in promoting behavior change for peer leaders, as well as the school environment. However, more research is needed to determine how a peer-led program might influence the health behaviors of the entire student body.

Story et al. (2002) evaluated the peer leader component of the Teens Eating for Energy and Nutrition at School (TEENS) study. The TEENS program was a two year intervention in seventh and eighth grade that targeted nutrition behaviors. Peer leaders were identified in the seventh grade to help implement the curriculum. Specific duties of peer leaders included leading group discussions, conducting hands-on experiments, and facilitating food preparation. All peer-led activities were monitored by teachers. Results from peer leaders, classmates, classroom observations, and teacher perceptions indicated that peer-led education was a feasible method for young adolescents. Approximately 90% of peer leaders enjoyed the experience, 80% said they would do it again, and 85% thought they learned more about nutrition from being a peer leader. Additionally, more than half of the students participating in the curriculum thought that peer leaders were helpful. Peer leaders implemented the program with fidelity and teachers noted that it was a positive experience for all involved.

The literature shows that peer-led programs may be one strategy to promote physical activity and nutrition. Results from international peer-led high school programs for sex education and HIV prevention demonstrated that peer-led groups showed greater improvement in knowledge than teacher-led groups (Baghianimoghadam, Forghani, Zolghadr, & Khani, 2012; Borgia, Marinacci, Schifano, & Perucci, 2005). However, student evaluations of a peer-delivered and teacher-led sex education intervention revealed that sex education may be more enjoyable and engaging in a peer-group, but the classroom was better controlled when led by the teacher (Forrest, Strange, & Oakley, 2002). In a systematic review of effective elements of school health promotion across behaviors domains, researchers concluded there is not enough evidence to suggest one type of facilitator is more effective than another (Peters, Kok, Dam, Buijs, & Paulussen, 2009). Given that students are influenced by their peers, it is feasible that a

peer-led program may increase the likelihood students relate to the program. However, it is also possible that peer-led programs could be viewed more as a social gathering and students may miss opportunities to be exposed to resources and information about health behaviors. It is likely teachers and administrators have a better idea of the strengths and weaknesses of peer-led programs, therefore the use of peers to implement a high school obesity prevention program was explored with teachers and administrators.

Coordinated School Health Framework

In addition to recommendations made by previous programs, the Coordinated School Health (CSH) framework also was used to develop strategies and recommendations for a high school program. The CDC recommends CSH as an approach for promoting healthy student behaviors. The CDC defines coordinated school health as:

> a systematic approach to improving the health and well-being of all students so they can fully participate and be successful in school. The process involves bringing together school administrators, teachers, other staff, students, families, and community members to assess health needs; set priorities; and plan, implement, and evaluate all health-related activities. CSH typically integrates health promotion efforts across eight interrelated components that already exist to some extent in most schools. These components include health education, physical education, health services, nutrition services, counseling, psychological and social services, health and safe school environments, staff wellness, and family and community involvement. (CDC, 2013a)

One of the many advantages of the CSH framework is that it encourages collaboration among the many different agencies and disciplines involved in school health (CDC, 2011a; Jonas, Jamers, & Summer, 2003). CSH promotes teamwork among education departments, health departments, community organizations, families, and researchers from various disciplines such as education, nursing and psychology. Opportunities to implement high quality school-based health programs are enhanced through collaborations among these entities. Although the CDC has mapped out a framework for implementation, little is known about the degree to which

schools and school districts are using CSH strategies with regard to physical activity and nutrition, especially in high schools (Murray, Low, Hollis, Cross, & Davis, 2007). In a review of CHS programs and academic achievement, only five of the 17 studies reviewed were conducted at the high school level and none of the programs focused on physical activity or nutrition (Murray et al., 2007).

There are four overarching goals of CSH:

1. Increase health knowledge, attitudes, and skills.
2. Increase positive health behaviors and health outcomes
3. Improve education outcomes.
4. Improve social outcomes. (CDC, 2013b)

Increasing health knowledge, such as nutrition facts, and increasing healthy eating and physical activity and decreasing sedentary behaviors are components of the first and second goal. The first and second goals are most applicable to the proposed study. However, by encouraging healthy behaviors and implementing school based initiatives, it is hoped that the third and fourth goals also may be addressed.

To achieve these goals, the CDC outlined eight strategies:

1. Secure and maintain administrative support and commitment.
2. Establish a school health council or team.
3. Identify a school health coordinator.
4. Develop a plan.
5. Implement multiple strategies through multiple components.
6. Focus on students.
7. Address priority health-enhancing and health-risk behaviors.

8. Provide professional development for staff. (CDC, 2013c)

These eight strategies serve as a blueprint for schools interested in implementing a coordinated school health program. The current study addressed teacher and administrator views related to the goals and strategies outlined by the CDC. Specifically, this study explored the current environment regarding administrative support and school health councils, as well as suggestions for potential strategies and components to target to address students health-enhancing and health-risk behaviors (e.g., physical activity and nutrition). Findings from the current study will help determine the feasibility of implementing a high school coordinated school health program focused on students with an emphasis on physical activity, nutrition, and sedentary behaviors.

The Role of Teachers

As stated by the CDC (CDC, 2011a), teachers are one group of stakeholders involved in assessing student health needs, setting priorities, and planning, implementing, and evaluating health-related activities in school settings. Sharma (2006) suggested programs should involve PE teachers in delivering or supplementing intervention messages. Research suggests that teachers can and are willing to successfully implement prevention programs (Cothran, Kulinna, & Gardn, 2010; Rohrbach, Dent, Skara, Sun & Sussman, 2007). For example, Cothran et al. (2010) explored classroom teachers' willingness to incorporate physical activity into their daily schedules through interviews with elementary, middle, and high school teachers working with Native American students. Results indicated that teachers' care for their students and their own personal interest in healthy lifestyles were associated with positive remarks about physical activity integration. Relatedly, Kubik, Lytle and Story (2005) demonstrated that middle school teachers think student nutrition should be a priority. Ninety-five percent of teachers thought it

was important to address adolescents' eating practices, and 85% of teachers thought the environment was influential in adolescents' food choices. Additionally, nearly all teachers thought that adolescent nutrition should be a priority at the school, but only 31% felt the school gave nutrition adequate attention. Teachers felt it was important that schools had explicit nutrition policies, however only 1/3 of teachers thought they had an influence on policy. Researchers stated that teachers were key stakeholders and recommended teachers be engaged in the process of incorporating policies and practices into the school food environment.

Not only do teachers think student health is a priority and are willing to implement programs, but research has shown that teachers can implement programs with fidelity. For example, Rohrbach et al. (2007) compared program delivery of a substance abuse prevention program delivered by trained program specialists versus classroom health teachers in 18 high schools. Observations examined adherence and classroom process or quality of delivery, and pretest-posttest surveys were given to students to examine perceived acceptance of the program. Program specialists and school teachers yielded comparable results. Both achieved the same outcomes, and students reported comparable ratings of program quality and program implementation. Classroom teachers delivered the program with almost as high fidelity as the program specialists. Findings showed that trained high school health teachers can implement evidence-based programs with success. Similar, Rosario et al. (2013) examined the impact of a teacher-delivered nutrition intervention in elementary schools in Portugal. Findings showed that trained in-service teachers were effective at reducing the amount of high fat high sugar foods. Teachers were trained in the curriculum and then able to weave the curriculum into their classroom topics throughout the year.

Although many programs are implemented by teachers (Harrison, Burn, McGuinness, Helsin, & Murphy, 2006; Neumark-Sztainer et al., 2003), and teacher characteristics, such as teacher training, teacher self-efficacy and teacher social support, are associated with successful program implementation and/or positive program outcomes (Eather, Morgan & Lubans, 2013; Masse, McKay, Valente, Brant & Naylor, 2012), teachers are rarely included in the development phase of such programs. Researchers have discussed the need to include teachers in the planning process (Hall et al., 2012; Rhodes, Camic, Milburn & Lowe, 2009; Young et al., 2006), as one way to increase teacher engagement and self-efficacy to implement programs, resulting in more successful program outcomes. For example, a process evaluation of the HEALTHY physical education intervention noted teacher disengagement was a barrier to implementing the curriculum (Hall et al., 2012). Researchers hypothesized that teacher disengagement may have been associated with their limited role in the planning stages, and suggested future interventions should include PE teachers in the development phase as opposed to only providing teachers with a curriculum created by researchers.

Programs that have included teachers in the planning stages have demonstrated positive results. For example, Rhodes et al. (2009) examined the influence of a teacher-empowerment approach to program development, specifically a program to improve the middle school climate, on teacher's commitment, engagement and collegiality, as well as the success of the program. Teacher-empowerment was conceptualized as engaging teachers in the process to improve school climate. Results indicated teachers were active in the planning, creation, implementation and evaluation of intervention components. Additionally, teacher attitudes and perceptions, as well as program success, were more positive in the treatment school versus the comparison school. Researchers concluded that teacher initiated interventions, adapted to the context of each

school, can be successful at improving the school climate and the interactions of faculty members. These findings illustrate that including teachers in the planning process can be beneficial for teacher engagement, morale, and program success. Given that teacher engagement in a high school prevention program may be imperative to program success, this study explored teacher perceptions.

The Role of Administrators

As stated by the CDC (CDC, 2011a), administrators are also stakeholders involved in assessing student health needs, setting priorities, and planning, implementing, and evaluating health-related activities in school settings. Researchers have noted that understanding administrators' views and attitudes about school-level change is vital for the success of school-based prevention efforts (Turner, Slater, & Caloupka, 2013). Administrators are able to provide a different perspective than health and PE teachers because they are involved in school-wide supervision and oversee implementation of school policies.

Turner et al. (2013) conducted a nationally representative survey examining elementary school administrators' attitudes about student obesity and their interest in improving health-related behaviors at school. Principals, assistant principals, or other administrators, such as school directors, were included. Over 90% of administrator participants agreed or strongly agreed that schools can play a role in addressing the childhood obesity problem, and believed there was a connection between physical education and academics. Similarly, over 90% had interest in improving student nutrition and physical activity at their respective school (Turner et al., 2013). Relatedly, Slater, Nicholson, Chirqui, Turner, & Chaloupka (2012) used the same data to examine the influence of state, school, and district level policies regarding physical education and recess at the elementary level. Results showed that having strong district-level

policies increased the chances students had 150 min/week of physical education time. These findings highlight that some administrators see value in focusing on student health behaviors, although more research is needed to explore high school administrator views about student health.

Administrators were also included in a formative study with elementary schools. Pearlmean et al. (2005) examined how four elementary schools used the School Health Index as a self-assessment and planning tool for physical activity and nutrition programs and policies. The school health index helps schools identify areas for improvement across the CDC's CSH model. Each of the four schools assigned a SHI team, including a principal, PE teacher, and a food service staff member. Findings demonstrated that the principal "played a pivotal role in team functioning" (p. 5). Further, process evaluation results showed schools with collaboration among the SHI team, and supportive superintendents and principals, were more likely to successfully implement school policies. Findings highlight the importance of principal support as well as cohesion between team members.

Although research outlines the importance of cohesion and collaboration among school staff for school-based programs, not all school personnel are aware of existing policies related to student wellness. For example, The Action for Healthy Kids report, a nationally representative survey about school health and wellness policies, asked administrators, teachers, school nutrition services, superintendents, and other school personnel about issues surrounding school wellness (Action for Healthy Kids, 2008). For example, 68% of superintendents and 59% of principals thought they had policies that encouraged daily physical activity. However, only 35% of PE teachers believed this to be true. Similarly, 77% of superintendents and 54% of principals believed schools were implementing wellness policies, whereas only 28% of teacher and 18%

community health professionals thought school were implementing wellness policies. These findings demonstrate the need to include multiple stakeholder perspectives such as teachers and administrators.

Research has highlighted that administrators play an important role in implementing health-based programs or initiatives at the school level. Findings at the elementary level suggest administrators are interested in improving student health, however, there is little research exmaining high school administrators' beliefs. More work is needed to determine if teacher and administrator views about the current high school environment align. Additionally, administrators' views about the feasibility of teacher recommended strategies likely will influence the success of health-based programming.

Program Development

Although the CDC has provided strategies for implementation of school-based programs, public health researchers suggest formative research with stakeholders should be conducted to aid program development (Healy & Zimmerman, 2010; Potvin, Cargo, McComber, Delormier, & Macaulay, 2003; Young et al., 2006). Formative research is the process of collecting data to be used for development and implementation of health promotion programs (Gittelsohn et al., 2006). Healy and Zimmerman (2010) stated that too often prevention programs are implemented without sufficient planning and the findings are not promising. They recommended greater time and effort in the beginning stages to increase the chance that programs are successful. Formative research helps increase the chances that the program will be appropriate, culturally sensitive, and meet the needs of the target audience (Gittelsohn et al., 2006; Healy & Zimmerman, 2010). One advantage of including stakeholders is that they can help program developers find creative and innovative ways to target the population and induce behavior change. Young et al. (2006) call

for more formative research to be reported in an effort to assist other investigators and intervention planners with study design.

An entire supplemental issue in the journal, *Health Education and Behavior*, was devoted to describing the development of the Trial of Activity for Adolescent Girls (TAAG), a multi-center intervention targeting the decline in physical activity during adolescence in 36 middle schools. Gittelsohn et al. (2006) opened the issue with a description of the rationale and process of the TAAG formative research. The importance of research goals, theory, and flexibility to meet the needs of a large trial were described. The TAAG theoretical framework research goals were:

1. Provide a description of study communities and schools.
2. Select and design the trial's intervention to increase physical activity among adolescent girls.
3. Identify potential effective recruitment and retention strategies.
4. Design appropriate evaluation instruments. (Gittelsohn et al., 2006)

Remaining articles reported on the theory, data collection, and analyses that formed the formative research. In phase one, surveys were conducted with school principals, local community agencies and parents, and surveys and semi-structured interviews were conducted with adolescent girls to gather initial information. During phase two, focus groups were conducted with adolescent girls and boys (boys were included because phase 1 revealed PE classes were coeducational), and interviews with physical education teachers to refine the intervention. Recommendations from stakeholders were then used to develop the four components of the program: TAAG physical education, health education and activity challenges, programs for physical activity, and promotions. The current study intends to stand as phase one

of program development for high school students. Information will be collected from teachers and administrators through individual interviews and the findings will be used to inform subsequent formative work with high school stakeholders such as high school students.

Similarly, researchers used formative research to help develop the Teen Eating and Activity Mentoring in Schools (TEAMS) research project, aimed at decreasing prevalence and development of obesity (Bindler et al., 2012; Power, Bindler, Goetz, & Daratha, 2010). Researchers conducted focus groups with seventh and eighth grade students, parents, and teachers to assess conceptions of health and wellness, the relation between health and behavior, adolescents' physical activity and dietary habits, preferences, influences and barriers, and suggestions for intervention (Power et al., 2010). Findings from focus groups, paired with a theoretical framework (bio-ecological systems, self-determination theory, the Transtheoretical Model of Behavior Change, and social cognitive theory), served the basis for curriculum planning. Additionally, researchers noted that a strong partnership with school officials was essential (Bindler et al., 2012). Recommendations of components integral to curriculum development were provided and include:

1. Identification of community needs.
2. Careful perusal of existing curricula for extraction of useful materials and approaches.
3. Tailoring of available curricula to meet the demands, needs, and limitations of the specific setting.
4. Applying selected theories consistently to guide program offerings.
5. Identifying personnel able to bride the interdisciplinary, inter-organizational, and developmental considerations of the audience.

6. Openness to evaluative feedback to inform adaptation of approaches. (Bindler et al., 2012).

Formative research was also used to develop CHANGE! (Children's Health, Activity, and Nutrition: Get Educated!), a curriculum aimed at targeting physical activity and nutrition behaviors of primary school children in England (Boddy et al., 2012; Mackintosh, Knowles, Ridgers, & Fairclough, 2011); GEMS (Girls health Enrichment Multi-Site Studies), an intervention to prevent obesity in African-American girls (Kumanyika et al., 2003); and an elementary school-based intervention to promote whole-grain foods (Burgess-Champous, Marquart, Vickers, & Reicks, 2006).

The use of formative research to aid in program development has been established as a best practice. Researchers who have conducted formative research provide useful suggestions about carrying out this type of effort, and the necessary components and steps to gathering practical recommendations from stakeholders. Although this study is much smaller in scale, it is still important to follow recommendations outlined by researchers conducting formative work for larger programs. The current study had explicit research goals and theory before the formative research, and remained flexible to the local school district (Gittelsohn et al., 2006). Relatedly, the study followed the following recommendations by Bindler et al. (2012): (a) explore the existing curriculum, (b) apply selected theories, and (c) identify personnel, or support, that will be needed for successful program implementation.

High School Program Development

There have been a few studies conducted that examine high school stakeholders' views about program development and/or program components (Gellar et al., 2012; Kong et al., 2012; Kubik, Lytle, & Fulkerson, 2005; Shepard, Neumark-Sztainer, Beyer, & Story, 2006; Sussman et

al., 2013). These studies have explored many different settings and topics including female adolescents' perceptions of nutrition messages, high school students in alternative high schools, high school-based health center programs, and a nurse delivered intervention. Results from these studies helped to inform the interview protocol and provided suggestions for potential strategies for high school students. The suggestions provided by high school stakeholders served as prompts on the interview protocol.

Shepherd et al. (2006) conducted semi-structured interviews with adolescent high school girls to explore their perceptions about the focus of nutrition messages. Findings were mixed regarding the emphasis of nutrition messages. Approximately half of the participants believed the focus should be on health in general, whereas the other half thought the focus should be on weight control. The majority of participants suggested that learning about calories would be helpful, however, it would be important to be sensitive about delivering the content. This information was relevant when determining the focus of advertisements and recruitment messages.

To understand the health behaviors of high school students attending an alternative high school, focus groups were conducted with students from urban and suburban alternative high schools in the Minneapolis region (Kubik et al., 2005). Seven mixed-gender focus groups were conducted to explore factors that influenced physical activity and nutrition behaviors, as well as possible strategies for a school-based health promotion program to encourage healthy eating and physical activity. Some suggestions for strategies to promote healthy behaviors at school were "make it fun," "offer school credit," and offer cooking classes. To encourage physical activity, students wanted more opportunities throughout the day to be active, and to have a variety of options to choose from, which would include more sporting equipment and access after school.

A common theme for both physical activity and nutrition was a need for outside motivators. Strategies such as offering cooking classes and afterschool activities were explored with teachers.

Researchers conducted a series of studies utilizing a community-based participatory research approach to formative assessment for an obesity intervention with New Mexico high school stakeholders (Kong et al., 2012; Sussman et al., 2013). Semi-structured interviews were conducted with seven overweight/obese high school adolescents and their parents to explore their perspectives on possible intervention components. Kong et al. (2012) used interview findings to develop a survey that tested the feasibility of the strategies gathered from the interviews with eight New Mexico high schools associated with school-based health centers and Sussman et al. (2013) used interview findings to develop a DVD for a weight management program at a school-based health center. Kong et al. (2012) identified three interview themes that guided survey development:

1. A lack of healthy food options through the school.
2. A lack of opportunities to be physically active outside of school sports
3. Lack of exposure to health and nutritional information through classroom experiences.

Fourteen strategies were created and surveyed based on the three interview themes. Of the fourteen strategies proposed, six strategies were consistently rated as acceptable across the eight high schools. Four strategies focused on nutrition – supplying healthier food, improving food preparation, healthy eating marketing campaign, and yearly taste tests. Two strategies focused on physical activity – after-school noncompetitive activities and linkage to community physical activity opportunities. Strategies included as main questions or prompts on the teacher

interview protocol include: marketing principles, noncompetitive activities, and linkage to community physical activity opportunities.

Sussman et al. (2013) used the same interviews to develop a DVD for weight management and identified six interview themes. Participants stated the current requirement for PE participation should be increased beyond one semester. Additionally, participants noted that the internet served as a tool for entertainment and information seeking, and described the importance of being internally motivated to achieve weight loss. Participants' responses influenced the content and delivery of the DVD intervention. Relatedly, focus groups with stakeholders about a one on one nurse delivered intervention discussed the internet as potential tool for recruitment to help maintain confidentiality (Geller et al., 2012). These findings reiterate the importance of exploring the internet as a tool for high school students demonstrated in previous high school programs.

There was consensus across studies regarding nutrition and physical activity concerns for high school students. Many students noted availability of healthy foods and opportunities to be physically active as potential barriers. Adolescents understood that healthy behaviors are important, but also suggested the need to approach the topic with sensitivity. Another common thread across studies was the need for support from family members and peers, and external motivators to engage in healthy behaviors. Students suggested many strategies for prevention programs, but there is still a need for more formative work with high school stakeholders, especially high school teachers and administrators. The following strategies highlighted by high school students will be explored with teachers and administrators: additional course offerings, content of advertisement and recruitment messages, afterschool activities, and the use of the internet for recruitment as well as prevention materials.

Theoretical Underpinnings

Successful health programs are guided by theory and the theoretical framework should be established during the formative phase of program development (Bindler et al., 2012; Gittelsohn et al., 2006; Healy & Zimmerman, 2010; Jones et al., 2013; Sharma, 2006). A theoretical framework helps to develop measures that explore the multiple influences on health behaviors. Most importantly, outlining the theory prior to conducting formative research assists with interpreting the findings and integrating strategies into a prevention program. A theoretical model merging social cognitive and ecological theories was used to guide the current study (Story et al., 2002).

In a review of school-based interventions, Sharma (2006) found that social cognitive theory (SCT) was the most popular theory utilized. SCT states that human functioning is influenced by reciprocal determinism, a model of triadic reciprocality where behavior, cognitive and other personal factors, and environmental aspects influence each other (Bandura, 1986). Bandura (2004) outlined a social cognitive model of health promotion. He identified core determinants of health behaviors, which included knowledge of health risks and benefits, perceived self-efficacy, outcome expectations, goals, and perceived facilitators and impediments (Bandura, 2004). Figure 1, taken from Bandura (2004), illustrates the direct and indirect pathways between the core determinants and behavior. Of particular importance in the current study are the sociostructural factors, or the perceived facilitators and impediments to physical activity participation and healthy eating. As noted in the figure, barriers and facilitators influence student behavior indirectly through goals.

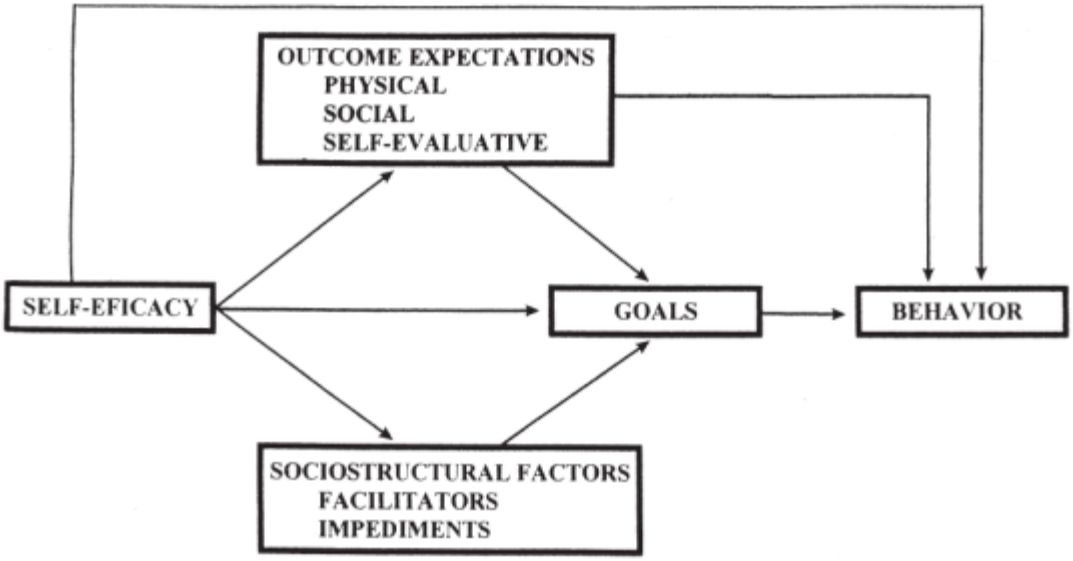


Figure 2.1. *Social Cognitive Model of Health Promotion*

Although social cognitive theory is a useful theory for health based programs (Cole, Waldrop, D'Auria, & Garner, 2006), no one single theory can account for adolescent health behaviors (Glanz, Rimer, & Viswanath, 2008). A multi-faceted approach is necessary to target the multiple influences on adolescent behaviors (Glanz & Rimer, 2008). Researchers suggest that programs be developed using complementary theoretical frameworks (Jones et al., 2013). An ecological model influenced program development because it complements social cognitive theory (Martin, McCaughtry, Flory, Murphy, & Wisdom, 2011). Further, an ecological model adds to the current study because it outlines additional influences on behavior, such as policy, and is designed to promote change in population-based health programs (Martin et al., 2011; Sallis, Owen, & Fisher, 2008).

Ecological models stress the importance of multiple levels of influences and the interaction among these influences on health behavior (Sallis et al., 2008). A combination of the following influences are most often incorporated in ecological models – intrapersonal (biological, psychological), interpersonal (social, cultural), organizational, community, physical

environment, and policy. Ecological models outline the broad influences on behavior, such as advertising and policy; however, they do not specify the exact variables to target under each influence (Elder et al., 2007). Social cognitive theory supports an ecological model because it specifies the intra- and interpersonal variables that influence health behaviors. For example, self-efficacy, a SCT variable, also aligns with intrapersonal variables in ecological models. In addition to the intra- and interpersonal variables outlined in SCT, the current study explored the potential of community partners/influences, school environment, and physical education policy outlined in ecological models.

Story et al. (2002) demonstrated how social cognitive theory and ecological models could be merged to explain adolescent eating behaviors. Figure 2.2 contains a researcher created figure using the model proposed by Story et al. (2002). Researchers outlined four broad levels of influences on adolescent eating behaviors including individual, interpersonal, physical environmental, and macrosystem influences. Specific variables within each level of influence also were identified. Researchers suggested that programs should target changing predictive factors across all four categories. The factors outlined in the model proposed by Story et al. (2002) aligned with the goals and objectives of the current study and therefore served as the theoretical framework.

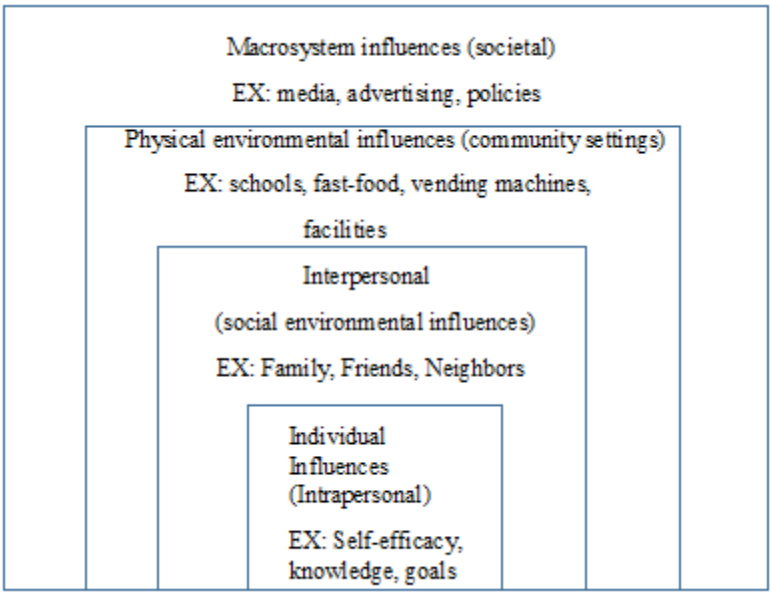


Figure 2.2. *Ecological Model merged with Social Cognitive Theory: A Theoretical Framework*

The influences on adolescent eating behaviors outlined by Story et al. (2002) that are especially relevant to the current study include macrosystem influences, physical environmental influences, and interpersonal influences. More specifically, factors explored in the current study that might influence adolescent eating behaviors included schools, vending machines, policies, advertising, friends, families, and the community. Although researchers outlined this model for eating behaviors, it can also be used for physical activity and sedentary behaviors. For example, interpersonal influences on physical activity and sedentary behaviors may include peer support, physical environmental influences may include facilities, and macrosystem influences may include policies. This theoretical model helped to ensure the protocol covered as many levels of influence as possible, and included components of both SCT and ecological models.

Social Marketing

Finally, social marketing principles also informed this study. Social marketing principles have become common in public health programs because they serve as a way to promote

behavior change and internalization of healthy behaviors (DeBar et al., 2009). Social marketing is "the adaptation of commercial marketing technologies to programs designed to influence the voluntary behavior of target audiences to improve their personal welfare and that of the society of which they are a part" (Andreasen, 1995, p.110). Borrowing principles from marketing, social marketing uses audience segmentation, consumer orientation, product, and exchange theory, to develop marketing plans that align with the preferences and values of the targeted population (Grier & Bryant, 2005). These marketing strategies stress the importance of taking into account the unique characteristics of subgroups, the costs and benefits associated with the product and/or program, and the consumer/participant needs when developing advertisements (Storey, Saffitz, & Ramon, 2008). For example, the VERB program, a popular physical activity promotion among "tweens" that utilized social marketing, advertised physical activity as a means to have fun and hang out with friends, instead of a means to prevent obesity (Grier & Bryant, 2005).

Programs have been successful using social marketing principles. For example, student-based promotions were a key component of the TACOS (Trying Alternative Cafeteria Options in Schools) school-based intervention to increase sales of lower-fat foods (Fulkerson et al., 2003). The goal of the student promotions was to increase student awareness and promote sales of lower-fat foods. Students implemented many promotion techniques such as a media campaign, public service announcements, poster contest, raffle event, recipe creations, and several other promotional campaigns. The students, combined with school staff, influcing food-service and teachers, implemented 181 promotional activities over the two years. The number of promotions in year one and the duration of promotions in year two were related to sales of lower-fat foods. Findings showed that a heavy emphasis on promotional activities, and including students in

promotional activities was linked to positive outcomes. Researchers outlined four factors that influenced the success:

1. School administration support and enthusiasm for the activities.
2. Similar goals between the project and the student group or class.
3. Support of school food-service staff.
4. Teachers' perceptions that the project was worthwhile and their facilitation of the activities. (Fulkerson et al., 2003)

These factors highlight the importance of administrative support, as well as teacher perceptions. The current study explored teacher and administrator recommendations for promotional activities and messages.

The HEATLHY diabetes prevention program also implemented social marketing-based communications to increase motivation and encourage behavior change in middle school students (DeBar et al., 2009). Researchers conducted formative research to come up with an appealing brand that helped integrate study activities. In addition to branding the program, other communication campaign elements included posters, banners, events, student-generated messages, and student peer communications to educate students about the study components and themes. Researchers identified six key characteristics that could be applied to other school-based health intervention, which informed the current study:

1. Targeting and responding to multiple audiences.
2. Using a broad array of communication modalities.
3. Attention to developmental needs of students.
4. Awareness of resources required.
5. Flexibility.

6. Incorporation of local interests. (DeBar et al., 2009)

The combination of SCT, ecological model, and social marketing principles has been recommended and utilized in several school-based programs (Edler et al., 2007; Springer et al., 2012; Pate et al., 2005; Story, Neumark-Sztainer, & French, 2002). Identifying the theoretical framework during the formative phase of program development may help develop a more comprehensive prevention program for high school students. The personal influences outlined in SCT and the broad influences outlined in ecological models, paired with social marketing principles, influenced the protocol development.

Physical Activity and Nutrition Barriers and Facilitators

A key aspect in both ecological models and SCT is identifying factors, often referred to as barriers and facilitators, associated with physical activity participation and healthy eating (Bandura, 2004; Gyurcsik, Spink, Bray, Chad, & Kwan, 2006). According to SCT, barrier self-efficacy, or self-efficacy to overcome impediments, is associated with healthier behaviors (Bandura, 2004). The first step to building barrier self-efficacy and encouraging high school students to overcome barriers is to identify the personal and environmental barriers that prevent participation in physical activities. Gyurcsik et al. (2006) examined ecological barriers to physical activity participation with students from grades seven through freshman year of college. Findings indicated that as students progressed through school the number of barriers increased, which further illustrates the importance of identifying barriers and helping high school students devise strategies to build barrier self-efficacy.

Researchers have examined high school student self-reported barriers and facilitators to physical activity participation and healthy eating using NYPANS data (Lowry et al., 2013), Project EAT data (Larson et al., 2008; Larson et al., 2010), focus groups with alternative high

school students (Kubik et al., 2005), photovoice methodology with Canadian youth 14-18, a method where participants take pictures to document their health experiences (Walia & Leipert, 2012), and surveys with sedentary girls ages 16-19 (Kimm et al., 2006), and ninth grade students in Florida (Aggazzi, Armstrong, & Bradley-Klug, 2010). Similar findings were found across all studies. The most common self-reported barriers for physical activity participation from high school students included lack of time, facilities and equipment/opportunities (Aggazzi et al., 2010; Kubik et al., 2005; Wailai & Leipert, 2012; Kimm et al., 2006), being uninterested (Aggazzi et al., 2010; Kubik et al., 2005; Kimm et al., 2006), being too tired (Kubik et al., 2005; Kimm et al., 2006), and lack of ability and/or knowledge about equipment (Kubik et al., 2005; Kimm et al., 2006; Agazzi, Armstrong, & Bradley-Klug, 2010). Additionally, television, computers, and homework (Wailai & Leipert, 2012), work schedules (Kubik et al., 2005), and no one to participate in physical activities (Agazzi et al., 2010) were reported as barriers. The most commonly reported barriers for healthy eating included availability and accessibility of healthy foods, family meal frequency, support from family and friends, taste preference, and self-efficacy to consume recommended servings of fruit and vegetables (Larson et al., 2008; Larson et al., 2010).

The most commonly reported facilitators for physical activity included a positive attitude (Lowry et al., 2013; Deforche, Bourdeaudhiuj, & Tanghe, 2006), social support (Lowry et al., 2013; Kubik et al., 2005; Walia & Leipert, 2012), and enjoyment and/or variety of activities (Kubik et al., 2005; Walia & Leipert, 2012). Family support, peer interests, weather, and transportation availability emerged as both barriers and facilitators (Wailia & Leipert, 2012). Alternative high school students liked fruit and vegetables and the way physical activity made them feel, but often needed a push or motivator. Based on correlates for healthy eating and

physical activity, an ecological model paired with social cognitive theory is well suited to explore factors that can be implemented to increase healthy behaviors. The majority of research on high school student physical activity barriers has used self-report methodology. Self-reported barriers are important, however, teachers and administrators may be better able to report environmental or school-related barriers, as they are likely more familiar with school policies related to health and wellness. Therefore, teacher and administrator perceived barriers were explored with a focus on environmental or school-related barriers.

Environmental and/or Policy Barriers and Facilitators to Physical Activity and Nutrition. Teachers may have more knowledge about environmental or school-related barriers, such as policy regarding physical education classes. Ecological models stress the importance of policy in promoting healthy behaviors. One advantage of targeting policy is that policy changes target the population not just the individual (Sallis et al., 2008). This is especially important in the current study because policy changes are one way to promote healthy behaviors for the entire student body. Sharma (2006) also recommends that programs target school policies and environments.

State Graduation Requirement. The state Health and Physical Education high school policy requires students take health and PE during their ninth and tenth grade year, any course offerings beyond that are considered electives (State Board of Education, 2008). Thus, this states policy conflicts with research, which supports daily physical activity (Sallis et al., 2012). Further, preliminary research suggests that students who enroll in physical education as an elective are generally competitive athletes. As such, teacher and administrators participants were interviewed about the graduation requirement for Health and PE.

Healthy Hunger-Free Kids Act (2010). The Healthy, Hunger-Free Kids Act is a federal law that calls for healthier school environments and "is the most significant investment in the school meal program in more than 30 years" (Wootan, 2012, p. 18). The main aim of the HHFKA is to improve the school food services, including improved meal financing and greater accountability for school meals to meet nutrition standards (Wootan, 2012). However, the HHFKA also calls for a revision of school wellness policies related to physical activity and nutrition. High schools in South Valley School District (SVSD) are not currently operating under the National School Lunch Program (NSLP), however, they still have to follow federal nutrition guidelines outlined in the HHFKA by the United States Department of Agriculture (USDA). Further, high schools will be moving to the NSLP in the upcoming year. The researcher's pilot work with secondary teachers suggest they are unaware of the HHFKA. Therefore, the salience of the HHFKA, as well as the current school policies, was explored.

Identifying the factors that influence high school students' health behaviors is complex and requires a multi-faceted approach. By utilizing multiple theoretical frameworks and identifying the barriers and facilitators associated with physical activity participation and healthy eating a more well-rounded approach to prevention may be developed. Many researchers have focused on the individual facilitators and barriers to student physical activity and healthy eating; however, more research is needed that focuses on the school or environmental barriers and facilitators, such as policies. Teachers' and administrators' feedback and recommendations are imperative to developing a prevention program that targets multiple influences, as they provide a different perspective than individual students and researchers.

The Current Study

This study builds on and advances the literature base in many ways. This study follows the recommendation, suggested by many researchers (Gittelsohn et al., 2006; Healy & Zimmerman, 2010; Potvin, Cargo, McComber, Delormier, & Macaulay, 2003; Young et al., 2006), to conduct formative research with key stakeholders to identify appropriate health promotion strategies for the target population. Similar to research goals outlined in previous formative research (e.g., Bindler et al., 2012; Gittelsohn et al., 2006), the aims for the current formative study included:

1. Describe the local high school health environment with regards to student physical activity and nutrition promotion.
2. Identify teacher and administrator reported individual and school and/or environmental barriers.
3. Identify potential strategies for recruitment of high school students.
4. Identify potential prevention components, or strategies, to promote physical activity and healthy eating among high school students.

Additionally, this study incorporates strategies and suggestions outlined by the CDC, previous school-based programs, theoretical models, and research on high school student health behaviors by including them as prompts on the interview protocol.

This work adds to the literature by targeting a group of stakeholders that to date has been overlooked. The majority of the formative research conducted in high schools thus far has been conducted in specific settings with specific populations. For example, not all schools have school-based health centers, and findings from students in alternative high schools may differ from findings with general population high school students. Studies have examined student,

nurse, staff and parent perspectives; however, no formative work has been conducted with high school teachers or administrators to explore strategies for a prevention program targeting the entire student body in general education high schools. The current study addressed this gap by conducting research with high school teachers and administrators in an effort to gain recommendations and feedback about strategies to promote physical activity participation and healthy eating that may be effective for the entire student body.

Chapter 3: Methodology

Formative research for health behavior interventions is a critical component of intervention development (Boddy et al., 2012; Potvin et al., 2003; Young, 2009). High school teachers and administrators are key stakeholders in prevention programs implemented in high schools (CDC, 2013). This research study addressed the following questions:

1. How do teachers and administrators perceive the current high school environment with regard to student health promotion, specifically student physical activity, nutrition, and sedentary behaviors?
2. What are teacher and administrator perceived barriers and facilitators for high school student sedentary behaviors and participation in physical activity and healthy eating?
3. What strategies do teachers and administrators recommend for a prevention program targeting high school students' physical activity, nutrition, and sedentary behaviors?
4. What is the feasibility of teacher recommended strategies according to administrators?

This qualitative study used in-depth semi-structured individual teacher and administrator interviews for data collection. The exploratory nature of the study lended itself to qualitative methodology. Qualitative methodology was most appropriate because it had the potential to produce detailed information about teacher and administrator perspectives, increasing depth of understanding (Patton, 1990). Whereas quantitative methods might restrict the understanding of teacher opinions and strategy recommendations because they are confined to pre-determined response options, qualitative research allows for findings to emerge from the experiences of

research participants (Allender, Cowburn, & Foster, 2006). In a review of qualitative studies about sport and physical activity, Allender et al. (2006) stated the need for more qualitative research because it takes into account the contextual, social, economic, and cultural factors that contribute to participation in physical activities. This helped situate teachers' and administrators' opinions and recommendations within the high school setting in a large Mid-Atlantic school district.

Additionally, interviews afforded the opportunity to ask participants questions and probes, which encouraged in-depth responses about their experiences, perceptions, and options (Patton, 1990). Rubin and Rubin (2012) stated that qualitative interviewing is appropriate when answering questions where an "entirely fresh view" (p. 50) is required. Little to no research exists that explores teacher and administrators perceptions of the high school environment and potential strategies for a prevention program. This study provides an entirely fresh view of high school teacher and administrator views about high school student health promotion.

Population, Sample and Study Context

Participating teachers were recruited from a large school district located in the Mid-Atlantic region. For the remainder of the study the school district will be referred to by the pseudonym, South Valley School District (SVSD). According to the 2014-2015 School District Profile, South Valley School District has more than 58,000 students that attend 63 schools, 11 of which are high schools. Enrollment illustrates a diverse student body; 54% of students were white, 26% black, 12% Hispanic, 4% Asian/Hawaiian/Pacific Islander, and 4% two or more races. Thirty-six percent of the student body qualified for free or reduced-price meals. Student demographics vary significantly across the 11 high schools in the district. For example, the percent of the student body classified as economically disadvantaged ranges from 4.2 – 58.2%.

See table 3.1 for a comparison of high schools by percent economically disadvantaged, limited English proficiency, and homeless using data from the state Department of Education (VDOE) (State Department of Education, 2015). See table 3.2 for a comparison of high schools based on gender and ethnicity (State Department of Education, 2015). Pseudonyms were assigned to all participating schools to maintain confidentiality. Schools are arranged by the percentage of the student body classified as economically disadvantaged as several findings related to socioeconomic status. The DOE classifies a student as economically disadvantaged if the student is eligible for free/reduced meals, receives TANF (Temporary Assistance for Needy Families), or is eligible for Medicaid (State Department of Education, 2015). The percentage of students from economically disadvantaged backgrounds was used as a proxy measure for the socioeconomic status (SES) of the school. Participant responses were merged with the percent economically disadvantaged data to categorize schools. That is, schools with less than 15% of the student body classifying as economically disadvantaged were labeled "high SES" schools. Schools with 15-30% of the student body classifying as economically disadvantaged were labeled "average SES," sometimes referred to as "mixed" due to participant responses, and schools with over 30% of the student body classifying as economically disadvantaged were labeled as "low SES' schools.

Table 3.1. *High Schools in SVSD by Economically Disadvantaged, Limited English Proficiency, and Homeless*

School	Total	Economically Disadvantaged	Limited English Proficiency	Homeless
East	273	58.24% (N = 159)	8.79% (N = 24)	
Summerville	1647	38.92% (N = 641)	15.36 (N = 253)	.85 (14)
Grand Park	1816	24.01% (N = 436)	5.56 (N = 101)	
Uptown	1943	17.65% (N = 343)	.77 (N = 15)	.51 (10)
Galley	1873	16.76% (N = 314)	.69 (N = 13)	
Hamilton	2282	16.61% (N = 379)	1.67 (N = 38)	.61 (14)
Ridgeview	2144	16.28 (N = 349)	10.82 (N = 232)	.65 (14)
West Bridge	1411	15.45% (N = 218)	1.28 (N = 18)	
Central	1881	12.76% (N = 240)	.75 (N = 14)	
Riverton	1543	5.64% (N = 87)	.78 (N = 12)	
South Valley	2028	4.19% (N = 85)	.01 (N = 11)	

Table 3.2 *High Schools in SVSD by Gender and Ethniciy*

	East	Summerville	Grand Park	Uptown	Galley	Hamilton	Ridgeview	West Bridge	Central	Riverton	South Valley
Total	273	1647	1816	1943	1873	2282	2144	1411	1881	1543	2028
Gender											
Male	57.88	60.87	54.46	49.92	54.14	48.86	50.65	50.53	47.16	51.46	48.96
Female	42.12	45.78	45.54	50.08	45.86	51.14	49.35	49.47	52.84	48.54	51.04
Ethnicity											
America Indian or Alaska Native		.24	.11	.31	.37	.39	.23	.50	.27	.26	.01
Asian		2.61	2.86	2.16	1.82	3.16	4.52	2.62	5.32	8.1	3.99
Black, not of Hispanic origin	44.81	56.28	36.84	28.51	38.7	30.59	15.40	31.11	26.16	10.56	13.56
Hispanic	20.15	30.48	15.75	7.98	3.63	9.01	41.60	6.95	6.65	3.31	4.68
White, not of Hispanic origin	20.51	4.98	23.57	29.34	29.31	26.12	31.11	25.73	27.49	38.04	37.97
Native Hawaiian or Pacific Islander		.30	.11		.05	.04		.07	.11	.06	.10
Non-Hispanic, two or more races	1.47	.97	1.87	1.44	1.66	1.62	1.54	1.77	2.02	1.43	1.63

In 2012, SVSD adopted an eight year strategic plan that identified student health as a priority. The plan outlined goals and objectives to be achieved by the year 2020, which included goals for health and wellness programs. Goal 1.6 reads, "Learners will make healthy lifestyle choices and maintain a mentally healthy and physically active lifestyle that sustains and promotes personal, family and community health." To achieve this goal, the district outlined four strategies:

1. Revise the wellness guidelines and policies to reflect national guidelines, 2016-17.
2. Develop a district plan to promote healthy lifestyles in students, 2016-17.
3. Support students in setting individualized health and wellness goal, 2017-18.
4. Support and monitor students' individualized goals, 2018-20.

This aligns well with the district goals outlined in the strategic plan.

Sample. Maxwell (2005) stated, "selecting those times, settings, and individuals that can provide you with the information that you need in order to answer your research questions is the most important consideration in qualitative selection decisions" (p. 88). Therefore, a purposeful sampling strategy was employed (Patton, 1990). Purposeful sampling occurs when researchers deliberately select people who are relevant and involved in the phenomenon being studied (Frost, 2011). That is, purposeful sampling provides "information rich" cases that help answer the research questions (Patton, 1990, p. 230). More specifically, criterion sampling was employed. The purpose of criterion sampling was to recruit participants who meet a predetermined criterion of importance (Patton, 1990).

The predetermined criterion for the study was employment as a high school health and physical education (PE) teacher or high school administrator in the SVSD. Administrators included principals, assistant principals, student deans, and instructional specialists. All health

and PE teachers and administrators from the 11 high schools were invited to participate in the study, which yielded a total participant pool of 74 teachers. All principals, assistant principals, student deans, and the instructional specialist from the high school level were invited to participate, which yielded a total participant pool of 65 administrators.

A total of nine teachers across six high schools participated in the study. Teachers represented schools across the different SES levels, with at least two teachers from each category. Teacher names were replaced with pseudonyms to maintain confidentiality. See table 3.3 for teacher pseudonyms. Five of the participants were female (male, N=4), and all nine participants were Caucasian/White. Teachers' years of experience ranged from 7-40, with an average of 25 years of experience. One third of the teacher participants (n = 3) were coaches.. Teachers represented ninth and tenth grade health and PE teachers, which provided a perspective across the different topics covered in the curriculum.

Table 3.3. *Participant Roles and Pseudonyms*

Teacher Participants	**Administrator Participants**
Jane	George
Carl	Charlotte
Heather	Mia
Jessica	Lucille
William	Jake
Harper	Thomas
Nadine	Daphne
James	
Grant	

A total of seven administrators across six high schools participated in the study. Teachers and administrators did not represent the same six high schools. A toal of nine high schools were represented across teacher and administrator participants. Administrator participants also ranged across the different levels of SES. Similar to teacher participants, administrators' names were replaced with pseudonyms to maintain participant confidentiality. See table 3.3 for administrator psudonyms. Four of the participants were female (male, N = 3), and all but one participant was Caucasian/White. All administrators had previously been teachers, and administrative years of experience ranged from 1-28 with an average of 9 years. The total average years of education experience was 23. Administrator participants included prinicpals, vice principals, and student deans. Six of the seven administrators previously or currently coached an athletic sport.

Procedures

Recruitment. To recruit teacher participants the research was presented at a SVSD health and PE department meeting. Health and PE department heads from each of the 11 high schools in the district attended the district meeting. Permission was granted to present at the meeting and provide a handout describing the purpose of the research, methods, and mode of contact for participants (i.e., email). Department leaders took the information from the meeting back to their respective schools and informed teachers to expect an email. The instructional specialist for the health and PE department for the district then sent an e-mail to each of the 74 high school health and PE teachers in the SVSD. See appendix A for a copy of the recruitment email. The contents of the e-mail included a brief description of the research and a link for participants to volunteer their participation. The link took teachers to a short survey containing three questions: (a) name, (b) contact information, and (c) school. The online platform, Survey

Monkey (www.surveymonkey.com), was used to collect contact information for volunteer teacher participants. Participants were given a water bottle as a token of appreciation for their participation in the study. A reminder email was sent through the instructional specialist approximately three weeks after the initial email was sent. Ten total teachers volunteered to participate in the study. However, one participant did not respond after repeated attempts to set up an interview. As such, a total of nine participants were interviewed.

Administrator participants were recruited at the conclusion of teacher interviews. Given the rationale for including administrators was to assess the feasibility of strategies proposed by teachers during the interviews, administrator interviews were not conducted until all teacher interviews were complete and an initial round of data analysis had occurred. The SVSD research specialist identified all high school principals, vice principals, student deans, and the instructional specialist as administrators that could be recruited for participation. Next, an email was sent to administrators including a description of the research and a link to volunteer their participation. See appendix B for a copy of the administrator e-mail. Similar to teachers, the link included three questions: (a) name, (b) contact information, and (c) school. Administrators were then contacted to set up a time and location (phone or in person) for the interview. Seven administrators volunteered their participation and all seven administrators were interviewed. Administrator participants also were provided a water bottle as a token of appreciation.

Data Collection. In-depth, individual semi-structured interviews were conducted with participants by phone or in person. Rubin and Rubin (2012) outlined three characteristics of in-depth interviewing. First, in-depth interviews seek to obtain rich and detailed information from participants, such as examples, experiences, narratives, or stories. Second, in-depth interviews are open-ended. That is, there are no specified categories and the participants can elaborate on

their responses. Last, questions are not fixed. The protocol was flexible with regard to the order and wording of questions and probes. In-depth interviewing afforded participants an opportunity to elaborate on their responses through examples or stories they have experienced in their school environment.

A semi-structured interview occurs when the researcher has a specific phenomenon to study and prepares a limited number of questions to address the phenomenon but plans to ask follow up questions (Rubin & Rubin, 2012). In a semi-structured interview, the researcher attempts to focus on questions that help answer the research questions. A semi-structured interview allowed for a focus on the important research topics, but also allowed for new themes to emerge. The interview protocol was developed to address the current school environment, facilitators and barriers, and potential strategies for prevention programs, potentially key factors in the proposed research questions.

All nine teacher interviews were conducted before beginning administrator interviews. This allowed for an initial round of analysis to determine the most discussed strategies among interviewed teachers. Teacher interviews lasted approximately 45 minutes, but ranged between 25 and 70 minutes. Administrator interviews lasted approximately 30 minutes, but ranged from 25 to 60 minutes. Many factors contributed to the duration of both teacher and administrator interviews. Previous studies that have utilized interviews for formative research ranged between 45-60 minutes (Power et al., 2011; Mackintosh et al., 2011). Pilot interviews with the protocol lasted between 30-45 minutes. Further, interviews of this duration allowed teachers to participate during their planning period without taking up the entire planning period. Administrator interviews were shorter given their busy and unpredictable schedules.

Additionally, the protocol had been revised after teacher interviews to be succinct yet thorough enough to cover topics.

Teachers and administrators were given consent forms and assured their responses were anonymous and confidential. See appendix C for a copy of the consent form. Interviews were conducted by the researcher and audio-taped in order to be transcribed. Transcripts were then uploaded to the qualitative software program, Atlas Ti.

Notes were taken during and after each interview. Patton (1990) describes four reasons it is important to take notes even when using a tape recorder:

1. Notes help the researcher formulate new questions throughout the interview.
2. Notes help ensure the interviews are addressing the research aim, which may involve revising the protocol for subsequent interviews.
3. Notes help facilitate data analysis by highlighting times with important quotations.
4. Notes serve as a backup in case any error occurs with the audio recorder.

Additionally, notes help pace the interview and provide nonverbal feedback to the interviewee that the interviewer is paying attention and that their viewpoints are important. Notes during the interview were short and included phrases or abbreviations, whereas notes after the interview were more detailed (Patton, 1990). Notes after the interview served as a way to reflect and elaborate on the rapport, interview questions, and responses of the teachers (Patton, 1990). The notes helped determine if interview questions were appropriately worded, if the research questions were being addressed, and if anything, including the researcher persona, needed to be changed before subsequent interviews. The notes served as the main tool for revision of the protocol with teachers and administrators. For example, "Is student physical activity a priority?" was a separate question from "Is student nutrition a priority?" However, due to teacher responses

and the limited amount of time administrators had to discuss the topics, the questions were condensed for administrators to 'is student health a priority?' Previous participants answered similarly to both questions, which further validated the revision for administrators.

Instruments

Demographic Questionnaire. Participants were asked to complete a brief questionnaire after the interview that contained demographic questions. Teachers were asked to report their total number of years teaching, gender, ethnicity, and coaching status (i.e., does the participant coach a school sport). Each of these variables was used to personify the data. Coaching status was included because the current school policy requires physical education in 9th and 10th grade. Physical education courses during the 11th and 12th grade year are elective, and based on pilot work teachers suggest these courses tend to be dominated by athletes. One of the interview questions refers to the current PE policy, and therefore coaching status may influence the participants' response.

Teacher and Administrator Interview Protocol. The teacher and administrator interview protocol (see appendix D) was developed by the researcher and based on the research questions, theoretical tenets (Perry et al., 2008; Sallis et al., 2008) and previous literature (Gellar et al., 2012; Kubik et al., 2005; Kong et al., 2012). The teacher and administrator protocol was the same with the exception of an additional section for administrators exploring feasibility of teacher recommended strategies. The additional section is described in detail following the description of the protocol.

Prior to the study, the protocol was piloted and revised based on findings and feedback from secondary teachers. The protocol contained main questions and probes. According to Rubin and Rubin (2012), main questions are used to address the research questions and probes

are used to encourage participants to elaborate on the topic by providing details and examples. In the protocol, main questions gave the interviewee a chance to freely respond to items that targeted the research questions. Probes were outlined and used when elaboration was needed, and to explore teacher perceptions about strategies from the literature that have been used in different settings or with different age groups. It is important that strategies from the literature were phrased as probes so teachers were first able to discuss strategies and ideas that may be absent from the literature.

The protocol contained two sets of questions. The first set of questions was designed to address the first and second research questions:

1. How do teachers and administrators perceive the current high school environment with regard to student health promotion, specifically student physical activity, nutrition, and sedentary behaviors?
2. What are teacher and administrator perceived barriers and facilitators for high school student sedentary behaviors and participation in physical activity and healthy eating?

For example, one question in this set prompted participants to discuss whether or not they felt student physical activity and nutrition was a priority at their school. This set of questions also addressed the salience of current school health and wellness practices and policies. The second set of questions was designed to address the third research question: What strategies do teachers and administrators recommend for a prevention program targeting high school students' physical activity, nutrition, and sedentary behaviors? This set of questions was designed to explore teacher and administrator perceptions about potential initiatives and strategies for a healthy lifestyle program that targets physical activity, sedentary, and nutrition behaviors.

A script was read before each set of questions was asked. The script for the first set of questions emphasized that questions were about the current school environment related to physical activity, nutrition, and sedentary behaviors. The script for the second set of questions stated questions were about potential health prevention strategies.

To incorporate theory, questions were developed to address ecological influences, social cognitive theory tenets, and social marketing principles. In addition, questions were created to address facilitators and barriers to physical activity participation and healthy eating, which are key factors in social cognitive theory, ecological models, and the literature. For example, the protocol stated "What are some current policies or practices that prevent healthy eating at your high school?" An identical question addressed physical activity barriers, and both these questions cover possible environmental and personal influences that may serve as barriers to nutrition and physical activity. A second question that addressed environmental influences was, "what types of support from administration, school staff, students and the community do you think would be necessary to implement a high school-based physical activity and nutrition program?" This question also was informed by the literature, which suggests the importance of administrative support for successful school-based initiatives.

Many of the probes were strategies that have been outlined in the literature as successful. The main question, "What types of school-based activities do you think could be successful at the high school level to promote physical activity?" contained many probes generated from the literature. For example, probes were outlined for intramural sports, peer-led programs, internet/media programs, and additional course offerings. The rationale was that teachers would first provide any suggestions or strategies they thought may be effective in promoting healthy behaviors, and then discuss their opinion on the likelihood that specific strategies (e.g., internet

interventions) may be successful with a high school population. Additionally, teacher recommended strategies that were not initially probes were then included as probes in subsequent interviews. For example, one teacher recommended the addition of a salad bar to promote student nutrition. In the following interviews a probe was added for the strategy suggestion "salad bar."

Administrator interviews contained one additional section. This section was designed to answer the fourth research question: What is the feasibility of teacher recommended strategies according to administrators? Administrators received a list of teacher recommended strategies to promote physical activity and healthy eating, and reduce student sedentary behaviors two days prior to the interview. See appendix E for the list of strategies that was provided to administrators. The rationale behind this decision was twofold: 1) providing administrators with a list beforehand gave them an opportunity to think more critically about the feasibility of the strategies and any potential barriers, and 2) this allowed the researcher to discuss all of the strategies in a more time efficient manner given administrators' busy schedules. Administrators tended to go down the list of strategies and discuss the pros and cons of each strategy. When needed, participants were prompted for more elaboration or clarification. This section, paired with administrator suggested strategies, helped determine the strategies with the greatest perceived chance for success.

The interview protocol was piloted with six (female, N=5) secondary teachers. Three of the six teachers were high school teachers and three were middle school teachers. The pilot study revealed that in order to gain a more comprehensive view of the current school environment, the clarity and quality of several questions needed to be revised. For example, the original question "do you think student physical activity and nutrition is a high priority at your

school?" proved to be a loaded question. Therefore, it was split into two separate questions since the priority placed on physical activity and nutrition could be different. These questions are: do you think physical activity is a priority at your school? (Why or why not?) Do you think nutrition is a priority at your school? (Why or why not?). Further, teachers often asked "to whom is it a high priority?" when responding to this question. Probes were added for administration, fellow teachers, and students since all serve as stakeholders in a prevention program.

A second policy question was rephrased. The question, "what is the PE requirement at your school?" was rephrased to "how do you feel about the state's high school PE requirement?" with the follow up probe, "how would you change the requirement?" Since the PE requirement is a state policy, it was more beneficial to ask teachers about the policy and potential changes they would make to the policy. Data collection and analysis was an iterative process in which the protocol was continuously revised as data collection and analysis occurred. Although the final protocol did not change in scope, as the interviews were being conducted the researcher was better able to navigate the questions and probe for elaboration, which increased the quality of responses.

Data Analysis

All interviews were transcribed and imported to the qualitative software program, Atlas Ti, where data analysis occurred. Each interview was given a unique identifier that corresponded to the role (teacher or administrator) and gender of the participant. This allowed informal comparisons to be made during the initial read of the data. Additionally, each interview was placed into a family for role (teacher or administrator), coaching status, and gender. By placing each interview into a family, differences in codes and themes by gender, role, and coaching

status were able to be explored. It was not appropriate to look at ethnic differences, as the sample was homogenous and only one participant was not White.

Data were analyzed using strategies from Corbin and Strauss (2008) grounded theory method. More specifically, the constant comparative method was used. The constant comparative method is an inductive method of analysis where each occurrence of information in the data was compared with other occurrences to highlight similarities and differences (Corbin & Strauss, 2008). Data analysis and data collection occurred at the same time, with data analysis informing future data collection. For example, data analysis suggested the distribution of Chromebooks in the following academic year was important to teachers. Therefore, instead of asking broadly about internet-based programs, participants were probed about the potential influence of Chromebooks on student health behaviors.

O'Connor, Netting, and Thomas (2008) state:

> It must be clear that constant comparison, the data analysis method, does not in and of itself constitute a grounded theory design…..Simply put, constant comparison assures that all data are systematically compared to all other data in the data set. This assures that all data produced will be analyzed rather than potentially disregarded on thematic grounds.

This is important to note for this study. It was not the goal of the proposed study to build a new theory of obesity prevention programs. However, there is a gap in the obesity prevention literature regarding the high school population, and therefore it was not appropriate to code the data through a pre-determined coding structure. That is, coding through a pre-determinded coding structure may have restricted the code list, and subsequently, findings. Using a constant comparative method helped ensure all participant responses were given equal priority because codes were data driven not theory driven.

Individual interviews were the unit of analysis for teacher and administrator interviews. The purpose of an individual unit of analysis was to explore what was occurring to individuals in

a setting and how individuals were influenced by the setting (Patton, 1990). The first step of analysis involved reading through the teacher transcripts in order to become familiar with the data. The same process occurred for administrator interviews, however, since all teacher interviews had to be conducted before administrator interviews, the teacher interviews were analyzed first. Two main analytic strategies were used throughout data analysis, asking questions and making comparisons. Asking questions such as, "what is the teacher trying to tell us about the environment?" or "what is the meaning of this response?" helped the researcher assume the role of the teacher or administrator and better understand the participant's perspective (Corbin & Strauss, 2008). Corbin and Strauss (2008) outline types of questions researchers should ask themselves throughout the data analysis process:

1. Sensitizing questions: What is going on? How do participants define the situation? What is the meaning to the participant? How are various participants interpreting the phenomenon?
2. Theoretical questions: What is the relationship between concepts? What are the larger issues and how do they interact?
3. Practical questions: What concepts are well developed? Do the findings represent the responses? Has the data analysis reached saturation?

Informal comparisons made during the initial read of the data and formal comparisons made throughout the coding process facilitated interpretation of data that seemed abstract. Additionally, informal and formal comparisons were used to revise future interview questions, ensure all data was being included, increase the chances of finding variation within the data, and help identify researcher bias (Corbin & Strauss, 2008). For example, the transcripts and notes

revealed a slight bias against online physical education. After noticing this, an effort was made to be more objective in future interviews, as well as during coding.

Coding. The coding process included "extracting concepts from raw data and developing them in terms of their properties and dimensions" (Corbin & Strauss, 2008, p.159). Several cycles of coding occurred. The first cycle of coding employed open coding, sometimes referred to as initial coding (Corbin & Strauss, 2008; Saldana, 2013). Open coding was a way of breaking down the data and identifying concepts that represented chunks of raw data (Corbin & Strauss, 2008). The goal of initial coding was to be open to the data and the possible codes that may emerge. In Vivo codes were used during initial coding. In Vivo codes use the language of the participants instead of researcher assigned codes (Corbin & Strauss, 2008). For example, many participants discussed the Standards of Learning (SOL), but one participant specifically used the phrase "But it's all about SOL's." As such this became a first round, or invivo code, because it appropriately described many participant responses. Occurrences that were conceptually similar were given the same code, whereas new occurrences were assigned a new code. For example, responses that highlighted the influence of role modeling on student health were all given the code "modeling." However, statements about teacher and student participation together in health-based activities were conceptually different than modeling responses, and therefore, required a new code, teacher engagement. Throughout data analysis, a code book was created and revised. The code book contains all codes as well as a short definition describing each code. See appendix F for the final code list, and see appendix G for the code book with definitions.

At the conclusion of initial coding, which consisted of several rounds of open coding, there were 328 codes that described the data. The data were cleaned to identify instances when a

code was repeated or conceptually the same. For example, during initial coding a code for school nurse and nurse was created. However, these represent the same idea, and therefore, were merged. After the data were cleaned there were 253 codes when second cycle coding began. Second cycle coding employed axial coding. During axial coding, connections were made between emerging codes and concepts (Corbin & Strauss, 2008). Throughout this stage of coding, more abstract connections and hypothesis were made and checked against the data. For example, many teachers discussed being stressed about academic pressures, the SOL, and the number of teacher requirements in the same response. During second cycle coding, the code school environment, which was a more abstract connection based on the data, was created. Abstract connections were elaborated on by revising and expanding the definitions in the code book. Themes began to emerge during second cycle coding as more abstract connections were made.

Analysis continued until the researcher reached conceptual saturation. Corbin and Strauss (2008) define conceptual saturation as "the process of acquiring sufficient data to develop each category/theme fully in terms of its properties and dimensions and to account for variation" (p.159). Once all interviews were coded, a final code book was created (Appendix G). Miles and Huberman (1994) recommended that codes be organized into a meaningful structure. Codes were organized into hierarchies representing codes that conceptually relate. For example, all recommended strategy codes were placed in the larger family of "strategy." Friese (2012) outlined several advantages to an organized code list including transparency of research methods, methodological rigor, and a precursor to looking for connections and relationships to include in the findings. Additionally, organizing codes in this manner afforded the opportunity to make connections within a coding family and between coding families. Hierarchies or

families serve as a method to organize data, whereas themes describe the data and relationships between hierarchies or families as they relate to the research goals and questions.

To ensure all participant ideas were included in the themes, relationships between the codes, and differences between code families were explored, including demographic differences. This was done by analyzing the data, or pulling quotes, by code family, and through the co-occurrence feature on Atlas.ti. The co-occurrence feature pulls codes that consistently occur together in participant responses. By exploring co-occurring codes, the researcher was better able to describe the relationships between codes. Additionally, codes were analyzed by families. For example, recommended strategies or policy changes were analyzed by the code family "gender." When exploring differences by the demographic variables and participant role, few differences emerged. Given the homogeneity of the sample, it is not surprising there were few differences by participant demographic variables. However, there was variation in participant responses based on the percentage of students at the school who were classified as economically disadvantaged. . When appropriate, differences by percent economically disadvantaged are presented in the results.

Codes were then organized into themes. Themes represent multiple families and/or codes, which taken together form a common idea (Creswell, 2013). Several codes were included in multiple themes. For example, the code "relevant or interesting" was included in the theme that summarizes recommendations for marketing and health-based strategies. However, it was also included in the theme that summarizes specific recommendations because it co-occurred with the suggested strategy codes such as strategy – fitness classes.

All decisions made during data collection and analysis were recorded as memos in the reflexivity journal (Corbin & Strauss, 2008). For example, when a question was reworded or

eliminated due to participant feedback during interviews, the decision was recorded in the reflexivity journal. Additionally, overall rapport and flow of interviews was recorded. This served as a point of data analysis about participant demeanor. Finally, decisions regarding which codes were merged or renamed and why were recorded in the journal.

Trustworthiness. Lincon and Guba (1985) outlined four criteria to establish trustworthiness of qualitative research: credibility, transferability, dependability and confirmability. Credibility refers to the accuracy of interpretation of participant experiences. Transferability is the degree to which findings can be transferred to similar contexts. Dependability refers to the ability to replicate the findings with similar subjects. Finally, confirmability refers to the absence of bias in the data. Lincoln and Guba (1985), Miles and Huberman (1994) and Shenton (2004) are among researchers who have provided strategies to establish trustworthiness. The current study used the following strategies:

1. Accurately and rigorously defined the research design and implementation (Shenton, 2004). Adopting research methods that were appropriate for qualitative methodology, as well as the health promotion and education fields, was one strategy that was employed to establish credibility, transferability and dependability. Well defined methods provide an opportunity for replication, which addresses dependability concerns. Additionally, thick description of the phenomenon being studied, context, method, and participants involved helps readers evaluate the degree of transference to similar studies.
2. Triangluation often involves the use of different methods; however, using different research sites and multiple sources of data is also a form of triangulation (Lincoln & Guba, 1985; Miles & Huberman, 1994; Shenton, 2004). This study used several

different high schools within a large school district as a strategy to establish all four criteria of trustworthiness. This decreased the chances that findings were specific to one high school. Additionally, this study explored both teacher and administrator views of the school environment.

3. Frequent debriefing sessions with the dissertation chair (Lincoln & Guba, 1985; Shenton, 2004). Collaborative sessions with the dissertation chair helped ensure the credibility and confirmability of the research. That is, the dissertation chair served as a sounding board to developing findings and probed for potential biases in the research (Shenton, 2004).
4. Negative case analysis is a process in which the researcher searches for cases that disconfirm possible hypothesis (Lincoln & Guba, 1985; Miles & Huberman, 1994; Shenton, 2004). This helped establish credibility and confirmability of the data. The researcher looked for negative evidence as coding categories developed and themes emerged.
5. Member checking occurs when the researcher asks participants to verify data, interpretations and conclusions (Lincoln & Guba, 1985; Miles & Huberman, 1994; Shenton, 2004). This provided an opportunity for participants to correct errors and/or add additional information. Member checking occurred throughout the interview. Interpretation of data was repeated back to participations to allow opportunities for participations to confirm or disagree with the interpretation.
6. Reflexivity journal is a journal used to record the researcher's thoughts about researcher biases, data collection, and data analysis and helps establish all four criteria of trustworthiness (Lincoln & Guba, 1985). The researcher wrote in a

reflexivity journal after each interview and throughout data analysis. The journal served as a method to document the interview process, the researcher's thoughts and opinions about data collection and analysis, and as a record of methodological decisions and rationales.

7. A thick description of the context and participant responses helps establish credibility and provides a basis for transferability judgments to be made (Lincoln & Guba, 1985; Shenton, 2004). Each high school in the SVSD was described, and each participant was described using number of years teaching, ethnicity, gender, and coaching status. Additionally, direct quotations for all themes are provided.

Institutional Review Board (IRB)

The research was approved by both the Virginia Commonwealth University Institutional Review Board (HM20003376) and the SVSD research review board before any interviews were conducted.

Delimitations

Although it is the hope that findings will help all high school programs, the findings from the current study are delimited to the population included in this investigation. That is, the findings are representative of administrators and health and PE teachers at the participating high schools in the SVSD school district.

Chapter 4: Results

Results are presented by research question and theme. Eight total themes emerged, two to three per research question, comprised of 10-50 codes. A total of 180 codes were created to describe participant data (Appendix F). See table 4.1 for a list of themes and accompanying codes. Quotes are provided throughout the description for both administrator and teacher participants to illustrate the theme. Differences between administrator and teacher participants, or differences by demographic variables are described when appropriate. Results for research questions three and four are described together as the strategies described by teachers and administrators should be interpreted along with the feasibility. An interpretation and discussion of the themes is provided in chapter five.

Table 4.1 *Themes and Accompanying Codes*

Theme	Accompanying Codes
Theme 1: The current public education school climate is a major barrier for any new initiatives, extracurricular activities, or out of the box thinking.	Teacher – pressures on teachers, PE – not a priority, SOLs, priority - academic priorities trump PE, support, time - afterschool, back to the basics, time – before school, field notes, school environment, thinking outside the box, school – too many requirements
Theme 2: High school health and physical education are not primary priorities to most high school students, non-PE teachers, and administrators.	Priority family, PE – department responsible, PE – elective, PE - misconception, school - is this a school responsibility, mind body connection, sch_health council, student - decrease interest in health-related courses and activities, school – too many requirements, policy – 8th grade pe, advanced pe, athletes, athletics, SOL's, coach, school - pa school only, PE – dumping ground, field trips, healthy lifestyle/health consequences, teacher – no collaboration, school – no school wide efforts, student – accountability, student - behaviors, student - engagement/motivation, student - attitude, wellness committee
Theme 3: Frequently mentioned barriers to physical activity participation and healthy eating at the school level included "Money, Money, Money," supervision and/or sponsorship, transportation, and regulations/logistics. Family responsibilities and/or job responsibilities might be personal barriers for high school students.	Advanced PE - field trips, a terrible lunch, barrier, barrier- facilities, barrier - cost, barrier - logistics or hoops, barrier - nutrition, barrier - pa, barrier - PE grading, barrier – time, barrier – liability, barrier – job or family responsibility, barrier – scheduling, barrier – dress out, comp time, compensation, class size, convenience, school - early start time, PE - female engagement, funding – money – budget, lunch, lunch a la carte, lunch – our school lunches are terrible, policy - 90 minute classes, teacher – no collaboration, PE – schedule, instruction – assessment, sedentary, sedentary facilitator, sugar sweetened beverages, supervision/sponsor, vending machine, technology, transportation, transportation budget
Theme 4: Lunch, vending machines, facilities and equipment can be either a facilitator or barrier to student health behaviors. Health and PE instructional methods can be a facilitator to student health behaviors.	facilitator, facilitator – healthier options, facilitator nutrition, facilitator PA, facilities, equipment, HHFKA, lunch, lunch a la carte, instruction, instruction – nutrition, instruction - physical activity, instructional specialist, nurse, variety of activities, choices, vending machine healthier, constant activity/movement

Theme Five: Positive school role models are essential to setting up an environment that promotes student health. Marking strategies should utilize peer support and be relevant to student lives.'	apps, marking – advertising - recruitment, peer support, word of mouth, support – come from the top, community resources, marketing focus-emphasis, teacher – collaboration, comp time, compensation, competition, course offerings, lifetime sports, strategy - offer incentive, peer support, strategy – peer-led, poster, relevant_interesting, start small, school – starts at school, teacher – starts from the teachers, student driven, student engagement/motivation, student interest, teacher engagement, choices, word of mouth
Theme Six: Intramurals, fitness classes, open gym times, and fitness apps ranked among the top strategies to increase physical activity and decrease sedentary time. Fitness apps and improving the school lunches ranked among the top strategies to improve student nutrition.	Advanced pe, advanced pe – atheletes, advanced pe - field trips, apps, chromebook, course offerings, cooking class, competition, field trips, strategy - internet based effort, strategy - intramurals, strategy – offer incentive, lifetime sports, strategy - open gym, strategy – peer-led, strategy - salad bar, strategy, strategy - half off, strategy – fitness classes, technology, choices, walking club, yoga, activity breaks, education, homework, mind body connection, student interest, teacher interest
Theme Seven: Teachers and administrators described mixed views on physical education and wellness policies. However, many felt a complete revision of physical education and lunch services at the high school level is necessary to help promote student health behaviors.	Policy, policy – 8th grade PE, policy – 90 minute classes, policy – change, policy – online PE, policy – onlinePE accountability, policy – gender, policy – varequirement, advanced pe, advanced pe gender, instruction - assessment, PE - female engagement, HHFKA - fundraising through food, gender separate activities, HHFKA, change PE, social aspect pe, summer school pe, target students early, wellness policy, sch health council
Theme 8: Community, family, and district support might help alleviate some of the liability and logistical concerns placed schools, as well as increase accessibility to health resources for students. However, there is wide variation of family and community involvement throughout the school district.	family, family – support, family – engagement, family – parents, community resources, community events, support, barrier - liability, barrier – logistics or hoops, education, student - pa only at school, student – only meals at school, school – is this a school responsibility, education/educate, context, school - equality across the district, resources, SES, support, school – diverse population, wellness committee, strategy, supportive administration, support – come from the top, instruction, wellness policy, active commuting, afterschool, before school, clubs, support – needs to come from the administration, school - district effort, lifetime sports, Medford league, PE – department responsible, school effort, school resource, student interest, teacher interest, teacher engagement,

Research Question 1: How do teachers and administrators perceive the current high school environment with regard to student health promotion, specifically student physical activity, nutrition, and sedentary behaviors?

Two themes emerged from the data that described the current high school health promotion environment:

Theme One: The current public education school climate is a major barrier for any new initiatives, extracurricular activities, or out of the box thinking.

Theme Two: Health and physical education are not primary priorities to most high school students, non-PE teachers, and administrators.

Participants were asked about practices at their school regarding student health promotion and student health behaviors. They described the negative school climate, such as teacher pressures and student academic requirements, as a major obstacle to promoting student health behaviors. Additionally, the participants described the emphasis, or lack of emphasis, placed on the health and physical education (PE) curriculum by administrators, teachers, and students. These two themes taken together illustrate participant views about current high school health promotion practices, and student health behaviors, specifically physical activity, nutrition, and sedentary behaviors.

Theme One: The current public education school climate is a major barrier for any new initiatives, extracurricular activities, or out of the box thinking.

This theme emerged from both teacher and administrator responses, and the pessimistic sentiment about the state of public education was pervasive from the start of each interview through the conclusion. Participants described an environment where the academic requirements placed on students and teachers, and the Standards of Learning (SOL) limit the available time and resources needed to focus on student health. One teacher participant, Carl, seemed to summarize the sentiment expressed by both teachers and administrators:

> I think that this is more of a general education question…we're not being allowed to do our job to the best of our ability because we have so many technology requirements and so many lesson requirements that have to be done, staff development type of stuff that has to be done that are kind of taking the place of getting in and standing in front of those kids and getting those kids involved. It's make sure we get this requirement done, this lesson done as a requirement, make sure we get this technology done.

Standards. Several participants described pacing guides and standardized tests or SOL as main factors limiting teachers' time and adding pressure. James explained, "Our core teachers are so academically oriented and they're under such gun, under the testing by the state mandates, all the state requirements…so packed with getting in the curriculum that they just don't have any time to do anything else." Similarly, "pacing guides are driving how the time needs to be spent and some classes depending on the pacing guide, it's [activity breaks] going to be a lot more challenging" (George). Lucille, an administrator, added that the requirements are making it difficult for schools to think outside of the box. "You have to be willing to take a risk, you have to be willing to step outside of the box. And people have become very gun shy of stepping outside of the box because of the way education is now."

Educator Morale. Beyond the time needed to carry out the requirements and cover the SOL, participants discussed the influence of increasing teacher responsibilities on teacher morale. Many of the participants seemed exhausted and defeated, and used the interview as a platform to voice their frustration with the overall school system. Thomas noted, "morale is very low, people don't want to do a lot anymore…we've got teachers here who've been teaching over 7 years and actually do even less now than when they first started." Teachers and administrators often used words like "overburdened," "overwhelmed," "taxed," "pressure," and "stress" to describe teacher morale. One teacher discussed a movement called "just let me teach" that was created due to the added requirements placed on teachers and schools:

> I think part of the problem we have at this point is to try to collaborate is very difficult because of the sheer amount of demands put on us for all these new initiatives and different things to do. The [teaching organization] has this initiative now, this movement, that's just let me teach…it's please take some of the little petty stuff off our plates so that we can…develop relationships with the kids better and we can just teach, and really be able to enjoy just teaching. And yes we can learn new things, it's not about that. It's about this laundry list [of requirements] all of the sudden, this year. (Harper)

The code "teacher pressures" co-occurred with the code "supervision/sponsorship." Daphne explained how the added teacher requirements have influenced teacher sponsorship for extracurricular activities, including administrators reaching out to teachers, "I think teachers being overloaded at the moment, especially this year, it seems to be worse than ever. I think that's a barrier...you feel bad going to say, can you do this?...Because I think they work hard…So I think that's pretty big." The work load placed on teachers and administrators could be negatively influencing the number of volunteers willing to come before or stay after school to sponsor or supervise clubs and activities. Several participants added the same teachers often volunteer for the majority of school events, which likely increases their already heavy workload. Participants explicitly stated barriers related to the school environment, such as teacher supervision, without being prompted. Many of these same barriers were described again when participants were probed about the specific barriers to physical activity and healthy eating. As such, these barriers are also presented in subsequent sections.

Participants' demeanor during the interviews was additional evidence about their morale and views on current policies or practices that promote student health in high school. When asked questions about current health-based activities or initiatives there were often sighs, rolling of the eyes, long pauses, and seemingly nervous orfrustrated laughter. When asked questions about what could be improved or what may be feasible for high school students, teachers struggled to think of strategies. Across all participants, but especially teachers, there seemed to

be a feeling of paralysis when asked about what could be done or improved given the school environment. Teachers needed to be probed for elaborated responses when asked about strategies and the researcher often had to add the caveat, "if teachers had the time."

Administrators were more likely to state directly whether they believed a strategy was infeasible and cite the current school climate as the reason. For example, George explained "[are health-based activities during the day feasible?] Yeah, if you had time. You look at the time that we have now and it's taxed, remediation, so many requirements that cover the day." Administrators also added that they often feel the same pressures and requirements as teachers. Jake stated, "Remember that as far as this administration and teachers, we have a lot on our plate right now and just meeting the SOL requirements and meeting the daily things that are required amongst educators." Many administrators discussed how "sad" the education system is and their "worries" for the teaching profession, with one administrator describing how he could not recommend the profession to his children.

Changing System. Several teachers and administrators discussed the changes in the education system over the years. All but three participants had 15+ years experience in the school system, and based on their responses, it is reasonable to assume one reason they participated in the study was to express their frustration with the changing education system. Some participants even apologized for sounding so negative. One teacher summed up what many other participants described:

> Well, you know, it's funny. Forty years ago, I went into teaching because I knew when I was ready to have kids, it was a failing system and I wanted my kids to be successful. That was 40 years ago, and it has gotten nothing but worse, not just Health and PE, the whole education system. (Jessica)

Theme Two: Health and physical education are not primary priorities to most high school students, non-PE teachers, and administrators.

The first theme described participants' feelings and thoughts about the broader school environment; theme two focuses more specifically on the health and physical education (PE) curriculum and student health behaviors. Participants' responses were coded into the broader category priority – teachers or priority – students, and then again as yes or no. Responses were coded this way to explore the overall picture of student health at the high school level, and link specific practices with positive and negative responses. Participants overwhelmingly stated that student health behaviors were not primary priorities to students, administrators, families, or non-PE teachers. Occasionally, participants stated that it was priority to one or two of the groups, or that it was "mixed" at their school.

Administrative Priorities. When discussing whether or not student health behaviors were a priority to administration, teachers struggled with the word, "priority." For example Harper commented, "Do I think it's a priority? Gosh, that's really hard to say?" James had a similar response, "once again, priority is just a really high word." Overall, most teachers felt that health and physical education were not primary priorities to administration, and discussed the pressure of academics as the main reason why it was not a priority. For example, Harper summarized what most participants stated, "I can't say that's high on the list….there are so many concerns...So many things to worry about. So many things that they have pressure about, which are a lot of the same things we have the pressure about." However, although some participants believed it was a priority to school administrators, their responses to how administration showed it as a priority were contradictory such as:

> Do [administrators] understand what the kids are getting and aren't getting? I don't know because unless it's an issue, we don't have administrators down here. So sometimes administrators don't really know what we do down here unless it's a problem, or unless they're in observing. So I think they do, but I don't think that's a point of emphasis for them. (Grant)

A couple teacher participants felt health and PE was a priority to school administration. One participant described physical activity and nutrition as a personal priority to the administration, and one participant stated it was a priority to one administrator who was previously a coach. This was interesting considering a different participant explained physical activity was a priority to administration as far as athletics were concerned. Although there were a few teachers who stated student health was a priority to the administration, there was far more evidence suggesting administrators were struggling to make it a primary priority due to academic pressures.

On the other hand, administrator responses were mixed regarding whether or not student health was a primary priority to the administration. Mia admitted it was not a primary priority to her explaining, "I wish it was, but unfortunately, our number one priority is obviously we haven't met accreditation and so we have all these standards that the state is making us meet academically." On the other hand, two administrators stated it was a priority, and identified modelling as the main way they show it as a priority. For example, Lucille explained, "My philosophy is you have got to be healthy to instill in others to be healthy. So if I don't model for the teachers, and the teachers then model for the students, it's not going to happen." Two other administrators identified it as a personal priority, but not necessarily a school priority due to academic pressures. Thomas described:

> Yes. I mean myself personally with a PE background, a sporting background, which is why we pushed incredibly to get kids to walk between campuses. Is it a priority? Not with everything else that we have to deal with our administration, but it's something that we definitely look at.

One notable characteristic about the administrator participants is that all but one administrator was or had previously coached a sport. The case that all administrator volunteers were coaches, paired with participant responses about athletics being a priority, indicates the

possibility that student health behaviors are mainly a priority to those administrators who have coached an athletic sport.

Non-PE Teacher Priorities. Teacher and administrator responses about whether student health was a priority to fellow teachers, students, and families did not differ. As such, their responses will be discussed together. Participants stated that non-PE teachers are overwhelmed with academic pressures and therefore, student health is not a priority. An administrator, Mia, summarized what most participants seemed to feel, "I think we would all like to say so. But….no, no, I would say everyone is more worried about the SOL's and getting their papers graded…They don't feel like they can have an impact on student health." Additionally, several teachers noted it was a personal priority, but not necessarily something that impacted the students. For example, "So for their personal fitness, yes, I think it's a priority. Whether that trickles down to their students outside of PE, I don't know" (Grant).

Student and Family Priorities. Participants described an environment where students' eating, physical activity, and sedentary behaviors are evidence of their lack of interest in their health. For example, Nadine recalled, "'Can I go to the snack machines,' 'can I go to the vending machines?' Just seeing, hey, 'can I use your microwave to heat this up?' and seeing what they're heating up, just things like that, wrappers in the hallway." Charlotte, an administrator, echoed this sentiment, "(laughs) they are more likely to go to McDonalds and get a burger/fries than they are to order a salad….they don't even a lot of times buy a whole lunch, they just get fries or something out of the vending machines."

In addition to poor nutrition habits, teachers and administrators described low student physical activity participation, and the significant amount of the day students seem to spend on technology devices, a factor that increases student sedentary time. For example, one teacher

explained, “And it’s the technology. It’s the kids, the phones, the Game Boys, the Play Stations, all that, the texting, and they just sit around and I think it’s easy for kids not to do things” (Grant). Additionally, teachers described situations where students’ only physical activity participation is that which takes place at school. For example, Harper highlighted some students’ sentiment after completing the necessary PE requirements, “But then you get some that once PE is over they are like yeah, I don’t have to do anything anymore, you know. And that’s frustrating.”

Evident in both teacher and administrator responses was the role socioeconomic status plays in whether or not health was a priority to students and families. The few teacher and administrator participants who stated health was a priority to students and families were all from higher SES schools. For example, Lucille explained:

> How do they show it [is a priority]? We have a lot of children that are involved in our sports programs. They're also in show choir, they're in band, and they believe very strongly they have to eat right and they have to exercise. We also have a weight room here at school. And they're full, all the time.

Participants from schools with diverse student bodies, or average SES schools, often stated that whether health was a priority to the students was “mixed.” For example:

> For some students [It is a priority]. And some students could not care less about physical activity and the only physical activity some of our students get are when they’re in PE with us. A lot of our students are very active, whether it be through school activities or outside activities but we do have a group of kids that they get no activity at all except what we make them do in PE class. (Grant)

Participants from lower SES schools explained that student health was not a priority to the students. For example, Heather shared, “They're more concerned with getting through the everyday of coming to school. I think just getting up and coming to school is a challenge...So I think health and nutrition and eating is definitely on the back burner.” The emphasis placed on student health by families/parents mirrored responses related to students, including the variation

by SES. Below are three quotes about the priority families place on health behaviors by the different levels of SES:

> Low: The meals that our students receive are probably the only two guaranteed meals they get in a day. That being said, I believe that it's just not high on the priority list. It's going to be what, with my paycheck, can I buy for my family that is cheap and can stretch, and nutrition is expensive. That's the population we're dealing with here. (Nadine)

> Average: I think it's [student health as a priority] really split, I think it's honestly really split. (Harper)

> High: Probably more so here than in other schools. I think that we have a lot of families that are very supportive of their students…I think a lot of it is not just academic…I do talk to kids that say they've run in a 5K here or one of my football players did one of the Spartan races with his Mom. So I think it probably is something that the families kind of support. (Carl)

School Level Indicators. Beyond participant responses to questions regarding priority levels, there were several indicators that student health is on the back burner at the high school level. First, many teachers and administrators discussed a decrease in student interest in the elective PE courses. Jessica summed up what many teachers and administrators described:

> We used to do an Advanced PE class when I first started, oh gosh, it's been 18 years ago, there were five Advanced PE classes. Those kids would go to other schools and compete with the kids whether they were playing ultimate [Frisbee] or bowling or whatever. It was quite popular. Now we're lucky to have one and it is a class of throwbacks, they didn't have any place to put these kids, so let's put them in Advanced PE and they're always definitely a problem class.

Next, health and PE was discussed as an elective, even though it is a required course to graduate, illustrating the importance of the health and PE curriculum. For example, "He understands that we electives have, and even though we're not an elective, we're considered an elective" (Jessica). Related, William described the way the health and PE class is sometimes viewed by administrators, "30 years of teaching, [and] for the most part, [to] administrators we are a, just an extra activity to put kids into. If they really took us seriously, it wouldn't be what is now, if they took it seriously." Additionally, teachers often described situations where many

students are placed in advanced PE or fit for life classes because it's the only class that fits with the students' schedule, making it a "dumping ground" according to teachers. "Each principal has so many FTE's [full time equivalents] that they've got to allocate, so obviously do I need to add an extra section of PE or an extra section of Algebra I? They're going to add an extra section of Algebra I and PE becomes a dumping ground" (Grant). Teachers added this limits participation during PE classes because students who do not self-select the course are often less motivated and interested in being there.

Additionally, PE teachers noted that there is a "misconception" about what they do on a daily basis. For example, James explained "We don't want to come across as the Phys Ed teacher in the '50's and '60s that was all concerned with athletics, we want to get across to them that we are teaching a life style." Similarly, Grant added, "Part of the problem is the old adage of the old gym coach who rolls the ball out, and reads his newspaper and drinks his coffee, whereas you've got PE teachers who work their tails off…to work the different aspects…of fitness." An administrator, Lucille, admitted this was her view of health and physical education, "So I see Health and PE as antiquated. I see it as boring. I see it as roll the ball out and y'all just grab it when you want to."

Further, many teachers and a few administrators discussed that students get pulled from health and PE if remediation is needed, and the health and physical education courses lose their classroom or gym space during testing periods. "We try to pull them out of their elective classes, Health and PE or art, ones that are not required for graduation" (Mia). Heather described the bigger issue when students are pulled from health and PE:

> Because of the school we're at, there's a lot of remediation needed for SOL's so they get pulled from our class a lot. So the kids that test lower usually they are the kids that are more disruptive, so…they're taking their only physical activity that they have during the day if we're in PE that day, and send them to just sit in the class where most of these kids need to be

> running…But it's all about SOL's...I try to encourage them to take them when we're in the classroom and not when we're in PE. So especially for the kids that love PE. To just go sit again in the classroom again is not what they want to hear.

In addition to the examples that illustrate health and PE courses are not priorities, there were a few examples that indicated student physical activity, nutrition, and sedentary behaviors were not a priority outside of the health and PE curriculum. Several teachers and administrators explained there were no school-wide efforts that encourage student physical activity and healthy eating. Jessica simply stated, "I'll tell you the truth, unfortunately, I haven't got a positive thing to say about that [school-wide student health promotion]." Another teacher participant described there are no strategies to promote physical activity participation and healthy eating outside of the health and PE curriculum, "Besides the athletes that want to play sports? No. We don't even have posters on the wall in the cafeteria that say drink milk" (Nadine). Lucille explained that any school initiative would have to come from the PE department:

> The only way that we could do any type of wellness and I'm talking activity type stuff in this building, in a high school level, would be in your Health and PE classes because your academic classes do not have time any longer to do anything but get ready for testing, for SOL's, for AP, for anything that comes down the pike, SATs, ACTs, whatever, we test constantly. And so your wellness has got to come with your Health and PE teachers.

Finally, a few administrators shifted the responsibility of promoting healthy behaviors to elementary schools or families, as there was little that could be done when students reached high school. For example, Mia explained, "there's only so much we can do at school…and they need to start learning these things at the elementary level and the middle school level. By the time they get to us, either they're into it or they're not." Although teacher participants agreed that students should be targeted early, they also stated the importance of schools providing continued support. For example, "they're trying to get the kids younger and I can see why they're doing

that…it will get them in the habit, but to keep reinforcing it, then you do need it at the next level, too" (Grant). One administrator questioned whether this should be a school responsibility at all,

> I appreciate that people want to learn to be healthy. And I appreciate that we as Americans get involved in so many different causes. But sometimes we need to let parents take care of their own children instead of putting it upon on the schools. (Lucille)

Research Question 2: What are teacher and administrator perceived barriers and facilitators for high school student sedentary behaviors and participation in physical activity and healthy eating?

Two themes emerged that described barriers and facilitators for physical activity participation and healthy eating:

Theme Three: Frequently mentioned barriers to physical activity participation and healthy eating at the school level included "Money, Money, Money," supervision and/or sponsorship, transportation, and regulations/logistics. Family responsibilities and/or job responsibilities might be personal barriers for high school students.

Theme Four: Lunch, vending machines, facilities, and equipment can be either a facilitator or barrier to student health behaviors. Health and PE instructional strategies can be a facilitator for student health behavior.

Theme three summarizes the perceived barriers to promoting physical activity participation, healthy eating, and limiting sedentary time at school. Theme four summarizes practices or policies that were listed as both barriers and facilitators to student health behaviors, and the current practices or policies listed as facilitators for promoting healthy student behaviors.

Theme Three: Frequently mentioned barriers to physical activity participation and healthy eating at the school level included "Money, Money, Money," supervision and/or sponsorship, transportation, and regulations/logistics. Family responsibilities and/or job responsibilities might be personal barriers for high school students.

Theme three revolves around the school and personal barriers to physical activity participation and healthy eating for high school students. Teachers and administrators described a long list of barriers; however, some barriers were mentioned more frequently than others. In

general, teachers and administrators discussed several barriers simultaneously. That is, each barrier code co-occurred with another barrier code. For example, participants often described school funding as the main barrier, but cited transportation and compensation for sponsors as reasons funding is needed. Similarly, participants often described the logistics and regulations that had to be followed and cited the current school environment or changing times as a cause for the new regulations and policies. Therefore, many participant responses include several barriers.

Funding. Across participants, the most cited school level barrier to implementing health strategies was funding. Participants repeatedly reported money, funding, or the budget as a main reason health-based strategies were difficult to implement. Participant responses about funding were very straight forward. Heather explained, "It's all about money. Unfortunately, I think it's all about money." Similarly, Nadine added, "Money. It's always about the money." An administrator, Charlotte, made the following comment when discussing teacher recommended strategies, "You shared with me some of the strategies that were recommended by teachers, and I mean, a lot of them are great. Unfortunately a lot of them also require money that we don't have."

Related to the money needed from schools and/or funders to implement activities was the cost of activities to students and families. This was not discussed as often, however, it was mentioned several times. For example, Grant explained the student cost to enroll in advanced PE, "Now that's [advanced PE] an extra expense to the kids. And then that becomes a problem. The kid really wants to do that [advanced PE], but he doesn't have the extra $10 dollars or extra $20 dollars." An administrator echoed this concern, "It cost kids just about $80 to take advanced PE and they are only doing a few field trips. They used to go canoeing, and repelling and all these different things and they just can't afford them anymore" (Mia).

Supervision. Supervision also was listed as a barrier to implementing extracurricular activities and participants consistently linked this barrier to funding. Supervision and/or a sponsor was consistently reported as a barrier whether the strategy occurred before, during, or after school. Jane simply stated, "getting sponsors for extracurricular activities is hard to do." Similarly, "it's hard to ask somebody [teachers] to put that amount of work into doing it every day or every other day or…without some kind of compensation" (Carl). The barrier of supervision was also linked with participants' perceptions of the current school environment. That is, many teachers seemed unlikely to volunteer because they are overwhelmed with other pressures. Grant explained:

> And the problem is that as a teacher they pile so many other things on us…You've got your academic teachers that have SOL's…they look like I'm a bad teacher if they don't have enough of their kids pass, and so they've got the stress of that and then those teachers used to be willing to do clubs and other things. Well, they're not willing to do that anymore.

Supervision is also an issue during the school day. Many teachers suggested open gym hours during the day; however, that requires a sponsor/supervisor to be in the gym at all times. For example, Harper explained:

> It would be very difficult for anyone to be available to run it [open gym], any adult available to supervise…whether I'm in health or in PE I have kids coming in the morning to make up work or to do test corrections. Today I had four different groups in there working on their project that is due on Monday. So, you know that becomes another money issue, I'm afraid.

Transportation. Next, the lack of transportation for afterschool activities was listed as a barrier. Teachers often talked in detail about how providing transportation would increase participation. William explained, "I think we lose a lot of kids if they don't have the transportation [to stay afterschool]. I get kids asking me if they can work outdoors in lunchtime...And I think the reason is because they don't have transportation [afterschool]."

Similarly, Jane described how providing transportation would encourage more students to stay afterschool:

> [Transportation] would be a big plus. I would think [transportation] would help a lot. A lot of kids who do stay after…some live in a neighborhood nearby but a lot of them if they were to stay after, they're not going to be picked up until their parents get off work past five. Which I'm sure discourages some of them, or a lot of them.

However, not one administrator thought that providing transportation was a feasible strategy. For example, Lucille described, "No. We can't even get money to transport our teams to other schools and get them to transport our band to football games. They [schools] are not going to transport children home from staying and working out in the gym." Another administrator described the likelihood of providing transportation for students afterschool was "next to nothing" (Charlotte). Each administrator discussed the soaring rates of transportation, with almost every participant citing the exact dollar amount per mile, and rate per hour for a school bus driver. Additionally, multiple administrators added that they can no longer afford to transport their students to athletic events, with one administrator, Mia, stating it was cheaper to charter a bus, "bus transportation at this point is almost you can't even afford it, it's cheaper for us to take a charter bus somewhere than it is a school bus." Taken together, administrator responses indicated that providing transportation afterschool is not feasible.

Regulations/Logistics. The number of regulations and/or logistics that accompany implementing before or afterschool strategies is another major school barrier. William described an initiative he was trying to implement, but due to the regulations and logistics he was unable to follow through.

> I did try, I drew up plans and everything, I wanted to make a fitness course in one of our fields in the back here...it's about 200 yards long, so I wanted to do a cinder track and then have stations…I asked county for donations of cinder, they wouldn't give me anything. And then they said I had to get a permit for land disturbance, and a permit for this and a permit for that, I said, forget about it……Yeah, the hoops. That would have

> been great, not just for classes, but for the community to provide in the afternoons and at nighttime.

The regulations/logistics barrier differed by teachers and administrators. Although a few teachers discussed logistics, administrators were far more likely to dismiss a strategy due to the regulations or logistics. Teachers often discussed logistics, such as finding supervision, whereas administrators often discussed the liabilities placed on the school when students take part in afterschool or physical activities. For example, George explained, "Peer-led fitness club? Get into some liability issues there…what they are leading, what they are doing, are they certified, if you get into some lifting….injury, accidents, you have to look at, you know was there neglect on our part." In fact, one administrator, Thomas, described an afterschool physical activity initiative that was cut due to the regulations and liabilities placed on the school.

> It's always the liability issues as well when you come into things like that. For instance…a couple of PE teachers started an afterschool fitness…the Insanity, it started out and we were told we couldn't do that…Just a lot of logistics placed in the way. It's not as easy to do things with the liability and logistics as one would hope. More red tape to jump through in order to get something which is basically well meaning off the ground.

Health and PE Barriers. The PE schedule and students being forced to "dress out," or wear appropriate clothing for physical activity participation, were reported as barriers to physical activity participation during the PE classes, but were not mentioned as often as the other barriers. The school district allows each school to determine what schedule, that combines health and physical education, works best for their school. For example, one school rotates between two weeks in the gym for physical education and two weeks in the health classroom, whereas one school spends one full semester on health, and one full semester on physical education. This practice was cited as a barrier to physical activity participation and also as a method that promotes student sedentary time. Grant explained, "each high school is allowed to organize their Health and PE however they want...here we have two weeks of health, two weeks of PE. So the

problem with that is the kids go two weeks without any activity at school." If students only form of physical activity is at school, it is possible they could go a whole semester without receiving any physical activity.

A barrier to physical activity participation at school mentioned often was the policies related to dressing out and wearing jewelry. Many teachers explained that getting all students to dress out is a challenge, with one teacher stating that 3-5 kids every day are not dressed out. For example when probed about practices or policies at the school that inhibit physical activity participation Jessica stated, "Jewelry, having to take your jewelry off. The clothes that you're allowed to wear. Having to tie your sneakers. Those are big ones." Moreover, teachers explained that sometimes students will not dress out as an excuse to not participate, although they are still made to walk, Grant explained, "other kids, they don't want any part of PE and that's just their cop out, 'Well, I don't have my stuff.' That's their cop out of not having to do anything." An administrator described this as a barrier as well, "and I deal with issues all the time of students being sent to me because they refuse to dress out and do anything. A lot of them don't want to dress out for PE" (Mia). Some participants noted that schools are moving to a more relaxed policy, where students aren't required to wear a PE uniform as long as they are dressed in appropriate clothes for physical activity participation.

Academic Class Time. Another barrier to physical activity participation, as well as a practice and/or policy that can influence student sedentary time was the duration of academic classes, which is 90 minutes. James described, "take almost all the entire classes except for ours…they're going to be sedentary during the day." Similarly, "And then we've got 90 minute classes. (Laughs) We're supposed to be educators? Come on" (William). Participants explained how 90 minute blocks increase student sedentary time, as well as also influence students' ability

to pay attention. For example, "If you sit in a chair like this for 90 minutes you're [students] going to fall asleep, and you're going to be just so lethargic, and they don't think well that way" (Harper). Daphne, an administrator, echoed this response, "Research says you can't sit that long, I mean, even as adults. So….you know, it's torture."

Job or Family Responsibilities. A personal barrier that was discussed for students was family or job responsibilities. Teachers explained that many students go home right after school to babysit younger siblings or take care of family responsibilities, which often includes jobs. The following quotes illustrate what many teachers and administrators discussed:

> We have a lot of kids when they come home from school because both parents work, they actually are care givers for their younger siblings, taking them off the bus, and watching them until Mom and Dad come home because they don't have the extra money for child care. (Jane)

> I'm not talking half, most of our population are single parent homes. With that big influx of Hispanic ESOL kids, they're from El Salvador, Ecuador, their mommies are not even in the country, they're living with relatives, they're working. So many of our students are depended on for income, a lot of our kids are foster kids. Not that they couldn't handle a leadership role, that's not what I'm saying. I'm talking about the time in the day. Their time is much more valuable at home. (Nadine)

Higher SES schools were less likely to list this as a barrier. Similar, transportation was mentioned less often as a barrier for students at these schools. Teachers and administrators described more parental involvement, including the ability to pick up students from after school activities.

Theme Four: Lunch, vending machines, facilities, and equipment can be either a facilitator or barrier to student health behaviors. Health and PE instructional strategies can be a facilitator for student health behaviors.

Theme four encompasses the factors that emerged as both a facilitator and barrier to healthy eating and/or physical activity, as well as the factors solely classified as facilitators.

Food Offerings. The lunch and vending machine were discussed both as facilitators and barriers to healthy eating. Some participants believed that the vending and lunch options were now healthier and promoted healthy eating. For example, "each year we seem to have healthier offerings to the students...and what we serve at the cafeteria…they have lots of variety, for the most part it's very nutritious" (James). Related, Harper discussed healthier options in the vending machines, "The snack machines, it's all lower fat choices…the baked chips and then the whole grain choices and things like that." An administrator described the changes she has witnessed over the past 10 years:

> Well, when I first came here we had sodas, at lunch we could get those. You know that's all changed, now it's all just milks and juices. It's all low fat snacks in the vending machine. Fries are only sold on certain days, they used to be sold everyday. Pizza and fries used to be sold everyday. So I just think the choices for lunches are healthier. (Mia)

Even though many participants believed the lunch and vending options had improved over the years, they still thought the options were unhealthy. For example,

> Food and nutrition took some steps this year but I don't think they did it well. They're meeting these requirements, but it just seems like it's still a chicken patty sandwich, but they just want like a drier bread that has less calories or something like that. (Thomas)

Further, participants explained that many students and teachers do not like, and often avoid, the new lunch options. Harper described an instance in which she forgot to bring her lunch and was forced to buy the school lunch, "And the food has no flavor, none. And I get they are lowering the fat, and lower the carbs and everything, but I'm not sure what the spices would have to do with it. But the food doesn't seem to have a lot of taste." Jane explained that students now eat from the vending machines instead of buying the lunch:

> We still just have a lot of junk food in the vending machines and what kids are doing because the cost of the lunch is so high and even if you do have the money, it's not that healthy, they're just eating potato chips and a drink for lunch.

Lucille described her view of the lunch changes:

> Went to crap, yeah. There are no soft drinks, there's nothing fried, nothing sweet, everything is according to this new wellness policy and it tastes like that piece of paper and the children aren't going to buy it. They will bring it from home and they will eat a light bag of chips, but they're not something that tastes like a piece of paper.

Facilities and Equipment. Participants also discussed facilities and equipment as both facilitators and barriers to physical activity participation. The lack of equipment and facilities, often due to athletic practices, was discussed as a barrier. However, a few schools had recently been renovated and participants found the new equipment and facilities to be a facilitator for physical activity. William shared, "We've probably got more equipment than most schools, just regular PE equipment. So we do have an advantage over them with that." James described the benefits of the renovation that had taken place at his school:

> I just think that we went from having very limited facilities…and now that we have space, we included a fitness room, we're able to really keep the kids that are in the gym very physically active. And I think that having the facilities really helps you as a teacher, you can just promote and just show [students] the opportunities that they will have once they get through high school.

On the other hand, most participants discussed lacking facilities and equipment as a barrier to participation, especially for afterschool activities. For example, Jane commented, "afterschool, you have all the different sports teams having their practices then…and now I think this is the first year that they can do year round conditioning...So it's very hard to get weight room time, or gym time afterschool." Similarly, Nadine described the facility limitations, along with many other barriers to physical activity, "Besides funding, manpower, facility location…although I might be able to meet and I have the manpower and all that, while the auxiliary gym is taken up by wrestling, main gym basketball, track is track…There would also be facility limitations."

Instructional Strategies. Teachers described the variety of instructional strategies used in the physical education curriculum as a practice that promotes student health. Nadine described in detail the project based learning (PBL) initiative being implemented across physical education courses at her school, calling it "the best in the county." She went on to describe a PBL in which students gain miles for running during the PE portion and then map the miles onto a map during the health portion. Part of this PBL is that at each "stopping point" students research aspects of the community such as the health issues or the fitness facilities available. At the conclusion of the project, the students create a public service announcement and encourage people to visit based on the research they conducted. It was evident how much the teacher enjoyed her job, department, and school describing how, "It's just so much fun. So I think as far as trying to get kids motivated to do, we come to school everyday on rocket fuel, we love what we do and this is the school that needs it most."

Many other teachers described the instructional strategies in the classroom as a facilitator for physical activity. Teachers often discussed providing choices and a variety of activities that cater to students interests' as a facilitator for physical activity. For example, Grant described allowing students choices for their final exam, including the option of running in community races:

> Our exam in the Spring is the kids have to run. It's part of the exam, and so there are a lot of like the Susan B Coleman, the 5ks and stuff, so kids are allowed to run in that, and that counts as their exam…

Carl described how they rotate during physical education courses to keep students moving and motivate them:

> We spend 20 some, 25 minutes…in this gym doing some type of activity, then we go into the main gym and do whatever team sport we're working on …and then we split it up and go into the weight room, or we have a fitness room that has a lot of different gear like treadmills and ellipticals and things like that.

Two teachers from the same school discussed a practice they had used in the past that seemed motivating for the students. Harper elaborated:

> A few years ago we were able to give them choices of areas that best suited them. Like, one teacher focused more on team sports, one teacher focused more on individual and recreational sports and some outdoor sports, one focused on wellness, personal wellness, and the yoga was part of that…I forget what else, personal fitness…the standards are still getting fulfilled, but they're getting the types of the activities that are best suited to their personalities and their preferences. And the kids really bought into it.

A few teachers also credited the instructional specialist as a facilitator. For example, James commented, "we certainly have a specialist that is in charge with promoting all the things that we do in physical education and she does an excellent job. She's very supportive and at the same time, helps give us resources that we need."

Research Questions 3 and 4: What strategies do teachers and administrators recommend for a prevention program targeting high school students' physical activity, nutrition, and sedentary behaviors?

What is the feasibility of teacher recommended strategies according to administrators?

Teachers and administrators recommended general strategies to promote student health such as include peers or model healthy behaviors. They also described suggestions for marketing any health-based initiatives, for example, allow students to advertise any student efforts. Moreover, they suggested specific strategies to encourage physical activity participation and healthy eating, and decrease student sedentary time such as intramurals or fitness apps. The remaining themes summarize teacher and administrators recommendations on school-based strategies, policy recommendations, and overcoming barriers associated with implementing extracurricular activities.

Theme Five: Positive school role models are essential to setting up an environment that promotes student health. Marketing strategies should utilize peer support and be relevant to student lives.

Participants described several features that could potentially increase student interest and participation in health-based extracurricular activities. For example, they described the responsibility of the school to promote student health such as role modeling healthy behaviors. Further, they suggested initiatives or strategies at the high school level would likely need to include peers during recruitment and implementation of extracurricular health-based activities.

Strategies to increase student health behaviors should start small. Many participants were excited about the strategies, but often responded with phrases like "I just don't know how that would look," or "I can't say because we've never tried that." Charlotte specifically stated health-based initiatives should "start small, so if you get a few [students] going…then word of mouth spreads you know. Sometimes when you go too big, it [initiative] doesn't go well, and nobody wants to do it." Similarly, Thomas noted, "so I think with any new program you should start off very slow." These participant responses taken together with themes one and two, suggest that any initiative, strategy, or program should start small.

Several teachers and administrators stated that student health promotion starts from the teachers, or starts from the school. For example, William shared, "we've got to start [health promotion] here at school, we can't really touch it [health behaviors] at home that much…we've got to give [students] more time here…hopefully, then maybe they'll say this [physical activity, nutrition] is pretty important…maybe that will carry over to them at home." Similarly, Heather stated, "It starts from the teachers…I think if we did more team building things with the staff, it would trickle down probably into the students overall." She went on to describe a grant she had applied for that targets at-risk communities by bringing in an outside person to teach yoga to

either teacher or students. When probed about whether this was for teachers or students, she commented that she would be happy either way because a teacher initiative would influence the students. Many other teachers and administrators described efforts at the school level that start with the teachers and promote student health. For example, one school planned a chili cook-off, which involved teachers cooking healthy chili dishes. Teachers at this school also participated in a biggest loser program, where faculty competed to see who could lose the most weight.

Modeling. Teachers often discussed how the faculty and staff at the school should be models of healthy behavior. Lucille noted, "I think first we have to model it, I think we as administrators have to model that we believe that student health is important." Similarly, Nadine described how the PE department models enthusiasm for the students, "so we're just loud and crazy and it just sets the kids on fire. They love it." Grant seemed to summarize the participants' views on modeling:

> Well, I think one, practice what we preach. So if we're telling the kids to be active and we're telling the kids to eat right, then we as role models and as their teachers have got to exhibit that too. I think that's huge. So the kids are like, 'yeah, you're telling us, and then look at you. You're out of shape, you're eating three donuts every day and drinking soft drinks, things like that.' So I think we have to practice what we preach.

Although almost every participant discussed the importance of teacher modeling, several teachers stated that the vending machines, or soft drink vending machines, had been removed except for in the teachers' lounge. Heather explained, "There's one vending machine in the teacher's lounge. And students are not allowed to go in there." Similarly, Grant commented, "The only soft drink machine we have is in the faculty lounge. So kids will try to sneak in there to get soft drinks, but they technically don't have access to that" This finding is interesting, considering the important role of modeling so many teachers described.

Many teachers and administrators explained that students enjoyed activities that teachers and students participated in together, such as faculty vs. student basketball games or activities during PE classes, which typically include an element of competition. James stated, "I have all these kids that think they can beat me at badminton, they want to play me. And pickle ball, pickle ball is kind of like an indoor chess game, and so they're always wanting to challenge me." Carl used an example of a fellow PE teacher who is competing with an athlete on her soccer team:

> Honestly most of the kids when I think of what's going to draw them to participating and participating to the fullest, it's competition…..My wife, she teaches...PE, she has the Fit Bit, and she's very active herself…she also coaches soccer and one of her soccer players just got one...they're actually challenging each other today to see how many steps [they can take].

Charlotte described how they use competition to encourage student and staff participation in a morning open gym time:

> And the kids sign in and the one with the most minutes at the end of nine weeks gets a prize, and they randomly will do some door prizes and things to try to get kids going and not have such a sedentary lifestyle.

Marketing Strategies. Teachers and administrators spoke about the importance of advertising any initiatives that took place at the school. Participants recommended that marketing strategies should utilize peer support and be relevant to students' lives. Teachers and administrators both explained that the best strategy to recruit students to participate in extracurricular activities is to target the influential students and then use a "word of mouth" approach. For example, Jane explained the best way to encourage participation is through "word of mouth. Getting a bunch of kids hooked, and then getting them to spread it." Jake described the successful approach used at his school to recruit students to join clubs:

> The way that we designed the last one to make sure that kids will come to the afterschool activity we had a couple of kids in the hallway that we saw were extremely popular and

> we said, 'hey, why don't you come on in and see if you would like this.' And so what is happening is that one student brought in four, and then that four brought a few more, and so that's how we knew we were going to be able to draw more kids in by asking certain kids to come in as a part of the leadership program.

Evident in these responses in the role of peers. Several participants said the best way to encourage participation was to harness peer support. For example, Grant explained that participation in afterschool clubs or extracurricular activities was often dependent on peers, "A lot of times, if their friends are going to do it [participate] then they're definitely going to do it [participate]. A lot of peer pressure." Similarly, Charlotte described how peers influence participation, "you can do posters, you can do announcements…but they don't always listen to that, but if they had a friend of theirs that is like, I really want to try this out, that makes a big difference." Finally, Lucille added that student-led approaches are more likely to garner student participation in new programs, "I would have children do it. Adults wouldn't do it. I would have a group of children buy into it first, sell it to them, and then go from there. And they sell it to their friends."

Although teachers thought a word of mouth approach utilizing peer support was the best method to recruit students, many also suggested multiple modes of advertisement and recruitment increases the chances that students will participate. Harper described the importance of advertising health-based initiatives to parents and through as many outlets as possible:

> Advertising where the parents have the information, good thorough information, you know, maybe putting it on county and school websites. Promotional advertisements, whether it's through TV, newspapers, where people are getting it from many different sources, 'hey this is a really good thing, be a part of this, don't miss out.' And in some of the ways that the students are going to see it the most, and the parents will also have the exposure and access.

Some possible modes of advertisement include announcements, posters, school websites, and school or local newspapers. Participants discussed using relevant modes of advertising for

high school students such as social media. Jane recommended, "Use social media. I'm not on social media but yeah, we would have to do the whole social media thing. A facebook, an Instagram." Daphne also recommended social media as an approach, "I think social media can play a part in…advocacy for programs that are promoting health and wellness."

Participants described powerful recruitment and advertisement messages as those that are student-driven, bold, and humorous. For example, Jessica stated "Anything that is student made and driven is ten times more valuable than anything an adult could do." Carl explained what he thinks is powerful by comparing it to student election posters, "Like when the kids are running for office, and they make a funny poster…I tend to notice it more. So you have to actually have the information, but kind of spin into some kind of funny way." Jessica echoed this when describing an activity she does in the classroom where students create posters about washing their hands and then the posters are hung around school. She added, "some [posters] get ripped down... And some of them are hysterical. And those are the ones that usually stay up the longest in the bathrooms." These suggestions point to the need for messages to be interesting and eye-catching to students.

Theme Six: Intramurals, fitness classes, open gym times, and fitness apps ranked among the top strategies to increase physical activity and decrease sedentary time. Fitness apps and improving the school lunches ranked among the top strategies to improve student nutrition.

Theme six emerged from the specific strategies teachers recommended to promote physical activity and healthy eating, and decrease sedentary behavior for students. As aforementioned, it was difficult for teachers and administrators to think of feasible strategies. Participants often discussed a strategy, but then described all the barriers, stating "well, that could never work." After exploring teacher recommended strategies and cross-analyzing the responses with administrator feasibility, a list of the most feasible strategies to promote high

school student physical activity, healthy eating, and reduce sedentary time was composed. Of the strategies discussed, intramurals, fitness apps, open gym times, and fitness classes after school were the most feasible strategies to promote physical activity and reduce student sedentary time. Fitness apps and improving the school lunches were the top recommended strategies to improve student nutrition. A peer-led initiative and activity breaks were also discussed frequently. Each strategy was also discussed alongside the barriers to implementing the strategy. Barriers that co-occurred with each strategy also are discussed.

Intramurals. Teachers and administrators frequently discussed intramurals as a possible strategy to promote student physical activity. Intramural sports was the main strategy discussed without probing from the researcher. For example, before being prompted, Nadine stated, "Intramural sports. They don't even exist. That's a number one because you take a kid that loves to play basketball, but he didn't make the cut...give him an opportunity to shine, he's going to be active. I think that's your answer." Similarly, Harper described how intramurals have the potential to include all students, not just those with athletic ability:

> I think bringing intramurals back for those kids that maybe aren't gifted athletes but like to be physically involved and challenged…So, I really think we are missing a big population of kids who like to be physically active but how are you going do that when you can't make a team? How do you do that on your own and be part of something?

Jessica suggested a complete revision of the sports structure at the high school level is needed, "Get rid of your teams and build yourself one heck of an awesome intramural program, build your varsity teams from your intramural programs and have varsity on the eleventh and twelfth grade." Most administrator participants agreed that intramurals were a feasible strategy to promote physical activity. For example, George explained, "I think intramurals work well. Even within the school or with other schools…just more opportunity without having to make a team. Just the cost when you look at some of these associations and travel teams, it's prohibitive."

Similarly, Mia stated, "I do wish…there were intramurals and that would be nice if there was a more organized intramural program for the students that don't necessarily want to go out for an athletic team but still want to do something." However, Lucille explained intramurals was not a feasible strategy at her school, "We have enough problems now getting coaches for our regular teams to think that we had to find supervision for intramurals. I think the director of student activities…would probably quit. Intramurals are not something that we even want to entertain." Overall, most participants agreed intramurals was a feasible strategy, but they also discussed barriers such as supervision and limited facilities afterschool. Thomas summed about the benefits and the barriers of running an intramural program:

> When I was a middle school teacher, I ran several intramural programs and it really is nice, you get the kids unencumbered...and therefore you get to incorporate a lot of different fun activities just to keep them motivated. Intramural in high school is very hard to keep because there are sports. There are usually three to four sports per season and therefore the people that are doing the sports are typically the people that would do the intramural activities as well. So unfortunately in high school, our staff is very split. You have some that want to stay after school and help students all the time, and then you have some that at 2:25 they're out the door.

Open Gym Times. Another popular strategy that evolved throughout the course of the interviews was implementing open gym times during the school day. Many teachers discussed times during the day, such as remedial periods or lunch, where students may be able to participate in activities in the gym. For example, Harper stated, "I think there are a lot of kids who sit in [remediation] morning with nothing to do and would much rather be physically involved." One teacher gave an example of students asking him to participate in activities during the day because they cannot stay after school. A different teacher described her vision for open gym times,

> I think it would be cool to have some sort of open weight room, open gym policy where if they were caught up in their studies and they were in good standing in their classes, that they could come in…and they could take advantage of that free time and you know, lift

> some weights or if we had the equipment, get on the ellipticals or, you know, play a game of pick up basketball or badminton. (Heather)

Administrators' opinions about whether or not open gym times was a feasible strategy varied, with slightly more administrators describing it as a reasonable strategy. For example, George described how schools have remediation blocks, which could potentially serve as open gym times, "open gym times, I think that's great with the schools that have [remediation] mornings, and lunch learning, stuff like that, open it up…during the day, that is great. You just have to have somebody to run it." Whereas another administrator, Mia, explained why this would not be a possibility at her school during the day,

> The open gym times would be great. I don't say that it could be during the day because classrooms are in the gym so during the day would be kind of hard when there's already classes down there. And again it would have to be supervised. They're just setting up the system of the accountability of who's going and who's supervising it.

Obvious barriers in the administrator responses include supervision and facilities. However, a different administrator, Lucille, described open gym times as a strategy already in effect at her school. Students have a 15 minute remediation block in the morning and students who are caught up with their work are allowed to go to the gym. It is reasonable to assume that open gym times as a strategy during the day may vary based on school factors such as whether or not the school is meeting accreditation.

Fitness Apps. The use of fitness apps or internet-based programs were discussed as a strategy to improve student physical activity and sedentary behaviors, as well as student nutrition. Participants described programs or apps students can download to track their physical activity participation, eating habits, and sedentary time. Participants also described their ability to help students set goals, track their eating, and monitor their progress. For example, Nadine explained, "If we had iPods, oh my goodness, it would be awesome because there are these cool

apps. There's a calorie counter, just reading labels, there are some brilliant apps." Similarly, Grant described activities that may be possible with the Fitbit or Chromebook:

> I know the Fitbit app that's out there now…would be great if we could get all the kids to have their bracelets and then, see, next year..all kids will have the Chromebook. So next year with every kid having a computer at their desk every single day, you may be able to start doing some different things, maybe research something on nutrition. Okay let's go to a website and let's count calories of what you had for dinner last night, and then break down.

Jane described a grant her school received, which included a set of Ipods. She identified several "cool" apps and features such as, "Nike has a cool workout…the kids on a PE day, bring their headphones in and...we open up the whole gym and you set up things, and they follow the iPod and do the exercises." Jane added that students ended up downloading the apps they used in the classroom on their personal phones, "I'll have kids that come back to me the next month, when we're already done with the nutrition unit, and they'll say, 'Guess what, Miss Jane, I've still been doing this.' So yeah, those are huge things."

Administrators thought fitness apps or strategies through the Chromebook were both feasible strategies. One administrator recommended:

> Every child needs one of these (points to fitbit). And you need to have a competition that has to how many steps you do during the day, heart beat, everything, cardio, I think your Fit Bit, whatever you want to call it, that would be a way to get your children up and moving. But it also, every time you look at it, oh…I haven't moved today, you know, I haven't moved much today. That's where you need to key in on what they are interested in. They're not interested in staying afterschool and walking around the gym or walking around the track. Give them one of these so that they know that they can sync it with their phone. (Lucille)

Thomas talked through his thought process about the implementation of the Chromebook:

> We will go online with the Chromebooks next year, so I couldn't really answer to what they can actually do, but I would think as a fitness tracker or something...maybe My Fitness PAL, or Fit Bits, or whatever, I'm sure there's something that can hook up to them, that could actually get the kids moving, some sort of motivation and brought into actual classes. Yeah, I'm sure something like that can be definitely done.

There were very few barriers mentioned for the apps/Chromebook because generally speaking no supervision is needed and there are several free apps focused on health and wellness. However, Nadine suggested it may not be possible at her school because not all students have smart phones. Additionally, Daphne explained that some of the programs are expensive:

> There's also a program called Wellnet, and it's an online program, but it helps kids with goal setting, it allows the fitness scores to be input, it gives me common assessments for everybody. I mean, I'd love to see, just, there are wellness tools that are going to help the teachers, and in turn, help the students. So usually it's a big price tag with money that's a barrier.

Related, several participants suggested each student should receive a FitBit. The FitBit is a fitness device that is worn on the wrist and can track physical activity, sedentary behavior, and sleep patterns. The FitBit data can then be uploaded and tracked on the computer. It is important to note the FitBit would also be expensive to purchases for all students. The FitBit is not necessarily an app, but it is similar because of its ability to track health behaviors.

Fitness Classes. Another strategy that emerged throughout the course of the interviews was fitness or group exercise classes for high school students. This strategy was first discussed when a teacher spoke about extending the employee initiative in SVSD to students. The SVSD employee initiative, XFIT, provides teachers with opportunities to sign up for free or low-cost fitness classes, such as yoga, kickboxing, or Zumba, before or after school. Harper explained that a similar approach would be nice for students:

> Maybe if they were able to stretch that [XFIT] a bit and open it up to some students…They've stretched…the activities they offer for employees, and I appreciate they are trying to improve the wellness of employees, because it's a free thing. I do think that needs to be extended to students as well.

After this participant recommended group exercise, or fitness classes, as a strategy an interview probe was added for fitness classes or a similar approach to "XFIT." Carl thought students would be interested in group exercise classes and explained why this may be popular

among high school students, "Honestly, the comparison to what they see in American Family or Gold's Gym...I think that's a selling point for these kids is that whole fitness center kind of life style." When probed if this would be similar to offering fitness classes for students, the participant added, "Yes, exactly." Similarly, an administrator thought group exercise classes would be feasible and also discussed the comparison of fitness classes to what students see at gyms or fitness centers, "I think a lot of the kids would take advantage to that [fitness classes], especially at the reduced cost … like we are members of American family, and I run into kids there. And it tends to be the more affluent families" (Charlotte). Participants added that fitness classes should be implemented in as many locations as possible such as schools, community centers, or possibly even partnering with local gyms, to increase accessibility.

Although both teachers and administrators discussed the strategy as potentially feasible, they also noted that this would vary based on the SES of the school. That is, transportation was often listed as the main barrier to implementing fitness classes and this barrier co-occurred with SES. Mia explained:

> If you do it [fitness classes] somewhere out in the community, is it somewhere that the students can easily get to? They [schools] don't provide transportation. In my experience some of the other schools that are let's just say on the other side of the county, a lot of those students have their own transportation, they have their own cars. Here, not so much.

Similarly, Heather commented, "I think especially at the other end of the county and at the other schools, a lot of the students would eat it up." Administrators also noted the barriers of liability or concussion management if the fitness classes occur at the school. For example, Daphne explained, "I think another barrier is like concussion management, that's just getting more and more of that if you're responsible now that you have to have them sign paperwork."

Another administrator participant, George, stated, "The fitness classes after school, yeah, if you get qualified instructors or teachers, the students, again the liability on the students."

Improve Food Offerings. The number one suggestion to improve student nutrition was improving the food options at school. Several participants thought the school lunches were "terrible" and believed this to be an ideal place to improve nutrition at school, with several participants suggesting a complete revision of the lunch services. Jessica seemed to summarize what many participants suggested about the lunch options:

> First of all, change the school lunch menus. You know, there's so much research out there that says…what kids put in their bodies affects their behaviors. Bite the bullet and change the system completely. Change out what's in the vending machines because what's there, they will take what's there if they're hungry enough. And there's plenty of choices out there to meet the needs of kids. I mean, there are great granola bars that are high in fiber that they need, you know, those kinds of things. – Jessica

Jake echoed this response, "We need to revamp the entire process of our lunch line, because again, I've actually walked through the lunch line and there's nothing appealing, there's nothing that invites me to say, 'I think I'll have something healthy.'"

Nadine suggested including a salad bar with the lunch options, explaining that a previous school she worked at had implemented this strategy successfully. She described, "It had a pasta bar, potato bar, and a salad bar every single day…you put it on your plate, you weighed it, you paid it.. It was fabulous because a lot of people ate salad with their given meal." Several other participants thought this was a feasible strategy. Heather stated that she would eat the school lunch if they had a salad bar, "I would [eat the salad bar]...I bring my lunch every day, I don't even go down there…Maybe not every day. Maybe if it were like once a week, or twice a week thing, they would probably be more inclined to do the salad bar." An administrator, Mia, also thought there would be student interest in a salad bar, "Yeah, where they could actually go and pick out what they want, yes, I think a lot of them would be much more interested in that than the

prepackaged [salads] that are currently available" Lucille stated this would not be feasible at her school because of the added logistical concerns:

> I've read too much about how salad bars are so contaminated in a high school that I really do not want to even think about it, either one. The monitoring you'd have to hire another person, that person would be the only one to monitor the salad bar. You would have to make sure nobody slipped anything into the salad bar, I mean, it would be constant, it's just, it's too risky for me.

Peer-Led. Most participants thought a peer-led initiative was feasible, but also noted several barriers. James described current successful peer-led initiatives at his school, "You know, we have a lot of kids that do try to lead clubs and stuff, and I think something like that [peer-led fitness club] would be very successful." Similarly, Grant described an ultimate Frisbee club at his school that's peer-led, "The kids get together and play, and I think they've actually gone to other high schools and played other schools…you have a faculty sponsor to make sure they're doing what they're supposed to be doing. But that's more peer-led."

Many participants often suggested merging the peer-led piece with other recommended strategies such as fitness classes, or with an internet-based effort. For example, Charlotte shared, "I like some of the suggestions on here about the peer-led fitness club. Because…there are student athletes but…if you can't play basketball, you know, what can you do? I like the idea of a fitness club that is student-led." Similarly, Grant expressed that students may be more successful than teachers using technology/apps to promote health, "All of our students are more technologically savvy than we [teachers] are because we didn't have that when we were growing up. And so maybe the peer-led with that…like I wouldn't be comfortable knowing enough about all the different apps."

However, several administrators explained the barriers such as supervision, liability, and time. For example, Daphne stated, "You know, I think that's a good model. I just think risk

management would say, there might be some issues with this, depending on age level." Similarly, Charlotte discussed the downside to having a peer-led program is that it would likely be afterschool, "But you know it's just hard because none of our kids stay after school…that's the other piece of it, you know is trying to find time within the school day." Mia seemed to summarize the barriers to peer-led initiatives:

> Yeah, it [peer-led fitness club] would still need to be something that if it's at school they would have to have a faculty sponsor. Probably also something that we would have to look into having physicals, and fitness waivers as well. Our students aren't even allowed to condition without having an updated physical. So that's something that they would probably all have to have.

Activity Breaks. There were mixed findings regarding implementing activity breaks in core classes to reduce student sedentary time. Participants understood the benefits of activity breaks and some indicated that there are teachers who already implement activity breaks in core classes. For example, "The good teachers who know how to teach I'm sure they use them. The other teachers, I don't know how they would view that" (Jessica). Similarly, Charlotte thought some teachers would be open to implementing activity breaks:

> I think some of them do…we have block geometry classes that meet every day for 90 minutes, and to break up that monotony, 'hey, lets go, we'll walk outside and we're going to use our chalk and we're going to draw right angles'…or whatever it is. So I think they would be.

Although participants thought teachers knew the benefits of activity breaks, they thought the pressures of pacing guides and standards would not allow teachers the time to implement activity breaks. For example, Mia explained "they [core teachers] may say yeah, there is a benefit, however, I have to get through this, this and this." Similarly, teacher and administrator participants echoed the time restraints and academic pressures core teachers are feeling:

> I think that the problem that you're going to face is with the core teachers, you know, teaching to the test so to speak, and I'm not implying that any of them are doing that, I'm just saying that the panic is going to set in that they need as much time as possible, even

though the understanding is that physical activity kind of helps brain power. (Carl, teacher)

Honey, I can't even get the teachers to do a five-question bell ringer before they start their class because it's "their" class. Do you think I'm going to be able to get them to get children to stand up and do a break for two minutes? No, I'm not. They are feeling so much pressure from using every minute of their teaching which is very sad. (Lucille, administrator)

Theme Seven: Teachers and administrators held mixed views on physical education and wellness policies. However, many felt a complete revision of physical education and lunch services at the high school level is necessary to help promote student health behaviors.

Theme seven summarizes participant views on local, state, and federal policies regarding student physical education, and health and wellness. Three specific policies related to physical education were explored—online physical education, the state's physical education graduation requirement, and sex (gender) separate classes. Also, the salience and influence of the Healthy Hunger-Free Kids Act (HFFKA) and the SVSD wellness policies were explored. A comparison of participant answers by each policy is provided.

Graduation Requirement. The VA policy requirement for graduation is that health and physical education is required in the 9th and 10th grades. Participants were divided about whether they thought this was an appropriate policy. Most thought the requirement should be extended, but several highlighted that this was unlikely to occur. For example, William describes, "For a regular average kid…You've got to have more PE. I don't know if the state will ever come to it because of budget, but it should be mandatory up until twelfth grade." Similarly, Jessica stated, "I think they should be required to take PE every year of their school life. Because they get out of shape, they need the stress release." Three administrators thought the requirement should be extended; however, they also noted that it was unlikely to happen. Jake summed up the views of several administrators:

I can understand ninth and tenth [grades]. I just wish that we could move that a little

> further, especially even with an advanced diploma. Giving up that one credit to get them into the eleventh grade is still an option, but as the state standards continue to move up, it's hard to keep Health and PE on the docket if we're going to continue to ask for more credits in the Social Studies and the Science and the Math and the English programs, it seems like the…Department of Education seems to choke out the electives.

The remaining participants thought the requirement was acceptable, though they cited student schedules and academic requirements as challenges to extending the requirement. Carl described, "I'm okay with it [9th and 10th grade PE required]. I think by eleventh grade they're [students] starting to get an idea of what they want to do, where they want to go to school, what requirements they need for college and what not." Similarly, "I don't think we should make it mandatory for eleventh or twelfth graders just because of the logistics" (Grant). A few administrator participants stated that they would like to see ninth and tenth grade PE removed or revised. For example, George explained his view:

> Honestly, I'd like to see them remove the requirement for freshmen and sophomores, or put more things available. Where I grew up, if you were on a sports team, you could opt out. If you're a freshman, and you're playing two sports, you really don't need to be taking gym, now the health side, yes. So I'd love to see more flexibility. – George

There was not a question on the protocol about eighth grade health and PE, but most all participants described their views of the eighth grade policy requirement in SVSD. In SVSD health and PE is no longer required in eighth grade, but it can be taken as an elective. There was consensus that eighth grade PE should be required. For example, "I do think it [8th grade PE] should be required, at least six through tenth. Like I don't understand why it's an elective in 8th grade. It's really hard to get them back" (Charlotte). Similarly, Carl added, "SVSD no longer requires it for eighth grade, which I disagree with completely, it's an elective in eighth grade."

Online Physical Education. Participants held mixed views about online physical education. Participants described that higher SES schools have a large number of students who take online PE or summer school PE to free up credits for more academic courses. Lucille

discussed enrollment at her school, **"**We have probably 400 children…that never take Health and PE in this building. They take it at the Y over the summer so they can get those two extra academic classes that they want before they go to college." Jessica explained, "Our brainiacs in school who go to a specialty center they are encouraged to take PE online and then they're all stressed out. I mean, it's silly." Teachers who taught at lower SES schools did not have any students enrolled in online PE. For example, Nadine explained that none of her students even know online PE is an option, "none of them. They don't even know it exists."

Many participants disagreed with the option of online health and PE, citing numerous different reasons. For example, Carl commented, "the option of online I would love to be eliminated. I understand the reason…in terms of scheduling other classes, but it was never an option, there are some things that I believe if it's not broke, don't fix it." Many participants questioned the student accountability. That is, are students actually participating in 70-75 hours of physical activity? Or are they attending fitness centers and having an employee sign off on their physical activity participation, without actually being physical active? Harper described conversations among students at her school:

> I have heard a lot of kids say that they could just be in the gym, and then somebody will sign off for them. So a lot of kids are doing pretty much nothing. And I don't know the numbers, I've just heard kids talking about it.

Charlotte echoed this sentiment, "What really accountability is there for it [physical activity participation]? I question the accountability of whether or not people are actually doing what they're supposed to be doing." Thomas agreed, and explained his view, "Not a big fan….I've only seen a little bit, we've had some students just go in there and not really doing too much in the YMCA, and standing around and not actually being as active as perhaps they could be."

However, some participants thought that SVSD had a rigorous online program. One teacher who has taught the online class described the requirements of the course:

> It's really not bad because they have to still keep up with on Blackboard [health portion]…and they have to join a fitness club…I mean, they have to be very, very active. Now, as long as they're truthful, as long as everything is documented properly, they are just as active when they take it online as they are say maybe taking it during the school year. (James)

George explained his perspective of the benefits of online PE:

> It allows a lot of students to come here [Technology Center]. That being said, I've heard that it's challenging, and you really need to do your part to get the documented hours and things like that, so it's not easy…Again, it goes back to that voice and choice and the more flexibility you have in your schedule, the better off you're going to be.

Single-Sex vs. Coeducational. Participants held mixed views about whether or not physical education classes should be single-sex or coeducational. Those who felt the classes should be coeducational believed there may be greater female participation if they were not feeling self-conscious in front of males. For example, "oh my god, what a difference. Matter of fact we experimented here two years ago, with two more teachers, they went all male, and all female. And the difference in participation was tremendous" (William). He added they were no longer allowed to implement this practice because of title nine, although he believes it's not actually against title nine regulations. Similarly, a female teacher described how her teaching team often splits the class into single-sex groups anyways, "And there is a greater participation when they don't have that pressure or that sensitivity of those boys watching them. Puberty is a crazy thing" (Nadine).

However, not all teachers agreed. Many thought single-sex courses would actually hinder athletic female participation, because without male participation they would not be challenged. For example, James explained his opinion, "They definitely should be mixed, integrated…I've taught it [PE] freshmen and sophomore...and at that level you have a lot of guys in there that are not athletes, so you find the girls are comparable to them or if not better." Similarly, Jessica expressed her concern for athletic females if classes were single-sex:

> You only get those few [female] athletes and they're awesome and I don't teach for the athlete, but I have six girls this week that came in with brand new long pointed nails. And they're like, 'we can't play this game because of our nails.'

District Wellness Policies. When exploring the salience of SVSD wellness policies and the Healthy Hunger-Free Kids Act (HHFKA), responses varied by administrators and teachers. The school district recently put together a wellness committee, comprised of local school health officials, students, teachers, community members, and experts such as researchers, to make recommendations across five broad wellness areas, which included physical activity and nutrition recommendations. Recommendations were then sent to the school board for review and five strategies were chosen to be implemented. However, only two participants, one administrator and one teacher, were aware of this committee, and both participants were members on the committee. The teacher participant added she was unaware of the progress made since the meeting. Similarly, no participants referred to the health and wellness policies currently being implemented in the district. See appendix H for the health and wellness policy. The instructional specialist noted that the wellness policies are in the process of being rewritten.

HHFKA. Teachers had little to no knowledge of the district wellness policies or the HHFKA, whereas administrators were knowledgeable on the HHFKA. Each teacher participant simply stated they did not know what the HHFKA was and several asked for a description. For example, Jane explained "I don't even know if I'm familiar with that, tell me what it is?"

However, all administrators were aware of the HHFKA act. Daphne shared:

> Yes, I'm very aware of that [HHFKA]…One of the biggest obstacles I understand from...food services is that these mandates came through, but our vendors didn't have enough time to create the products that are meeting [nutrition recommendations], and so it's very limited. I think it's starting to grow.

A few administrators explained their frustrations with how the HHFKA nutrition requirements have influenced the school revenue. For example, Lucille explained how the new

healthier offerings in the vending machines have influenced her school's sales, "The stuff is getting stale because the children won't buy it, and we used to make 7, 8, or 9,000 dollars a month from those machines down there. If I make $800 I'm lucky" Similarly, an administrator from a different school discussed the influence of the HHFKA:

> First thing is that our students have stopped eating the food in the schools…And so we're starting to see that the profit revenue, the revenue stream that we had from the lunch room, is starting to deteriorate. So now we're seeing the healthy kids are becoming, they're coming in even more healthy, packing their own healthy snacks, and the kids that wanted the greasy foods, well, now they're just bringing in their own greasy food. So we haven't met that middle ground yet on how we can sustain that program. (Jake)

Policy Changes

Several participants recommended a revision of the policies related to the physical education curriculum and the lunch services. Participants suggested the physical education course should adopt a model where students are able to choose different forms of physical activities such as yoga, team sports, or interval training. For example, a teacher and administrator summarized similar approaches discussed by participants:

> Ideally it would be nice to have them do more of like a college approach where they can pick the type of activity and have it done every day. You know, what they're really into…I want to do team sports, oh no, I want to do group exercise classes, or I want to be in the weight room…it would be nice to have an option and have it run like that. (Heather, teacher)

> I think children should be given an option of different activities, physical activities, one being a running/walking class, two would be biking and something else so that the first semester you would do nothing but biking; the second semester would be kayaking…it would not be a health and PE as we see it now…And you could even put it over three years and it would be eleventh grade requirement…or you could say you need three requirements of a Health and PE credit…your children then would have a choice and they would buy into it instead of just saying, oh, Health and PE Nine…we know we're going to do Drivers' Ed in tenth grade. (Lucille, administrator)

One school is currently experimenting with allowing students choices for the second time, but the teachers noted how successful it was when they originally implemented the change.

Both teachers added that grading became an issue because teachers did not have the same students for Health and PE, which is a combined grade, but they are experimenting with the approach again this coming year.

Theme Eight: Community, family, and district support might help alleviate some of the liability and logistical concerns placed on schools, as well as increase accessibility to health resources for students. However, there is wide variation of family and community involvement throughout the school district.

Participants recommended many potential strategies to improve student physical activity, nutrition, and sedentary behaviors. However, strategies were presented alongside a long list of barriers. To this end, theme eight addresses the recommended levels of support needed to implement health-based strategies in high school. Many administrators discussed that family support might help alleviate some of the stress and logistical concerns associated with implementing health-based initiatives. Jake summed about the benefits to schools when parents can assist with extracurricular activities:

> Having a parent outreach program that will have parents to help do a lot of the leg work [for extracurricular activities]…Remember that as far as this administration and teachers, we have a lot on our plate right now…but creating a parent committee that would help facilitate some of this [health initiatives] would be absolutely amazing.

Similarly, Daphne discussed school initiatives that have been taken over by the PTA to reduce the liability, "If PTA does it [health-based activity], it's a whole different ballgame, it doesn't fall under the umbrella of concussion management, so I think sometimes we're mandated to do certain things, but in the long run they become barriers."

Administrators also discussed the benefits that occur when schools partner with community organizations. For example, George explained how community partners can help make activities more accessible, "If they had different things [health-based activities] rotating throughout community centers, libraries, things like that…working with gyms and health

clubs…the more available the opportunity is, the better." Further, participants described examples of field trips they have taken to community organizations that students have enjoyed such as rock climbing. Carl added that there are community organizations willing to assist schools, "you've just got to put the time in."

As discussed in previous themes, evident in the data was the variation in family and community involvement across the school district. When analyzing the data, the codes "priority – family," "family – engagement," and "family – support" differed by the student population. That is, teachers and administrators were more likely to say student health was a priority to families if they taught at a higher SES school. Moreover, several teachers stated "it may work on the other end of the county" indicating there may be inequalities across the school district. Participants added that the level of family support was often related to transportation, with teachers at higher SES schools more likely to say transportation was not an issue. Nadine, a teacher at a lower SES described the level of family support, "There's no support, once these kids leave here, bam! They're on their own. And when Momma gets home from work, she's tired." As opposed to the comments of James, a teacher from a higher SES school who explained there would be support from both administration and community for extracurricular health-based activities, "I think the administration would be supportive [of health-based activities] and I definitely think the community would be." Harper, a teacher at a school with a diverse population summed up the differences many participants described:

> I hate to put it this way, but a lot of it depends on what area they are from. What neighborhoods they come from. We have a couple of very tough neighborhoods in which parents are either single parent homes, parents working a lot just to try to get by, and we have some families who…areas around here where the families are much better off, kids are involved in sports, kids are involved in outside leagues and things like that, and so are the parents.

Participants were probed for strategies to increase family and community involvement; however, it was difficult for participants to come up with answers, with one participant laughing as she said, "Ha! If I did, I would have used them by now." Several participants thought educating parents and the community about the physical education curriculum or about healthy lifestyles was needed. For example, "We need to help parents understand. And so kind of a campaign to push education out again, you know, whether it's simple things like let's have posters in the school center, explaining concussion management or signs and symptoms" (Daphne). Harper thought small community events, such as community workshops about healthier cooking or cooking on a budget, may be a good starting place to reach out to the parents and community and promote health-based activities, explaining:

> Get it [health activities] in a smaller environment, where it's more comfortable for some people, that maybe aren't comfortable with coming to a school...If its within their community they are more likely to engage, and just as a way to get it started, and then word of mouth really helps.

A few participants recommended parent/community fair nights, but added it may not be as feasible of a strategy at the high school level as it is in middle and elementary school because they believed students would not be interested at this age.

Although participants discussed several barriers such as the school environment and transportation, a few schools were implementing before, during, and after school strategies with success. For example, Grant explained a project carried out by students called lunchtivities, "We just finished Dodge ball, and…he's going to do a volleyball tournament. So it's team sign up and you play a tournament and they do it in the 40 minutes during lunch. One tournament might last for two weeks." Related, another school has an afterschool program, and students spend half the time doing remediation work and the other half participating in PE units. Heather added, "They [students] love it. They love it. They're not getting credit for it. So it's purely for

physical health and social health. And a lot of social health, developing is needed in these kids." Finally, a different school is implementing a program two days a week before school where students and faculty come to the gym and participate in a variety of different activities. The administrator noted, "I would say we probably have 200 kids that participate, but on any given day you would have 50-75, you know it's not the same kids all the time" (Charlotte). The administrator was probed about who supervises the program given the barrier of supervision mentioned often by teachers and administrators, and she explained that none of the PE teachers are currently coaches, and this is considered their "give back" to the school.

Participants described that any major or large scale changes will have to "come from the top." For example, Grant explained, "It's from the higher up down, so our administration's hands are tied because of the county's administration, and the state administration." Similarly, William commented, "it has to come down from the top. And the school system has to start saying it, if you say your kid has to pass physical education for four years… to graduate…you'll see how quickly parents would get behind it." Thomas, an administrator, echoed the responses of teachers:

> Now if things came down from Central Office, it would obviously take a lot of pressure off us and make it a lot easier logistically and financially to actually get it done. So if there were a push more from Central as opposed to just on a local level, on the individual school level.

One administrator and one teacher even recommended expanding the school day to include mandatory time for teachers and students to participate in extracurricular activities. For example, the teacher described a friend who works in a school district that has implemented a similar strategy:

> They have something at the end of every day and every teacher has to be involved, whether it's refereeing or coaching a team, a small team to play basketball, a small team

> playing volleyball, or your supervising getting kids here and there. No one is free that period, everyone is involved. And it works. (Jessica)

An administrator described a similar approach:

> Looking at the at-risk students, a longer school day is what they need… it would allow more time for that [extracurricular activities]. If you went to a model where the school day was 9-5 or 8-5…that would allow you to have, hey, it's intramural time…or it's open activity time, you can be playing an instrument, you can be doing this, we can have different clubs and organizations, and I think that would help tremendously. (George)

Additionally, teachers and administrators recommended educating all teachers and the public about the physical education curriculum, as well as the relationship between physical activity and academics. For example, Harper advocated, "I think that if the educators as a whole were better educated about the benefits of brain activity and physical activity, it would really help…I think that classroom teachers need to be given more help on how to make their environment a little more active." Similarly, George believed teachers would be interested in professional development that focuses on implementing activity breaks in core classes, "if there was professional development provided to help teachers, I think they would definitely be open to it." Finally, Daphne advocated for Health and PE teachers to educate the public about the importance of PE and the rigorous instructional methods used to promote physical activity participation and healthy eating, "but that's educating your parents and inviting them in, having family nights and stuff…because a lot of parents do think, Oh, you just play basketball, Oh all I did was play basketball, that's all you do. Well, we don't."

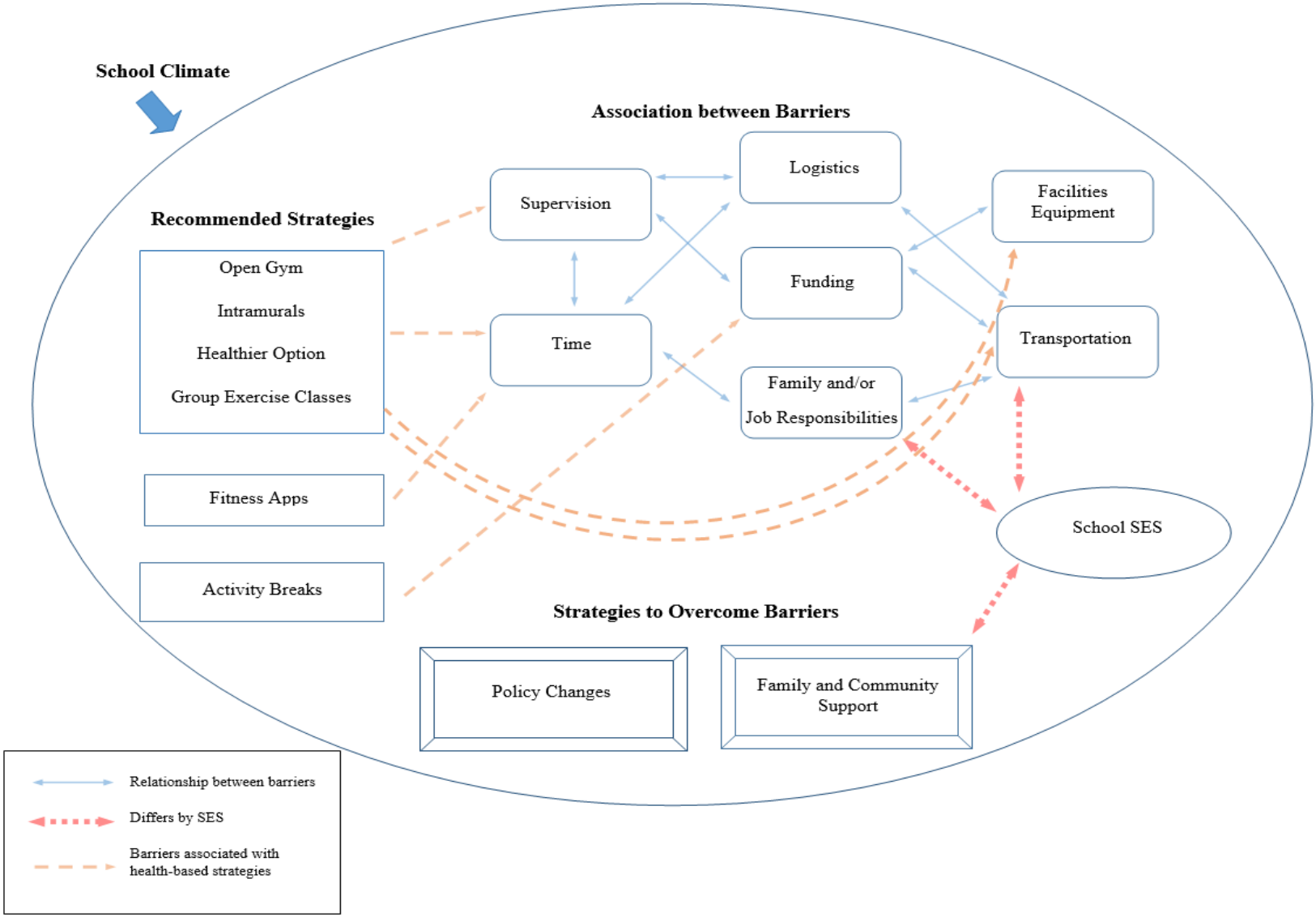
Chapter Five: Discussion

The purpose of this study was to explore teacher and administrator views of the current high school environment with regards to student health promotion, specifically student physical activity, nutrition, and sedentary behaviors. An additional aim was to explore teacher recommended strategies to promote student physical activity participation and healthy eating, and decrease student sedentary behaviors. The feasibility, according to administrators, of teacher recommended strategies was also investigated. This chapter is organized around the four research questions that guided this study:

1. How do teachers and administrators perceive the current high school environment with regard to student health promotion, specifically student physical activity, nutrition, and sedentary behaviors?
2. What are teacher and administrator perceived barriers and facilitators for high school student sedentary behaviors and participation in physical activity and healthy eating?
3. What strategies do teachers and administrators recommend for a prevention program targeting high school students' physical activity, nutrition, and sedentary behaviors?
4. What is the feasibility of teacher recommended strategies according to administrators?

Based on findings from the current study, a figure was created to outline the recommended strategies and the associated barriers to implementing health-based strategies. See figure 5.1 for a visual representations of relations among the findings.

Figure 5.1. *Visual Representation of Relations among the Findings*



The figure was created by analyzing the co-occurring codes in the data. The multitude of interactions among barriers and the influence of potential moderators, such as socioeconomic status (SES), highlight the complexity of implementing health-based strategies at the high school level. To begin, all strategies have to be considered in light of the current school climate, represented as the outer layer in the figure. Educator morale is low and participants described a negative school environment that will likely influence implementation of any new extracurricular strategies. Next, there are several barriers that interact with each other, such as funding and transportation, which further increases the difficulty of implementing new health-based activities. Moreover, some variables, such as transportation, family and/or job responsibilities, and perceived family support, differ by SES, illustrating one approach will not suffice across SVSD. Finally, it seemed difficult for educators to suggest strategies to overcome barriers associated with implementing health-based extracurricular activities, and teachers and administrators were undecided about the policy changes that could influence student health.

Evident in the data and theoretical model (figure 5.2) is that one uniform approach or initiative will not work across a district as large and diverse as SVSD due to variations in individual, interpersonal, and physical environmental influences. Identifying the ways in which a system can be created that capitalizes on resources of schools, families, and the community will be challenging, but necessary to promote high school student physical activity participation, and healthy eating, and reduce student sedentary time. Small changes across the multiple layers of influences explored in this study have the potential to influence and interact with individual facotrs, such as goal setting, and encourage behavior change in high school students.

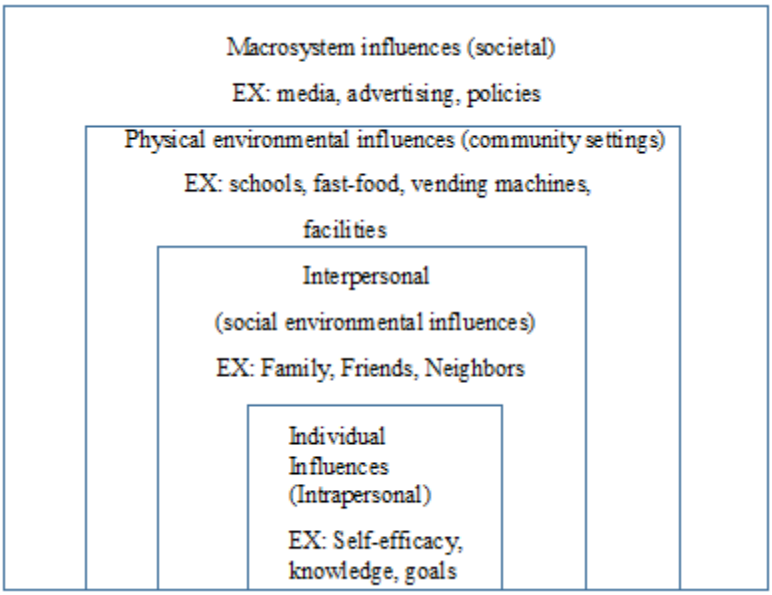


Figure 5.2. *Ecological Model merged with Social Cognitive Theory: A Theoretical Framework*

Educators suggested changes across all three levels of influence explored in this study – macrosystem, physical environmental, and interpersonal. Findings from the current study outlined in Figure 5.1, as well as the theoretical model, show that the factors that influence student health are not mutually exculsive, and influence each other in a reciprocal fashion. For example, educators suggested increased support from family and community members to assist in implementing health-based extracurricular activities. This suggestion crosses all three levels of influences explored. That is, schools, a physical environmental influence, called on families and communities, a social environmental influence, to overcome barriers to implementing extracurricular activities that are associated with policies, a macrosytem influence. This example illustrates the necessity for a multifaceted approach that accounts for policies, school factors, family and community support, and individual influences. The following sections highlight the teacher and administrator perceived policies, school, family, and community factors that influence student health at the high school level.

Current Environment

To the researcher's knowledge, this is the first study that has focused on both high school teacher and administrator views of the current health environment for all high school students. These two groups have been identified as key stakeholders who should be involved in assessing health needs, setting priorities, and planning, implementing, and evaluating health-related activities (CDC, 2013a). To this end, the findings represent a first look at teacher and administrator views of the health needs, priorities, and health-related activities at the high school level. Findings of this study indicate that the current high school climate is overall prohibitive to implementing large scale initiatives that focus on student health for the entire study body. The first two themes illustrate views held by both teachers and administrators that highlight the negative atmosphere permeating public education:

> *Theme One: The current public education school climate is a major barrier for any new initiatives, extracurricular activities, or out of the box thinking.*
>
> *Theme Two: High school health and physical education are not primary priorities to most high school students, non-PE teachers, and administrators.*

Participants spent more time discussing the current school health promotion environment than expected, which was an indicator of the morale of educators. Several factors such as, the Standards of Learning, pacing guides, and accreditation process can impede on teachers' time and negatively influence their morale. These factors can impact the amount of attention given to the physical education curriculum by administrators, as well as the amount of collaboration that occurs between core classes and PE teachers. Previous research has also found that standards and standardized testing, especially in low performing schools, are barriers to implementing health strategies in school settings (Cothran et al., 2010). Similarly, researchers found

implementation of the School Health Index, an assessment and planning tool for school wellness initiatives, was less successful in schools with low staff morale (Pearlman et al., 2005).

Educator morale in the current study was a barrier to implementing health activities, but also a broader concern related to the state of public education. Educator morale, or teacher pressures, was often linked to the standards of learning, accreditation process, and pacing guides, which all relate to accountability practices outlined in the No Child Left Behind Act (NCLB). NCLB was a federal act that impacted testing practices, teacher evaluation, funding, and accreditation (Hursh, 2007; McCarthy, 2008; NCLB, 2002). Previous research suggests NCLB regulations have influenced teachers in a number of ways, including teacher practices (Barrett, 2009), teacher motivation (Abrams, Pedulla, & Madaus, 2003; Cianai, Summers, & Easter, 2008), teacher stress (Valli & Busse, 2007), and teacher burnout (Berryhill, Linney, & Fromewick, 2009). This relates to the current study because many of the educators used the same phrases, such as stress, to describe teachers' morale. When designing extracurricular health-based activities researchers and program developers will need to keep in mind the pressures teachers are experiencing, because it likely influences teacher buy in and willingness to volunteer before or after school.

In addition to teacher influences, data showed that teachers and administrators believe high school students place little importance on their health behaviors and the physical education curriculum. That is, the majority of high school students physical activity (PA) participation was reported as low, with some students only PA participation being that which occurs at school. Furthermore, they believed students eating behaviors were unhealthy. They suggested students prefer to eat pizza, hamburgers, and fries, and a portion of students eat their breakfast or lunch from the vending machine. Finally, students spend a large amount of the school day being

sedentary due to the duration of academic classes. This supports cross sectional and longitudinal data that shows physical activity participation and healthy eating deteriorates and sedentary time increases during late adolescence (Driskell, 2008; Dumith et al., 2011; Sanchez et al., 2007; US Department of Health and Human Services, 2014). Findings regarding high school student health behaviors, coupled with the emphasis placed on the health and physical education curriculum, suggest a need for increased attention at the high school level with regard to student physical activity, nutrition, and sedentary behaviors.

Teachers and administrators recognized that student health should be a priority at the high school level, however, noted the ways in which competing academic priorities often take precedence. Similar to participants in the current study, teachers at the middle school level thought nutrition should be a priority, however only 1/3 believed schools were giving nutrition "adequate attention" (Kubik et al., 2005). Further, data from the Action for Healthy Kids Report survey showed that "competition from other school priorities" was ranked as one of the most significant barriers to school wellness (Action for Healthy Kids, 2008). Although it is not reasonable to assume that student health will be placed in front of academic responsibilities, it is concerning the teachers and administrators in this study felt unable to make it a priority. Moreover, those teachers and administrators who have tried to implement strategies and have been willing to dedicate their time have hit roadblocks, such as liability concerns, which have halted their initiatives. The evidence from these teachers and administrators indicates the high school climate is not conducive to promoting healthy student behaviors.

Additionally, this study provided teachers an opportunity to describe the health and physical education curriculum at the high school level. This was not a main goal at the onset of the project, however, participants expressed frustrations with the courses being viewed as

"electives." Several teachers were annoyed that other educators, including core academic teachers and administrators, held a misconception of what happens during health and PE, often associating current health and PE with an "antiquated" view of physical education. That is, teachers explained that they no longer just "roll the ball out" and let students "play," instead they teach different skills such as team sports, interval training, and weight lifting, using a variety of instructional methods. Further, they added the importance of teaching students how to make lifestyle changes. Physical education at the high school level may be the only way to reach some students who are either unable or uninterested in physical activity participation outside of school hours. To this end, schools should direct more attention to the physical education curriculum, and provide more resources to ensure evidence-based practices.

Finally, the salience of the SVSD wellness policies is indicative of the priority placed on student health at the high school level. Two of the eight strategies suggested by the CDC to implement school health programs include establishing a school health council or team, and identifying a school health coordinator (CDC, 2013a). Although SVSD does have a school health advisory board, and recently put together a school wellness committee to propose student health and wellness recommendations to the school board, only two participants were aware of either of these councils/committees. Researchers suggest policy changes because such changes target the entire population (Sallis et al., 2008), and previous research has documented that teachers (Kubik et al., 2005) and administrators have suggested policy changes (Action for Healthy Kids, 2008). However, findings from the current study show that teachers and administrators are not always aware of policies related to health and wellness. It is possible that unless there is a mandate that directly influences teachers or administrators, there is little awareness of district policies.

Based on findings from the first research question, schools and teachers should consider strategies to improve the current environment. First, teachers and administrators recommend education for core teachers, parents, and the community about the connections between student health and academics and what occurs in the physical education curriculum. The hope is that the more support schools receive from the community and parents, the more likely the school district will be to encourage any strategy, such as activity breaks, in classrooms. Second, participants recommended more collaboration between core classes and health and PE teachers. This suggestion not only promotes a positive school environment, but also potentially demonstrates to students that health is not an isolated event that occurs once a week, or one semester in the health and physical education curriculum. Finally, school district officials should promote awareness of district wellness committees and policies. Examples of promotion include social media, school websites, and newspaper advertisements.

Barriers and Facilitators

The second research question, "What are teacher and administrator perceived barriers and facilitators for high school student sedentary behaviors and participation in physical activity and healthy eating?" yielded several responses. Themes three and four highlight the barriers and facilitators:

Theme Three: Frequently mentioned barriers to physical activity participation and healthy eating at the school level included "Money, Money, Money," supervision and/or sponsorship, transportation, and regulations/logistics. Family responsibilities and/or job responsibilities might be personal barriers for high school students.

Theme Four: Lunch, vending machines, facilities, and equipment can be either a facilitator or barrier to student health behaviors. Health and PE instructional strategies can be a facilitator for student health behaviors.

The barriers and facilitators at the high school level listed in this study mirrored many of those identified in previous research by students, or programs at different school levels. The

main barrier listed in this study to implementing any strategy that targets student health was funding, which was one of the most frequently listed barriers by stakeholders in a survey that examined progress in school-based health initiatives (Action for Healthy Kids, 2008). Previous research shows that students also identified transportation (Hannay et al., 2013), facilities and equipment (Aggazzi et al, 21010; Kubik et. al, 2005), and work schedules (Kubik et al., 2005) as barriers to their physical activity participation. These three barriers often prevent student participation in physical activity because they limit the time and resources available after school hours. Similarly, finding supervision and/or a sponsor for afterschool club activities was cited as barrier to physical activity participation. School level barriers can influence each other in a reciprocal fashion. That is, participants often said students could not stay afterschool because there was no supervisor or sponsor, however, administrators added that there was no funding or money to compensate a sponsor.

The finding from the current study that facilities and equipment serve as a barrier to student physical activity at some schools and a facilitator to other schools differs slightly from the literature, with the literature citing facilities and equipment as barriers (Aggazzi et al., 2010; Kimm et al., 2006). One potential reason for this difference is that some of the schools in the current study had recently gone through renovation, including the gym and weight room. School renovations likely influenced participants' views about whether facilities and equipment served as a facilitator or barrier. This finding highlights that equipment and facilities can be facilitators to physical activity participation at school. Unfortunately, renovating or adding facilities, such as gyms, fields, or weight rooms, requires significant funding.

The personal barrier, family and/or job responsibilities, has been identified as a barrier to physical activity participation with minority populations (Hannay et al., 2013). Participants in

the current study explained that students often are needed for family responsibilities, such as babysitting, and therefore cannot stay after school. This mirrored barriers listed by Latina adolescents such as jobs, school work, caring for younger siblings, and in some cases, their own children (Hannay et al., 2013). It is important to note that this finding was more prevalent in lower SES schools, which is problematic given that students who are economically disadvantaged are more likely to fail to meet physical activity and dietary guidelines (Kann, et al., 2014).

The food options at school, specifically, the vending and lunch options, have also been reported as a barrier in the literature (Kong et al., 2012; Larson et al., 2010; Sussman et al., 2010), with many students and parents recommending that schools offer healthier options. Even though most participants in this study labeled the school lunches as a barrier to healthy eating, a few discussed the shift in healthier food options as a facilitator. This finding is related to the changes in the school nutrition requirements due to the Healthy, Hunger-Free Kids Act (HHFKA). The fact that some participants labeled this as a facilitator needs to be interpreted alongside the finding that most participants still consider the lunch "unhealthy." School districts, including SVSD, often implement taste testing sessions for parents and students. Schools should encourage teachers, parents, and the community to attend these taste testings and provide feedback to ensure continuous improvement of lunch options for students.

Teachers and administrators frequently discussed the influence of 90 minute classes on student sedentary time, which has been cited in the literature by students as well (Kong et al., 2012). Almost every participant thought 90 minutes was too long for high school students to sit, but they seemed to believe this would not change. One recommendation based on this finding is that teachers should implement activity breaks in core classes. Activity breaks are short one to

five minute exercises that get students moving. Many activity breaks can be done at students' desks, and several integrate the curriculum. The feasibility of activity breaks according to teachers and administrators is discussed in more detail with recommended strategies.

A barrier to implementing strategies that target physical activity, nutrition, and sedentary behaviors is logistics and regulations. Teachers described many logistics such as finding supervision, facilities, and time within the school day to conduct activities. However, administrators highlighted liability concerns, concussion management, and the paper work that accompanies health-based activities as a barrier. This finding extends the current literature by including an administrator perceived barrier that has not been documented in the literature to this date. Administrators explained that it is often too time demanding to go through the necessary channels to implement health-based activities.

On the other hand, a facilitator to implementing strategies that target health behaviors was energetic and passionate physical education teachers, which aligns with previous research suggesting teacher support influences physical activity participation (Kubik et al., 2005). Even though teachers felt health and physical education was not a priority at the high school level, it was encouraging to see how passionate teachers were about their instructional methods. One teacher even escorted the researcher down to the physical education hallway to show a poster documenting the competition between several of the PE classes. It was evident that the PE teachers in this study were dedicated to improving student health and their enthusiasm for teaching positively influenced the students' behavior.

Based on findings from the second research question, several recommendations can be made. One recommendation is to set up a ride share between students and teachers, which would hopefully increase the number of students who are able to stay after school to participate in

activities. Another recommendation is to make as many resources as possible available online. For example, schools may consider posting daily workouts, with each daily workout targeting a different muscle group. This strategy may help increase availability to students who have job or family responsibilities after school, or those who are unable to stay due to transportation. Finally, schools should continuously assess the school food offerings. Although many factors about school lunches and vending machines are out of school control, keeping the family and community informed about lunch changes and the rationale behind these changes may help bolster family and community support.

Recommended Strategies

The second set of research findings outlines prospective strategies to increase physical activity participation, improve student nutrition, and reduce sedentary behaviors. The following themes align with research questions three and four which explore teacher and administrator strategy recommendations and feasibility.

Theme Five: Positive school role models are essential to setting up an environment that promotes student health. Marking strategies should utilize peer support and be relevant to student lives.'

Theme Six: Intramurals, fitness classes, open gym times, and fitness apps ranked among the top strategies to increase physical activity and decrease sedentary time. Fitness apps and improving the school lunches ranked among the top strategies to improve student nutrition.

Theme Seven: Teachers and administrators held mixed views on physical education and wellness policies. However, many felt a complete revision of physical education and lunch services at the high school level is necessary to help promote student health behaviors.

It proved to be challenging for teachers to think of new strategies or elaborate on how a particular strategy may work in a high school setting. Moreover, it seemed difficult for administrators to expand on how a strategy could be tailored for high school students. Even though it was a challenge, both administrators and teachers were able to provide broad

recommendations for programs, as well as specific strategies they thought could be successful. Participants described several ways schools could improve the environment to be more conducive to promoting physical activity participation, healthy eating, and reducing sedentary behaviors for students.

Awareness of any school-based strategy or initiative will be imperative to success. Participants in the current study thought student-driven advertising approaches were the most powerful advertising or recruitment tool. This supports previous research that found the number of student-based nutrition promotional messages was linked to sales of lower-fat foods (Fulkerson et al., 2003). Similarly, findings from the current study show that teachers and administrators suggest messages that are catered to student interests. This recommendation aligns with one of the key characteristics, incorporation of local interests, of social marketing-based communications identified in the HEALHTY diabetes prevention program (DeBar et al., 2009). Two other key characteristics proposed by the HEALTHY team were also suggested in the current study – targeting and responding to multiple audiences and using a broad array of communication modalities (DeBar et al, 2009). Teachers and administrators highlighted the importance of advertising through multiple outlets – especially those that are relevant to students such as social media. Advertising efforts should also target parents and the community, as they both serve as crucial stakeholders in implementing afterschool initiatives.

Related to student interests is the role of peer support. Most all participants thought the best way to reach students and increase participation was a word of mouth approach, targeting the "popular" students first. Participants added that once you recruit a few influential students their friends are more likely to join. There is an abundance of research outlining the influence of peer support on student health behaviors (Leifer & Hartston, 2004; Waila & Leipert, 2012). In

fact, one study found that adolescent participation in afterschool activities was influenced by what their "posse" (p. 219) was doing (Hannay et al., 2013). Additionally, results from a cognitive-behavioral treatment for overweight adolescents demonstrated the influence of peers on weight loss during late adolescence. Adolescents were randomly assigned to a cognitive behavioral treatment with peer enhanced adventure therapy or aerobic exercise group, and results indicated that older adolescents in the peer adventure group lost more than four times the weight as those in the aerobic exercise group (Jelalian, Mehlenbeck, Lloyd-Richardsoon, Birmaher, & Wing, 2006). It is likely initiatives or strategies at the high school level will be more successful if they include an element of peer support.

Another broad recommendation made by participants was to engage students and teachers in health-based activities together. Although there are studies that discuss the influence of teacher social support on physical activity participation (Eather et al., 2013), and teacher self-efficacy on implementation of school-based PA initiatives (Masse et al., 2012), the findings from this study differ in that participants specifically discussed teachers and students participation in activities together. Teachers suggested that students often seem more motivated when they participate in activities with them during class time, adding how much the students seem to enjoy trying to beat the teacher. Further, administrators and teachers discussed events such as teacher vs. student sporting games, or chili cook-offs by the teachers, as school events that students enjoy.

Teachers and administrators often discussed teacher modeling alongside participation with students. Participants identified that seeing teachers eat healthy food, workout in the school facilities, and take part in afterschool wellness initiatives was one of the main ways they could promote student health. There is a wealth of literature that suggest role modeling influences

student behaviors in general (Bandura, 1986), and more specifically student health behaviors (Kubik et al., 2005). To this end, several participants discussed the importance of teachers monitoring their health and being aware of what they eat for lunch.

Multiple schools in this study currently use competition to motivate students to participate during PE class time, as well as outside of school hours. This finding is somewhat contradictory to the literature, given that some studies recommend decreasing the level of competition. For example, some high school students recommended an after-school noncompetitive physical activity program to promote physical activity (Kong et al., 2012). Perhaps one explanation for this discrepancy is the level of competition. It may be that a high stakes level of competition is not as motivating to students as a low stakes competition such as which class can run the most miles in a given semester. This finding should be explored in future research.

These broad recommendations set the stage for the specific strategies recommended by teachers and administrators. Intramurals, fitness classes, open gym times, and fitness apps ranked among the top strategies to increase student physical activity participation and decrease student sedentary time, and all include a combination of the features listed above (e.g., relevance and competition). Several of the recommended activities can take place before, during, or after school hours, which is encouraging since previous research suggest students want more opportunities for physical activity participation during the school day (Kubik et al., 2005), as well as outside of school hours (Kong et al., 2012). Further, it seems the more flexibility a school has in implementing a strategy the more likely the school will be able to cater it to their specific population. A discussion of the recommended strategies is provided, followed by barriers to implementing these strategies.

Strategies recommended by participants clearly highlight a need for more extracurricular opportunities that target physical activity, nutrition, and sedentary time. Intramurals, open gym times, and fitness classes all provide structured opportunities for students to participate in physical activities. These strategies share similar characteristics such as participation with peers, competition, and choice. One strategy will not reach the entire population, therefore multiple strategies that provide opportunities for students to be physically active is imperative.

Intramurals are a popular strategy for middle school students (Evenson, Ballard, Lee, Ammerman, 2009), however, they are not as popular at the high school level. For example, one study found that the mean percentage of students who participated in intramural sports declined approximately 10% from 8th grade through 12th grade (Jonston, Delva, & O'Malley, 2007). This strategy was developed out of the researcher's pilot work with secondary teachers suggesting intramurals may be a feasible strategy for high school students. Teachers and administrators in the current study supported this finding. High school intramurals provide all students, not just student athletes, a chance to play an organized team sport. Further, the Center for Disease Control and Prevention and the National Association for Sport and Physical Education both recommend intramurals as an afterschool strategy to encourage physical activity participation (CDC, 2013d).

Offering free group exercise or fitness classes to students was also a recommendation to promote physical activity. This suggestion aligns with the literature in the regard that students have suggested offering a variety of options to increase physical activity participation such as yoga or kickboxing (Hannay et al., 2013). It also extends the literature in many ways. Participants described this strategy as one that mainly occurs afterschool. Providing students opportunities to take part in activities that mirror fitness clubs, such as fitness classes or group

exercise classes, may be one way to encourage participation that can be sustained after graduation. Additionally, this provides students flexibility and choice, which increases the likelihood classes will cater to their interests. Finally, teachers and administrators recommended offering fitness classes in as many locations as possible. For example, community centers, school facilities, churches, or partnerships with local gyms. This finding supports formative work with high school students suggesting students want more community linkages to physical activity opportunities (Kong et al., 2012). Offering fitness classes in as many locations as possible can increase accessibility for students, and minimize the school-based facilities needed.

Next, open gym times was a popular recommendation by teachers and administrators, with a few schools currently implementing open gym times. Open gym was mainly recommended as a strategy during the day, but also could be implemented before or after school. Teachers and administrators identified remediation times as possible open gym times. Moreover, this strategy affords students who cannot stay after school hours an opportunity to be physically active during the day. Finally, this strategy provides students with choices such as basketball, volleyball, or walking. Although this strategy is not one that is well documented in the literature, it does cross many recommendations made by high school students such as allowing students choices, and more opportunities for physical activity participation during the day (Kukib et al., 2005).

Unfortunately, there are several barriers with implementing intramurals, open gym times, and fitness classes, whether they occur before, during, or after school. There often are limited facilities afterschool due to athletic sports teams, and transportation becomes an issue for students who do not have a car. Further, it seems there are very few teachers who are willing to volunteer to sponsor afterschool events without any pay, especially activities as time consuming

as intramurals. The number one recommendation by teachers to overcome the barriers associated with implementing these extracurricular activities was find a way to pay a sponsor. However, administrators did not think paying a sponsor was a feasible option, though they did feel these strategies were feasible as long as there was a volunteer sponsor. Schools might consider using classrooms to carry out fitness classes as they do not require the same facilities and equipment as intramurals or open gyms.

The use of fitness apps, or internet-based technology, was recommended to increase healthy eating, promote physical activity participation, and decrease sedentary time. Both teachers and administrators listed this as a feasible strategy for high school students. Specifically, the accessibility to health resources, such as nutritional information, and the ability to set goals, track and monitor progress, and receive feedback were listed as features that might influence the feasibility. Further, technology-based efforts are more likely to be relevant to high school students' lives and require little, if any, supervision.

Previous programs have used interactive media to deliver health promotion programs. For example, Health in Motion was a high school based multi-media intervention that targeted physical activity, fruit and vegetable consumption, and limited TV viewing (Mauriello et al., 2010). Health in Motion was successful at initiating behavior change in each weight-related behavior immediately following the intervention. Further, Health in Motion demonstrated that an interactive program has the potential to target the entire population because it requires minimal supervision, does not need to be tailored based on weight or behavior risk, and is cost-effective (Mauriello et al., 2010). Similarly, the HEALTH[e]TEEN interactive program was a six month program for high schools students enrolled in biology or physical education courses. This program also demonstrated improvements in health behaviors, as well as self-efficacy

(Whittemore et al., 2013). The use of fitness apps, or the internet, was associated with the least barriers in the current study.

Further, this strategy is one that may be sustained into young adulthood. For example, researchers used the internet and e-mail to deliver mini-educational lessons and messages about healthy weight management to young adults ages 18-24 (Kattelmann et al., 2014). Although there were no changes in BMI, weight, or waist circumference, there were positive changes for fruit and vegetable intake, vigorous PA for females, fat intake, and regulation of mealtime behavior (Kattelmann et al., 2014). Participants were able to set goals, track and monitor their goals through graphs, and receive recommendations based on each target behavior. These features align with the perceived benefits of using the internet or fitness apps in the current study. Finding ways to implement strategies that can transition into young adulthood may help prevent declines in health behaviors as students become more independent adults.

The main recommendation to improve student nutrition was improving the food options at the school, including the lunch and vending machines. This suggestion is found repeatedly in the literature, with students and parents describing the lack of healthy food options (Hannay et al., 2013; Kubik et al., 2005; Kong et al., 2012). The findings related to the school lunch options are interesting given the recent implementation of the HHFKA. Findings of this study show that some educators feel the options are healthier, but there is still room for improvement.

One specific recommendation to improve student lunches was to include a salad bar. Not only would a salad bar possibly be more appealing to students, but participants added that teachers would be more likely to eat a salad, which would influence students' behaviors through modeling. In 2010 an initiative was created called "Let's Move Salad Bars to Schools" (LMSB2S) to help schools find funding to implement salad bars, with the goal of increasing fruit

and vegetable consumption (Harris et al., 2012). Since the initiative began more than 4,000 salad bars have been implemented nationwide. One elementary school that introduced a salad bar found that students increased their fruit and vegetable consumption after the salad bar was implemented, and reduced their mean energy, cholesterol, saturated fat, and total fat (Slusser, Cumberland, Browdy, Lange, & Neumann, 2007). In a different study with elementary students, researchers found that the presence of a salad bar does not necessarily increase fruit and vegetable consumption, however, including a variety of fruits and vegetables on the salad bar was associated with greater fruit and vegetable consumption (Adams, Pelletier, Zive, & Sallis, 2005). Findings shows that a salad bar may be a feasible option, however, more research is needed to explore if and how high students eating behaviors are influenced by salad bars.

The main recommendation to reduce student sedentary time at school was to encourage activity breaks during core classes. Even though 90 minute classes were described as a practice or policy that influenced student sedentary time, not all teachers or administrators thought core classes would be willing to implement activity breaks. Research suggests that elementary school teachers are generally willing to implement activity breaks (Masse et al., 2012), which aligns with several participant responses suggesting activity breaks are more popular in elementary and middle school. In fact, the school district in the current study is experimenting with wellness integration at the elementary level. Wellness integration incorporates movement and phsycial activity in daily lessons. This is promising; however, most all participants thought high school students would also benefit from activity breaks. The combination of student behaviors, such as decreasing physical activity and increasing sedentary time, with the amount of time students typically are sedentary during the school day highlights an even greater need for activity breaks at the high school level.

Participants thought peer-led initiatives could be successful if the liabilities to the school were minimized. Previous research suggests that peer-led programs have been beneficial to both peer leaders and the student population (Agron et al., 2002; Story et al., 2002). Fitness classes and sporting events, such as ultimate Frisbee, were the two main activities teachers and administrators thought could be included in a peer-led initiative. However, other participants felt that students might be too busy with academic clubs to participate, and further added an adult sponsor would still be needed. One of the struggles teachers and administrators highlighted with a peer-led initiative is getting it off the ground. Based on social marketing findings, schools should target a certain "niche" of students, and use a word of mouth approach from there.

These recommended strategies illustrate that activities offered to promote student health behaviors should cater to student interests. For example, one of the recommendations was to use the fit-bit, or health-related apps, that help students set goals and track their eating, physical activity, and sedentary time, because technology and social media is interesting and relevant to students. Previous research shows high school students suggested strategies such as "make it fun" and "have a variety of options to choose from" to increase physical activity participation at school (Kubik et al., 2005). Further, research suggests that some students prefer physical activity outside of school because the options at school were "boring" (Hannay et al., 2013). An obvious recommendation then is to ensure that activities are relevant and cater to student interests.

Educators suggested broad and specific features of student programs that target physical activity, nutrition, and sedentary behaviors. Based on participants' recommendations, it is clear that strategies should keep in mind the developmental considerations of high school students. That is, educators in the current study did not recommend walking clubs or health fairs, which are strategies often implemented in elementary and middle schools. Instead educators

recommended strategies that are relevant to high school student development, such as health apps and group exercise classes, which is encouraging because these are strategies that have a greater chance of being sustained into young adulthood.

Policy Recommendations

Beyond recommended health-based extracurricular activities, policy influences were also explored as they have the potential to influence all students. Teachers and administrators described their views and any recommended changes to district, state, or federal policies. More specifically, the following policies were explored: the state's graduation requirements for physical education, the district policies for online physical education and single or mixed gender classes, and the federal Healthy Hunger Free Kids Act.

Findings about the physical education and nutrition policies were mixed. To begin, most all teachers believed the physical education graduation requirement should be extended to 12th grade. Unfortunately, both teacher and administrator participants suggested this was not likely to occur due to the number of added academic requirements. In fact, it took state legislators two sessions to pass a bill designed to encourage schools to offer all elementary and middle school students' physical education, with the first bill being vetoed by the govenor (National Association for Sport and Physical Education and American Heart Association, 2012). Relatedly, participants recommended eighth grade PE should be a requriment and not an elective course. However, the SVSD wellness committee recommended this policy change to the district school board, but it was not adopted. These efforts to change physical education requirements illustrate that the fight for stricter physical education policies will be challenging.

Additionally, more research is needed to examine how students' motivation and engagement is influenced when requirements allow for a break from health and physical

education. That is, for the current sample, how is student motivation influenced in 9th grade after having the eighth grade year as an elective health and PE requirement? In 2012, 41 states required middle school physical education (National Association for Sport and Physical Education and American Heart Association, 2012), however, findings from the current study on 8th grade PE requirements warrant more research that examines student engagement and participation in physical education and health courses after a lapse in physical education requirements.

Next, it is not clear whether teachers and administrators recommend single-sex or coeducational classes. Teachers who were in favor of single-sex classes explained that female participation would be greater if females were not worried about perceptions of male students. Female high school students have also listed worries about appearance, and self-consciousness related to exercising in front of boys as two main barriers to physical activity participation during school (Hannay et al., 2013). However, some teacher participants in this study believed athletic female students would not be challenged in single-sex classes. A study conducted by McKenzie, Prochaska, Sallis, & Lamaster (2007) supports this finding. Females received more moderate to vigorous MVPA in coeducational classes than single-sex classes, and males accrued similar levels in single-sex and coeducational courses (McKenzie et al., 2007). In contrast, Derry and Phillips (2004) found support for single-sex classes. Findings showed that female students reported more engaged skill learning time and student-initiated interactions, and teachers reported less time on time management, and greater instruction for engaged skill learning (Derry & Phillips, 2004). These contradictory findings warrant more research to determine how physical activity levels and motivation differ in single-sex and coeducational courses.

SVSD students who take online health and PE are required to document physical activity hours and meet a minimum of 70 or 75 hours, as well as follow an online health curriculum. According to the most recent report from the National Association for Sport and Physical education, over 50% of states offer online physical education (National Association for Sport and Physical Education and American Heart Association, 2012). Overall, participants largely disagreed with the option to take health and physical education online. Many noted students miss the social aspect of physical education when completed online, and they questioned the student accountability of physical activity participation. There are mixed findings in the literature regarding online Health and PE, but accountability and social interactions have been cited as drawbacks to online PE. For example, in a review about online physical education, Mohesen (2013) listed accountability issues regarding physical activity participation, and student learning and performance as disadvantages. Moreover, Karp and Woods (2003) conducted a case study of a high school online health and PE course. Findings showed that the teacher reported missing contact with the students, and the students reported missing contact with both peers and the teacher. However, these studies have also highlighted positive features of online PE such as flexibility, individualized coursework, and the ability to spend more time on difficult concepts (Karp & Woods, 2003; Mohesen, 2013).

Although there have been mixed findings regarding online PE, it is unlikely the option of online PE will be removed. As such, several recommendations have been made by researchers. First, one recommendation to ensure physical activity participation was to use heart rate monitors or accelerometers to measure physical activity intensity (Mohensen, 2013). It is important to note that purchasing hear rate monitors or accelerometers for students would be expensive on a district as large as SVSD. Next, researchers suggested professional development for online PE

instructors (Karp & Woods, 2003; Mohesen, 2013). Similar, faculty members who teach pre-service health and PE teachers also may benefit from professional development. One study reported faculty members who taught pre-service physical education teachers believed online PE could be a feasible option at the high school level, however, they did not feel adequately prepared to teach online PE instructional practices (Daum & Woods, 2013). More research on effective instructional methods for online physical education is needed to help determine the best techniques that encourage physical activity participation and healthy eating, and decrease sedentary time.

Findings related to the Healthy Hunger Free Kids Act (HHFKA) were interesting. Although no teacher participants had heard of the HHFKA, every administrator participant was aware of the policies and talked in detail about how the HHFKA has influenced school revenue. High schools in SVSD are not currently operating under the National School Lunch Program (NSLP), but they still have to meet nutrition guidelines outlined by the United States Department of Agriculture (USDA). High schools in SVSD will be moving to the NSLP in the upcoming year, and it will be interesting to compare student eating behaviors pre- and post-implementation of the NLSP.

Based on findings from the current study, it seems as though schools, or lunch vendors, have not yet found a balance of meeting the nutrition requirements and generating a profit from food sales. Moreover, students do not appear to be reaping the benefits of the healthier food options. That is, students may not like the "taste" of the healthier lunch options, and sometimes eat lunch from the vending machines. Although some students eat lunch from the vending machine, schools in this study are still reporting a decrease in vending machine sales as well. Findings about student eating behaviors following the implementation of the HHFKA are mixed.

For example, one study compared middle school students' fruit and vegetable consumption and plate waste pre- and post-implementation of the HHFKA (Schwartz, Henderson, Read, Danna, & Ickovics, 2015). Results indicated that the percentage of students choosing fruit increased from 54 % to 66%, and students threw away less entrees and vegetables after the implementation of the HHFKA (Schwartz et al., 2015). On the other hand, researchers measured plate waste among preschool and kindergarten students and found that 45% of meals were wasted, and vegetables, entrees, and milk were among the foods most often wasted (Byker, Farris, Macenelle, Davis, & Serrano, 2014). It is unclear how the new federal regulations have influenced student eating behaviors, especially high school students. Constant evaluation of the school nutrition policies will be necessary to ensure both students and schools benefit from the lunch offerings.

Small and large scale policy changes were recommended to improve student health behaviors. Educators believed that revising the physical education curriculum and using more of a "college approach," whereby students choose certain physical activities that meet their needs and interests would be more beneficial to student engagement in the classroom than current practice. Participants also believed this recommendation would encourage participation beyond the 10th grade year. Additionally, educators recommended a total revision of the lunch services. As previously mentioned, a salad bar, making the labels more appealing, and conducting taste tests with parents were all strategies to improve the food options.

Educators' views about the current policies were mixed, with no real consensus about policy changes that would benefit high school students' physical activity, nutrition, and sedentary behaviors. However, several educators felt policy changes could positively influence the health of all students, and garner support from parents. That is, some educators believed policy changes, such as requiring PE through 12th grade, may highlight the importance of

physical education to parents. More research is needed to determine how local, state, and federal policies interact to influence student health behaviors in high school.

Moving Forward

Theme Eight: Community, family, and district support might help alleviate some of the liability and logistical concerns placed on schools, as well as increase accessibility to health resources for students. However, there is wide variation of family and community involvement throughout the school district.

Educators are calling on community and family support to overcome some of the school level barriers associated with implementing health-based strategies, including limited facilities, limited funding, and limited supervision. Schools recommended parents or community members help lead extracurricular activities, because they can alleviate the liability concerns and time constraints placed on schools. Churches or church leaders, community centers, and local gyms all have the potential to serve as community partners for school-based health programming. It is not surprising that schools would reach out to parents and the community, as it is unreasonable to think schools should be solely responsible for improving our youth's health (CDC, 2011; Action for Healthy Kids, 2008).

Evident in educators' responses, however, was the role socioeconomic status plays in parent and community support. There are numerous studies that highlight the relationship between socioeconomic status and health behaviors (Delva, Johnston, & O'Malley, 2007; Lindberg, Ik, Nyman, Marcus, Uijaszek, & Nowicka, 2015; Lord et al., 2015; Ogden et al., 2012). One study showed school SES was associated with BMI among adolescents (O'Malley, Johnston, Delva, Bachman, & Schulenberg, 2007). Related, research shows youth have labeled unsafe neighborhoods as a barrier to physical activity participation (Ganter et al., 2015; Lowry et al., 2013). Moreover, research has noted that levels of family support differ by socioeconomic

status, with low SES families providing less family support (Belanger-Gravel, Gauvin, Lagarde, & Laferte, 2015).

Although participants were probed about strategies to overcome the inequality in family and community involvement, participants were unable to recommend any strategies for improvement. Previous research highlighted community stakeholders' perceptions about barriers to obesity prevention in low-income families (Ganter et al., 2015). Perceived barriers to obesity prevention listed by schools, afterschool programs, health care professionals, and WIC personnel included education, ethnicity-cultural background and norms, lack of safe neighborhoods, lack of transportation, lack of affordable, healthy food, media, and parental distrust in staff knowledge related to health behaviors. Findings also highlighted the importance of a good relationship between families and researchers or practitioners. Based on these findings, researchers suggested resources should be directed toward increasing parent's health literacy, including family members in health promotion efforts, and ensuring organizational cultural competency (Ganter et al., 2015). Schools will likely benefit from following these recommendations when implementing extracurricular health-based activities.

Researchers also suggest families set rules related to sedentary behaviors and eating habits (Lederer et al., 2015). One school-based obesity prevention program for students grades four through eight examined how family rules influenced student physical activity, sedentary time, and dietary behaviors. Results showed that students who had rules or restrictions on sedentary behaviors (TV viewing, computer use, and video games) exhibited less media use, and parental enforced dietary restrictions (soda and fast food consumption) were associated with fruit and vegetable intake, and decreased soda and fast food consumption. Perhaps schools could encourage parents to set restrictions on sedentary and dietary behaviors. However, this may not

be as feasible for high school students given the developmental considerations. More research is needed to determine how parents and the community can contribute to high school health-based initiatives.

An interesting finding was the number of initiatives that are currently being implemented in SVSD high schools. Throughout the course of the interviews, participants were blunt about the difficulties associated with implementing extracurricular activities. They described a long list of barriers, and administrators were not shy to indicate the ways in which a strategy was not feasible due to the academic pressures at the high school level. However, three schools are currently implementing open gym times – one before school, one during, and one after. This finding is promising, given the dire need for health resources for high school aged students. It is important to note that the one afterschool program was carried out at a school that was able to provide an activities bus because over 55% of the student body is economically disadvantaged. Unfortunately, the majority of schools reported no current school-wide efforts, including small initiatives such as posters hung in the cafeteria promoting healthy foods. Although there is still room for improvement, the case that some schools are implementing strategies successfully indicates there are ways to overcome the school level barriers.

To make student health a priority at the school level, educators feel support needs to "come from the top." Teachers and administrators are both under extreme academic pressures and step one to improving the health options at school, including extracurricular activities, is making it a district-level priority, which includes budgeting funding for health initiatives. Fortunately, SVSD has identified student health as a priority and changes are currently being implemented based on recommendations from the wellness committee. SVSD has not implemented all changes yet, and future research should follow the changes being implemented.

The finding that educators advocate for increased support from district and state officials is interesting, given that participants criticized the number of teacher and administrator requirements, and a district-led initiative would most likely be accompanied by additional requirements for teachers and administrators. One possible explanation for this is that the educators who participated in this study have a personal interest in health and wellness. That is, the teachers were physical education teachers, and all but one administrator had previously coached a sport. To this end, educators may be more likely to support additional requirements that align with their personal motives.

Implications for Educators

Findings from this study illustrate that implementing a large scale program at the high school level is not an appropriate first step. However, several smaller steps can be taken to set up an environment that encourages healthy student behaviors. For example, educators will benefit from professional development that focuses on the determinants and outcomes of student health behaviors (Mohesen, 2013; Waters et al., 2013). It may be beneficial for teachers to be informed of the research highlighting the positive relationship between academics and health behaviors. Further, professional development should also focus on how to implement strategies that reduce student sedentary time in the classroom. Teachers may be hesitant to implement activity breaks because they do not see relevance to the curriculum. It is not reasonable to assume a substantial change in the duration of high school classes in the near future, therefore, educators should be provided with support to implement short activity breaks that integrate the curriculum. Further, encouraging core teachers and physical education teachers to attend professional development as teams may increase implementation of health-based strategies.

Collaboration during professional development programs has been associated with increased implementation when returning to school (Garet, Porter, Desimone, Birman, & Yoon, 2001).

Schools may also consider forming a student council about school-based health and wellness. Given the developmental considerations and findings related to peer support, high school students may be more likely to participate in school efforts if they are surrounded by peers with similar goals. Schools could even consider electing a student health ambassador. For example, a student health ambassador may encourage student participation in school-based health decisions, and potentially serve as a bridge between faculty and students. Highlighting that a school-based wellness council, or school ambassador for health and wellness, can also be considered a service for college applications may help attract students who prefer "academic clubs." Related to student-led councils, findings suggest schools plan events, or times during the curriculum, to allow students an opportunity to create health promotional message to be displayed at school. Student-driven approaches have the potential to be more relevant to student lives (Story et al., 2002).

To promote school physical education, schools can look to recommendations by Sallis et al. (2012). Researchers proposed goals for HOPE (Health Optimizing Physical Education) over the next twenty years, which included policies that ensure daily physical activity, as well as studies to assess teacher behavior, preparation, and facilities. Following these recommendations, school should look for opportunities to provide students with daily physical activity. It may not be reasonable to assume that high school students will receive daily physical activity through a physical education curriculum. Therefore, schools will likely need to be creative to identify additional times when they can offer students an opportunity to participate in physical activities.

Assessing the interest of faculty members, including administrators, core teachers, and PE teachers, before implementing school-based strategies that promote student health increases the likelihood of successful implementation (CDC 2013b, CDC, 2013c). If there is consistent support, schools should also survey student interest and choose appropriate strategies based on the combination of findings from faculty and students. The feasibility of strategies implemented at the school level increases when there is cohesion between stakeholders (Pearlman et al., 2005). Schools will likely benefit from implementing the strategy slow at first, and then scaling according to student interest (Pearlman et al., 2005). If schools are currently operating under a one-to-one mobile computing initiative they should take advantage of the free resources available to students. Internet-based technology, or fitness apps, has the potential to improve student behaviors during high school, but it also has the potential to be sustained throughout the transition to young adulthood (Kattelmann et al., 2014).

Finally, creating a positive environment that promotes student physical, mental, and social health may help educate the "whole child." Schools should continually assess how their policies and/or practices may promote or prevent healthy student behaviors. One recommendation is to annually survey school faculty across the strategies listed in the coordinated school health model. Based on findings from the current study, modeling healthy behaviors, such as working out in the school gym and eating the school lunches, is another way to influence student health., Schools should continue to offer student vs. faculty sporting events as it encourages student and teacher physical activity participation.

It was the hope that more concrete strategy recommendations could be made. However, given the exploratory nature of the study, this was not the outcome. Although more research is needed before implementing high school-based initaitves, perhaps schools might start with

requiring activity breaks in core classrooms, or using fitness apps, as these strategies are associated with the fewest barriers from the researcher's perspective. Fitness apps are especially relevant for schools operating on one-to-one mobile computing as schools can be confident each student has access to a technology device, and several technology-based health resources, such as myfitnesspal, can be downloaded for free. Policy changes are likely to be more influential if there is flexibility in how schools implement the change. That is, findings from the current study showed that educator views differed based on the student demographics of the school. This is likely the case for school districts across the public education system. As such, policies that are flexible allow schools discretion in how they are incorporated into the school environment. For example, requiring daily (or every other day) physical activity participation, as opposed to requiring additional courses, affords schools an opportunity to determine how they can integrate physical activity participation into their schedule. The initial findings from this study should continue to be explored with different populations in an effort to determine what strategy and policy changes are most practical.

Limitations

There are several limitations of the current study that should be addressed. First, the sample of the current study was homogenous. All but one participant was Caucasian, and all participants had been teaching seven plus years with an average of 25 years. This is limiting, as one of the findings related to the number of teacher requirements and pressures. Generally speaking, new teachers typically have a greater number of teacher pressures, on top of adjusting to a new career, and including beginning teacher perspectives may influence the recommended strategies as well as teacher-perceived feasibility.

Next, the participants who volunteered for this study may be biased in their views about what is feasible to promote student health. It is reasonable to assume that participants who volunteered to be interviewed identify student health and wellness as a personal priority. As such, they may not represent the general population of health and PE teachers and administrators. Further, all but one of the administrator participants had previously coached a sport, potentially inflating the feasibility of recommended strategies. Administrators that have a personal interest in health and wellness may be more likely to rate a strategy as feasible.

There are also methodological limitations. Inherent in qualitative methodology is researcher bias. Although the researcher took steps to limit the subjectivity and bias during data collection and analysis, it is likely the findings still include an element of bias. Similarly, it is possible that the researcher's presence during interviews influenced participants' responses. For example, after the first several interviews, the researcher recognized a personal bias against online physical education. It is possible participants in the first few interviews, before the bias was uncovered, were influenced by the researcher's tone. Moreover, two teacher interviews occurred in public spaces in the school building. As such, participants may have felt their responses would be overheard by students, faculty, or administration.

Further, the findings of this study cannot be generalized. Although generalizability is not the goal of qualitative research, it is important to note these findings do not necessarily generalize to other school districts. Similarly, the views of the participants in this study represent a small number of high school health and PE teachers and administrators at SVSD. High schools who want to implement school-based strategies should conduct formative work with the faculty and administrators to determine appropriate strategies for their school environment.

Future Directions

This study highlighted a number of areas to be addressed in future research. To begin, more qualitative research exploring teacher and administrator views about the health environment at the high school level is needed. Social, cultural, and environmental features, such as neighborhood factors, cultural norms, and family support, influence student health behaviors (Ganter et al., 2015). As such, research exploring different populations is warranted to determine the most feasible high school strategies given the context.

Next, formative research with other key stakeholders of high school programs is needed. Although teachers and administrators are key stakeholders in school programs, students are the target population. Therefore, research with general population high school students will help determine student interest and motivation for extracurricular health-based activities. Teachers and administrators suggested there would be student interest in extracurricular activities; however, researchers should explore student views of the school environment, policies, and potential strategies to improve student health.

Formative research with core teachers also is an important next step. One of the recommended strategies, activity breaks, directly influences core teachers. Activity breaks have the potential to target the entire student body, and they do not require additional funding, supervision, transportation, or facilities. However, many participants noted that high school core teachers are pressed for time, which influences the likelihood of implementing activity breaks. The district in the current study will benefit from exploring how wellness integration influences elementary students' health behaviors, and if/how this model could be transferred to the high school level. The feasibility of implementing activity breaks in high school classrooms should be explored with core teachers, given this strategy was associated with fewer barriers in the

current study. Additionally, core teachers could serve as sponsors for afterschool health clubs, or supervise health-based activities. Formative research with core teachers will help provide a more complete description of the high school health enviornemnt, and will also help determine if activity breaks are a practical strategy.

Additionally, formative work with families and community partners may help identify community resources that encourage participation in extracurricular health-based activities. These two groups have the potential to influence the number and variety of health-based activities offered at the high school level. Although research consistently shows family and community support are linked to health behaviors (CDC, 2013d), the ways in which families and communities can support high school-based initiatives is still unclear. More research is needed to explore how schools can collaborate with parents and community partners.

The interaction of local, state, and federal student wellness policies, and the influence on student physical activity, nutrition, and sedentary behaviors merits further attention. Schools will continue to revise school wellness policies and lunch services to meet the Healthy Hunger-Free Kids Act requirements. For example, the school district in the current study plans to create wellness committees at each school, and exploring how the wellness committee influences student health will be important. Additionally, it may be interesting to analyze how different states react to these policies and the influence of policy changes on student nutrition, physical activity, and sedentary behaviors. For the sample of the current study, exploring how high school students eating behaviors are influenced by the National School Lunch Program will be interesting.

This study raised many questions about the purpose of education. Questions such as: Are educators interested in educating the whole child? Do educators see a place for instruction or

extracurricular activities that encourage healthy development, including physical, social, and mental health? Ultimately, a participant stated it best when she asked, "is this a school responsibility?' It would be interesting to examine the public's views about the purposes of education, and the school's responsibilities related to social, physical, and mental health.

Conclusion

The findings from this study suggest that high school is a crucial time to implement strategies that target student physical activity, nutrition, and sedentary behaviors. Students' health behaviors are evidence that support is needed before students' transition to young adulthood. Unfortunately, many faculty and staff at the high school level are struggling to make student health and physical education a priority due to the academic pressures. This is troubling considering that the school district in the current study has identified student health as a priority, and is currently taking steps to promote healthy student behaviors. Further, students also feel the academic pressures. Many students take online PE or summer school PE to free up space in their schedule for more academic classes. Similarly, these students are not participating in elective courses after the required two years because the number of elective academic required courses, such as economics, is increasing and students are concerned with building their college resume. This combination of findings illustrates that high schools are in dire need of resources to offer extracurricular activities that focus on student health and wellness.

Schools will benefit from implementing activities that are relevant to students' interests. High school is a difficult age to make healthy activities appear "cool," and utilizing peer support and student interests is imperative to success. Many of the recommended strategies accounted for the developmental considerations of high school students. For example, using social media as an advertising tool and taking advantage of fitness apps, aligns with high school students'

social behaviors. Additionally, this strategy may have a greater chance of being sustained into young adulthood. Finally, schools should find times before, during, or after the school day to increase the number of opportunities for physical activity. Intramurals, open gym times, and fitness classes, are all strategies that can be implemented at school or with community partners that encourage physical activity participation with peers.

Policy changes related to school lunches will continue to be discussed as a method to improve student nutrition. Schools should include students on wellness councils and committees as a means to promote awareness among the student body. Gathering feedback from the student body may help lunch vendors provide appealing options, while still meeting the nutritional requirements. School districts should also find ways to promote awareness of local, state, and federal wellness policies to parents and the community. Parent and community meetings serve as one outlet to accomplish this goal. Schools might also consider using social media to keep parents informed about health and wellness policies.

Finding ways to encourage student physical activity and healthy eating, and decrease student sedentary time at the high school level is challenging. However, findings from this study show high school students need support and resources to encourage healthy behaviors that can be sustained into young adulthood. It will be essential for researchers to continue exploring how the interaction of school, community, and parent influences impacts high school student health. Exploring these influences will help researchers and educators balance policy changes, school-based efforts, and community involvement. High school represents a unique developmental stage in an individual's life, a time full of physical and social changes, and research should continue to explore strategies and initiatives that align with this unique stage.

References

Abrams, L. M., Pedulla, J. J., & Madaus, G. F. (2003). Views from the classroom: Teachers' opinions of statewide testing programs. *Theory into Practice, 42*(1), 19-29.

Action for Healthy Kids (2008). *Progress or promises? What's working for and against healthy schools.* Retrieved from: http://www.actionforhealthykids.org/storage/documents/AFHK_Progress_or_Promises-Whats_Working_For_and_Against_Healthy_Schools.pdf

Adams, M. A., Pelletier, R. L, Zive, M. M., & Sallis, J. F. (2005). Salad bars and fruit and vegetable consumption in elementary schools: A plate waste study. *Journal of American Dietetic Association, 105*(11), 1789-1792.

Andreasen, A. R. (1994). Social marketing: Its definition and domain. *Journal of Public Policy & Marketing, 13*(1), 108-114.

Agron, P., Takada, E., & Purcell, A. (2002). California Project LEAN's Food on the Run Program: An evaluation of a high school-based student advocacy nutrition and physical activity program. *Journal of the American Dietetic Association, 102*(3), S103-S1015. Doi: 10.1016/S0002-8223(02)90435-9

Allender, S., Cowburn, G., & Foster, C. (2006). Understanding participation in sport and physical activity among children and adults: A review of qualitative studies. *Health Education Research, 21*(6), 826-835.

Baghianimoghadam, M. H., Forghani, H., Zolghadr, R., Rahaei, Z., & Khani, P. (2012). Peer-led versus teacher-led AIDS education for female high-school students in Yazd, Islamic Republic of Iran. *Eastern Mediterranean health Journal, 18*(4), 353-357.

Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice-Hall Inc.

Bandura, A. (2004). Health promotion by social cognitive means. *Health Education & Behaviors, 31*(2), 143-164. Doi: 10.1177/100198104263660

Barrett, B. D. (2009). No child left behind and the assault on teachers' professional practices and identities. *Teaching and Teacher Education, 25*, 1018-1025.

Bauer, K. W., Laska, M. N., Fulkerson, J. A., Neumark-Sztainer, D. (2011). Longitudinal and secular trends in parental encouragement for healthy eating, physical activity, and dieting throughout the adolescent years. *Journal of Adolescent Health, 49*, 306-311. Doi: 10.1016/j.jadohealth.2010.12.023

Beauman, C., Cannon, G., Elmadfa, I., Glasauer, P., Hoffmann, I., Keller, M…Zerilli-Marimo, M. (2005). The principles, definition and dimensions of the new nutrition science. *Public Health Nutrition, 8*(6a), 695-698. Doi: 10.1079/PHN2005820

Belanger-Gravel, A., Gauvin, L., Laarde, F., & Laferte, M. (2015). Correlates and moderators of physical activity in parent-tween dyards: A socio-ecological perspective. *Public Health*. Advance online publication. doi: 10.1016/j.puhe.2015.05.019

Berryhill, J., Linney, J. A., & Fromewick, J. (2009). The effects of education accountability on teachers: Are policies too stress provoking for their own good? *International Journal of Education Policy and Leadership, 4*(5), 1-14.

Bindler, R. C., Goetz, S., Butkus, S. N., Power, T. G., Ullrich-French, S., & Steele, M. (2012). The process of curriculum development and implementation for an adolescent health project in middle schools. *The Journal of School Nursing, 28*(1), 13-23. Doi: 10.1177/1059840511424414

Boddy, L. M., Knowles, Z. R., Davies, I. G., Warburton, G. L., Mackintosh, K. A., Houghton, L., & Fiarclough, S. J. (2012). Using formative research to develop the healthy eating component of the CHANGE! School-based curriculum intervention. *BMC Public Health* (12), 710-720.

Borgia, P., Marinacci, C., Schifano, P., & Perucci, C. A. (2005). Is peer education the best approach for HIV prevention in schools? Findings from a randomized controlled trial. *Journal of Adolescent Health, 36*, 508-516.

Budd, G. M., & Volpe, S. L. (2006). School-based obesity prevention: Research, challenges, and recommendations. *Journal of School Health, 76*(10), 485-495.

Burgess-Champoux, T., Marquart, L., Vickers, Z., & Reicks, M. (2006). Perceptions of children, parents, and teachers regarding whole-grain foods, and implications for a school-based intervention. *Journal of Nutrition Education and Behavior, 38*, 230-237.

Brener, N. D., Merlo, C., Eaton, D., Kann, L., Park, S., & Blanck, H. M. (2011). Beverage consumption among high school students – United States, 2010. *Morbidity and Mortality Weekly Report, 60*(23), 778-780.

Caspersen, C. J., Pereira, M. A., & Curran, K. M. (2000). Changes in physical activity patterns in the United States, by sex and cross-sectional age. *Medicine & Science in Sports & Exercise, 32*(9), 1601-1609.

Casperson, C. J., Powell, K. e., & Christenson, G. M. (1985). Physical activity, exercise and physical fitness: Definitions and distinctions for health-related research. *Public Health Reports, 100*(2), 126-131.

Center for Disease Control and Prevention, Division of Adolescent and School Health (2011a). *School health programs: Improving the health of our nation's youth at a glance 2011*.

(Publication No. CS217229-AC). Retrieved from http://www.cdc.gov/chronicdisease/resources/publications/aag/dash.htm#aag

Center for Disease Control and Prevention, Division of Nutrition, Physical Activity, and Obesity. (2011b). *Physical activity: How much physical activity do children need?* Retrieved from: http://www.cdc.gov/physicalactivity/everyone/guidelines/children.html

Center for Disease Control and Prevention, Division of Adolescent and School Health (2013a). *Coordinated school health faqs*. Retrieved from: http://www.cdc.gov/healthyyouth/cshp/faq.htm

Center for Disease Control and Prevention, Division of Adolescent and School Health. (2013b) *Goals of coordinated school health.* Retrieved from: http://www.cdc.gov/healthyyouth/cshp/goals.htm

Center for Disease Control and Prevention, Division of Adolescent and School Health. (2013c). *How schools can implement coordinate school health.* Retrieved from: http://www.cdc.gov/healthyyouth/cshp/schools.htm

Center for Disease Control and Prevention, Division of Population Health. (2013d). *Comprehensive school physical activity programs: A guide for schools.* Retrieved from: http://www.cdc.gov/healthyyouth/physicalactivity/pdf/13_242620-A_CSPAP_SchoolPhysActivityPrograms_Final_508_12192013.pdf

Christie, D., & Viner, R. (2005). ABC of adolescence: Adolescent development. *British Medical Journal, 330,* 301-304.

Ciani, K. D., Summers, J. J., & Easter, M. A. (2008). A "top-down" analysis of high school teacher motivation. *Contemporary Educational Psychology, 33,* 533-560.

Cole, K., Waldrop, J., D'Auria, J., & Garner, H. (2006). An integrative research review: Effective school-based childhood overweight interventions. *Journal for Specialists in Pediatric Nursing, 11*(3), 166-177.

Cook, S., Weitzman, M., Auinger, P., Nguyen, M., & Dietz, W. H. (2003). Prevalence of metabolic syndrome phenotype in adolescents: Findings from the third national health and nutrition examination survey, 1988-1994. *Archives of Pediatrics & Adolescent Medicine, 157*(8), 821-827.

Corbin, J., & Strauss, A. (2008*). Basics of qualitative research: Techniques and procedures for developing grounded theory* (3rd ed). Thousand Oaks, CA: Sage.

Cothran, D. J., Kulinna, P. H., & Gran, A. C. (2010). Classroom teachers and physical activity integration. *Teaching and Teacher Education, 26*(7), 1381-1388. Doi: 10.1016/j.tate.2010.04.003

Creswell, J. W. (2013). *Qualitative inquiry and research design* (3rd ed). Thousand Oaks, CA: Sage.

Daum, D. N., & Woods, A. M. (2013). Physical educators' attitudes toward and understanding of online physical education. *Research Quarterly for Exercise and Sport, 84*(S1), S38.

Debar, L. L., Schneider, M., Ford, E. G., Hernandez, A. E., Showell, B., Drews, K. L…White, M. (2009). Social marketing-based communications to integrate and support the HEALTHY study intervention. *International Journal of Obesity, 33*(S4), S52-S59. Doi: 10.1038/ijo.2009.117

Deforche, B. I., De Bourdeaudhiu, I. M., & Tanghe, A. P. (2006). Attitude toward physical activity in normal-weight, overweight and obese adolescents. *Journal of Adolescent Health, 38,* 560-568. Doi: 10.1016/j.jadohealth.2005.01.015

Delva, J., Johnston, L. D., O'Malley, P. M. (2007). The epidemiology of overweight and related lifestyle behaviors: Racial/ethnic and socioeconomic status differences among American youth. *American Journal of Preventive Medicine, 33*(S4), S178-S186.

Derry, J. A., & Phillips. D. A. (2004). Comparisons of selected student and teacher variables in all girls and coeducational physical education environments. *Physical Educator, 61*(1), 23-35.

Dishman, R. D., Motl, R. W., Saunders, R., Felton G., Ward, D. S., Dowda, M., & Pate, R. R. (2004). Self-efficacy partially mediates the effect of a school-based physical-activity intervention among adolescent girls. *Preventive Medicine, 38*, 624-636. Doi: 10.1016/j.ypmed.2003.12.007

Driskell, M., Dyment, S., Mauriello, L., Castle, P., & Sherman, K. (2008). Relationships among multiple behaviors for childhood and adolescent obesity prevention. *Preventive Medicine, 46*, 209-215.

Dumith, S. C., Gigante, D. P., Domingues, M. R., & Kohl, H. W. (2011). Physical activity change during adolescence: A systematic review and a pooled analysis. *International Journal of Epidemiology, 40*, 685-698. Doi: 10.1093/ije/dyq272

Dwyer, J. J., Allison, K. R., LeMoine, K. N., Adlaf, E. M., Goodman, J., Faulkner, G. E. J., & Lysy, D. C. (2006). A provincial study of opportunities for school-based physical activity in secondary schools. *Journal of Adolescent Health, 39*, 80-86.

Eather, N., Morgan, P. J., & Lubans, D. R. (2013). Social support from teachers mediates physical activity behavior change in children participating in the Fit-4-Fun intervention. *International Journal of Behavioral Nutrition and Physical Activity, 10*(1), 68-83.

Elder, J. P., Lytle, L., Sallis, J. F., Young, D. R., Steckler, A., Simons-Morton,…Ribisl, K. (2007). A description of the social-ecological framework used in the Trial of Activity for Adolescent Girls (TAAG). *Health Education Research, 22*(2), 155-165. Doi:10.1093/her/cyl059.

Fischer, C., Hunt, P., Kann, L., Kolbe, L., Patterson, B., & Wechsler, H. (2003). *Building a healthy future through school health programs.* Retrieved from Center for Disease Control and Prevention website: http://www.cdc.gov/healthyyouth/publications/pdf/PP-Ch9.pdf

Forrest, S., Strange, V., & Oakley, A. (2002). A comparison of students' evaluations of a peer-delivered sex education programme and teacher-led provision. *Sex Education, 2*(3), 195-214. Doi: 10.1080/1468181022000025776

Foster, G. D., Sundal, D., McDermott, C., Jelalian, E., Lent, R., & Vojita, D. (2012). Feasibility and preliminary outcomes of a scalable, community-based treatment of childhood obesity. *Pediatrics, 130*(4), 652-659. Doi: 10.1542/peds.2012-0344

Freedman, D. S., Mei, Z., Srinivasan, S. R., Berenson, G. S., & Dietz, W. H. (2007). Cardiovascular risk factors and excess adiposity among overweight children and adolescents: The Bogalusa Heart Study. *The Journal of Pediatrics, 150*(1), 12-17. Doi: 10.1016/j.jped.2006.08.042

French, S. A., Story, M., Fulkerson, J. A., & Hannan, P. (2004). An environmental intervention to promote lower-fat food choices in secondary schools: Outcomes of the TACOS study. *American Journal of Public Health, 94*(9), 1507-1512.

Frost, N. (2011). *Qualitative research methods in psychology: Combining core approaches*. New York, NY: McGraw Hill.

Fulkerson, J. A., French, S. A., Story, M., Nelson, H., & Hannan, P. J. (2003). Promotions to increase lower-fat food choices among students in secondary schools: Description and outcomes of TACOS (Trying Alternative Cafeteria Options in Schools). *Public Health Nutrition, 7*(5), 665-674.

Fulton, J. E., Carroll, D. D., Galuska, D. A., Lee, S. M., Eaton, D. K., Brener, N. D., & Song, M. (2011). Physical activity levels of high school students – United States, 2010. *Journal of American Medical Association, 306*(4), 367-368.

Ganter, C., Chuang, E., Aftosmes-Tobio, A., Blaine, R. E., Giannetti, M., Land, T., & Davison, K. K. (2015). Community stakeholders' perspectives of barriers to childhood obesity prevention in low-income families, Massachusetts 2012-2013. *Preventing Chronic Disease, 12*(E42), 1-11.

Gellar, L., Druker, S., Osganian, S. K., Gapinski, M. A., LaPelle, N., & Pbert, L. (2012). Exploratory research to design a school nurse-delivered intervention to treat adolescent overweight and obesity. *Journal of Nutrition Education and Behavior, 44*(1), 46-54. Doi: 10.1016/j.jneb.2011.02.009

Gittelsohn, J., Steckler, A., Johnson, C. C., Pratt, C., Grieser, M., Pickrel, J…Staten, L. K. (2006). Formative research in school and community-based health programs and studies: "State of the art" and the TAAG approach. *Health Education Behavior 33*(1), 25-39. Doi: 10.1177/1090198105282412

Glanz, K., & Rimer, B. K. (2008). Perspectives on using theory: past, present, and future. In K. Glanz, B. K. Rimer, & K., Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (pp.509-517). San Francisco, CA: Jossey-Bass.

Glanz, K., Rimer, B. K., & Viswanath, K. (2008). The scope of health behavior and health education. In K. Glanz, B. K. Rimer, & K., Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (pp.3-22). San Francisco, CA: Jossey-Bass.

Gonzalez-Suarez, C., Worley, A., Grimmer-Somers, K., & Dones, V. (2009). School-based interventions on childhood obesity: A meta-analyses. *American Journal of Preventive Medicine, 37*(5), 418-427. Doi: 10.1016/j.amepre.2009.07.012

Gordon-Larsen, P., Nelson, M., & Popkin, B. M. (2004). Longitudinal physical activity and sedentary behavior trends: Adolescence to adulthood. *American Journal of Preventative Medicine, 27*(4), 277-283. Doi:10.1016/j.amepre.2004.07.006

Grier, S., & Bryant, C. A. (2005). Social marketing in public health. *Annual Review of Public Health, 25*, 319-339.

Gyuresik, N. C., Spink, K. S., Bray, S. R., Chad K., & Kwan, M. (2006). An ecologically based examination of barriers to physical activity in students from grade seven through first-year university. *Journal of Adolescent Health, 38*, 704-711.

Hair, E. C., Park, M. J., Ling, T. J., & Moore, K. A. (2009). Risky behaviors in late adolescence: Co-occurrence, predictors, and consequences. *Journal of Adolescent Health, 45*(), 253-261. Doi: 10.1016/j.jadohealth.2009.02.009

Hall., W. J., Zeveloff, A., Steckler, A., Schneider, M., Thompson, D., Pham, T….HEALTHY study group. (2012). Process evaluation results from the healthy physical education intervention. *Health Education Research, 27*(2), 307-318. Doi: 10.1093/her/cyr107

Harris, D. M., Seymour, J., Grummer-Strawn, L., Cooper, A., Collins, B., DiSogra, L…Evans, N. (2012). Let's move salad bars to schools: A public-private partnership to increase student fruit and vegetable consumption. *Childhood Obesity, 8*(4), 294-297.

Harrison, M., Burns, C. F., McGuinness, M., Heslin, J., & Murphy, N. M. (2006). Influence of a health education intervention on physical activity and screen time in primary school children: 'Switch Off-Get Active.' *Journal of Science and Medicine in Sport, 9*, 388-394. Doi: 10.1016/j.jsams.2006.06.012

Healey, B. J., & Zimmerman, R. S. (2010). *The new world of health promotion: New program development, implementation, and evaluation*. Sudbury, MA: Jones and Bartlett Publishers.

Hesketh, K., Waters, E., Green, J., Salmon, L., & Williams, J. (2005). Health eating, activity and obesity prevention: A qualitative study of parent and child perceptions in Australia. *Health Promotion International, 20*(1), 19-26. Doi: 10.1093/heapro/dah503

Hill, J. O., Wyatt, H. R., Peters, J. C. (2012). Energy balance and obesity. *Circulation, 126*(1), 126-132. Doi: 10.1161/CIRCULATIONAHA.111.087213

Hirst, K., Baranowski, T., Lynn, D., Foster, G. D., Kaufman, F., Kennel, P….Yin, Z. (2009). HEALTHY study rationale, design and methods: moderating risk of type 2 diabetes in multi-ethnic middle school students. *International Journal of Obesity, 33*(S4), S4-S20. Doi: 10.1038/ijo.2009.112

Hoelscher, D. M., Kirk, S., Ritchie, L., Cunningham-Sabo, L. (2013). Position of the academy of nutrition and dietetics: Interventions for the prevention and treatment of pediatric overweight and obesity. *Journal of the Academy of Nutrition and Dietetics, 113*(10), 1375-1394. Doi: 10.1016/j.jand.2013.08.004

Hortz, B., & Petosa, R. (2006). Impact of the "Planning to be Active" leisure time physical exercise program on rural high school students. *Journal of Adolescent Health, 39*, 530-535. Doi: 10.1016/j.jadohealth.2006.03.015

Hursh, D. (2007). Exacerbating inequality: The failed promise of the No Child Left Behind Act. *Race, Ethnicity, and Education, 10*(3), 295-308.

Johnston, L. D., Delva, J., & O'Malley, P. M. (2007). Sports participation and physical education in American secondary schools: Current levels and racial/ethnic and socioeconomic disparities. *American Journal of Preventative Medicine, 33*(S4), S195-S208.

Jonas, J., James, G., Summers, S. (2003). *Planning a coordinated school health program*. Woodland Hills, CA: Glencoe/McGraw-Hill.

Jones, R. A., Lubans, D. R., Morgan, P. J., Okely, A. D., Parletta, N., Wolfenden, L…Waters, E. (2013). School-based obesity prevention interventions: Practicalities and considerations. *Obesity Research & Clinical Practice,* Doi: 10.1016/j.orcp.2013.10.004

Kann, L., Kinchen, S., Shanklin, S. L., Flint, K. H., Hawkins, J., Harris, W. A…Zaza, S. (2014). Youth risk behavior surveillance – United States, 2013. *MMWR Surveill Summ, 63*(4), 1-168.

Karp, G. G., & Woods, M. L. (2003). Wellness nutrifit online learning n physical education for high school students. *The Journal of Interactive Online Learning, 2*(2), 1-19.

Kattlemann, K. K., Bredbenner, C. B., White, A. A., Greene, G. W., HOerr, S. L., Kidd, T…Morrell, J. S. (2014). The effects of young adults eating and active for health (YEAH): A theory-based web-delivered intervention. *Journal of Nutrition Education and Behavior, 46*(6), S28-S41.

Keating, X. D., Subramaniam, P. R., Shangguan, R., & Chen, L. (2013). Physical education program changes from 2006 to 2010. *Journal of Teaching in Physical Education, 32*, 205-213. Doi:

Kimm, S. Y. S., Glynn, N. W., McMahon,, R. P., Voorhees, C. C., Striegel-Moore, R. H., & Daniels, S. R. (2006). Self-perceived barriers to activity participation among sedentary adolescent girls. *Medicine & Science in Sports & Exercise, 38*(3), 534-539. Doi: 10.1249/01.mss.0000189316.71784.dc

Kong, A. S., Farnsworth, S., Canaca, J. A., Harris, A., Palley, G., & Sussman, A. L. (2012). An adaptive community-based participatory approach to formative assessment with high schools for obesity intervention. *Journal of School Health, 82*(3), 147-154. Doi:

Kubik, M. Y., Lytle, L., & Fulkerson, J. A. (2005). Fruits, vegetables, and football: Findings from focus groups with alternative high school students regarding eating and physical activity. *Journal of Adolescent Health, 36*(6), 494- 500. Doi: 10.1016.j.jadohealth.2004.05.010

Kubik, M. Y., Lytle, L., & Story, M. (2005). Soft drinks, candy, and fast food: What parents and teachers think about the middle school food environment. *Journal of the American Dietetic Association, 105*(2), 233-239. Doi: 10.1016/j.jada.2004.11.007

Kumanyika, S. K., Story, M., Beech, B. M., Sherwood, N. E., Baranowski, J. C., Powell, T. M…Owens, A. S. (2003). Collaborative planning of formative assessment and cultural appropriateness in the Girls Health Enrichment Multi-site Studies (GEMS): A retrospection. *Ethnicity & Disease, 13,* S1-S15.

Kropski, J. A., Keckley, P. H., & Jensen, G. L. (2008). School-based obesity prevention programs: An evidence-based review. *Obesity, 15*(5), 1009-1018. Doi: 10.1038/oby.2008.29

Kwan, M. Y., Cairney, J., Faulkner, G. E., & Pullenayegum, E. E. (2012). Physical activity and other health-risk behaviors during the transition into early adulthood: A longitudinal cohort study. *American Journal of Preventive Medicine, 42*(1), 14-20.

Larson, N. I., Neumark-Sztainer, D. R., Harnack, L. J., Wall, M. M., Story, M. T., & Eisenberg, M. E. (2008). Fruit and vegetable intake correlates during the transition to young adulthood. *American Journal of Preventative Medicine, 35*(1), 33-37. Doi: 10.1016/j.amepre.2008.03.019

Larson, N. I., Neumark-Sztainer, D., Story, M., & Burgess-Champoux, T. (2010). Whole-grain intake correlates among adolescents and young adults: Findings from project EAT. *Journal of the American Dietetic Association, 110*(2), 230-237. Doi: 10.1016/j.jada.2009.10.034

Larson, N. I., Neumark-Szatiner, D., Hannan, P. J., & Story, M. (2007). Trends in adolescent fruit and vegetable consumption, 1999-2004: Project eat. *American Journal of Preventive Medicine, 32*(2), 147-150. Doi: 10.1016.j.amepre.2006.10.011

Lederer, A. M., King, M. H., Sovinski, D., & Kim, N. (2015). The impact of family rules on children's eating habits, sedentary behaviors, and weight status. *Childhood Obesity,* 11(4), 1-9

Leifer, G., & Hartson, H. (2004). *Growth and development across the lifespan: A health promotion focus*. St. Louis, Missouri: Elsevier.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, California: Sage.

Lloyd-Richardson, E. E., Jelalian, E., Sato, A. F., Hart, C. N., Mehlenbeck, R., & Wing, R. R. (2012). Two-year follow-up of an adolescent behavioral weight control intervention. *Pediatrics, 130,* e281-e288. Doi: 10.1542/peds.2011-3283

Loth, K. A., Mond, J., Wall, M., & Neumark-Sztainer, D. (2010). Weight status and emotional well-being: Longitudinal findings from project EAT. *Journal of Pediatric Psychology, 36*(2), 216-225. Doi: 10.1093/jpepsy/jsq026

Lowry, R., Lee, S. M., Fulton, J. E., Demissie, Z., & Kann, L. (2013). Obesity and other correlates of physical activity and sedentary behaviors among US high school students. *Journal of Obesity*, Doi: 10.1155/2013/276318

Lubans, D. R., Morgan, P. J., Okely, A. D., Dewar, D., Collins, C. E., Batterham, M….Plotnikoff, R. C. (2012). Preventing obesity among adolescent girls. *Archives of Pediatric and Adolescent Medicine, 166*(9), 821-827. Doi: 10.1001/archpediatrics.2012.41

Mackintosh, K. A., Knowles, Z. R., Ridgers, N. D., & Fairclough, S. J. (2011). Using formative research to develop CHANGE!: A curriculum-based physical activity promoting intervention. *BMC Public Health, 11*, 831-842.

Masse, L. C., McKay, H., Valente, M., Brant, R., & Naylor, P. (2012). Physical activity implementation in schools: A 4-year follow up. *American Journal of Preventive Medicine, 43*(4), 369-377. Doi: 10.1016/j.amepre.2012.06.010

Martin, J. J., McCaughtry, N., Flory, S., Murphy, A., & Wisdom, K. (2011). Using social cognitive theory to predict physical activity and fitness in underserved middle school children. *Research Quarterly for Exercise and Sport, 82*(2), 247-255. Doi: 10.1080/02701367.2011.10599752

Mauriello, L. M., Ciavatta, M. M. H., Paiva, A. L., Sherman, K. J., Castle, P. H., Johnson, J. L., & Prochaska, J. M. (2010). Results of a multi-media multiple behavior obesity prevention

program for adolescents. *Preventive Medicine, 51*(6), 451-456. Doi: 10.1016/j.ypmed.2010.08.004

McCarthy, S. J. (2008). The impact of no child left behind on teachers' writing instruction. *Written Communication, 25*(4), 462-505.

McKenzie, T. L., Prochaska, J. J., SAllis, J. F., & Lamaster, K. J. (2004). Coeducational and single-sex physical education in middle schools: Impact on physical activity. *Research Quarterly for Exercise and Sport, 75*(4), 446-449.

Maxwell, J A. (2005). *Qualitative research design: An interactive approach* (2nd ed.). Thousand Oaks, CA: Sage.

McAlister, A. L., Perry, C. L., & Parcel, G. S. (2008). How individuals, environments, and health behaviors interact: Social cognitive theory. In K. Glanz, B. K. Rimer, & K> Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (pp.169-188). San Francisco, CA: Jossey-Bass.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: A methods sourcebook* (2nd ed). Thousand Oaks, CA: Sage.

Mohnsen, B. (2012). Implementing online physical education. *Journal of Physical Education, 83*(2), 42-47.

Murray, N. G., Low, B. J., Hollis, C., Cross, A. W., & Davis, S. M. (2007). Coordinated school health programs and academic achievement: A systematic review of the literature. *Journal of School Health, 77*(9), 589-600.

National Association for Sport and Physical Education and American Heart Association. (2012). *2012 shape of the nation report: Status of physical education in the USA.* Reston, VA: American Alliance for Health, Physical education, Recreation, and Dance.

Nelson, M. C., Neumark-Stzainer, D., Hannan, P. J., Sirard, J. R., & Story, M. (2006). Longitudinal and secular trends in physical activity and sedentary behavior during adolescence. *Pediatrics, 118*(6), e1627-e1634. Doi: 10.542/peds.2006-0926.

Nelson, M. C., Neumark-Sztainer, D., Hannan, P. J., & Story, M. (2009). Five-year longitudinal and secular shifts in adolescent beverage intake: Findings from project EAT (Eating Among Teens)-II. *Journal of the American Dietetic Association, 109*(2), 308-312. Doi: 10.1016/j.jada.2008.10.043

Neumark-Sztainer, D., Story, M., Hannan, P. J., & Rex, J. (2003). New Moves: A school-based obesity prevention program for adolescent girls. *Preventive Medicine, 37*(1), 41-51. Doi: 10.1016/S0091-7435(03)00057-4

O'Connor, M. K., Netting, F. E., & Thomas, M. L. (2008). Grounded theory: Managing the challenge for those facing institutional review board oversight. *Qualitative Inquiry, 14*, 28-45. Doi: 10.1177/1077800407308907

Ogden, C. L., Carroll, M. D., Curtin, L. R., McDowell, M. A., Tabak, C. J., & Flegal, K. M. (2006). Prevalence of overweight and obesity in the United States, 1999-2004. *Journal of the American Medical Association, 295*(13), 1549-1555.

Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2012). Prevalence of obesity and trends in body mass index among US children and adolescents, 1999-2010. *Journal of the American Medical Association, 307*(5), 483-490. Doi:10.1001/jama.2012.40

Ogden, C. L., & Flegal, K. M. (2010). Changes in terminology for childhood overweight and obesity. *National Health Statistics Reports, 25*, 1-8.

Ogden, C. L., Flegal, K. M., Carroll, M. D., & Johnson, C. L. (2002). Prevalence and trends in overweight among US children and adolescents, 1999-2000. *Journal of the American Medical Association, 288*(14), 1728-1732.

O'Malley, P. M., Johnston, L. D., Delva, J., Bachman, J. G., & Schulenberg, J. E. (2007). Variation in obesity among American secondary school students by school and school characteristics. *Amerian Jouranl of Preventive Medicine, 33*(S4),S187-S194.

Pate, R. R., Ward, D. S., Saunders, R. P., Felton, G., Dishman, R. K., & Dowda, M. (2005). Promotion of physical activity among high-school girls: A randomized controlled trial. *American Journal of Public Health, 95*(9), 1582-1587. Doi: 10.2105/AJPH.2004.045807

Pate, R. R., Saunders, R., Disman, R. K., Addy, C., Dowda, M., & Ward, D. S. (2007). Long-term effects of a physical activity intervention in high school girls. *American Journal of Preventive Medicine, 33*(4), 276-280. Doi: 10.1016/j.amepre.2007.06.005

Patton, M. Q. (1990). *Qualitative evaluation and research methods*. Newbury Park, CA: Sage.

Pearlman, D. N., Dowling, E., Bayuk, C., Cullinen, K., & Thacher, A. K. (2005). From concept to practice: Using the school health index to create healthy school environments in Rhode Island Middle Schools. *Preventing Chronic Disease, 2*(5).

Peters, L. W. H., Kok, G., Ten Dam, G. T. M., Buijs, G. J. & Paulussen, T. G. W. M. (2009). Effective elements of school health promotion across behavioral domains: A systematic review of reviews. *BMC Public Health, 9*, 182-194.

Poddar., K. H., Hosig, K. W., Anderson, E. S., Nickols-Richardson, S. M., & Duncan, S. E. (2010). Web-based nutrition education intervention improves self-efficacy and self-regulation related to increased dairy intake in college students. *Journal of the American Dietetic Association, 110*(11), 1723-1727. Doi: 10.1016.j.jada.2010.08.008

Potvin, L., Cargo, M., McComber, A. M., Delormier, T., & Macaulay, A. C. (2003). Implementing participatory intervention and research in communities: Lessons from the Kahnawake schools diabetes prevention project in Canada. *Social Science & Medicine, 56*, 1295-1305.

Power, T. G., Bindler, R. C., Goetz, S., & Daratha, K. B. (2010). Obesity prevention in early adolescence: Student, parent, and teacher views. *Journal of School Health, 80*(1), 13-79.

Rhodes, J. E., Camic, P. M., Milburn, M., & Lowe, S. R. (2009). Improving middle school climate through teacher-centered change. *Journal of Community Psychology, 37*(6), 711-724. Doi: 10.1002/jcop.20326

Rohrbach, L. A., Dent, C. W., Skara, S., Sun, P., & Sussman, S. (2007). Fidelity of implementation in Project Towards No Drug Abuse (tnd): A comparison of classroom teachers and program specialists. *Preventive Science, 8*, 125-132. Doi: 10.1007/s11121-006-0056-z

Rosario, R., Araujo, A., Oliveira, B., Padrao, P., Lopes, O., Teixeira, V…Moreira, P. (2013). Impact of an intervention through teachers to prevent consumption of low nutrition, energy-dense foods and beverages: A randomized trial. *Preventive Medicine, 57*, 20-25. Doi: 10.1016/j.ypmed.2013.02.027

Roseman, M. G., Riddell, M., C., & Haynes, J. N. (2011). A content analysis of kindergarten-12th grade school-based nutrition interventions: Taking advantage of past learning. *Journal of Nutrition Education and Behavior*, *43*(1), 2-18.

Rubin, H. J., & Rubin, I. S. (2012). *Qualitative interviewing: The act of hearing data*. Thousand Oaks, CA: Sage.

Saldana, J. (2013). *The coding manual for qualitative researchers*. Los Angeles, CA: Sage.

Sallis, J. F., Owen, N., & Fisher, E. B. (2008). Ecological models of health behavior. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (pp. 465-485). San Francisco, CA: Jossey-Bass.

Sallis, J. F., McKenzie, T. L., Beets, M. W., Beighle, A., Erwin, H., & Lee, S. (2012). Physical education's role in public health: Steps forward and backward over 20 years and hope for the future. *Research Quarterly for Exercise and Sport, 83*(2), 125-135.

Sanchez, A., Norman, G., J., Sallis, J. F., Calfas, K. J., Cella, J., & Patrick, K. (2007). Patterns and correlates of physical activity and nutrition behaviors in adolescents. *American Journal of Preventative Medicine, 32*(2), 124-130. Doi: 10.1016/j.amepre.2006.10.012

Schmitz, K. H., Lytle, L. L., Phillips, G. A., Murrary, D. M., Brinbaum, A. S., & Kubik, M. Y. (2002). Psychosocial correlates of physical activity and sedentary leisure habits in young adolescents: The teens eating for energy and nutrition at school study. *Preventive Medicine, 34*(2), 266-278.

Schwartz, M. B., Henderson, K. E., Read, M., Danna, N., & Ickovics, J. R. (2015). New school meal regulations increase fruit consumption and do not increase total plate waste. *Childhood Obesity, 11*(3), 242-247.

Sharma, M. (2006). School-based interventions for childhood and adolescent obesity. *Obesity Reviews, 7,* 261-269.

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information, 22,* 63-75.

Shepherd, L. M., Neumark-Sztainer, D., Beyer, K., & Story, M. (2006). Should we discuss weight and calories in adolescent obesity prevention and weight-management programs?

Perspectives of adolescent girls. *Journal of the American Dietetic Association, 106*(9), 1454-1458. Doi: 10.1016/j.jada.2006.06.012

Shilts, M. K., Lamp, C., Horowitz, M., & Townsend, M. S. (2009). Pilot study: EatFit impacts sixth graders' academic performance on achievement of mathematics and English education standards. *Journal of Nutrition Education and Behavior, 41*(2), 127-131. Doi: 10.1016.j.jneb.2008.05.007

Slater, S. J., Nicholson, L., Chriqui, J., Turner, L., & Chaloupka, F. (2012). The impact of state laws and district policies on physical education and recess practices in a nationally representative sample of US public elementary schools. *Archives of Pediatric and Adolescent Medicine, 166*(4), 311-316.

Slusser, W. M., Cumberland, W. G., Browdy, B. L., Lange, L., & Neumann, C. (2007). A school salad bar increases frequency of fruit and vegetable consumption among children living in low-income households. *Public Health Nutrition, 10*(12), 1490-1496.

Somerville, L. H., Jones, R. M., & Casey, F. J. (2010). A time of change: Behavioral and neural correlates of adolescent sensitivity to appetitive and aversive environmental cures. *Brain and Cognition, 72*, 124-133.

Springer, A. E., Kelder, S. H., Byrd-Williams, C. E., Pasch, K. E., Nalini, R., Delk, J. E., & Hoelscher, D. M. (2013). Promoting energy-balance behaviors among ethnically diverse adolescents: Overview and baseline findings of the central Texas CATCH middle school project. *Health Education & Behavior, 40*(5), 559-570.

State Board of Education. (2008). *Physical education standards of learning for "the state".*

State Department of Education. (2015). Fall membership for the state. [Data file and code book].

Story, M., Nanney, M. S., & Schwartz, M. B. (2009). Schools and obesity prevention: Creating school environments and policies to promote healthy eating and physical activity. *The Milbank Quarterly, 87*(1), 71-100.

Story, M. (1999). School-based approaches for preventing and treating obesity. *International Journal of Obesity, 23*, S43-S51. Doi: 10.1038/sj/ijo/0800859

Story, M., Neumark-Sztainer, D., & French, S. (2002). Individual and environmental influences on adolescent eating behaviors. *Journal of the American Dietetic Association, S102*(3), S40-S51.

Story, M., Lytle, L. A., Birnbaum, A. S., & Perry, C. L. (2002). Peer-led, school-based nutrition education for young adolescents: Feasibility and process evaluation of the teens study. *Journal of School Health, 72*(3), 121-127.

Suminski, R. R., & Petosa, R. (2006). Web-assisted instruction for changing social cognitive variables related to physical activity. *Journal of American College Health, 54*(4), 219-226. Doi: 10.3200/JACH.54.4.219-226

Sussman, A. L., Montoya, C., Werder, O., Davis, S., Wallerstein, N., & Kong, A. S. (2013). An adaptive CBPR approach to create weight management materials for a school-based health center intervention. *Journal of Obesity,* 1-9. Doi: 10.1155/2013/978482

Sweat, V., Bruzzese, J., Albert, S., Pinero, D. J., Fierman, A., & Convit, A. (2011). The Banishing Obesity and Diabetes in Youth (BODY) Project: Description and feasibility of a program to halt obesity-associated disease among urban high school students. *Journal of Community Health, 37*(2), 365-371. Doi: 10.1007/s10900-011-9453-8

Thompson, C. A., & Ravia, J. (2011). A systematic review of behavioral interventions to promote intake of fruit and vegetables. *Journal of the American Dietetic Association, 111*(10), 1523-1535. Doi: 10.1016/j.jada.2011.07.013

Tremblay, M. S., Colley, R. C., Saunders, T. J., Healy, G. N, & Owen, N. (2010). Physiological and health implications of a sedentary lifestyle. *Applied Physiology, Nutrition, and Metabolism, 35*, 725-740.

Turner, L., Slater, S. J., & Caloupka, F. J. (2013). Support for school-based obesity prevention efforts: Attitudes among administrators at nationally representative samples of US elementary schools. *Childhood Obesity, 9*(4), 311-318.

US Department of Health & Human Services. (2010). *The surgeon general's vision for a health and fit nation*. (ID: NBK44656). Retrieved from: http://www.ncbi.nlm.nih.gov/books/NBK44656/#background.s4

US Department of Health and Human Services (2014). *Healthy People 2020: Physical activity*. Retrieved from: http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=33

Young, D. R., Johnson, C. C., Steckler, A., Gittelsohn, J., Saunders, R. P., Saksvig, B. I…Mckenzie, T. L. (2006). Data to action: Using formative research to develop intervention programs to increase physical activity in adolescent girls. *Health Education Behavior, 33*(1), 97-111. Doi: 10.1177/1090198105282444

Wadsworth, D. D., & Hallam, J. S. (2010). Effect of a web site intervention on physical activity of college females. *American Journal of Health Behavior, 34*(1), 60-69.

Walia, S., & Leipert, B. (2012). Perceived facilitators and barriers to physical activity for rural youth: An exploratory study using photovoice. *Rural and Remote Health,*

Waters, E., de Silva-Sanigorski, A. Burford, B. J., Brown, T., Campbell, K. J., Gao, Y…Summerbell, C. D. (2011). Interventions for preventing obesity in children. *Cochrane Database of Systematic Reviews, 12*, 1-224.

Whittemore, R., Jeon, S., & Grey, M. (2013). An internet obesity prevention program for adolescents. *Journal of Adolescent Health, 52*(4), 439-449.Doi: 10.1016/j/jadohealth.2012.07.014

Wootan, M. G. (2012). The healthy, hunger-free kids act: One year later. *NASN, 27*(1), 18-19.

Valli, L. & Buese, D. (2007). The changing roles of teachers in an era of high-stakes accountability. *American Educational Research Journal, 44*(3), 519-558.

Zenzen, W., & Kridli, S. (2009). Integrative review of school-based childhood obesity prevention programs. *Journal of Pediatric Health Care, 23*(4), 242-258. Doi: 10.1016/j.pedhc.2008.04.008

Appendix A

Teacher Email

Dear Teachers:

My name is Sarah Conklin. I'm a Ph.D. Candidate at Virginia Commonwealth University. You are receiving this email because you are a high school health and physical education teacher employed in Chesterfield County, and I would love to talk with you.

I am conducting interviews to explore high school health and physical education teachers' perceptions about the current school environment with regards to student physical activity and nutrition, and strategies to improve student physical activity and nutrition behaviors. As a health and PE teacher, you can provide valuable insight into the ways we can make student health a priority.

You are being asked to participate in an interview focusing on student physical activity and nutrition. Your responses will remain anonymous. A chance to win one of four $25 dollar gift certificates is offered for participation in this study. If you are willing to participate, please follow this link: _____ to volunteer your participation. I will contact you through your preferred contact method to set up a time and location for the interview.

If you have any questions or concerns about the nature of this study, feel free to contact either myself, Sarah Conklin, or my advisor, Dr. Sharon Zumbrunn, at Virginia Commonwealth University School of Education Foundations department at (540) 420-9858. Thank you for your time and cooperation!

Sincerely,

Sarah Conklin
Ph.D. Candidate
Educational Psychology
Virginia Commonwealth University
Foundations of Education
1015 W. Main Street
Richmond, Virginia 23284
conklins@vcu.edu
(540) 420-9858

Appendix B

Administrator Email

Dear Administrators:

My name is Sarah Conklin and I'm a Ph.D. Candidate at Virginia Commonwealth University. I am conducting interviews to understand high school administrators' and teachers' views about the current high school health environment with regards to student physical activity, nutrition, and sedentary behaviors. Additionally, I am exploring the feasibility of strategies recommended by Chesterfield High School Health and PE teachers to improve these health behaviors. As an administrator, you can provide valuable insight into the ways we can make student health a priority.

This project involves participation in a brief interview, either by phone or in person, lasting approximately 30 minutes, about student physical activity, nutrition, and sedentary behaviors. What you say during the interview will remain anonymous and confidential. If you are willing to participate, please follow this link:https://www.surveymonkey.com/s/CPSZFH3 to volunteer. I will contact you through your preferred contact method to set up a time and location at your convenience for the interview. You will receive an individual token of appreciation for your time.

If you have any questions or concerns about this study, feel free to contact either myself, Sarah Conklin, or my advisor, Dr. Sharon Zumbrunn, at Virginia Commonwealth University School of Education Foundations department at (804) 827-2625. Thank you for your time and cooperation!

Sincerely,

Sarah Conklin
Ph.D. Candidate
Educational Psychology
Virginia Commonwealth University
Foundations of Education
1015 W. Main Street
Richmond, Virginia 23284

Appendix C

Informed Consent

Purpose: The purpose of this study is to explore the high school environment with regards to student nutrition and physical activity. You are asked to be in this study because you are a high school health and physical education teacher or administrator in a Chesterfield County High School.

Description of your involvement: If you agree to be part of this study, you will be asked to participate in a 30-45 minute interview about 1) the current high school health environment, specifically regarding student nutrition and physical activity, and 2) recommendations for strategies to improve student physical activity and nutrition for high school students.

Risks and discomforts: There are no known risks related with your participation in this study.

Benefits to you and others: Your participation can provide local school districts, universities, parents, and students with recommendations to promote student physical activity and nutrition, which can be used to improve student health.

Costs and compensation: There are no costs for participating in this study other than the time you will spend during the interview. A chance to win one of four $25 dollar gift certificates is offered for participation in this study.

Alternatives: The alternative to participating in this study is to not participate in this study.

Confidentiality: All identifying information (e.g., names) will be replaced with a numeric code specific to this study. Only the lead researcher will have access to identification information after codes are assigned. Data files and records will be stored in the researcher's secure filing cabinet at VCU. Electronic data files will be secured using password protection and encryption. The information may be published in scientific journals or presented at professional meeting, but the data will not identify any individual.

Voluntary participation and withdrawal: Your participation in this study is your choice. You are free to decide not to participate at any time without penalty. You may also choose not to answer particular questions that are asked in the study. Your decision to participate or not to participate will not affect your relationship with your school, district, or Virginia Commonwealth University.

Questions: You may have questions about your participation in this study. If you have any questions, complaints or concerns about this research, contact Sarah Conklin at 540-420-9858 or conklins@vcu.edu. If you have any questions about your rights as a participant in this study, you may contact the VCU Office of Research at 804-821-7157. You may also contact the VCU Office of Research for general questions, concerns, or complaints about this research. Please call this number if you cannot reach the research team or wish to talk to someone else. Additional

information about participation in research studies can be found at http://www.research.vcu.edu/irb/volunteers.htm

Consent: By signing the line below, you are agreeing to participate in this study. You are also indicating that you have read and understood the consent form.

Signature:_____ Date:_____

Appendix D

Interview Protocol

Script: The first set of questions is about your perceptions of the current school environment with regard to physical activity nutrition behaviors and promotion.

Do you think student physical activity is a high priority at your school? Why or why not?
- Students?
- Administration?
- Fellow teachers?
- Families?

Do you think nutrition is a high priority at your school? Why or why not?
- Students?
- Administration?
- Fellow teachers?
- Families?

What are some current policies or practices that prevent or inhibit healthy eating and nutrition at the high school level?
- Fundraising done through food sales?

What does your school do well to promote nutrition or healthy eating?

- Are there any policies or practices that you believe encourage healthy eating and nutrition?

Has the Healthy Hunger-Free Kids Act influenced your curriculum?
- If so, how?

What are some current policies or practices at your school that prevent physical activity participation?

What does your school do well to promote physical activity?

Are there any practices or policies at your school that you feel influence student sedentary time?

How do you feel about the state's high school graduation PE requirement?
- How would you change the requirement?
- Single-sex versus coeducational?
- Online PE?

What are some ways the current structure could be improved to promote student health behaviors?

Do you know if your school or school district currently has a school health council (school health advisory council) or a school health coordinator?

Is there anything that you want to add that I have missed regarding current school policies or activities?

Script: Recently there has been a growing interest in implementing school-based obesity prevention programs that promote physical activity participation and healthy eating throughout the school environment. One way to increase the likelihood of program success is to ask for stakeholders' opinions before programs are implemented. The next questions are about your opinions on what strategies may be successful in high schools.

What types of school-based activities do you think could be successful at the high school level to promote physical activity?

- course offerings?
- peer-led programs?
- intramural sports?
- internet-based programs?
- fitness classes?
- open gym times?

What types of school-based activities do you think could be successful at the high school level to promote nutrition?

- course offerings?
- peer-led programs?
- internet based/led programs?

One idea would be to use the internet or social media to encourage physical activity participant and healthy changes. What are your thoughts about this?

What types of school-based activities do you think could be successful at reducing student sedentary time?

- Activity breaks?

How do you feel gender would influence the physical activity and nutrition activities?

For example, do you feel that separate activities would need to be implemented for females versus males?

What types of advertisements and/or communication messages do you think would encourage student participation in school-based or extracurricular activities that promote student health behaviors?

- Focus on nutrition?
- Focus on physical activity?
- Focus on sedentary behaviors?
- Focus on healthy lifestyles?

How would providing transportation for afterschool activities influence participation?

What are some current barriers to implementing a prevention program at the high school level?

Do you feel that there is adequate support from the administration, students, staff, and community to implement a prevention program? Why or why not? (resources)

What types of support from administration, school staff, students, and the community do you think would be necessary to implement a high school-based physical activity and nutrition program?

Is there anything you would like to add?

Appendix E

Strategies Recommended by Teachers

In interviews over the past two months, various CCPS physical education teachers discussed the current health environment in high schools, and then described different strategies they think can be successfully implemented in addition to the physical education courses. This list is to help us discuss the feasibility of these strategies and possible alternatives.

Intramural program (possibly playing against other CCPS high schools)

Add healthier food options to the cafeteria menu (e.g., pasta bar, salad bar, or potato bar).

Provide transportation for after school activities.

Open gym times during the day and/or after school. For example, allowing students to come during lunch, study hall if they have no work, and after school.

Using Chromebooks/apps to provide health resources to students.

Peer-led fitness club

Activity breaks in core classes

Field trips during PE or advanced PE classes to expose students to a variety of physical activities.

Fitness classes after school (e.g., yoga, kick boxing, Zumba) led by fitness instructors, teachers, or students.

Single-sex (all male or all female) Advanced PE courses.

Appendix F

Code List

active commuting	homework	School – starts at school
advanced pe	instruction	school - resource
advanced pe - athletes	Instruction - assessment	School - too many requirements
advanced pe - field trips	instruction - nutrition	sedentary
advanced pe - gender	Instruction - physical activity	Sedentary – facilitates
apps	instructional specialist	SES
athletes	lifetime sports	social aspect pe
athletics	lunch	SOLs
back to the basics	lunch - a la carte	start small
barrier	Lunch – our school lunches are terrible	strategy
Barrier – dress out	Marketing – advertising - recruitment	Strategy - activity breaks
barrier - cost	marketing focus-emphasis	Strategy – Half Off
barrier - facilities	Marketing - poster	Strategy - fitness classes
Barrier - job or family responsibilities	Medford league	Strategy -saladbar
Barrier - liability	mind body connection	Strategy - intramurals
barrier - logistics or hoops	modeling	Strategy - internet based effort
barrier - nutrition	Negative connotation	Strategy - offer incentive
Barrier - scheduling	nurse	Strategy - open_gym
barrier – pa	nutrition	Strategy - peer_led
barrier - PE grading	Physical Education - PE	student
barrier - time	PE - an elective	Student - accountability
buy in	PE - dumping ground	student - behaviors
cater to student interests	PE - department responsible	Student – PA only at school
cfit	PE – female engagement	Student – only meals at school
change pe	PE - misconception	student driven
changing times	PE - not a priority	Student – decrease interest in health – related courses and activities
choices	PE - schedule	student engagement / motivation
chromebook	peer support	student interest
class size	policy	Student attitude
clubs	Policy - 8th grade PE	sugar sweetened beverages
coach	Policy – 90 minute classes	summer school pe

community events
community resources
comp time
Compensation
Competition
constant activity / movement
Context
Convenience
course offerings
Course offerings
cooking_class
Course offerings – fit for life
education/educate
equipment
facilitator
facilitator - healthier options
facilitator nutrition
facilities
facilitator pa
family
family - engagement
family - support
Family – parents
field trips
Funding
funded program
funding - money - budget
Funding - grants
gender separate activities
Graduate early
healthy lifestyle/ health consequences
hhfka
Hhfka - fundraising through food
policy - change
Policy - onlinepe
Policy – onlinpe accountability
Policy - gender
Policy –requirement
Priority
Priority – multiple priorities
priority - teachers
priority - administration
Priority – student
Priority - family
priority - yes
priority - no
Priority - mixed
Priority - academic priorities
trump health and pe
priority pe teachers yes
profit/revenue
recess
relevant _interesting
resources
Sch health council
school
School – district effort
School – diverse population
School – early start time
School - effort
School - environment
School - equality across the district
School – is this a school responsibility
School – no school wide efforts
supervision/sponsor
support
Supportive administration
Support – needs to come from administration
Support – come from the top
target students early
teacher
Teacher – collaboration
teacher engagement
teacher interest
Teacher - pressures on teachers
Teacher – starts from the teachers
Teacher – no collaboration
technology
thinking outside the box
Time
Time – before school
Time – during school
Time – after school
transportation
transportation - activity bus
transportation - budget
variety of activities
vending machine
walking club
wellness committee
wellness policy
word of mouth
yoga

Appendix G

Code Book

1. Active commuting – anytime a participant mentions walking or balking as means of transportation
2. Advanced pe – a larger family that encompasses ideas related to the elective course, advanced PE
3. Advanced pe athletes – views about athlete participation in advanced PE courses
4. Advanced pe – field trips – responses that relate to current or prospective field trips in advanced PE
5. Advanced pe – gender – responses that relate to current or prospective policies about sex separate vs. single sex advanced PE courses
6. Apps – suggestions about using apps or technology to promote student health
7. Athletes – views about participation in health and PE by athletes
8. Athletics – responses that illustrate teachers views about the importance of athletics
9. Back to the basics – statements that recommend a revision of practices to align with old school practices
10. Barrier – a larger family that encompasses barriers related to physical activity participation or healthy eating
11. Barrier – facilities – statements that highlight facilities as a barrier to physical activity participation
12. Barrier – cost – statements that suggest cost on students/families as a barrier to physical activity or nutrition
13. Barrier – job or family responsibilities – statements that mention jobs or babysitting as barriers to staying afterschool
14. Barrier – logistics or hoops - responses about liability, concussion management, required paperwork, and added requirements that prevent extracurricular participation
15. Barrier – nutrition – any reported barrier to eating healthy
16. Barrier – scheduling – barriers to student health due to academic course scheduling
17. Barrier – PA – any reported barrier to physical activity participation
18. Barrier – PE grading – reported barriers to physical activity participation or healthy eating due to grading requirements
19. Barrier – time – responses that highlighted time as a barrier to physical activity participation or healthy eating
20. Buy In – participant recommendations that "buy in" is needed for extracurricular activities
21. Cater to student interests – suggestions about improving PE by offering more opportunities that cater to student interests
22. XFIT – statements about the county employee wellness initiative
23. Change PE – suggestions about how the PE section could be improved through large scale changes

24. Changing times - responses about societal changes – such as technology, decrease in kids playing outside
25. Choices – suggestions about providing choices as a strategy to promote physical activity participation
26. Chormebook – responses about the potential use of Chromebooks for health promotion
27. Class size – statements about large PE class sizes, including sometimes having to share the gym
28. Clubs – comparisons of health strategies to current after school clubs
29. Coach – statements regarding the roles of athletic coaches
30. Community events – current or prospective ideas for community events
31. Community resources – current or prospective ideas about how to use community resources such as parks
32. Comp time – opinions about the feasibility of comp time as compensation for sponsors
33. Compensation – any ideas related on how to compensate afterschool sponsors/supervision
34. Constant activity/movement – teachers responses about the importance of constant activity during the PE curriculum
35. Context – responses that highlight feasibility of a suggested strategy depends on the context
36. Convenience – statements about how convenience influences student eating behaviors
37. Course offerings – a larger family that encompasses views about current or prospective course offerings
38. Course offerings – cooking class – opinions on offering a cooking class
39. Course offerings – fit for life – views about the current fit for life courses
40. Education/educate – suggestions that call for education about student health for various groups of stakeholders
41. Equipment – any statements regarding physical education equipment
42. Facilitator – a larger family that encompasses facilitators to physical activity participation or eating healthy
43. Facilitator nutrition – any reported facilitators for eating healthy
44. Facilitator - facilities – responses that suggest facilities (gym, fields) as a facilitator to physical activity
45. Facilitator – healthier options – responses that highlight the healthier offerings are a facilitator to eating healthy
46. Facilitator PA – any reported facilitators for physical activity participation
47. Family – a larger family that encompasses views about the current and prospective roles of family members in promoting student health
48. Family – engagement – statements about the frequency families engage in health-based activities together
49. Family – support – views about current or recommended levels of family support
50. Family – parents – statements that specify parental support as opposed to overarching family support

51. Field trips – current or prospective views about how field trips help promote student health
52. Funding – a larger family that encompasses views about funding
53. Funded program – statements that highlight a funded pre-packaged program would be beneficial
54. Funding –money-budget- opinions about how money and the budget influence health-related activities
55. Funding –grants –statements about writing or receiving grant funding
56. Gender separate activities – suggestions about whether extracurricular activities/strategies should be gender –mixed or gender – separate
57. Graduate early – views about how graduating early influences student health
58. Healthy lifestyle/health consequences – responses that illustrate students are not concerned with a healthy lifestyle and do not think about the health consequences
59. HHFKA – views about the HHFKA
60. HHFKA – Fundraising through food – responses about whether or not schools still do fundraisers through food
61. Homework – responses about how homework influences student sedentary time
62. Instruction – a larger family that encompasses strategies related to instruction and instructional methods
63. Instruction – assessment – how assessment influences student health behaviors
64. Instruction – nutrition – current or prospective instructional strategies that relate to nutrition
65. Instruction – physical activity – current or prospective instructional strategies that relate to physical activity
66. Instructional specialist – statements about the role of the school district instructional specialist
67. Lifetime sports – views about the importance of teaching sports that can be played across the lifetime
68. Lunch – a broader category that includes views about the lunch services
69. Lunch – a la carte – statements about the number of students who eat the "a la carte" offerings
70. Lunch – our school lunches are terrible – responses about the poor quality of student lunches
71. Marketing – advertising – recruitment – a broader category that encompasses suggestions about how to market strategies
72. Marketing – focus/emphasis – responses about the focus of advertisement and recruitment efforts (physical activity, nutrition, healthy lifestyle)
73. M league – statements about a recreational league for special education students
74. Mind body connection – views about the connection between living a healthy lifestyle and academics
75. Modeling – participant views about the importance of modeling on student health behaviors, specifically modeling by school personnel

76. Negative connotation – participant apologizes for sounding negative about current or prospective health-based promotion and strategies
77. Nurse – statements about support from the nurse for student health promotion
78. Nutrition – general views about nutrition
79. Physical education – PE – a larger family that encompasses views about the PE curriculum
80. PE – an elective – times when participants refer to health and PE as an elective
81. PE – dumping ground – statements that suggest students are placed into PE electives even when they do want to be
82. PE – department responsible – responses about the role of the PE department in regards to extracurricular health-based activities
83. PE – female engagement – the level of female participation during PE classes
84. PE – misconception – teachers statements about the misconceptions other educators and the public hold about the PE curriculum
85. PE – not a priority – instances where participants specifically stated PE was not a priority
86. PE – schedule – responses about how the school divides health and PE time such as 2 weeks health then 2 weeks PE
87. Peer support – any statements about the influence of peer support on marketing and participation
88. Policy – a larger family that encompasses participants views on physical activity and nutrition policies
89. Policy – 8th grade PE – opinions regarding 8th grade PE as an elective
90. Policy – 90 minute classes – statements about the duration of academic classes
91. Policy – change – any suggested change to current local, state, or federal policies
92. Policy – onlinePE – responses about the onlinePE course
93. Policy – onlinePE accountability – views about the accountability measures in place for students taking onlinePE
94. Policy – gender – opinions about whether PE classes should be gender separate or gender mixed
95. Policy – varequirement- views about the VA Health and PE graduation requirement, 9th and 10th grade required
96. Priority – a larger family of codes that encompasses all views about whether or not student health is a priority to several groups of people
97. Priority – multiple priorities – statements that suggest health cannot be a priority due to other priorities
98. Priority – teachers – statements regarding the emphasis on student health by teachers
99. Priority – administrator – statements regarding the emphasis on student health by administrators
100. Priority – student – statements regarding the emphasis on student health by students
101. Priority – family – statements regarding the emphasis on student health by parents
102. Priority – Yes – responses that indicate student health is a priority
103. Priority – No – responses that indicate student health is NOT a priority

104. Priority – Mixed – responses that indicate student health is a priority for some of the group, but not all of the group
105. Priority – academic priorities trump health and PE – statements about the academic pressures and priorities in relation to the health and PE curriculum, or student health behaviors
106. Priority – pe teachers – yes – responses that indicating it is definitely a priority to the PE teachers
107. Profit/revenue – responses about the HHFKA has influenced school revenue
108. Recess – any views or opinions about recess at the elementary level
109. Relevant_interesting – participant responses that highlight the need for advertising and activities to be relevant and interesting
110. Resources – any general resources mentioned to promote student health
111. Sch health council – any responses about school health councils or school wellness committees
112. School – a larger family of codes that relate to the role of the school, including limitations and resources, in promoting student health
113. School – district effort – any practice, initiative or strategy occurring across the district
114. School – diverse population – statements about a diverse student body
115. School – early start time –responses about the early start time for high school students
116. School – effort – any practice, initiative or strategy occurring at the school
117. School – environment –statements about how the school environment, such as teacher morale and supervision, influences extracurricular activities
118. School – equality across the district – opinions about the inequalities across the district such as facilities
119. School – is this a school responsibility – views about whether or not student health should even be a school responsibility
120. School – no school-wide efforts – responses that suggest there is nothing positive, or no school-wide events, that occur at a specific school
121. School – starts at school – statements that indicate efforts to promote student health should start at school
122. School – resource – responses that call for more school resources in order to promote student health
123. School – too many requirements – statements outlining the number of requirements for schools and teachers
124. Sedentary – responses related to student sedentary behaviors
125. Sedentary – facilitator – any practice or policy at the school that increases student sedentary time
126. SES – responses that highlight the role socioeconomic status plays in student health behaviors
127. Social aspect PE – views about the importance of the social aspect of physical education
128. SOLs – responses about the standards of learning and how they influence student health
129. Start small – suggestions regarding initial steps to implement health-based activities
130. Strategy – a larger family that encompasses teacher and administrator recommended strategies

131. Strategy – activity breaks – opinions about the feasibility of activity breaks to decrease student sedentary time in the classroom
132. Strategy –half off – opinions about the potential of providing fruits and vegetables through the school for half off
133. Strategy – fitness classes – opinions about the feasibility of fitness classes for students
134. Strategy – saladbar – opinions about the feasibility of implementing salad bars
135. Strategy – intramurals – opinions about the feasibility of intramurals
136. Strategy – internet based effort – opinions about the feasibility of targeting students through the internet or apps
137. Strategy – offer incentive – suggestions about ways to encourage participation through incentives
138. Strategy – open gym – opinions about the feasibility of open gym times as a strategy to increase physical activity
139. Strategy – peer-led– opinions about the feasibility of peer-ledinitiatives
140. Student – a larger family of codes that encompasses views about students' behaviors, motivations, and attitude
141. Student – accountability – statements suggesting student accountability is a problem in health and pe classes, with parents often complaining about students being held accountable
142. Student behaviors – responses about student health behaviors at school such as PA levels
143. Student – PA only at school – statements indicating some students only PA is that which they receive at school
144. Student – only meals at school – statements indicating some students only eat the meals they receive at school
145. Student – student-driven – opinions about the influence of student driven initiatives
146. Student – decrease interest in health – related courses and activities – responses about the decrease numbers in elective health and PE courses such as advanced PE
147. Student – engagement/motivation – statements about the level of student engagement and motivation during health and PE activities
148. Student interest – opinions about the level of student interest in given strategies
149. Student attitude – statements regarding students attitude about the health and PE curriculum
150. Sugar sweetened beverage – responses about the availability of sugar sweetened beverages
151. Summer school pe – statements about the option to take summer school PE
152. Supervision/sponsor – responses highlight the need for a supervisor or sponsor to oversee extracurricular activities
153. Support – a larger family of codes that highlight the support needed for extracurricular activities
154. Supportive administration – responses that suggest administration is already supportive
155. Support – needs to come from administration – responses that call for more administrative support
156. Support – come from the top – statements that call for more support beyond the school level administration

157. Target students early – views about the need to target students early such as elementary school
158. Teacher – a larger family of codes that that encompasses views about teacher behaviors and interest in extracurricular health-based activities
159. Teacher – collaboration – responses that highlight the need for more teacher collaboration
160. Teacher engagement – statements that suggest teacher engagement in extracurricular activities or engagement with students is needed
161. Teacher interest – opinions about the level of teacher interest in given strategies
162. Teacher – pressure on teachers – views about the overwhelming number of requirements on teachers and how it has influenced morale
163. Teacher – starts from the teachers – statements that indicate efforts to promote student health should start from the teachers
164. Teacher – no collaboration – responses about the lack of collaboration between academic and PE teachers
165. Technology – views about how technology influences student interactions and sedentary time
166. Thinking outside the box – responses about the need to think outside of the box to promote student health
167. Time – a larger family that encompasses the various times an extracurricular activity could occur
168. Time – before school – strategies that could occur before school
169. Time – during school – strategies that could occur during school
170. Time – after school – strategies that could occur after school
171. Transportation – opinions about how transportation could influence student participation
172. Transportation – activity bus – responses from one school about the activity bus that runs
173. Transportation – budget – statements regarding how the transportation budget influences the ability to offer transportation j
174. Variety of activities – suggestions about providing a variety of activities to encourage student participation
175. Vending machine – responses about how the vending machine influences student nutrition
176. Walking club – suggestions about a walking club at the high school level
177. Wellness committee – statements about the district's recent wellness committee
178. Wellness policy – any responses about the district's wellness policy
179. Word of mouth – suggestions about promoting extracurricular activities through a word of mouth approach
180. Yoga – recommendations about providing extracurricular yoga, and yoga through the PE curriculum

Appendix H

Vita

Sarah Blaine Conklin was born on November 5, 1986 in Roanoke, Virginia, and is an American citizen. She graduate from Franklin County High School, Franklin County, Virginia in 2005. She received her Bachelor of Arts in Pyschology from James Madison University, Harrisonburg, Virginia in 2009. She received her Master of Science in Educational Psychology from George Mason University, Fairfax, Virginia in 2011.