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The Effects of Student Involvement in Afterschool Activities on Childhood Obesity

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The Effects of Student Involvement in Afterschool Activities on Childhood Obesity

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Childhood obesity has been a significant health issue in the United States since the 1970s. In an effort to combat this issue, children are encouraged to be physically active and maintain a nutritional diet. Previous sociological literature has analyzed the effects of the family and neighborhood environment in an effort to understand the socioeconomic forces influencing obesity. This study extends this literature by analyzing the effects of how children spend their time in structured, semi-structured, and unstructured afterschool activities. Building upon Pierre Bourdieu's theory of practice and concept of cultural capital, I argue that afterschool activities present a particular structured environment in which children apply forms of habitus that has the potential to develop a healthy lifestyle. I find that structured activities, such as art club and dance class reduce students' risk of obesity, while unstructured activities, such as watching television, increase the likelihood of obesity in binary logit models. Nonlinear effects are only present for unstructured afterschool activities. Overall, it is clear that unstructured activities have a much greater effect on the risk of obesity as compared to structured activities. These findings theoretically emphasize the differences between structured and unstructured activities, while stressing the importance of addressing television time to decrease childhood obesity.

Since the 1970s, childhood obesity has been one of the most serious health issues facing the United States. Recently the CDC reported that 17% (12.5 million) of children and adolescents aged two through 19 were classified as obese in 2011-2012 (Ogden, Carrol, Kit, and Flegal, 2014). High rates of childhood obesity have consequences for many aspects of children's everyday lives, in particular, their physical health and experiences in social interactions (Strauss and Pollack, 2003; Campos, Saguy, Ernsberger, Oliver, and Gaesser, 2006).

In response to the severity of this issue, many individuals and groups – academic, political, activist – have mobilized to reduce obesity and improve the quality of life for these obese children. This response emphasizes children's lifestyles, particularly their diet and amount of physical activity. In 2010, First Lady Michelle Obama began the program "Let's Move" that funds and supports healthy eating in schools and physical activity within the community (White House Task Force on Obesity, 2010). Her reasoning behind these efforts is explained by public health literature that analyzes how a child's lifestyle influences obesity. Scholars find that a non-nutritious diet and a lack of physical activity increase the risk of obesity (Ludwig, Peterson and Gortmaker, 2001; Crespo, Smith, Troiano, Bartlett, Macera, and Andersen, 2001). Sociologists have extended this research by analyzing the effects that various social environments, including families, neighborhoods, schools, and corporations have on children's lifestyle. Findings indicate that families and neighborhoods are two of the most important environments because they influence the type of food that children eat daily and dictate the available time and opportunity for physical activities (Popkin, Duffey, and Gordon-Larsen, 2005).

I argue that afterschool activities, ranging from music club to watching television, exist as an additional environment that also affects a student's healthy lifestyle and their chances of being obese. I organize afterschool activities into three types: structured, semi-structured, and

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unstructured. Structured afterschool activities share common characteristics such as an organized group meeting time, involvement of peers, the goal of developing a specific type of skill and individual responsibility, and adult leadership (Mahoney, 2000; Mahoney and Stattin, 2000; Eccles, Barber, Stone and Hunt, 2003; Bennett, Lutz, and Jayarm, 2012). For example, being a member of an art club, a music ensemble, and/or an athletic team are all structured afterschool activities. Conversely, unstructured activities do not have an organized meeting time, a direct purpose of participation, and may not include a mentor or peers. Unstructured activities include spending time with friends, playing in the neighborhood, watching television, and playing video games. Semi-structured activities fall in between structured and unstructured activities with a goal or purpose, an adult mentor, and perhaps students' peers or an organized meeting time. Examples of semi-structured include visiting a museum or library and attending a concert or sporting event.

Previous literature has examined a healthy lifestyle in the form of a child's diet and physicality. In this study, I examine other aspects of a healthy lifestyle, namely a preference for participation in a structured, engaged environment. This idea that afterschool activities, including structured, semi-structured, and unstructured activities, could have an impact on obesity is understudied. Although scholars do demonstrate that activities have multiple academic and behavioral benefits for students who are involved, this literature does not include physical health (Feldman and Matjasko 2005). At the same time, the literature on the effects of unstructured activities considers the effects on obesity, but does not compare these effects to other forms of afterschool activities (Shin 2004).

This study poses two specific research questions:

1. How does involvement in a structured, semi-structured, or unstructured afterschool activity affect students' chances of being obese?

2. What are the effects of various levels of involvement in afterschool activities on student's chances of being obese?

To explore these questions, I begin by reviewing sociological literature that evaluates the effects various environments related to afterschool activities on students' healthy lifestyle. This literature evaluates the effects of the family and neighborhood on student's healthy lifestyle. Extending this literature, I then argue that afterschool activities are another environment that warrants consideration. Theoretically, I apply the framework of practice and the concept of cultural capital developed by Pierre Bourdieu (1977; 1986) to describe how students engage in afterschool activities and how their lifestyle is influenced. With this theoretical framework, I argue that students involved in structured and semi-structured afterschool activities will develop a healthy lifestyle that is indicated by a decrease in their risk of obesity. However, students involved in unstructured activities will not develop a healthy lifestyle. Lastly, this study considers whether the effects of various levels of involvement in structured or semi-structured activities continues to decreased students' risk of obesity or if there is a turning point of diminishing returns or over-involvement. Similar non-linear effects will also be tested for the ability of unstructured activities to increase obesity. My results from a series of binary logit regressions indicate that students involved in structured afterschool activities are less likely to be obese, while involvement in unstructured afterschool activities increases the risk of obesity. Involvement in semi-structured activity is unrelated to students' risk of obesity. When taking into consideration levels of involvement in non-linear equations, the non-linear effects of

unstructured activities is larger than the linear effects of structured activities on students' risk of obesity.

Children's Healthy Lifestyle and Environments Effect

Diet and Physical Activeness

Sociologists build upon public health literature that explains how poor nutrition and a lack of physical activity increases obesity by considering the various environments that dictate children's diet and physical activeness. Public health scholars find that children who frequently consume fast food, less frequently eat fruits and vegetables, and spend extended periods of time indoors watching television are more likely to be obese (Epstein, Paluch, Gordy, and Dorn, 2000; Crespo et al., 2001; Ludwig, Peterson and Gortmaker, 2001; Popkin, Duffey, and Gordon-Larsen, 2005). Sociologists find that children's healthy lifestyle is influenced most frequently by their parents and neighborhood (Wansink, 2004; Popkin, Duffey, and Gordon-Larsen, 2005).

Parents are often blamed for their children's obesity. They are usually the deciding factor that dictates what their children eat and how physically active they are. A child's diet is directly determined by the parents' income and understanding of what is healthy (Gable and Lutz, 2000; Popkin, Duffey, and Gordon-Larsen, 2005; French, Story, and Jeffery, 2001). At the same time, parents' restrictions or allowances on time spent watching television can explain why children may be less physically active (Gable and Lutz, 2000; French, Story, and Jeffery, 2001). In many ways, parents have a direct influence on their children's physical health. However, there are other influential environments.

Scholars emphasize the neighborhood effects on children's healthy lifestyle and obesity. The location of a neighborhood, its median income and whether it is rural, urban, or suburban influences a family's access to food (French, Story, and Jeffery, 2001; Morland, Wing, Roux,

and Poole, 2002; Popkin, Duffey, and Gordon-Larsen, 2005; Cecil-Karb and Gorgan-Kaylor, 2009). Many low-income families in urban areas struggle to purchase nutritious foods because grocery stores are not located in their area, thereby directly influencing their children's diet (Morland, et al., 2002; Popkin, Duffey, and Gordon-Larsen, 2005). In addition, the level of safety and availability of recreational facilities in a neighborhood directly influences the likelihood of parents allowing their children to play outside (French, Story, and Jeffery, 2001; Popkin, Duffey, and Gordon-Larsen, et al., 2005; Cecil-Karb and Gorgan-Kaylor, 2009). Children with better access to areas where they can play and be active outside of the home are less likely to be obese (Cecil-Karb and Gorgan-Kaylor, 2009). It is clear that, across both family and neighborhood factors, income inequality plays a significant role in determining children's lifestyle and thus, their risk of obesity.

Theoretical Framework for Afterschool Activities and a Healthy Lifestyle

In this paper, I argue that afterschool activities are another environment that may affect children's healthy lifestyle. Children only spend about 30 percent of their day in school. How they spend their time afterschool, whether it be in a structured, semi-structured, or unstructured activity, will influence their physical health. I propose that students who are involved in a structured and semi-structured afterschool activity will develop a healthy lifestyle. Their preference for a specific type of activity in a structured, engaging and disciplined environment will encourage it. Scholars confirm the value of structured and semi-structured afterschool activities in studies that demonstrate numerous positive student outcomes, such as improved academic performance, as indicated by increased grades (Eitle and Title, 2002; Feldman and Matjasko, 2005). In alignment with earlier literature, I support the claim that unstructured activities do not produce a healthy lifestyle. However, contrary to current theories of the

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relationship between television watching and cultural capital described by Shin (2004), I argue that increasing the risk of obesity is due to an unengaging, latent environment. I theoretically explain students' experiences and outcomes from involvement in afterschool activities using Bourdieu's framework of practice and the concept of cultural capital.

Pierre Bourdieu's theory provides a framework to help understand how afterschool activities affect students' experiences and shape their lifestyles. Bourdieu (1977) argues that the best approach to comprehend individual practices is to understand the role of structure and habitus. Structure refers to the context and objective reality that an individual is acting within. Bourdieu (1977) formally defines habitus as, "a socially constituted system of cognitive and motivating structures and the socially constructed situation in which agents' interests are defined" (p. 76).

An individual's habitus is socially constructed by an objective environment that causes him/her to formulate specific beliefs, determinations, and an understanding of the world around them (Bourdieu, 1977). In daily activities, individuals act based on their habitus, but also expand this body of knowledge to include what they are currently experiencing (Bourdieu, 1977). For this study, I define structure as the afterschool activity environment and habitus as a student's understanding of how they should act in an activity.

Students' experiences in afterschool activities are dictated by their structure and habitus. The structure of a structured afterschool activity includes an adult leader, peers, a designated subject, individual responsibility, and an organized scheduled meeting time (Mahoney, 2000; Mahoney and Stattin, 2000; Eccles, Barber, Stone and Hunt, 2003). Students respond to this structure by relying on their habitus to dictate their actions. A common form of habitus that all students can act upon is an understanding of discipline that is transferred from the school

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environment. In both environments students respect adult leaders, participate in organized projects, and are respectful to other students. Students also institute forms of habitus that are directly connected to the subject of the activity whether it be soccer or art. The commonalities of students' habitus and the uniform structure of structured afterschool activities demonstrate that the effects of different types of afterschool activities on students are analogous.

Semi-structured afterschool activities provide a different form of structure and habitus. Usually, these activities include a goal or purpose, an adult mentor, and perhaps students' peers or other family members. In this type of environment, students' behavior is limited by appropriate public conduct. This includes how they treat people and use the space around them. Students' habitus is now based upon their previous experiences in public places and on outings with their parents. This form of habitus includes a set of etiquette. Examples of this learned behavior include "do not scream," "do not make a scene," "do not wander away," and "wait your turn."

Unstructured activities create a third type of structure and habitus. The structure of these activities is informal with no organized schedule, no direct purpose of participation, and action that does not necessarily include other people. This environment causes students to maintain low levels of engagement with, in some cases, no fixed time limit. Some parents choose to limit the amount of time for activities, such as television watching or video games. However, even in these situations, students' engagement or cognitive thinking are low (Shin, 2004). These students must rely on forms of habitus developed in their home that are most often based on how their parents spend their leisure time. A student whose parents watch television all night long after work or who go on the computer for extended periods of time is more likely to resort to spending their afterschool time in this way.

In his discussion of capital, Bourdieu provides a theoretical explanation for why students' lifestyles are influenced by afterschool activities. He suggests that individuals hold a location in social space or status that is based upon acquired forms of economic, cultural, and social capital (Bourdieu, 1986). These forms of capital are produced and reproduced in social settings and through interaction (Bourdieu, 1986). For example, within a structured afterschool activity, a student, or more likely their parents, may demonstrate economic capital in their ability to financially invest in the activity. Cultural capital exists in three forms of physical resources, such as sports equipment, student's skills, and accredited accomplishments. Finally, social capital refers to students' connections with peers and mentors within the activity.

Although each form of capital is present in afterschool activities, this study will specifically examine the development of cultural capital. Of the three forms of cultural capital, I will focus on the development of students' skills, preferences, manners, and tastes, which is known as embodied cultural capital (Bourdieu, 1986). I chose this form of cultural capital because an individual's skills and preferences influence their lifestyle. Based on the understanding that the structure and habitus in afterschool activities dictate how individuals act, the concept of cultural capital explains that, as a result of this social situation, students develop skills and knowledge that they utilize as a resource in their everyday lives.

Bourdieu (1986) also explains that the production of cultural capital occurs through social reproduction. Socialization of children, by their parents and relatives, is a process of passing down tastes, preferences, and skills from one generation to the next. Inherent in this process is also the transfer of status inequalities. Dominant forms of cultural capital are defined by high status individuals and are supported by many institutions, in particular, schools (Bourdieu 1986). More recent scholars such as Annette Lareau (2011) explain the class differences in social

reproduction. According to Lareau (2011), parents have different child rearing methods based on income. As a result, children from middle class families are more likely to be involved in afterschool activities, while lower class children are more likely to spend time in unstructured environments (Lareau, 2011).

The relationship between afterschool activities and health is explained by Bourdieu's concept of cultural capital. Cultural capital is developed in social settings and interactions that occur in afterschool activities. These activities are more than just a place for students to spend time with peers and develop their interests. They also provide a healthy lifestyle. A healthy lifestyle refers to students' preferences to spend time in structured activities that encourage engagement and thought instead of unstructured activities, such as watching television or playing video games. It is possible that students in semi-structured activities will also develop a healthy lifestyle. However, unstructured activities will not produce this form of cultural capital because they do not have a similar structure and students apply a different form of habitus. Students' enactment of this form of cultural capital will be indicated by the effects of involvement in afterschool activities on students' risk of being obese.

Previous literature supports the contention that health is a type of behavioral norm and perception that dictates how individuals lead their daily lives (Abel, 2007). Abel (2007) argues that a healthy lifestyle is formed from the overlap of behaviors, orientations, and resources in an individual's social environment. The structure of an individual's social setting influences their overall embodied cultural capital and thus, a healthy lifestyle (Abel, 2007; Abel and Frohlich, 2012).

Afterschool Activities and a Healthy Lifestyle

Structured Activities

My argument is that the structure and habitus that make up structured afterschool activities lead students to develop a healthy lifestyle which, in turn, decreases the risk of obesity. Empirical evidence suggests that involvement in structured afterschool activities, both physical and non-physical, affects students' lifestyles and behavioral outcomes relating to health. Eccles and Barber (1999) and Barber, Eccles, and Stone (2001) demonstrate that activities improve students' educational outcomes, self-esteem, and psychological stability. Other scholars find that high school students involved in structured activities develop interpersonal skills, increase social behavior (Mahoney 2000; Mahoney and Stattin, 2000), decrease levels of depression (Mahoney, Schweder, and Stattin, 2002) and decrease the chances of dropping out of school (Mahoney and Cairns, 1997). Structured afterschool activities provide a valuable environment conducive to the development of cultural capital in the form of a healthy lifestyle.

Additionally, seasonal change literature demonstrates that children's time spent in a structured environment is conducive to decreasing the risk of obesity. This literature compares students' risk of obesity during the school term through to summer vacation. A majority of the studies in this area operationalize the risk of obesity by using a measure of students' Body Mass Index (BMI) (Hippel, Powell, Downey, and Rowland, 2007; Downey and Boughton, 2007; Tovar, Lividini, Economos, Folta, Goldberg, and Must, 2010). This measure is a scale that determines children's weight status considering their sex, age, height, and weight (Ogden, et al., 2014). They find that students' BMI and chances of obesity decrease during the school year (Christodoulos, Flouris, and Tokmakidis, 2006; Hippel, et al., 2007).

For example, Hippel, et al., (2007) estimate changes in BMI between Kindergarten, summer vacation, and first grade. They find that differences between students' BMI during the summer and during the school year was especially large for Black and Hispanic children and

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those who were overweight at the beginning of Kindergarten. The reason for the shift in students' BMI is largely because of a change in where students spend their time. During the summer, students allocate more time "in relatively unstructured environments" causing their BMI to increase (Hippel, et al., 2007 p. 701; Downey and Boughton, 2007; Christodoulos, et al., 2006; Tovar, et al, 2010). Conversely, the structured school environment organizes students' time in a way that causes BMI to decrease (Hippel, et al., 2007; Downey and Boughton 2007; Christodoulos, et al., 2006; Tovar, et al., 2010).

By merging Bourdieu's concept of habitus with the seasonal change literature, it is possible to further explain why children are less prone to being obese in a structured environment. Students within structured and unstructured environments apply and develop different aspects of their habitus. Additionally, different forms of cultural capital are developed within structured and unstructured environments. Seasonal change literature demonstrates that cultural capital in the form of a healthy lifestyle is conducive to the structured school environment and the habitus that is applied in that setting. My argument extends this analysis by stating that afterschool activities are a similar structured environment that relies upon a similar form of individual habitus. This means that afterschool activities, like the school environment, will produce a healthy lifestyle. This literature and the evidence of cultural capital in other forms of a healthy lifestyle lead me to hypothesize that *students involved in structured afterschool activities will have less chance of being obese because they have developed cultural capital that supports a healthy lifestyle* (1).

Semi-Structured Activities

My argument further states that semi-structured activities will also decrease student's risk of obesity because of the similar structure and habitus compared to structured activities that

students apply in this environment. Previous literature provides empirical evidence that students develop cultural capital in activities that support success in school. Students involved in these activities also have higher test scores (Roscigno and Ainswoth-Darnell, 1999; Eitle and Title, 2002) and higher educational attainment (DiMaggio and Mohr 1985; DeGraaf et al., 2000). It has been debated among scholars whether or not students also have higher grades if they are involved in semi-structured activities (Roscigno and Ainsworth-Darnell, 1999; Eitle and Eitle, 2002; Dumais, 2002; Jaeger, 2011). Semi-structured environments provide an educationally valuable environment. However, cultural capital in the form of a healthy lifestyle is not considered.

The comparable structure and habitus of structured and semi-structured activities lead me to predict that semi-structured activities will provide students with a healthy lifestyle. Similar to structured activities, semi-structured activities have an adult leader and a purpose of the activity. It is highly possible that semi-structured activities also have an organized meeting time and participation of students' peers, although these conditions are not guaranteed. Additionally, students rely on a form of habitus that resembles the one that they apply in structured activities and school. In all three environments, students rely on an understanding of acceptable manners and actions that are respectful to their parents or teachers and all surrounding others. It is therefore possible that these two key aspects of structure and similar habitus will support a healthy lifestyle. This is very dependent on the role of each structural quality. Nevertheless, I hypothesize that *students involved in semi-structured afterschool activities will have less chance of being obese because they have developed cultural capital that supports a healthy lifestyle* (2). *Unstructured Activities*

I also argue that unstructured activities decrease student's chances of acquiring a healthy lifestyle. Their risk of obesity is higher. Public health literature agrees that participation in unstructured activities, specifically sedentary activities such as watching television, increases obesity (Taveras et al., 2007; Cecil-Karb and Gorgan-Kaylor, 2009; Lazaridi, 2012). They explain this relationship as a result of a decrease in children's metabolic rate and increase in food consumption (Klesges et al., 1993; Temple et al., 2007). This literature emphasizes the purely physical aspects of sedentary or unstructured activities and children's physical health. The effects on children's healthy lifestyle, as a form of cultural capital, are not discussed.

Other scholars relate unstructured afterschool activities to students' academic outcomes which creates a foundation for theories of cultural capital and a healthy lifestyle. Shin (2004) tests and reviews three competing theories that explain the effects of television time on academic outcomes. The first is the time-displacement theory developed by Beentjes and Van der Voot (1989) who argue that watching television decreases the amount of time for studying, thus, decreasing academic success. Second, the theory of passivity is developed by Valkenburg and Van der Voot (1994) who find that the lack of mental engagement in television does not encourage thought processing or similar skills that are relatable to academic achievement. Third, the theory of arousal states that television encourages rash behavior that does not align with values of diligence that are necessary for academic success (Anderson et al., 2001). Shin (2004) validates all of these theories using data from children 6-13 years old from the Child Development Supplement from the Panel Study of Income Dynamics from 1997. These theories take into consideration the effects of students' time management on academic success. However, the effects of the structure and habitus developed and sustained in that environment are not considered.

I further argue that students' risk of obesity also increases because they develop a preference for spending their afterschool time this way. Instead of developing a healthy lifestyle, they are developing a preference for latent, unproductive time. By framing the argument using Bourdieu's theory of practice and concept of cultural capital, it is possible to explain why children continuously watch television, instead of spending their afterschool time in other ways. The previous theories only account for the effects of hours spent watching television without taking into consideration how it affects children's overall lifestyle. Based on this theoretical argument and the empirical evidence I hypothesize that *students involved in unstructured activities are more likely to be obese because they do not acquire the cultural capital necessary to support a healthy lifestyle* (3).

Non-Linear Effects

I extend my argument on the benefits of involvement in a structured activity to include the claim that a greater breadth of structured activity involvement will further reduce obesity. Students who are involved in a larger variety of structured activities, or greater breadth, will be less likely to be obese. Previous scholars find that students' overall wellbeing (Mahoney, Harris, and Eccles, 2006) and psychological stability (Mahoney and Vest, 2012) is fostered by recurrent involvement in structured afterschool activities. Public health scholars also support frequent rigorous physical activity as a way to maintain physical health (Shaya, Flores, Gbarayor, and Wang, 2008; Elkins, Cohen, Koralewicz, and Taylor, 2010). Afterschool activities have been proven to be beneficial in supporting children's school work, wellness, and physical health. Therefore I hypothesize that *students involved in a greater number of structured activities will have increasingly lower chances of being obese* (4a).

Other literature postulates that students suffer from over-scheduling of their afterschool time. Scholars find a threshold model or a curvilinear relationship between student time allocated to extracurricular activities and academic or behavioral outcomes (Cooper, Valentine, Nye, and Lindsay, 1999; Marsh and Kleitman, 2002). A greater breadth of involvement creates negative returns for students because they become overscheduled and overexerted. Over-scheduling, in turn, decreases self-esteem, increases anxiety, and diminishes their ability to adjust to changes in school (Marsh and Kleitman, 2002; Fredricks, 2012). Randall and Bohnert (2009) find that students who are not involved and overinvolved are more frequently depressed, compared to those who have more average levels of participation. This literature demonstrates the possibility of non-linear results leading me to hypothesize that *students involved in a greater number of structured activities will have negative returns demonstrated by a threshold or curvilinear relationship* (4b).

The literature on semi-structured activities does not consider the effects of various levels of involvement. This is an important contribution of this study because the number of times children visit a museum, library, sporting event, or the movies is something that can happen quite frequently. It is possible that scholars do not emphasize or evaluate levels of involvement because there is a greater difference between students who do participate in semi-structured activities compared to those who do not. This reasoning would imply that the actual act of participating is so significant, compared to not participating, that scholars have not extended the analysis further. Thus, considering the lack of previous literature I hypothesize that *students involved in a greater number of semi-structured activities will have increasingly lower chances of being obese* (5a).

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Correspondingly, it is possible for students involved in semi-structured activities to experience issues from over-involvement. Similar to structured activities, it is possible that children spend too much time in activities, thereby causing their risk of obesity to increase. Again, there is little research on this subject. Nevertheless, I hypothesize that *students involved in a greater number of semi-structured activities will have negative returns demonstrated by a threshold or curvilinear relationship* (5b).

Scholars agree that increased unstructured activity involvement, particularly the number of hours spent watching television, will increase students' risk of obesity (Klesges et al., 1993; Grund et al., 2000; Dowda et al., 2001; Wake et al., 2003; Temple et al., 2007). Cooper, Valentine, Linsay, and Nye (1999) tested for the presence of non-linear effects of television time on achievement test scores of students in grades 6-12 and did not find a significant relationship. This literature leads me to hypothesize that *students who watch increasingly more hours of television will be increasingly more likely to be obese* (6a).

I also argue that it is important to extend the concept of over-involvement from structured activities to consider unstructured activities. Although there is a paucity of literature that considers the possibility of or finds a non-linear relationship between television time and student outcomes, it is possible that the negative effects of television time on obesity increase at a higher rate after children watch a certain number of hours. This perspective emphasizes that it is not simply the fact that they are watching television that matters, but the number of hours watched may matter more. Based on the extension of the concept of over-involvement, I hypothesize that, for *students who watch increasingly more hours of television, the effects on the risk of obesity will increase exponentially after a certain number of hours* (6b).

Afterschool Time

The empirical evidence that supports my hypotheses has established a valuable foundation for understanding the effects of structured, semi-structured, and unstructured activities. However, the three forms of afterschool activities are not compared by scholars in their articles. A study conducted by Cooper, Valentine, Linsay, and Nye (1999) is one of the rare studies that compare students afterschool time spent on homework, television watching, extracurricular activities, other types of structured groups, and jobs. They analyze how each of the activities influence student's academic achievement using a series of correlations and hierarchical models. They find that extracurricular activities and structured groups improve academic performance while television time and jobs weaken academic performance. In their complete models, they find that extracurricular activities have curvilinear effects with negative returns for the highest level of involvement. None of the other activities had non-linear effects. I build upon Cooper, Valentine, Linsay, and Nye's (1999) study by testing the effects of structured, semi-structured, and unstructured afterschool activities together in an effort to contextualize the effect of how students spent their afterschool time as it pertains to obesity.

Class Inequalities

I predict that the benefits of afterschool activity involvement go beyond the influences of class inequalities. Although Bourdieu (1986) emphasizes the effects of class and social reproduction in the development of cultural capital, literature on afterschool activities finds that students from different class backgrounds have the same type of experience (Marsh, 1992). There is scant evidence that students of low socioeconomic status do not benefit from structured activity involvement. In some cases, they benefit more than students from a higher socioeconomic status (Posner and Vandell, 1999; Marsh and Kleitman, 2002; Covay and Carbonaro, 2010). Similarly, scholars find the effects of unstructured activities are analogous across class lines (Taveras et al.,

2007; Cecil-Karb and Gorgan-Kaylor, 2009; Lazaridi, 2012). Students of low socioeconomic status or from unsafe neighborhoods may be more likely to spend longer periods of time watching television compared to students of higher classes (Wright et al., 2007; Cecil-Karb and Grogan-Kaylor, 2009). Nevertheless, the effects on students' risk of obesity is the same for students across class lines (Taveras et al., 2007; Cecil-Karb and Gorgan-Kaylor, 2009; Lazaridi, 2012). Measures of socioeconomic status will be taken into consideration. However, I do not predict that they will have an intervening effect on the relationship between involvement in afterschool activities and the development of a healthy lifestyle.

Data, Measures and Methodology

Data

For this study, I use data from the Early Childhood Longitudinal Study-Kindergarten Cohort 1998-1999 (ECLS-K) gathered by the National Center for Education. ECLS-K is a nationally representative longitudinal dataset that offers information on children's daily lives in and outside of school, including measures of their physical health. This data is ideal for my study because it provides ample information on how children spend their time after school and measures of their BMI. For my analysis, I will be using variables measuring children's involvement and background characteristics from the third grade wave. These variables were gathered using student questionnaires, parent interviews and school reports from spring 2002. This particular wave of data is best suited because a majority of the literature reviewed on the benefits of afterschool activities neglects younger students.

The sample size of the Kindergarten base year of ECLS-K is 21,260 but, because of data collection procedures, the sample size of the third grade wave is 13,363. Before analyzing the data, cases that are missing completely at random are dropped. Then multiple imputation is used

to predict the cases that are missing at random. This produces a sample size of 15,395. Finally, I unregistered the imputed dependent variables to reinstate them to their original missing case. My final sample size is 11,066.

Measures of Dependent Variables

Obesity status is computed using measures of students' BMI from fifth grade. Measurements of a student's weight, height, and sex were gathered in one-on-one interviews between students and a trained interviewer. ECLS-K used this data to calculate each student's BMI. Children with a BMI above the 95th percentile are categorized as obese (Academy of Pediatrics, 2003, p. 424). Using Body Mass Index Percentile charts produced by the CDC, students are classified as obese or not obese. Throughout the literature, scholars measure physical health using BMI (Hippel, et al., 2007; Carrel, Clark, Peterson, Eickhoff, and Allen 2007; Ball, et al., 2008) while others use binary measures indicating obesity (Christodoulos, et al., 2006; Cecil-Karb and Grgan-Kaylor, 2009; London and Gurantz, 2013). The argument for using BMI as a continuous measure is that such a small difference exists between being below or in the 95th percentile that defines a child as obese (Hippel, et al., 2007). Thus, by using a continuous measure, it is indicative of a more specific change in physical health, but it does not indicate obesity. At the same time, other scholars argue that using measurements of obese status is important because there are physical, social, academic and emotional consequences for these students (Strauss and Pollack, 2003; Crosnoe and Muller, 2004; Campos, et al., 2006). The difference between obese and not obese may be a small measurement, but there are more dire consequences for obese children. Considering these harmful effects, a binary measure of obesity will be used with the understanding that I am using a conservative sample of students who fit this standard.

Key Independent Variables

Student involvement in structured, semi-structured, and unstructured activities are my three key independent variables. Each of the three variables is a composite measure of involvement created using data gathered from parent surveys. Structured activity involvement is a sum of seven binary measures of student involvement in athletics, dance lessons, performing arts, music lessons, art classes, clubs, and summer camp. These variables were chosen since they are structured afterschool activities that contain the qualities necessary to develop cultural capital, including an as an organized group meeting time, involvement of peers, the goal of developing a specific type of skill and individual responsibility, and adult leadership (Mahoney, 2000; Mahoney and Stattin, 2000; Eccles, Barber, Stone and Hunt, 2003; Bennett, Lutz, and Jayarm, 2012).

Semi-structured activity involvement is a composite measure of a series of binary variables measuring participation in cultural activities. Building upon literature on the benefits of semi-structured activities (Roscigno and Ainsworth-Darnell, 1999; Eitle and Eitle, 2002; Dumais, 2002; Jaeger, 2011) and the available data, this variable includes activities such as visiting a museum, library, concert, athletic event, or the zoo with a family member. These activities are less structured than athletics or music lessons for example, because they are less likely to occur at a regular time or support individual responsibility, and are not focused on developing a specific type of skill.

Finally, unstructured activities is a continuous measure of hours spent watching television after school and on weekends. This continuous variable is a sum of three continuous variables measuring television time between 3pm and dinner, after dinner, and on Saturday and Sunday.

Control Variables

A series of control variables will be used to isolate the afterschool environment from individual, family, and home/neighborhood intervening factors. Individual characteristics include students' sex, race, age, and Kindergarten obesity status. Sex is coded 1 for female and 0 for male. Race/ethnicity is measured as a group of dummy variables indicating whether the student is African American, Asian, other race, or white. Age is measured in years. Kindergarten obesity status is a binary measure of obesity that is calculated using ECLS-K composite measures of BMI. The calculation included plotting student's BMI on the Center for Disease Control BMI-for-age growth charts. If a child's BMI was within or above the 95th percentile he or she is classified as obese.

Family background characteristics consist of structure and class. Family structure is measured using the number of siblings and type of parents. Number of siblings is a continuous variable. Type of parents measures the parent's marital status and relation to the student. Parent's marital status is a binary measure indicating single parent status. Parent's relation to the student indicates if the parent(s) are biological or not. Family class variables include family income and parents' education. Both these variables are continuous variables. The former is measured in thousands of dollars and the latter in years of completed education. Finally, home/neighborhood level factors include safe neighborhood, type of location, and type of region. Safe neighborhood is an ordinal measurement of how safe it is for children to play outside in the neighborhood during the day. Location type is broken down into dummy variables including suburb/large town, small town/rural and large city (reference). Midwest, West, South, and Northeast (reference) are the four census regions that are used and coded into dummy variables. Table 1 provides the summary statistics for these variables.

Analytical Strategies and Statistical Models

First, to establish the difference between obese versus non-obese students, a series of t-tests are run comparing obesity status with demographic characteristics and activity involvement. The second stage of analysis consists of a series of binary logit regression models. Basic models establish the effects of each type of afterschool activity (structured, semi-structured, and unstructured). This analysis depicts the initial relationship between students' involvement and obesity. Individual, parental, and home/neighborhood control variables are then added, except for Kindergarten obesity status. By leaving out this variable, the results will indicate the general effects of activities in third grade on obesity. Then Kindergarten obesity status will be added to the logit models to demonstrate the effects overtime. Next, the three activities are combined first without and, then, with controls in full models. The third stage of the analysis includes testing the non-linear effects of involvement in each activity with controls.

Results

Descriptive Statistics: Non-obese versus Obese

Before testing the relationships between afterschool activities and obesity, I establish the differences between non-obese versus obese students. These results are important to help understand the underlying distribution of activity involvement and demographic characteristics. Table 1 displays the total, non-obese and obese means for each variable included in the analysis. The results from a series of t-tests for each variable are also included to demonstrate the difference between the means of non-obese and obese students.

[Insert Table 1 about Here]

Non-obese and obese students have significantly different averages of involvement in structured, semi-structured, and unstructured activities. Non-obese students are involved in an average of 1.927 structured activities compared to obese students who are involved in an average

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1.561 structured activities. The significant difference in average involvement in semi-structured activities is even smaller than structured activities. The greatest difference between non-obese and obese students is the average involvement in unstructured activities. On average, non-obese students watch 6.457 hours of television per week, while obese students watch an average of 7.198 hours per week. The division between the two groups of students may be explained by social stigma that obese students may often experience in structured and semi-structured activities (Strauss and Pollack, 2003; Campos, et al., 2006). This is not the case for hours of watching television because this activity occurs in the home where students are less likely to face social stigma. Another possible reason for the higher means of involvement of non-obese students in structured and semi-structured activities, is due to underlying socioeconomic inequalities (Wright et al., 2007; Covay and Carbonaro, 2010). Both of these factors will be discussed in more detail later in this section.

It is also apparent that, since Kindergarten, the number of obese students has increased. In third grade, 21 percent of students are obese, while only 12 percent of students were obese in Kindergarten. Forty-eight percent of students who are obese in third grade were obese in Kindergarten, while only three percent of students in third grade are not obese, but were obese in Kindergarten. Students' previous physical health is a significant predictor of their risk of obesity later in life as indicated by previous research (Millimet, Tchernis, and Husain, 2009). Even earlier than third grade, students' risk of obesity is already determined.

Other characteristics in the sample that are important to highlight are the significant difference between non-obese and obese students' race, family structure, and status. There is a significant difference between non-obese and obese students in all racial categories ($p<.01$). As for family characteristics, there is a significant difference between non-obese and obese students

in terms of single parents, annual family income, and parents' education. For example, parents' average years of education for obese students is 13.603 compared to non-obese students' parents' average of 14.433 years. These differences highlight the demographic inequalities within race and socioeconomic status found in previous research between non-obese and obese students (French, Story, and Jeffery, 2001; Cecil-Karb and Gorgan-Kaylor, 2009).

[Insert Table 2 about here]

Table 2 further clarifies and demonstrates the differences in involvement between non-obese and obese students. Non-obese students have higher average levels of involvement for all of the structured activities compared to obese students. The greatest difference is between participation in camp. On average, 23.5 percent of non-obese students attended camp while only an average 15 percent of obese students attended. There is a significant difference between these two groups of students ($p<.01$) for involvement in sports, dance, music, clubs, and camp. However, there is a significant difference at the .05 alpha level for art and performing arts. This means that there are more equal levels of participation in art and performing arts compared to the other forms of structured activities. More equal forms of participation may be due to the type of the activity and whether or not students' friends are also involved (Eccles and Barber 1999).

The results for semi-structured activities indicate that there is variation in the average levels of involvement. However, the differences between non-obese and obese students are not all significant. There is a significant difference ($p<.01$) for attendance at a sporting event. Fifty percent of non-obese students attend sporting events, while only 46 percent of obese students attend. At the .05 alpha level, there is a significant difference between non-obese and obese students and their visits to the library and concerts. In both cases, non-obese students have higher percentages of involvement. There is an insignificant difference between visiting museums and

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zoos between non-obese and obese students. This indicates that they are both equally likely to be involved in these types of semi-structured activities.

Finally, for unstructured activities, obese students have higher average hours of television watching compared to non-obese students. The biggest difference is on Sunday when non-obese students watched an average of 2.658 hours of television and obese students watched 2.915hours. The difference between non-obese and obese is statistically significant for all measures of television time. Unlike the other forms of afterschool activities, obese students watch more television than non-obese students.

Similar to Table 1, the underlying mechanisms that mediate involvement of non-obese and obese children in each of the three activities may be due to social stigma or socioeconomic inequality. Social stigma is most likely going to affect students' participation in structured activities because they do involve a group of students' peers (Strauss and Pollack, 2003; Campos et al., 2006). Obese children are more likely to be socially isolated from friend groups and not considered part of friend groups by non-obese students (Strauss and Pollack, 2003). In school, this can be seen as a student not being picked by others to be a team or group member. Socioeconomic inequalities also explain variation in involvement in structured activities (Lareau, 2011). As demonstrated in Table 1, obese students on average have parents with lower family incomes who are single parents with lower levels of educational attainment. Previous studies find that these students have a greater difficulty in accessing structured or semi-structured activities compared to students of a higher socioeconomic status (Covay and Carbonaro, 2010). Additionally, socioeconomic status influences the likelihood that students watch television afterschool (Wright et al., 2007; Cecil-Karb and Grogan-Kaylor, 2009). If parents are lacking funds to support involvement in structured or semi-structured activities, students are most likely

relegated to participating in unstructured activities. These qualities of non-obese and obese

students' lives are necessary to consider while interpreting the regression results.

Effects of Afterschool Activity Involvement on Obesity

[Insert Table 3 about Here]

Testing of the first three hypotheses on the effects of structured, semi-structured, and

unstructured activities on students' risk of obesity appears in Table 3. Each type of activity is

tested individually and then controls for individual, family, and home/neighborhood

characteristics are added together. Next, Kindergarten obesity status is added to the controlled

models. Kindergarten obesity status is added separately to demonstrate the effects of activities

on the change in students' obesity status between Kindergarten and third grade. Model 1 presents

the effects of structured activities on the risk of obesity without controls. Involvement in

structured activities significantly decreases the risk of obesity. The unstandardized beta

coefficients are reported to compute the odds ratio effects. For Model 1, every additional

structured activity that students participate in reduces their odds of being obese by a factor of

0.841 or 16 percent.

In Model 2, the variable structured activities is less significant and has a smaller

magnitude of effect on obesity. Every additional activity that students participate in now reduces

their odds of being obese by a factor of 0.938 or 6.2 percent. This drop in the level of

significance and magnitude indicates the explanatory roles of students' demographic

characteristics. Being female, increasing number of siblings, high family income, high parental

education, and western location are statistically significant factors that decrease the risk of

obesity. Conversely, being black, Hispanic, another racial category, or from a rural area

significantly increases students' risk of being obese.

A collection of previous literature explains these results. In terms of gender, girls face more social pressure to not be obese than boys (Strauss and Pollack, 2003). Across racial groups, there are different forms of social stigma against obesity that creates variation (Strauss and Pollack, 2003; Campos et al., 2006). There is also the underlying effects of socioeconomic inequalities for different racial groups. Compared to whites, blacks, Hispanics, and other racial categories are more likely to have a lower socioeconomic status (Cecil-Karb and Gorgan-Kaylor, 2009; Lazaridi, 2012). Factors such as having many siblings, low income, and low levels of parental education are also socioeconomic indicators of access to resources whether it be nutritional food, afterschool activities, or a safe neighborhood to play in (Covay and Caborano, 2010). Finally, home/neighborhood level variables also influence access to resources such as the types of schools and community resources present (Feldmen and Matjasko, 2005). So students with higher socioeconomic status are more likely to have access to these resources and thus a lower risk of obesity.

Model 3 adds students' Kindergarten obesity status to the series of controls from Model 2 to measure the effects of structured activities on students' risk of obesity since Kindergarten. Every additional structured activity that students participate in reduces the odds of being obese by a factor of 0.992 or 7.8 percent. The effects of students' Kindergarten obesity status is highly significant and explains the largest proportion of students' risk of obesity. Students who are obese in Kindergarten have 30.354 times greater odds of being obese in third grade. Given that this variable explains so much of students' risk of obesity, the effects of other control variables decrease in significance, but also change in magnitude of effects on obesity. Black and other racial categories are now the only two significant racial categories, while family income and parents' education are less significant than in Model 2.

Also in this model, students with non-biological parents and safe neighborhoods are less likely to be obese. The fact that they become significant implies that they have effects' on students' risk of obesity over time, but not at one point in third grade. The difference between biological and non-biological parents implies variation across parenting styles. It may also be possible that non-biological parents have higher socioeconomic status, meaning a greater understanding of the factors influencing physical health (Mahoney, Schweder, and Stattin, 2002). Safe neighborhoods imply that students are able to play in the neighborhood and be physically active around their home, thus decreasing the risk of obesity (French, Story, and Jeffery, 2001).

Overall, the outcomes from the first three models provide initial support for my first hypothesis that states, structured afterschool activities will reduce obesity. This means that more than just participating in sports will reduce students' risk of obesity, but as well, involvement in performing arts or even art club will also reduce the risk of obesity. Theoretically, this confirms the value of a structured environment that was first introduced by seasonal change literature (Hippel, Powell, Downey, and Rowland, 2007; Tovar et al., 2010). Like the school environment, a structured environment that organizes students' time in structured activities can lead them to develop a healthy lifestyle (Hippel, Powell, Downey, and Rowland, 2007; Tovar et al., 2010). At the same time, it is important to recognize the underlying structures of inequality initially demonstrated in Tables 1 and 2. Obese students are less likely to be involved in these activities and also more likely to have lower socioeconomic status. This means that, more often than not, students who are participating in structured activities are not already obese, and their risk of becoming obese is reduced. Ideally, we would like to reduce the risk of obesity for obese children as well, but that would involve overcoming issues of equal access to activities and decreasing the social stigma usually associated with obesity.

Models 4-6 contradict my hypothesized relationship between semi-structured activities and obesity. Model 4 indicates that every additional semi-structured activity that students participate in reduces their risk of obesity by a factor of 0.948 or 5.2 percent. This effect and significant relationship disappears in Model 5 when students' demographic characteristics, except for Kindergarten obesity status, are taken into consideration. Semi-structured activities remain insignificant in Model 6, while students' Kindergarten obesity status and other control variables are significant and influential. These results demonstrate that students do not acquire a healthy lifestyle within semi-structured activities, indicating that they present a different form of structure and applied habitus compared to structured activities. Finally, these results also indicate the differences between students' academic success and acquiring a healthy lifestyle. Previous literature demonstrates that these activities do improve students' grades. However, the type of structure and habitus within these activities does not support the knowledge or preferences that encompass a healthy lifestyle (Eitle and Title, 2002).

The negative effects of watching television on students' physical health are confirmed in Models 7-9. Model 7 indicates that for every additional hour of television that students watch, their risk of obesity increases by 1.053 or 5.3 percent. This relationship remains equally significant, but becomes slightly smaller in Model 8. This model includes controls for students' demographic characteristics in third grade. In Model 8, for every additional hour of television that students watch, their odds of obesity increase by 1.034 or 3.4 percent. The effects of control variables that are similar to Model 2 explain why the magnitude of effects of television watching decreases compared to Model 7.

Model 9 presents an analogous relationship between watching television and obesity, while controlling for Kindergarten obesity status. In this model, students who watch an

additional hour of television have 1.042 or 4.2 percent greater odds of being obese. This coefficient is greater than Model 8, implying that television has a greater effect on students' change in obesity between Kindergarten and third grade than on just their risk of obesity in third grade. Similar demographic characteristics, especially Kindergarten obesity status, remain significant as in Models 6 and 3. However, it is important to indicate that, in this model, there is not a significant relationship between students' risk of obesity and being black or having non-biological parents. The change in significant effects of control variables for unstructured activities emphasizes the magnitude of its effects compared to structured and semi-structured activities.

Overall, these models that test the effects of television time support my third hypothesis. Empirically, they confirm the results from public health scholars about the negative effects that watching television has on physical health (Ludwig, Peterson and Gortmaker, 2001). Theoretically, these results demonstrate that the environment of watching television is structurally different wherein students engage a different type of habitus compared to structured activities. This explains why students do not acquire a healthy lifestyle. However, it is not possible to rule out competing theories of time-displacement or passivity (Shin 2004). Additionally, it is important to emphasize the underlying effects of socioeconomic status. Within these models, measures of number of siblings, income, parental education, and safety of the neighborhood all predict students' odds of being obese. Also from Tables 1 and 2, we know that obese students are more likely to be of a lower socioeconomic status and have higher average hours of watching television. This means that obese children are more likely to be in a situation where watching television is their only afterschool option and are inherently at a disadvantage to benefit from structured activities.

Models 10-12 test the effects of all three activities together. Model 10 presents the uncontrolled effects of structured, semi-structured, and unstructured activities. Structured activities significantly decrease the risk of obesity, as demonstrated earlier. Semi-structured activities do not have a significant effect on students' risk of obesity. However, the effect is negative as I predicted it would be. Unstructured activities have an equally significant effect on obesity compared to structured activities, but have a smaller effect on the risk of obesity. These initial results uphold the findings from earlier models.

Even when control variables from third grade are added in Model 11, the contradictory effects of structured and unstructured activities are maintained. Involvement in an additional structured activity reduces students' odds of obesity by 0.944 or 5.6 percent. Also, students who watch an additional hour of television have 1.033 or 3.5 percent greater odds of being obese. The effects of the control variables mirror those of Model 8, indicating that the strength and effect of television watching is maintained. Model 12 tests for the effects of the activities on students' risk of obesity between Kindergarten and third grade. Students who were obese in Kindergarten are 30.3 times more likely to be obese in fifth grade. Despite the strong effects of Kindergarten obesity status, involvement in one additional structured afterschool activity decreases students' odds of obesity by 0.936 or 6.4 percent. However, structured activities are only marginally significant. Students who watch one additional hour of television are 1.039 times, or 3.9 percent, more likely to be obese. The results from the final three models provide important empirical evidence that maintains the effects of structured and unstructured activities. Also, these models emphasize the magnitude of the effect of watching television.

The main point of this large table is to confirm and build upon previous literature on afterschool activities and students' demographic characteristics. The support for my hypothesis

on structured and unstructured activities along with the lack of evidence for semi-structured activities, highlights the various structures, forms of habitus, and capital developed within each activity. These theoretical differences are maintained in models in which I test the individual effects of an activity and all activities together. The results also support previous literature that empirically demonstrates the academic benefits of structured activities and the negative effects of watching television on physical health and academic outcomes (Barber, Eccles, and Stone, 2001; Shin, 2004). Additionally, these models build upon the results from the descriptive t-tests in demonstrating the significant effects of students' previous health, race, and family socioeconomic status measures. Finally, these effects also follow the findings of preceding scholars concerning previous health as a predictor of current health and the effects of socioeconomic status on children's health (French, Story, and Jeffery, 2001; Cecil-Karb and Gorgan-Kaylor, 2009; Millimet, Tchernis, and Husain, 2009).

Increasing Levels of Involvement

[Insert Table 4 about here]

The last table tests my series of hypotheses on the non-linear effects of structured, semi-structured, and unstructured activities in a series of logit regressions. The squared term for structured and semi-structured activities and the natural log of television time are tested. Model 1 indicates that structured activities have a positive, but insignificant effect. Structured activities squared is negative and also insignificant. Also in this model, television time is significant with one additional hour of television increasing the odds of obesity by 1.040 or 16.9 percent. The effects of students' demographic characteristics closely resemble the results from Table 3, Model 12, except for the effects of the racial category of black, which is now significant.

Model 2 demonstrates similar findings compared to Table 3. Semi-structured activities in a linear and non-linear measure are insignificant. The insignificant measure of semi-structured activities implies that there is no relationship at all between those activities and obesity. The outcomes of structured and unstructured activities are the same as Table 3, Model 12.

The results from Model 3 confirm the non-linear effects of television time on obesity and the linear effects of structured activities. The natural log of television time explains the largest proportion of students' risk of obesity due to watching television. This coefficient indicates that, as the number of hours students watch television increases, they experience diminishing returns. Structured activities and the same demographic variables from Table 3 continue to significantly affect students' risk of obesity as they did before.

[Insert Figure 1a and 1b about Here]

The effects of various levels of involvement are demonstrated in Figures 1a and 1b. These figures demonstrate the predicted probabilities of students' likelihood of obesity given various levels of involvement. The coefficients were calculated using the results from Table 4, Model 3. In general, Figure 1a demonstrates the linear effects of structured and semi-structured activities and Figure 1b the non-linear effects of television time on obesity. First looking at Figure 1a, the effects of structured activities indicates a consistent decrease in the odds of obesity. Students who are not involved in structured activities have about an 18 percent probability of being obese, while students involved in seven activities have about a 12 percent probability of being obese. Also, in this figure, the insignificant effects of semi-structured activities are evident with the effects maintaining within a 15 to 17 percent probability.

Figure 1b portrays the diminishing effects of television time as indicated in Table 4, Model 3. Students who do not watch television have about a 3 percent probability of being

obese. The greatest increase in the probability of being obese occurs between watching zero and five hours of television. The difference between any of the preceding additional hours of television does not increase at such a great rate. Taken together, Figures 1a and 1b demonstrate the large effects of watching television on students' risk of obesity and the less sizeable effects of structured activities that is initially presented in Table 4.

Discussion/Conclusion

With obesity as an ongoing threat to the physical health and wellbeing of children across the country, it is crucial to consider any possible solution. For the longest time, scholars in the area of public health, have identified students' time in physical activities and maintaining a healthy diet as two crucial factors that mitigate obesity (Ludwig, Peterson and Gortmaker, 2001). Sedentary activities such as watching television or playing video games increase students' risk of obesity (Ludwig, Peterson and Gortmaker, 2001). Studies in the area of the sociology of health consider the effect of the family and neighborhood environments on childhood obesity (Gable and Lutz, 2000; French, Story, and Jeffery, 2001). Mechanisms of socioeconomic status such as family income, parents' education, and the safety of the neighborhood around the family home are linked to families' access to healthy food and physical activities, an understanding of healthy food, and the ability to be physically active in the neighborhood (Gable and Lutz, 2000; French, Story, and Jeffery, 2001). These factors, in turn, explain students' risk of obesity (Gable and Lutz, 2000; French, Story, and Jeffery, 2001).

While this perspective emphasizes factors directly connected to managing students' weight, this study uses Bourdieu's theory of practice and concept of cultural capital to demonstrate the role of afterschool activities in maintaining a healthy lifestyle. My claim is that students who spend time in structured activities such as art club or sports will act within a

structure and upon a form of school-based habitus that creates and maintains a healthy lifestyle. Students in semi-structured activities have the potential to also develop a healthy lifestyle because of a similar environment and forms of public etiquette habitus. Finally, due to the lack of engagement and organization of students' time, unstructured activities do not provide students with cultural capital in the form of a healthy lifestyle. These theoretical arguments are supported by empirical evidence from the area of the sociology of education that also demonstrates the values of structured and semi-structured activities in improving students' grades (Barber, Eccles, and Stone, 2001). Unstructured activities are most commonly found to be detrimental to students' academic achievements (Shin, 2004).

I extend public health and sociology of health and education literature by empirically testing the effects of afterschool activities on obesity based on my theoretical argument from Bourdieu. I find that linear models of structured activities reduces the risk of obesity, while watching television increases the risk of obesity in linear and nonlinear models. Theoretically, these results emphasize the different forms of structure and habitus present in social situations which create a healthy lifestyle in structured activities and an unhealthy lifestyle in unstructured activities. However, the benefits of structured activities are considerably smaller than the negative effects of watching television on students' risk of obesity. Applying Bourdieu's theory of cultural capital to these results would mean that forms of unhealthy cultural capital acquired while watching television are more influential than forms of a healthy lifestyle acquired in a structured environment. Finally, the results of my study highlight the mechanisms that limit obese students' involvement in structured activities and increase hours spent watching television. Social stigma and socioeconomic status both influence students' desire and resources to be involved in any of the three types of activities.

These findings contribute to understanding the potential of all structured activities to decrease the risk of obesity, but also the substantial negative effects of watching television. However, there is additional research that is necessary to clarify the mechanism that causes watching television to be so detrimental and how structured activities can strengthen their impact on a healthy lifestyle. Are the effects of television time on obesity similar to other forms of unstructured activities? Due to limited data, only the effects of television could be tested. Does playing video games or just hanging out with friends also have the same effect, and is it as strong as watching television? Also, what is it about structured activities that reduce obesity? This is important to question because the measure of structured activities includes more than just sports. Being involved, in 'non-physical' activities were also included. Additional information on how frequently students participate in an activity on a weekly basis and what they actually do in the activity is valuable and necessary information. The answers to these questions are beyond the capabilities of this study. However, the findings suggest that the benefits of structured activities are more dynamic and related to how students also spend their time, especially in unstructured activities.

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Table 1. Descriptive Statistics

Variable	Mean	Mean for Not Obese[1]	Mean Obese[1]	Min	Max	t
Dependent Variable						
Obese	.212			.000	1.000	
Key Independent Variables						
Structured Activities	1.850	1.927	1.561	.000	7.000	11.010**
Semi-Structured Activities	2.077	2.095	2.010	.000	5.000	2.764**
TV time	6.457	6.257	7.198	.000	35.000	-10.573**
Control Variables						
Female	.497	.517	.421	.000	1.000	8.339**
White a	.574	.598	.485	.000	1.000	9.869**
Black	.113	.104	.147	.000	1.000	-5.812**
Hispanic	.188	.173	.244	.000	1.000	-7.899**
Asian	.070	.073	.060	.000	1.000	2.191*
Other Racial Category	.055	.053	.065	.000	1.000	-2.206*
Age	8.938	8.934	8.952	4.375	10.042	-0.584
Kindergarten Obese	.124	.030	.482	.000	1.000	-67.230**
Number of Siblings	1.470	1.487	1.410	.000	3.000	3.613**
Single Parent	.199	.188	.238	.000	1.000	-5.351**
Non-Biological	.041	.040	.047	.000	1.000	-1.534
Annual Family Income	64.442	67.706	52.324	.000	252.956	12.654**
Parent's Education	14.256	14.433	13.603	2.663	25.093	11.954**
Safe Neighborhood	2.730	2.745	2.744	1.000	3.000	5.863**
Urban a	.377	.379	.379	.000	1.000	0.751
Suburban	.385	.391	.391	.000	1.000	2.395*
Rural	.238	.230	.230	.000	1.000	-3.593**
Northeast a	.185	.185	.185	.000	1.000	-0.027
Midwest	.266	.272	.272	.000	1.000	2.739**
South	.319	.309	.309	.000	1.000	-4.298
West	.231	.235	.235	.000	1.000	1.904

Data Source: Early Childhood Longitudinal Study – Kindergarten Cohort (ECLS-K) spring of 3rd grade Wave 5 (2002), except for obese which is from spring of 5th grade from Wave 6 (2004) and Kindergarten obese which is from fall of Kindergarten, Wave 1 (1998).
Note: Missing cases in dependent variables are excluded from the sample. Descriptive statistics for independent variables are adjusted by multiple imputations of missing cases. *N*=11,066
[a] Reference group for multivariate analysis.
*p<.05 **p<.01, two-tailed tests.

Table 2. T-Test

Variable	Mean Not Obese[1]	Mean Obese[1]	Min	Max	t
Structured Activities					
Sports	.624	.538	.000	1.000	8.416**
Dance	.147	.108	.000	1.000	4.828**
Performing Arts	.245	.221	.000	1.000	2.437*
Music	.217	.151	.000	1.000	6.919**
Art	.121	.106	.000	1.000	1.997*
Club	.339	.297	.000	1.000	3.884**
Camp	.235	.150	.000	1.000	8.977**
Semi-Structured Activities					
Museum	.328	.316	.000	1.000	1.074
Library	.567	.544	.000	1.000	1.988*
Concert	.398	.369	.000	1.000	2.593**
Athletic Event	.502	.464	.000	1.000	3.247**
Zoo	.316	.300	.000	1.000	1.542
TV time					
TV afterschool before dinner	.680	.808	.000	6.000	-6.674**
TV after dinner	.799	.955	.000	3.000	-8.259**
TV Saturday	.946	.952	.000	20.000	-8.564**
TV Sunday	2.658	2.915	.000	23.000	-8.281**

Data Source: ECLS-K spring of 3rd grade Wave 5 (2002).
Note: Missing cases in dependent variables are excluded from the sample. Descriptive statistics for independent variables are adjusted by multiple imputations of missing cases. *N*=11,066; *p<.05 **p<.01, two-tailed tests.

Table 3. Logit Coefficients for Involvement Predicting Obesity Controlling for Student Background Effects

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Structured Activities	-.172**	-.064†	-.080*							-.149**	-.058*	-.066†
	(.022)	(.026)	(.033)							(.024)	(.027)	(.034)
Semi-Structured Activities				-.053*	-.013	-.016				.010	.035	.008
				(.024)	(.025)	(.029)				(.026)	(.026)	(.029)
TV time							.052**	.034**	.041**	.043**	.033**	.039**
							(.008)	(.009)	(.010)	(.008)	(.009)	(.010)
Individual Characteristics												
Female		-.402**	-.371**		-.421**	-.393**		-.413**	-.388**		-.400**	-.370**
		(.065)	(.078)		(.065)	(.077)		(.065)	(.078)		(.065)	(.078)
Black		.249*	.333*		.242*	.330*		.165	.232		.167	.241
		(.118)	(.141)		(.119)	(.141)		(.122)	(.145)		(.122)	(.145)
Hispanic		.331**	.120		.347**	.145		.340**	.134		.322**	.114
		(.097)	(.117)		(.096)	(.119)		(.096)	(.116)		(.097)	(.117)
Asian		.182	.025		.205	.049		.181	.028		.167	-.009
		(.157)	(.196)		(.157)	(.196)		(.159)	(.197)		(.160)	(.197)
Other Racial Category		.475**	.500**		.486**	.514**		.468**	.498**		.450**	.487**
		(.141)	(.157)		(.141)	(.157)		(.140)	(.157)		(.140)	(.157)
Age		.013	-.012		.013	-.013		.013	-.014		.012	-.014
		(.025)	(.029)		(.025)	(.028)		(.025)	(.029)		(.046)	(.029)
Kindergarten Obese			3.413**			3.408**			3.406**			.411**
			(.101)			(.101)			(.101)			(.101)
Family Characteristics												
Number of Siblings		-.149**	-.087*		-.145**	-.083†		-.140**	-.079†		-.144**	-.083†
		(.036)	(.043)		(.036)	(.043)		(.037)	(.043)		(.037)	(.043)
Single Parent		-.010	.049		-.010	.053		-.014	.042		-.018	.040
		(.088)	(.096)		(.088)	(.096)		(.089)	(.097)		(.088)	(.097)
Non-Biological		-.227	-.368†		-.232	-.377†		-.196	-.331		-.183	-.335
		(.207)	(.205)		(.205)	(.205)		(.208)	(.205)		(.210)	(.206)
Annual Family Income		-.003**	-.002†		-.004**	-.002*		-.003**	-.002†		-.003**	-.002†
		(.001)	(.001)		(.001)	(.001)		(.001)	(.001)		(.001)	(.001)
Parent's Education		-.039**	-.045**		-.046**	-.051**		-.043**	-.050**		-.040**	-.044**
		(.013)	(.015)		(.013)	(.015)		(.013)	(.015)		(.013)	(.015)
Safe Neighborhood		-.097	-.130†		-.103	-.132†		-.098	-.134†		-.097	-.132†
		(.069)	(.077)		(.069)	(.077)		(.107)	(.078)		(.070)	(.078)
Home/Neighborhood Characteristics												
Suburb		.116	.068		.115	.070		.075	.059		.107	.059
		(.075)	(.093)		(.075)	(.093)		(.075)	(.093)		(.075)	(.093)
Rural		.187†	.155		.192*	.158		.174†	.138		.174†	.136
		(.095)	(.111)		(.095)	(.111)		(.096)	(.111)		(.096)	(.111)
Midwest		-.137	.026		-.139	.027		-.130	.031		-.134	-.031
		(.094)	(.113)		(.094)	(.113)		(.095)	(.113)		(.095)	(.113)
South		.051	.090		.058	.100		.056	.097		.049	.090
		(.091)	(.112)		(.091)	(.112)		(.091)	(.112)		(.091)	(.112)
West		-.268**	-.153		-.271**	-.155		-.253*	-.141		-.256*	-.139
		(.102)	(.127)		(.102)	(.127)		(.102)	(.127)		(.103)	(.127)
Constant	-.982**	-.070	-.507	-1.160**	-.069	-.492	-1.623**	.339	-.814†	-1.332**	-.348	-.803
	(.048)	(.339)	(.404)	(.059)	(.339)	(.404)	(.062)	(.350)	(.417)	(.090)	(.351)	(.418)
Pseudo-R^2	.009	.033	.272	.001	.032	.271	.008	.035	.274	.014	.035	.274

Note: N=11,066. Robust standard error in parenthesis. All coefficients are adjusted by multiple imputations for missing cases. White, urban, and Northeast are reference categories.

†p <0.10 *p<0.05 **p<0.01, two-tailed test

Table 4. Nonlinear Logit Coefficients for Involvement Predicting Obesity Controlling for Student Background Effects

Variables	Model 1	Model 2	Model 3
Structured Activities	.026	-.066†	-.065†
	(.081)	(.034)	(.043)
Structured Activities Squared	-.022		
	(.018)		
Semi-Structured Activities	.007	-.049	.009
	(.029)	(.088)	(.029)
Semi-Structured Activities Squared		.013	
		(.018)	
TV time	.039**	.039**	
	(.010)	(.010)	
Log of TV time			.293**
			(.072)
Individual Characteristics			
Female	-.357**	-.370**	-.367**
	(.078)	(.078)	(.078)
Black	.246†	.239†	.260†
	(.145)	(.145)	(.145)
Hispanic	.123	.112	.122
	(.117)	(.117)	(.117)
Asian	-.017	.008	-.032
	(.197)	(.197)	(.195)
Other Racial Category	.489**	.481**	.492**
	(.157)	(.158)	(.157)
Age	-.014	-.013	-.014
	(.029)	(.029)	(.029)
Kindergarten Obese	3.410**	3.413**	3.412**
	(.101)	(.101)	(.102)
Family Characteristics			
Number of Siblings	-.080†	-.082†	-.081†
	(.043)	(.043)	(.043)
Single Parent	.041	.039	.041
	(.097)	(.097)	(.097)
Non-Biological	-.324	-.327	-.323
	(.206)	(.206)	(.206)
Annual Family Income	-.002	-.002	-.002
	(.001)	(.001)	(.001)
Parent's Education	-.045**	-.044**	-.045**
	(.015)	(.015)	(.015)
Safe Neighborhood	-.134†	-.131†	-.131†
	(.078)	(.078)	(.077)
Home/Neighborhood Characteristics			
Suburb	.058	.058	.061
	(.093)	(.093)	(.093)
Rural	.134	.136	.136
	(.111)	(.111)	(.111)
Midwest	-.030	-.030	-.035
	(.113)	(.113)	(.113)
South	.091	.087	.093
	(.112)	(.111)	(.112)
West	-.138	-.140	-.140
	(.127)	(.127)	(.128)
Constant	-.848*	-.771†	-1.101*
	(.420)	(.422)	(.440)
Pseudo-R^2	.274	.274	.275

Note: N=11,066. Robust standard error in parenthesis. All coefficients are adjusted by multiple imputations for missing cases. White, urban, and Northeast are reference categories.

†p <0.10 *p<0.05 **p<0.01, two-tailed tests

**Figure 1a. Predicted Probability of the effects of Structured and Semi-Structured
Afterschool Activities on Obesity**
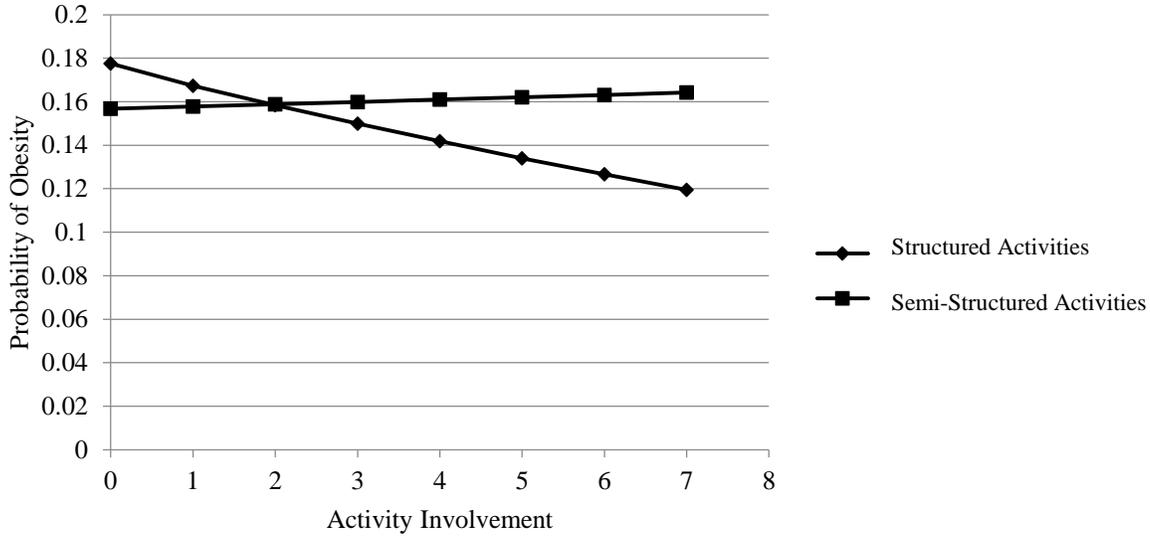
Note: The predicted probabilities are calculated using Model 3 of Table 4. Each series of predicted probabilities are calculated with one key independent variable equal to a designated value all other values are equal to their mean.

Figure 1b. Predicted Probability of the effects of TV Time on Obesity
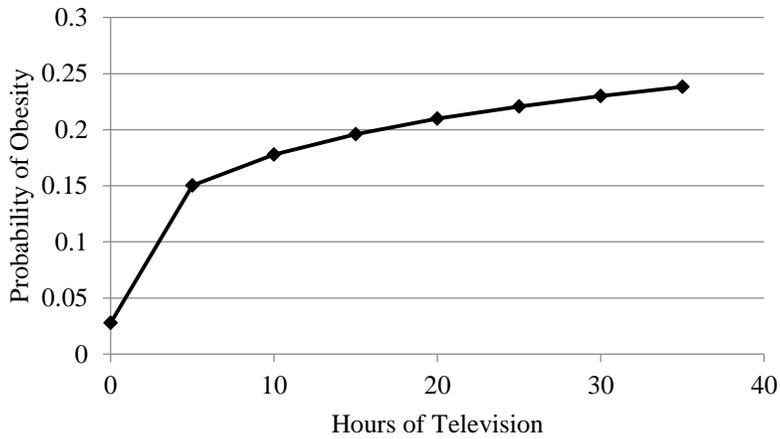
Note: The predicted probabilities are calculated using Model 3 of Table 4. Each series of predicted probabilities are calculated with the natural log of television set equal to designated values equivalent to five hour increments, while all other values are equal to their mean.

Appendix Variable List from ECLS-K -Third Grade Wave (2002)

Variable (Coding, Scale)	Description / Question Wording / Coding
Dependent variable	
Obese	Binary measure of obesity based on the ECLS-K composite measure of BMI. Calculated by plotting children's BMI on the Center for Disease Control BMI-for-age growth charts. If a child's BMI was within or above the 90th percentile of their gender and age group then he is classified as obese. 1=yes, 0=no
Independent Variables	
Structured Activities	Number of structured activities a child participated, measured based on the following questions in the parent questionnaire (range = 0 to 7): Outside of school hours in the past year, has the child participated in……organized athletic activities, like basketball, soccer, baseball, or gymnastics? …dance lessons? …organized performing arts, such as children's choirs, dance programs, or theater performances? …music lessons, for example, piano, instrumental music or singing lessons? …art classes or lessons, for example, painting, drawing, sculpturing? …organized clubs or recreational programs, like scouts? Where was the child when he was not with you during summer? At camp?
Semi-Structured Activities	Sum of binary measures of semi-structured activities a child participated, measured based on the following questions in the parent questionnaire (range = 0 to 5): In the past month, has anyone in your family done the following things with child…visited an art gallery, museum, or local historical site? …visited a library? …gone to a play, concert, or other live show? ...attended an athletic or sporting event in which the child was not a player? ...visited a zoo, aquarium, or petting farm?
TV Time	Number of hours of television the child watched, measured based on the following questions in the parent questionnaire (range = 0 to 45): On any given weekday, how many hours of television, videotapes, or DVD's on average does the child watch at home?...How about between 3:00pm and dinner time? … How about after dinner time? How about on Saturday and Sunday? …How many hours does the child watch television, videotapes, or DVD's at home on Saturdays? …How many hours does the child watch television, videotapes, or DVD's at home on Sundays?
Control Variables	
Individual	
Female	1=female, 0=male
Race	Categorical: 0=white; four dummies for Black, Hispanic, Asian, and Other Racial Category
Child's Age	Age of child measured in years
Kindergarten Obese	Binary measure of obesity based on the ECLS-K composite measure of BMI. Calculated by plotting children's BMI on the Center for Disease Control BMI-for-age growth charts. If a child's BMI was within or above the 90th percentile of their gender and age group then he is classified as obese. 1=yes, 0=no
Family	
Structure	
Number of siblings	Number of siblings
Single Parent	1=yes, 0=no
Parent Type	0=Biological 1=Non-biological
Status	
Annual family income	Annual family income measured in thousands of dollars
Parent's Education	Parent's highest education in years
Home/Neighborhood Characteristics	
Safe Neighborhood	Parents were asked: How safe is it for children to play outside during the day in the neighborhood? Would you say it's...not at all safe, somewhat safe, or very safe?
Location Type	Categorical: 0=Urban; two dummies for suburban and rural
Region	Categorical: 0=Northeast; three dummies for West, Midwest, South

Data Source: Early Childhood Longitudinal Study – Kindergarten Cohort (ECLS-K) spring of 3rd grade Wave 5 (2002), except for obese which is from spring of 5th grade from Wave 6 (2004) and Kindergarten obese which is from fall of Kindergarten, Wave 1 (1998).