Children's Neighborhoods, Time Use and Health

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INTRODUCTION

This project uses residential histories from the Panel Study of Income Dynamics (PSID) and children's time diaries from the PSID Child Development Supplement (CDS) to explore two questions: 1) Do characteristics of neighborhoods influence children's health-related time use? 2) Do neighborhood-based differences in time use influence children's health, thereby making time use a mediator in the neighborhood/well-being relationship? Researchers have shown that neighborhoods influence children's health, independent of other contexts, such as the family. In addition, studies using children's time diaries demonstrate that children's time use varies by family and socioeconomic environment. These two strains of research are often conducted separately, however, and raise several questions about non-family determinants of children's health-related time use, and about whether or not the behavioral differences hypothesized by conceptual models of neighborhood effects actually exist. We use data on neighborhoods and time use to examine whether differences in children's time use might be one reason why neighborhoods "matter" for health, using data from the PSID-CDS. In the end, our goal is to understand place-based differences in children's activities, and to contribute to narrowing the gap in our understanding of the neighborhood structure/child well-being relationship.

BACKGROUND

Neighborhoods and Child Well-Being

There is an abundant literature on the influence of neighborhood structure and composition on individual well-being, which has strong historical roots in sociology and has persisted in recent decades (Riis, 1890; Park and Burgess, 1925; Wilson, 1987;

Jencks and Mayer, 1990; Massey et al., 1992; Furstenberg and Hughes, 1997; Small and Newman, 2001; Sampson et al. 2002; Pebley and Sastry, forthcoming). Limitations in data, conceptual frameworks and the use of advanced statistical methods often bias results and limit researchers' ability to draw meaningful conclusions about whether or not characteristics of neighborhoods "matter" for children's well-being. Nonetheless, while the magnitude of neighborhoods' effects is still contested, experimental and rigorous observational studies have demonstrated that characteristics of neighborhoods do in fact structure children's opportunities, activities and achievement (Goering and Feins, 2003; Harding, 2004). Living in socioeconomically disadvantaged neighborhoods is believed to negatively affect several aspects of children's quality of life, including cognitive development and educational achievement (e.g., Crane, 1991; Brooks-Gunn et al., 1993), propensity for risky sexual behavior (Brooks-Gunn et al., 1997) and rates of teenage childbearing (Brooks-Gunn et al., 1993; Sucoff and Upchurch, 1998).

Research on the consequences of place for health and health behaviors is still developing, but it is clear that strong associations exist between characteristics of individuals' local context and obesity, birth weight, cardiovascular health, mortality, and emotional and psychological well being (Aneshensel and Sucoff, 1996; Morenoff, 2003; Boardman et al., 2005; for good reviews, see Robert, 1999; Ellen et al., 2001; Pickett and Pearl, 2001). While much of the work on the relationship between the local environment and health has focused on adults, research on children's well-being is growing. Such research is important; children and adolescents may be especially influenced by their immediate context, as they are more likely than adults to spend the majority of their time in their local surroundings, whether at home, school or outside.

Challenges in Defining "Neighborhoods" and Studying the Link between Neighborhoods and Individuals

In order to make systematic comparisons across space, researchers are forced to both define the concept of the neighborhood, and to decide how to examine the relationship between its characteristics (both objective and subjective) and the welfare of its residents. Regarding the former, researchers often employ Census-defined tracts, which are typically made up of about 4,000 people and include the area within a small number of city blocks (White, 1987), in order to maximize both data availability and the extent to which comparisons can be made across neighborhoods. Of course, while Census tracts are designed to approximate areas that have real meaning for residents in their opportunities for social interaction and exposure to positive and negative influences, census tracts are by no means a perfect representation of people's neighborhoods. Interesting developments are being made in this area, including the concept of "t-communities" (Grannis, 1998), which examine pedestrian street networks, and the idea of examining the interconnectness of adjacent Census tracts (Goodchild et al., 2000; Morenoff, 2003).

Regarding the latter challenge—that is, how to best understand the link between the local environment and individual outcomes—studies have often had to rely solely on Census measures (e.g., tract income, racial composition, immigrant concentration) to represent the neighborhood environment, and on objective indicators of resident well-being (e.g., health, academic achievement, pregnancy). This work has been extremely beneficial in identifying associations between place and health. One limitation of this approach, however, is that the lack of detail in these studies about both neighborhoods and individuals can obscure the actual process linking a neighborhood's characteristics to

the welfare of its residents. Until recently, researchers were forced to link Census characteristics to their outcomes of interest, without any additional information about either component to help them understand the process in between. A relationship between the percentage of a Census tract that was black and the mortality rate of its adult residents could be established, for example. Now, however, some large surveys include much more detailed information about both neighborhoods and the individuals within them, allowing researchers to examine the neighborhood/well-being relationship in greater depth.

Why Should Neighborhoods Influence Children's Health?

In response to the greater detail about neighborhoods and individuals contained within regional and national surveys, researchers have begun to examine the mechanisms, or pathways, through which neighborhoods exert an influence on children's health. Conceptually, there are several processes that may generate an observed relationship. The institutional model, one of the most commonly applied frameworks for understanding the influence of neighborhoods, emphasizes differences in the quality and quantity of neighborhood socioeconomic resources. According to this framework, poor neighborhoods should be less likely to have a sufficient number of high quality institutions and services for children and their families, both because residents lack the social and human capital to demand and acquire these services, and because there are not enough services to go around for all residents (Jencks and Mayer, 1990; Aber et al., 1997; Pebley and Sastry, forthcoming). As Pebley and Sastry (forthcoming: 4) describe, these services and institutions include schools, child care services, after-school activities, public parks and other social services. As the theory predicts, children in communities deprived

of these resources should engage in different activities from children in resource-rich neighborhoods. That is, neighborhood-level disparities in socioeconomic resources may affect children's health-related options and behaviors, thereby influencing the type of activities that children perform and their subsequent health.

Inherent in the institutional framework is the assumption that neighborhood-level disparities in socioeconomic resources create behavioral responses that, in turn, lead to disparities in health. There have been surprisingly few tests of this assumption, however. For example, children in economically disadvantaged neighborhoods may be more likely to be in poorer general health, but is that because they exercise less or because they experience a physiologic reaction to social stress? Despite behavior's role as the crux of many theoretical arguments linking neighborhoods and children's well-being, we know very little about the daily activities that children perform, whether or not systematic differences in these activities exist across communities, and if these activities may contribute to neighborhood-based health disparities. In sum, very little is known about how neighborhood institutional and social disadvantage may affect the daily lifestyle choices parents and children make and how any behavioral responses to constraints within communities may affect children's health.

The Role of Children's Time Use

In what has been a separate vein of research, recent studies using time diary data have examined how children's time use patterns are determined by family characteristics such as maternal employment, family structure, and household income. There is evidence that children with more educated parents spend less time watching television and more time reading and studying (Timmers et al. 1985; Bianchi and Robinson, 1997, Hofferth

and Sandberg, 2001), children of employed mothers spend less time watching television (Bianchi and Robinson, 1997; Yeung and Stafford, 2003), children from dual earner, intact families receive more involvement from their fathers (Hofferth and Sandberg, 2001, Yeung et al., 2001) and Black children receive significantly less involvement from their fathers than white or Latino children (Yeung et al., 2001).

Fewer studies have considered the determinants of children's health-related time use. In the literature to date, gender and age have been found to be the most important determinants of children's health-related time use. Physical activity, for example, declines with age: one longitudinal study of activity use shows a 35% decline in physical activity as girls transition from childhood to adolescence (Kimm et al., 2000). Boys are more likely to participate in sports and spend more time playing sports than girls (Hofferth and Sandberg, 2001). Parents also play an important role in influencing children's active and sedentary behaviors. A study of 180 nine year-old girls and their parents finds that children with parents who encourage physical activity are more likely to be physically fit and participate in organized sports (Davison et al., 2003). Differences in parenting styles may explain why some studies have found higher rates of physical inactivity among adolescents from lower SES families and among Black and Hispanic adolescents (Gordon-Larsen, et al., 2000). The literature on children's time use has almost exclusively focused on how individual and family characteristics influence children's daily activities, raising questions about how other environments, such as the local context, may place constraints and limitations on children's health-related time use. While studies of the neighborhood context and time use have separately exposed important sources of variation in children's time use and health, researchers have not considered neighborhoods and time use in conjunction with one another. An integration

of the these two veins of research is potentially useful, since it allows us to both understand the role of place in children's time use, and to explicitly examine the behaviors that are assumed to explain the neighborhood/well-being relationship by the institutional model of neighborhood effects.

There is ample reason to expect an association between the neighborhood context and health-related time use. Leisure time provides a good example, as it is an important context within which children learn and develop outside of formal institutions such as schools or families (e.g., Larson and Verma, 1999). The ways in which children spend their leisure time are likely to be important determinants of their physical health and lifestyle, both of which may persist into adulthood. Research shows that poor neighborhoods are less likely to have high quality nutrition and exercise-related resources (Morland et al, 2002). The children who live in these neighborhoods may subsequently be less likely to participate in physically active, outdoor activities and more likely to spend time engaged in sedentary indoor activities. Children who live in poor neighborhoods may also attend schools with inferior nutrition and exercise resources, and children at these schools may spend more time in sedentary activities. These differences in time use may have important consequences for children's health. Physically inactive children have a higher risk of being overweight or obese, and of developing the many health problems associated with being overweight, including type II diabetes, respiratory problems, liver and orthopedic complications and psychological distress in the short term, and hypertension, cardiovascular disease and cancer in the long term (Dietz, 1998; Gortmaker et al, 1993).

The Present Study

Our research extends previous work in a number of ways. This study is organized into two sections. First, we consider another possible source of variation in children's health-related time use: the neighborhood. This will contribute to our understanding of how children in the U.S. spend their time. Does children's time use in activities that promote or jeopardize health differ across neighborhoods? Secondly, we include the consideration of children's time use in a study of neighborhood effects on children's health, in order to provide concrete and direct measures of the behavioral pathways to health hypothesized by the institutional framework.

METHODS

Data

We address the relationship between neighborhood structure, time use and children's health using several unique components of the PSID and its CDS. The PSID is a longitudinal study that has been following a nationally representative sample of U.S. individuals since 1968. By 1996 that sample had reached 8,500 people. In 1997, the PSID conducted the PSID-CDS to collect detailed information on children's communities, time use, schools, development, demographic and economic context and families. The 1997 CDS contains information on 2,394 PSID families and 3,563 children ages 0-12, with a response rate of 88%. In 2002 a follow-up wave conducted, providing information on 2,019 families and 2,907 children ages 5-18, with a response rate of 91% (PSID-CDS User Guide, 2002).

The project uses two unique features of the PSID-CDS. First, we exploit its rich time diary data. Time diaries focus on capturing the chronology of events over a short

period of time. Data collected using this approach have been shown to be reliable and valid, less subject to social desirability bias, and to provide more reliable estimates of time spent in infrequent activities than data collected from other methodologies, including traditional, survey-based questions that ask individuals how much time they spend performing specific activities (Juster and Stafford, 1985; Robinson, 1985). In the PSID-CDS, detailed information on children's time use is available for up to two children within a family. In order to make daily diaries more representative of children's time use over the course of a full week, diaries were collected for a random weekday and weekend for each child. We limit the sample to children who completed both weekday and weekend time diaries in order to make time use information more representative of children's time use over the course of a full week. As a result, 387 children were dropped because they did not complete both weekday and weekend time diaries. To determine children's relationship with their primary caretaker, an additional set of restrictions was imposed: 1) the child's primary caretaker is the mother, and 2) the head/wife of the household is also the parent of the child. As a result, an additional 282 children were dropped from the sample. Our base sample for analysis consists of 2,238 children aged 5 to19 in 2002, which represents 77% of children interviewed in 2002.

Secondly, we use data from the PSID Geocode Match Files, which provide longitudinal data on PSID respondents' neighborhoods at the level of the census tract. Data on children's neighborhoods can be obtained by linking children with their primary caregivers. The residential histories allow us to track children's residences over their whole lifetime, or since their caregiver's inclusion in the sample. The Geocode Match Files can also be linked to data from the U.S. Census that provides information on specific social and demographic characteristics of neighborhoods, such as poverty rate,

racial/ethnic composition, median household income and proportion of foreign born. In addition, the CDS measures other characteristics of neighborhoods related to safety and community institutions.

Measures

Dependent Variables

In the first part of the analysis, in which we aim to examine variation in children's health-related time use across neighborhoods, time use is the dependent variable. To measure time use related to child health, we categorize the activities children perform according to the level of physical exertion necessary to perform each activity. Levels of physical activity among both children and adults are known to influence both physical and mental health status. Children who engage in low levels of physical activity, for example, have greater skinfold thickness, rates of overweight and obesity (Goran et al., 1997; Fogelholm, et al., 1999; Hernandez et al., 1999). We begin with the categories used by the PSID-CDS, in order to distinguish between two types of health-related leisure: active leisure and passive leisure. *Active leisure* includes participation in sports classes/practice/exercise and other outdoor activities requiring vigorous activity (hiking, biking, playing at a playground). This category also includes activities not directly related to sports, but which require some amount of vigorous activity, including repairing cars and caring for animals. In contrast, *passive leisure* includes activities that require low level of physical exertion, including watching television, talking on the telephone and reading.

Because the high level of aggregation in these categories may obscure variation in the level of activity required within the same broad category, we also examine several

disaggregated time-use behaviors within the active and passive leisure categories. One behavior within the "playing" category included in active leisure, for example, is electronic video game use, which does not require high levels of physical exertion. In order to more explicitly examine specific active and sedentary behaviors, we disaggregate our two categories of time use and separately consider some disaggregated activities, in addition to the aggregated categories. We consider two active behaviors and four sedentatry behaviors. Disaggregated measures of passive leisure include *television watching* and *video game use.* Disaggregated measures of active leisure include *walking/running/hiking*, *active sports* (e.g., basketball, hockey, but not in a structured, practice format), *sports practice/competition* (includes organized group practices and competitions) and *sports lessons* (includes individual lessons in swimming, dance, karate, etc.). Both weekday and weekend diaries were used to construct the activities children perform in a representative week by multiplying weekday time use by 5 and weekend time use by 2. All measures of time use are calculated in hours per week.

In the second part of the analysis, the time use variables become independent variables and our dependent variables focus around a key indicator of child well-being: physical health. The PSID-CDS contains substantial detail about children's physical and mental health conditions and the date of their onset. For any given health problem, however, there is very little variation among children, making it hard to examine the effects of any particular condition. Instead, we use children's age and sex-adjusted *body mass index (BMI)* and *general health status,* as reported by mothers. BMI is significantly associated with many health problems during both childhood and adulthood, including type II diabetes, respiratory problems, liver and orthopedic complications, psychological distress, hypertension, cardiovascular disease and cancer (Dietz, 1998; Gortmaker et al,

1993). In children and adolescents, BMI is sensitive to age and sex, since body fatness changes with age and since boys and girls develop at different rates. The PSID-CDS includes a measure of BMI that is adjusted for age and sex using growth charts from the Centers for Disease Control (PSID-CDS User Guide, 2002). We use that measure to create a dichotomous variable indicating whether or not a child's BMI is in the overweight or obese range, relative to normal weight (overweight/obese=1). The self-reported health measure ranges from 1-5, with a value of 1 indicating excellent health and a value of 5 indicating poor health. A higher score on this scale indicates poorer health. Research has shown that self-reported health is predicted by clinical factors such as body mass index, type II diabetes and cardiovascular health (Goldman et al., 2003), and that it is a strong predictor of future survival, morbidity and health care need (Idler et al., 1997; Moller et al., 1996). In addition, it is likely that self-reported health is a more holistic measure of health. In contrast to objective, clinical measures of health, self-reports capture people's perceptions of their own health, and may capture both physical and psychological/emotional aspects of health (Goldman et al., 2003). While much of the research on self-reported health has examined adults, there is no reason to think that the patterns for adolescent self-reports would be strikingly different. In these analyses, we use a dichotomous measure of health in order to differentiate between those with excellent/very good health and those with good/fair/poor health[1].

Independent Variables

We include several independent variables in both parts of the analysis. In the second part of the analysis, in which we incorporate time use into models of

[1] Analyses were also conducted with an ordinal version of the self-rated health variable. Results did not vary in substantive or statistical significance.

neighborhood effects, we include the aggregated active and passive leisure variables described above as independent variables. We use three variables to define the socioeconomic resources in a neighborhood: tract poverty rate, tract mean family income, and mothers' perception of neighborhood safety. Ideally we would use direct measures of neighborhoods' institutions (playgrounds, parks, after-school centers); in future work on this project we will try to link such data to our neighborhoods. Nonetheless, these three measures are direct and indirect indicators of the socioeconomic "quality" of a neighborhood. Tract poverty rate is calculated as the proportion of people in the census tract living below U.S. Census poverty thresholds (adjusted for household size), and ranges from 0 to 1. Tract mean family income is logged. Both tract poverty and tract income are averages of a child's neighborhood between 1997-2002, in order to more accurately represent cumulative neighborhood experience (Jackson and Mare, 2005). Since children are linked to their mothers, the average is computed with the number of observations that the mother has between 1997 and 2002. Finally, we use a dichotomous measure of neighborhood safety to indicate whether or not mothers feel safe in their neighborhood in 2002 (safe=1).

Individual and family-level variables include the race/ethnicity (black, Hispanic, other) and sex (male=1) of the child, total family income, mothers' educational attainment and mothers' marital status (married=1). To account for missing data on the income and education variables, we use mean substitution and dummy variable adjustment. In order to account for the possibility that unobserved characteristics of children and families are driving any relationships among neighborhoods, time use and health, we attempt to control for as many of these factors as possible. Mothers' BMI is included to control for a possible unobserved genetic contributor to children's BMI. In

addition, we include three measures from the Home Observation for Measurement of Environment-Short Form (HOME-SF). HOME scores are derived from semi-structured interviews and interviewers' observations of the home environment and of relationships between mothers and children; they are believed to provide a reasonably objective assessment of the quality of parenting and the level of cognitive stimulation that children receive at home (Caldwell and Bradley, 1984). The *cognitive stimulation* scale includes measurements of the amount of reading material and the degree of disorganization in the home, as well as how often children are taken to a museum. The *maternal warmth* scale measures the degree of maternal affection and encouragement that mothers provide to their children. Finally, the *parental aggravation* scale captures the degree of stress parents experience because of changes in employment, financial resources and other areas. The maternal warmth and parental aggravation scales are from the 2002 PSID-CDS, while the cognitive stimulation scale is from the 1997 wave, when children were between the ages of 0 to12. Higher scores on each of these scales indicate higher levels of cognitive stimulation, maternal warmth and parental aggravation.

Table 1 presents descriptive characteristics of the sample, weighted to adjust for differential family and child selection (oversampling of blacks, selection of children in households with more than two children) and attrition between waves. About two-thirds of the sample is non-Hispanic white, with blacks and Hispanics each making up about 14% of the sample, and Others making up about 6%. The mean education of mothers is about 13 years. Mean tract poverty rate is about 15% and mean tract family income is about $57,000. The majority of mothers (86%) feel safe in their neighborhoods. Children spend more time engaged in passive leisure (21.4 hours) than in active leisure

(12.6 hours). About 18% of children have a BMI in the obese range, and about 14% of children are in less than excellent or very good health.

Statistical Analysis

The first part of the analysis examines the relationship between characteristics of children's neighborhoods and their time use, net of family background, parental practices and sociodemographic characteristics. Do children living in poorer, less safe communities spend less time in active, outdoor activities than children from more affluent, safer communities? The institutional/resource model would answer yes to both of these questions. We use multilevel regression models to account for the clustering of children within neighborhoods. In the second part of the analysis, we use multilevel logistic regression models to examine the role that children's time use plays in explaining the relationship between neighborhood characteristics and health, as defined by BMI and general health status. Does time use acts as a mediator in the neighborhood/well-being relationship? All analyses are conducted using probability weights to adjust for differential family and child selection (oversampling of blacks, selection of children in households with more than two children) and attrition between waves.

RESULTS

Neighborhood Characteristics and Time Use

In this section, we ask two questions: 1) What is the gross association between children's and adolescents' neighborhoods and their time use patterns? 2) Do these associations persist after we control for individual and family characteristics? We separately regress eight categories of aggregated and disaggregated categories time use on

the neighborhood characteristics, as well as on an extensive array of individual and family characteristics. We present both the gross and net associations between neighborhoods and time use. Table 2 presents these relationships for children's mean tract poverty rate between 1997 and 2002. Table 3 presents the associations between time use and children's mean tract family income between 1997-2002. Finally, Table 4 presents the associations between time use and neighborhood safety, as rated by children's mothers.

Neighborhoods and Active Leisure

As the gross associations in Tables 2, 3 and 4 demonstrate, children who live in neighborhoods with a higher poverty rate spend less time in active leisure, whereas children who live in neighborhoods that are wealthier and safer spend more time engaging in active leisure. Most of these associations become insignificant once aspects of families and individuals are introduced, however. At the aggregated level, only the net association between neighborhood safety and active leisure remains significant: Table 4 shows that children of mothers who report feeling safe in their neighborhoods spend approximately 1.7 more hours per week performing activities that require physical exertion than children of mother who report feeling less safe.

Once active leisure is disaggregated, the results provide more detail on how specific active behaviors are related to the "quality" of neighborhoods. In particular, the net associations suggest that individuals who live in more economically advantaged neighborhoods spend more time in *sport lessons* and *active sports*, activities that require the availability of community resources such as sports facilities, community centers or gyms. Those that live in economically disadvantaged neighborhoods spend more time on

activities that can be performed without such resources (e.g. walking/running/hiking). Net of family and individual influences, children who live in wealthier neighborhoods are expected to spend more time taking private lessons such as dance, karate and swimming lessons while children who live in safer neighborhoods spend more time playing sports such as basketball, baseball, and tennis. On the other hand, children who live in poor neighborhoods are expected to spend more time participating in active leisure activities that require fewer material resources, such as walking or running.

The tables also show that race, gender, family income and the level of cognitive stimulation in the home environment are important correlates of time spent in active leisure. Black and Hispanic children spend substantially less time in active leisure than non-Hispanic white children, net of all other characteristics. Across the three neighborhood characteristics, Blacks and Hispanics spend at least 2.6 and 3.0 fewer hours per week, respectively, on active leisure than non-Hispanic white children. Boys also spend significantly more time on active leisure than girls; in all three tables, boys spend, on average, 5.2 more hours per week than girls. Regressions using disaggregated time use data show that much of this difference is due to the fact that boys spend more time on *active sports*; boys, for example, spend 1.4 more hours per week playing *active sports*). Girls, on the other hand, spend slightly more time taking *sports lessons* (0.11 more hours per week). Family income is positively correlated with aggregated active time. In all three tables, a one percent increase in family income is associated with at least a 0.9 hour per week increase in physical activity. Specifically, children from wealthier households spend more time in *organized sporting practices* and *sports lessons*. Finally, the level of cognitive stimulation in the home environment is negatively correlated with active leisure. This result is surprising, although it could be the case that children from

households that encourage intellectual development are less likely to participate in sports and more likely to participate in educational activities such as volunteer and political organizations, arts and crafts and theatre, all of which are activities that are not included in our measures of active and passive leisure.

Neighborhoods and Sedentary Activities

Tables 2, 3 and 4 show that time spent on the aggregated measure of passive leisure is negatively correlated with neighborhood tract income and neighborhood safety. However, these associations are not statistically significant once family and individual characteristics are introduced. Mother's education has the strongest correlation with the time children spend on passive leisure. Each additional year increase in mother's education is associated with a 0.3 hour per week decrease in the amount of passive leisure her children perform.

We also include two disaggregated measures of passive leisure in our analysis: time spent watching television and time playing video games. The gross associations between neighborhood quality and TV watching suggest that the amount of television children and adolescent watch increases with neighborhood poverty and decreases as neighborhoods become wealthier and safer. However, the net associations suggest that family income and mother's education mediate much of this relationship. A one percent increase in family income reduces the amount of time spent watching television by nearly 1 hour per week across all three models. Likewise, each additional increase in mother's education also reduces television watching by .3 hours per week. Regarding time spent playing video games, Tables 2 and 4 suggest that neighborhood poverty has a significant net relationship with the amount of time children and adolescent spend playing video

games. Those that live in completely poor neighborhoods are expected to spend approximately 3.3 fewer hours per week playing video games than those that live in more advantageous neighborhoods. On the other hand, those that live in safe neighborhoods spend about 1.1 more hours per week, relative to those that live in less safe neighborhoods. These results are somewhat surprising, as we would expect much of the relationship between video game playing and neighborhood quality to be mediated by family socioeconomic status and parenting practices. It could be that the associations between time spent on video games and neighborhood poverty and safety is being driven by characteristics of individuals and families that we cannot measure.

Overall, the results suggest modest associations between neighborhood characteristics and time use. In many cases, the associations become statistically insignificant once characteristics of families and individuals are introduced. However, some results provide insight into how health-related time use may relate to neighborhood quality. Institutional models suggest that poorer neighborhoods lack quality resources and services for children and their families. Our results suggest that individuals living in communities deprived of these resources engage in different activities from children who live in resource-rich environments. We find that children and adolescents who live in safer neighborhoods spend more time on active leisure than those who live in less safe neighborhoods. More specifically, children who live in more advantaged neighborhoods spend more time engaged in the types of activities that require basic community resources and services such as parks, sports facilities and after-school venues. While children who live in economically deprived neighborhoods spend less total time in active leisure, they spend more time engaged in the types of active leisure that do not require the use of available community resources and services. These results suggest that the availability of

neighborhood resources may structure the amount of time children and adolescents spend on active, high-energy leisure. With respect to passive leisure, the results suggest that neighborhoods play less of a role. In general, characteristics of the family, such as family income and mother's education, mediate the relationship between neighborhood characteristics and both aggregated measures of passive leisure and television watching. However, neighborhood characteristics appear to have an independent association with video game playing, which may be the result of unobserved heterogeneity.

Does Time Use Mediate the Relationship Between Neighborhoods and Health?

The second part of the analysis is motivated by the need to use concrete measures of the behavioral pathways from neighborhoods to health hypothesized by the institutional framework. First, do levels of neighborhood poverty, income and safety influence children's odds of being obese and in good general health, net of individual and family characteristics? While the results are not consistent across the three neighborhood characteristics, there are some significant effects for neighborhood income and safety. Net of the observed individual and family characteristics, living in a wealthier neighborhood is associated with a decreased likelihood of being obese. As Model 1 in Table 5 shows, for example, a 1% increase in neighborhood mean family income is associated with a 38% decrease in the odds of being obese. Neighborhood poverty rate and safety are not significantly associated with obesity, and are therefore not shown here. The discrepancy between the neighborhood poverty and income measures is surprising, since the poverty measure is constructed from income; this discrepancy may be driven by differences between family and household income. At least for neighborhood income, however, the results are consistent with the predictions of the institutional model: children

in neighborhoods with more abundant socioeconomic resources are expected to have a lower likelihood of being overweight or obese. In addition, Model 1 in Table 6 shows that living in a safer neighborhood is associated with being in better overall health. Children whose mothers define their neighborhoods as "safe" have 83% higher odds of being in excellent or very good health than children who live in less safe neighborhoods. One could argue, since both neighborhood safety and children's overall health are rated by mothers, that mothers who define their neighborhoods to be safe are generally more optimistic and would also rate their children in excellent health. The correlation between these two variables is quite modest (.15), however, suggesting that this is not the case.

The results from the previous portion of the analysis suggest that there is neighborhood-level variation in children's time use, with children in higher-income and safer neighborhoods spending more time on active leisure and organized sports that require the use of sports facilities. Might this variation in time use explain the observed associations between neighborhoods and health? If neighborhood resources contribute to the types of activities that children can perform, then we would expect not only differences in health behavior, but also in health status. Table 7, which displays the predicted probability of being obese or in good health, both before and after controlling for time use, suggests that neighborhood-based differences in time use do not explain differences in obesity and general health status. As is clear from the table, the predicted probabilities of being obese or in good health are virtually identical before and after controlling for time use.

Overall, the results from the second part of the analysis suggest that neighborhoods do exert an influence on children's health, net of individual characteristics. Contrary to our expectations, however, these differences are not

explained by neighborhood-based differences in children's time-use. Although the first part of the analysis suggests that children's health-related time use patterns, especially those related to active leisure, do appear to be structured at least in part by the resources and institutions in their neighborhoods, these behaviors do not appear to translate into health disparities, at least in the short term.

CONCLUSIONS

Despite the central role that behavioral differences play in theoretical arguments linking neighborhoods and children's well-being, we know very little about if and how the socioeconomic resources within neighborhoods affect the daily lifestyle choices parents and children make, and how any behavioral responses to constraints within communities may affect children's health. It is important to understand how children in the U.S. spend their time across multiple contexts, in order to understand the most important determinants of disparities in healthy and unhealthy behaviors. In the present study, we consider neighborhoods as a source of variation in children's and adolescents' health-related time use. In addition, we examine whether differences in the time that children spend on these activities contribute to neighborhood-based health disparities.

Our findings suggest that the neighborhood may be a source of variation in children's health-related time use. Net of observable individual and family characteristics, children who live in neighborhoods with more socioeconomic resources and a safer environment spend more time engaged in active leisure activities and in exercise activities that require sports facilities, such as private lessons and organized sports. Children in poorer neighborhoods, in contrast, spend less time overall in active leisure activities, but more time in activities like walking and running, which do not

require sports facilities. The results also suggest that characteristics of families and individuals go a long way in explaining gross associations between neighborhoods and health-related time use; once we control for these variables, many of the initially significant relationships become insignificant and even change in direction. This suggests that families can, to some extent, compensate for lacking neighborhood resources by structuring children's behaviors and activities outside of school.

Perhaps surprisingly, disparities in active and passive leisure that do significantly differ across neighborhoods do not explain any of the neighborhood-generated differences in body mass index and general health status. This makes sense for the socioeconomic neighborhood measures; while the *types* of active time use that children engaged in differed across neighborhoods, the qualitative results were the same, in that children in both wealthy and poor neighborhoods were engaged in active behavior. We would perhaps expect time use to play a larger role in explaining the association between neighborhood safety and general health status, however, since there was a strong association between neighborhood safety and total time spent on active leisure. Overall, the results suggest that while neighborhood resources and institutions might structure the types of exercise-related activities that children engage in, these differences do not necessarily explain neighborhood-based health disparities.

There are limitations to the current analysis that might contribute to the findings. While we have included measures of exercise behaviors, for example, we have not considered dietary measures. These measures are available for a subset of the sample and we will include them in later versions of the analysis. In addition, there is the possibility for reverse causation in the relationship between time use and health. Since both are measured in the same survey wave (2002), it is possible that children's health influences

their time use, rather than vice versa. This problem could be addressed by considering the lagged effect of time use in 1997 on health in 2002. In addition, this step would address the possibility that differences in time use contribute to neighborhood-based health disparities in the long term but not in the short term, since changes in health are often not immediate.

Reverse causation in the relationship between neighborhoods and time use/health is not a significant concern, since we use lagged measures of children's neighborhoods. It is possible that the neighborhood characteristics are endogenous in other ways, however. Families may, at least to some degree, choose their neighborhoods with their children's time use and health in mind; if these factors are not controlled, then coefficients may be biased. Our approach to this potential problem is to control for as many characteristics of families and individuals as possible, since other statistical methods are not feasible with only one wave of data. We recognize that we cannot make claims about causality, however, and that we can only describe associations.

More generally, future data collection on time use should gather information about *where* children perform their exercise-related activities. This is necessary in order to fully understand the importance of contexts in children's lives other than the family. In this analysis, we know that children engage in active and passive leisure outside of school, but we do not know if that takes place in their local environment or in other neighborhoods. If children are performing activities outside of the neighborhood, then this lack of detail in the measures might partially explain the modest size of neighborhoods' effects on time use, as well as the lack of consistency across measures. In addition, researchers should consider outcomes other than health, since neighborhoods may also influence children's time use in activities that promote cognitive development,

such as structured after-school activities in schools, churches and youth groups. Given evidence that active, structured activities are correlated with higher academic achievement (Hofferth and Sandberg, 2001), this may have important consequences for children's success in school. Finally, studies should consider the effects of local contexts in children's lives other than neighborhoods, especially the school environment, on their health-related time use. How do school resources structure children's exercise activities and, potentially, their health? Only by studying children's activities in multiple contexts can we gain a holistic understanding of how they are influenced by *all* of their environments.

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Table 1: Weighted Descriptive Characteristics of Sample (N=2,197)

Variables	
Individual Characteristics	
Race	
Non-Hispanic White	66
Black	14
Hispanic	14
Other	6
Total	100
Sex	
Male	48
Female	52
Total	100
Age	
5-7 years	18
8-10 years	23
11-13 years	23
14-16 years	23
17-19 years	13
Total	100
Neighborhood Characteristics	
Mean of 1997-2002 Tract Proportion Poor	.153
Mean of 1997-2002 Mean Tract Income	57,189
Neighborhood is Safe	86
Neighborhood is Unsafe	14
Total	100
Family/Parenting Characteristics	
Median Family Income, 2001	48212
Mean Education of Mother (Years)	12.9
Mean Score on Parental Warmth Scale	3.9
Mean Score on Home Cognitive Stimulation Scale	9.6
Mean Score on Parental Aggravation Scale	2.3
Marital Status	
Mother is Married	76
Mother is Unmarried	24
Total	100
Mean Parental BMI	27.9

Table 1, continued: Weighted Descriptive Characteristics of Sample (N=2,197)

Variables	
Time Use	
Mean Hours of Sedentary Activity/week	21.4
Mean Hours of TV/week	14.9
Mean Hours of Video Games/Week	4.3
Mean Hours of Vigorous Activity/week	12.6
Mean Hours Walking, Running Outside/week	.424
Mean Hours of Active Sports	1.6
Mean Hours of Organized Sports Practice/Meets	1.1
Mean Hours of Sports Classes/Lessons	.124
Dependent Variables	
Obese	18
Not Obese	82
Total	100
In very good or excellent general health	86
In poorer health	14
Total	100

Table 2: Coefficients for Regression of Time Use on Mean Neighborhood Income, Individual and Family Characteristics (N=2,197)

	Hours Per Week Engaged in Active Leisure										Hours Per Week Engaged in Passive Leisure					
	Active Leisure		Walk/Running		Active Sports		Sports Practices		Sports Lessons		Passive Leisure		TV		Video Games	
Mean Tract Income	1.991*	-.657	-.358**	-.165	-.078	.199	.551*	-.222	.280***	.202***	2.05**	.125	-3.96***	-.744	.808*	.267
	(.959)	(1.159)	(.177)	(.189)	(.343)	(.433)	(.310)	(.425)	(.075)	(.073)	(1.00)	(-1.320)	(.838)	(1.206)	(.493)	(.560)
Black		-2.90***		.154		-.168		.046		.036		.601		2.36***		-.752
		(.988)		(.206)		(.342)		(.339)		(.033)		(.987)		(.893)		(.532)
Hispanic		-3.34***		.130		-.308		.139		-.061		-.959		.297		-1.74**
		(1.004)		(.192)		(.369)		(.412)		(.042)		(1.557)		(1.423)		(.743)
Other		-1.712		-.117		-.739**		-.344		-.059		-3.01*		-2.031		-.813
		(1.506)		(.160)		(.331)		(.327)		(.059)		(1.56)		(1.484)		(.789)
Male		5.27***		.006		1.45***		.319		-.108**		-.732		.932		3.63***
		(.565)		(.126)		(.215)		(.209)		(.049)		(.681)		(.598)		(.367)
Log Family Income		1.09***		.008		-.100		.387***		.082**		-.737		-.918**		.434*
		(.386)		(.084)		(.209)		(.146)		(.040)		(.471)		(.455)		(.262)
Mother's Educ.		.071		-.015		-.050		.062		-.011		-.337**		-.308**		-.105
		(.146)		(.022)		(.051)		(.059)		(.008)		(.136)		(.132)		(.079)
Parental Warmth		-.279		-.134		.032		.207		.056**		-.936		-.684		-.474
		(.568)		(.187)		(.194)		(.189)		(.026)		(.607)		(.532)		(.348)
Cog. Stimulation		-.310*		-.039		-0.021		.042		.002		.042		-.004		-.081
		(.187)		(.049)		(.060)		(.062)		(.009)		(.204)		(.190)		(.102)
Parental Agg.		-.369		-.057		.056		-.150		.009		-.323		-.436		-.104
		(.410)		(.079)		(.150)		(.118)		(.029)		(.474)		(.399)		(.277)
Married		-.066		.087		.055		-.00016		-.00018		-.225		-.268		-.210
		(.776)		(.128)		(.302)		(.260)		(.047)		(1.032)		(.992)		(.494)

Table 2, continued: Coefficients for Regression of Time Use on Mean Neighborhood Income, Individual and Family Characteristics (N=2,197)

	Hours Per Week Engaged in Active Leisure									Hours Per Week Engaged in Passive Leisure					
	Active Leisure		Walk/Running		Active Sports		Sports Practices		Sports Lessons		Passive Leisure		TV		Video Games	
Age Categories																
5-7 yrs (omitted)																
8-10 yrs		-.566		.381		.562*		.258		-.032		1.346		1.252		1.28***
		(1.114)		(.327)		(.309)		(.233)		(.097)		(1.237)		(1.157)		(.502)
11-13 yrs		-1.81*		.110		1.18***		.885***		-.112		6.09***		3.28***		2.25***
		(1.059)		(.225)		(.385)		(.289)		(.100)		(1.26)		(1.15)		(.524)
14-16 yrs		-4.13***		-.051		.842**		2.00***		-.244***		7.89***		1.685		2.73***
		(1.068)		(.194)		(.382)		(.393)		(.085)		(1.34)		(1.111)		(.674)
17-19 yrs		-6.02***		-.285		.242		1.60***		-.246***		8.14***		2.70**		3.02***
		(1.118)		(.185)		(.318)		(.527)		(.081)		(1.59)		(1.245)		(.821)
Constant	-8.827	13.057	4.36**	3.22**	2.438	-.122	-4.689	-3.201	-2.93***	-2.92***	43.68***	32.53***	57.72***	37.99***	-4.514	-2.080
	(10.39)	(12.15)	(1.97)	(1.59)	(3.77)	(4.65)	(3.38)	(3.98)	(.796)	(.886)	(10.98)	(13.29)	(9.19)	(11.75)	(5.383)	(5.661)
Observations	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197
Number of Tracts	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061
Standard errors in parentheses																
*p<.1 **p<.05 ***p<.01																

Table 3: Coefficients for Regression of Time Use on Mean Neighborhood Poverty, Individual and Family Characteristics (N=2,197)

	Hours Per Week Engaged in Active Leisure								Hours Per Week Engaged in Passive Leisure					
	Active Leisure		Walk/Running		Active Sports		Sports Practices		Sports Lessons		Passive Leisure		TV		Video Games	
Mean Prop. Poor	8.93***	2.281	1.51**	1.03*	1.572	2.19*	-1.483	1.135	-.618***	-.150	5.292	-2.092	12.39***	.286	-4.90***	-3.28**
	(3.011)	(3.742)	(.736)	(.639)	(1.042)	(1.32)	(1.328)	(1.719)	(.234)	(.350)	(3.740)	(5.154)	(3.13)	(4.460)	(1.71)	(1.82)
Black		-3.01***		.078		-.441		-.028		.011		.769		2.48***		-.458
		(1.00)		(.193)		(.362)		(.392)		(.039)		(1.093)		(.958)		(.531)
Hispanic		-3.51***		.033		-.599		.037		-.073		-.730		.377		-1.39*
		(1.07)		(.204)		(.384)		(.349)		(.062)		(1.666)		(1.522)		(.746)
Other		-1.785		-.145		-.775**		-.376		-.047		-2.96**		-2.068		-.736
		(1.523)		(.159)		(.338)		(.325)		(.060)		(1.59)		(1.500)		(.799)
Male		5.277***		.004		1.44***		.319		-.111**		-.725		.947		3.64***
		(.564)		(.127)		(.211)		(.209)		(.049)		(.683)		(4.460)		(.365)
Log Family Income		1.04***		.006		-.012		.379***		.111***		-.768*		-1.03***		.396
		(.383)		(.073)		(.199)		(.140)		(.044)		(.454)		(.431)		(.246)
Mother's Educ		.065		-.014		-.032		.062		-.006		-.344***		-.327***		-.114
		(.140)		(.020)		(.049)		(.057)		(.008)		(.138)		(.131)		(.079)
Parental Warmth		-.299		-.146		-.001		.195		.055**		-.910		-.676		-.433
		(.573)		(.186)		(.192)		(.188)		(.026)		(.619)		(.532)		(.349)
Cog. Stimulation		-.313*		-.040		-.015		.041		.004		.040		-.012		-.083
		(.189)		(.049)		(.059)		(.061)		(.009)		(.203)		(.188)		(.102)
Parental Agg.		-.376		-.060		.052		-.153		.009		-.318		-.440		-.095
		(.411)		(.079)		(.148)		(.116)		(.028)		(.473)		(.398)		(.276)
Married		6.353		.091		.026		.007		-.013		-.220		-.218		-.205
		(5.166)		(.126)		(.299)		(.262)		(.046)		(1.036)		(.988)		(.488)

Table 3, continued: Coefficients for Regression of Time Use on Mean Neighborhood Poverty, Individual and Family Characteristics (N=2,197)

	Hours Per Week Engaged in Active Leisure								Hours Per Week Engaged in Passive Leisure					
	Active Leisure		Walk/Running		Active Sports		Sports Practices		Sports Lessons		Passive Leisure		TV		Video Games	
Age Categories																
5-7 yrs (omitted)																
8-10 yrs		-.555		.376		.535*		.258		-.039		1.357		1.282		1.30***
		(1.11)		(.325)		(.307)		(.232)		(.099)		(1.236)		(1.147)		(.502)
11-13 yrs		-1.81*		.108		1.14***		.884***		-.119		6.11***		3.31***		2.52***
		(1.06)		(.223)		(.382)		(.288)		(.101)		(1.26)		(1.14)		(.524)
14-16 yrs		-4.12***		-.054		.803**		2.00***		-.244***		7.91***		1.720		2.75***
		(1.06)		(.192)		(.378)		(.398)		(.085)		(1.34)		(1.111)		(.676)
17-19 yrs		-6.00***		-.286		.201		1.60***		-.258***		8.16***		2.75***		3.04***
		(1.12)		(.187)		(.316)		(.529)		(.083)		(1.60)		(1.24)		(.824)
Constant	14.16***	6.353	.242	1.356	1.37***	.796	1.53***	-5.61***	.206***	-1.07**	20.602	34.447	12.78***	31.29***	4.98***	1.538
	(.554)	(5.166)	(.089)***	(1.413)	(.170)	(2.183)	(.199)	(1.97)	(.046)	(.476)	(.649)***	(5.565)	(.530)	(5.34)	(.338)	(3.286)
Observations	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197
Number of Tracts	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061

*p<0.1 **p<0.05 ***p<0.01

Table 4: Coefficients for Regression of Time Use on Neighborhood Safety, Individual and Family Characteristics (N=2,197)

	Hours Per Week Engaged in Active Leisure										Hours Per Week Engaged in Passive Leisure					
	Active Leisure		Walk/Running		Active Sports		Sports Practices		Sports Lessons		Passive Leisure		TV		Video Games	
Neigh. Safety	2.81***	1.73**	-.077	.137	.477*	.713**	.267	-.382	.124***	.041	-1.37*	-.253	-2.24***	.050	1.43***	1.11**
	(.816)	(.887)	(.152)	(.174)	(.279)	(.312)	(.365)	(.343)	(.030)	(.028)	(.853)	(1.005)	(.831)	(.984)	(.484)	(.555)
Black		-2.68***		.197		-.168		.066		-.002		.549		2.52***		-.746
		(.936)		(.217)		(.325)		(.314)		(.031)		(.946)		(.857)		(.513)
Hispanic		-3.04***		.170		-.256		.127		-.087**		-1.029		.405		-1.66***
		(1.01)		(.192)		(.359)		(.408)		(.039)		(1.547)		(1.431)		(.753)
Other		-1.764		-.126		-.739**		-.350		-.051		-3.016		-2.072		-.816
		(1.507)		(.159)		(.334)		(.327)		(.060)		(1.579)		(1.482)		(.801)
Male		5.30***		.010		1.45***		.322		-.111**		-.736		.948		3.63***
		(.565)		(.127)		(.211)		(.209)		(.049)		(.682)		(.596)		(.364)
Log Family Income		.908**		-.025		-.096		.367***		.113***		-.693		-1.04***		.432*
		(.396)		(.073)		(.208)		(.143)		(.042)		(.444)		(.414)		(.239)
Mother's Educ.		.015		-.023		-.061		.064		-.006		-.333**		-.333***		-.122
		(.138)		(.019)		(.047)		(.055)		(.009)		(.138)		(.127)		(.077)
Parental Warmth		-.261		-.130		.038		.208		.053**		-.938		-.674		-.469
		(.564)		(.188)		(.193)		(.191)		(.026)		(.606)		(.515)		(.347)
Cog. Stimulation		-.345*		-.043		-.032		.046		.004		.0522		-.009		-.096
		(.189)		(.052)		(.061)		(.062)		(.009)		(.202)		(.186)		(.103)
Parental Agg.		-.341		-.055		.073		-.159		.010		-.330		-.439		-.082
		(.406)		(.078)		(.151)		(.117)		(.029)		(.473)		(.398)		(.276)
Married		-.092		.090		.013		.026		-.017		-.274		-.252		-.275
		(.787)		(.129)		(.299)		(.265)		(.046)		-1.050		(.998)		(.492)

Table 4, continued: Coefficients for Regression of Time Use on Neighborhood Safety, Individual and Family Characteristics (N=2,197)

	Hours Per Week Engaged in Active Leisure								Hours Per Week Engaged in Passive Leisure							
	Active Leisure		Walk/Running		Active Sports		Sports Practices		Sports Lessons		Passive Leisure		TV		Video Games	
Age Categories																
5-7 yrs (omitted)																
8-10 yrs		-.560		.385		.556*		.272		-.042		1.347		1.276		1.26***
		(1.109)		(.327)		(.304)		(.228)		(.097)		(1.230)		(1.143)		(.499)
11-13 yrs		-1.72*		.123		1.21***		.882***		-.119		6.08***		3.30***		2.54***
		(1.05)		(.229)		(.387)		(.290)		(.099)		(1.25)		(1.13)		(.528)
14-16 yrs		-4.11***		-.044		.833**		2.02***		-.247***		7.87***		1.703		2.71***
		(1.07)		(.192)		(.383)		(.395)		(.082)		(1.35)		(1.113)		(.674)
17-19 yrs		-5.98***		-.275		.238		1.61***		-.261***		8.12***		2.72**		3.01***
		(1.11)		(.188)		(.319)		(.527)		(.081)		(1.59)		(1.25)		(.829)
Constant	10.51***	7.240	.516***	1.746	1.18***	1.586	1.10***	-5.16***	.015	-1.13***	22.51***	33.61***	16.41***	31.38***	3.08***	.231
	(.724)	(5.112)	(.138)	(1.36)	(.255)	(2.164)	(.341)	(1.78)	(.008)*	(.435)	(.812)	(5.37)	(.796)	(5.10)	(.437)	(3.198)
Observations	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197	2197
Number of Tracts	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061

*p<0.1 **p<0.05 ***p<0.01

Table 5: Associations among Neighborhood Income, Time Use and Obesity (N=2,092)

Variables	(1)	(2)
Logged Mean Tract Income, 1997-2002 Mean	-.481*	-.485*
	(.261)	(.260)
Married	.208	.202
	(.240)	(.241)
Male	.474***	.522***
	(.145)	(.154)
Black	.157	.130
	(.214)	(.215)
Hispanic	.101	.0945
	(.291)	(.297)
Other	-.260	-.241
	(.388)	(.385)
Age 8-10 years	.615**	.603**
	(.248)	(.250)
Age 11-12 years	.724***	.667***
	(.255)	(.256)
Age 14-16 years	.369	.275
	(.258)	(.266)
Age 17-19 years	.376	.264
	(.295)	(.299)
Logged Family Income, 2001	.04	.0537
	(.125)	(.125)
Education of Head, 2001	-.009	-.00518
	(.037)	(.037)
Mother's BMI	.075***	.075***
	(.015)	(.015)
Parental Warmth Scale 2002	.235*	.243*
	(.130)	(.131)
Cognitive Stimulation Scale, 2002	-.060	-.0643
	(.045)	(.045)
Parental Aggravation Scale, 2002	.250***	.252***
	(.092)	(.092)
Time in Sedentary Activities (Hours)		.00911*
		(.00534)
Time in Vigorous Activities (Hours)		-.00730
		(.00534)
Constant	-.467	-.729
	(2.676)	(2.68)
Observations	2092	2092

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; significant at 1%

Table 6: Associations among Neighborhood Safety, Time Use and Self-Rated Health (N=2,193)

Variables	(1)	(2)
Neighborhood safe	.607*	.623*
	(.242)	(.240)
Male	-.003	.00695
	(.153)	(.162)
Married	.237	.223
	(.231)	(.236)
Black	.0115	.00567
	(.239)	(.244)
Hispanic	-.457	-.488
	(.277)	(.285)
Other	-.0474	-.125
	(.353)	(.349)
Age 8-10 years	-.317	-.314
	(.287)	(.291)
Age 11-12 years	-.191	-.129
	(.314)	(.325)
Age 14-16 years	-.358	-.274
	(.290)	(.305)
Age 17-19 years	-.246	-.162
	(.301)	(.315)
Logged Family Income, 2001	.377*	.378**
	(.131)	(.132)
Education of Head, 2001	.0159	.009
	(.034)	(.034)
Parental Warmth Scale 2002	.264*	.250
	(.134)	(.137)
Cognitive Stimulation Scale, 2002	.0591	.0589
	(.048)	(.0479)
Parental Aggravation Scale, 2002	-.503**	-.518**
	(.100)	(.102)
Time in Sedentary Activities (Hours)		-.0147*
		(.007)
Time in Vigorous Activities (Hours)		-.005
		(.009)
Constant	-3.10*	-2.59
	(1.46)	(1.52)
Observations	2193	2193

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Table 7: Predicted Probability of Being Obese and in Good Health, With and Without Time Use*

	Obese		Good Health	
Variables	(1)	(2)	(1)	(2)
Proportion of Tract in Poverty, 1997-2002 Mean	NS**	NS	NS	NS
Logged Mean Tract Income, 1997-2002 Mean	.180	.177	NS	NS
Neighborhood Is Safe	NS	NS	.887	.889

*All variables are held at their means. Predicted probabilities are for a child with a mean value of tract poverty/income, and with a value of "1" on the neighborhood safety variable.
**NS=Not Significant