

**Racial and Ethnic Disparities in
Childhood Overweight: The Effects of
Family Social Capital, Community Social
Capital, and Collective Efficacy**

*by Jean Kayitsinga, Rubén O. Martínez, and Francisco F. Villarruel
Julian Samora Research Institute, Michigan State University*

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Abstract

This paper examines the effects of family social capital, community social capital and collective efficacy on childhood overweight, employing logistic regression models. Using data from the Child Development Supplement and the 2000 U.S. Census, we find that both parent-child involvement in activities and parental enforcement of rules reduce the odds of childhood overweight, controlling for family and child characteristics. We also find that high levels of community social capital and collective efficacy reduce the odds of childhood overweight, controlling for community, family and child characteristics. These findings suggest that interventions of childhood overweight should target social processes in children's environments.

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Racial and Ethnic Disparities in Childhood Overweight:

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Racial and Ethnic Disparities in Childhood Overweight:

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Introduction

The prevalence of overweight in children and adolescents in the United States has increased in recent decades. In 2003-2004, the prevalence rates of at risk for overweight and that of overweight among children 2-19 years were 33.6% and 17.1% respectively (Ogden et al., 2006). Contributing factors to being overweight in children and adolescents is a complex health problem related to several factors. At the individual level, childhood overweight is associated with specific food preferences and dietary patterns (Institute of Medicine, 2005; Ludwig, Peterson & Gortmaker, 2001; Welsh et al., 2005; Malik, Schulze & Hu, 2006; Sherry, 2005), level of physical activity (Gordon-Larsen, McMurray & Popkin, 1999; Strong et al., 2005; Malina, 1996; Lowry et al., 2004; Eaton et al., 2005), sedentary behavior associated with time spent watching TV, movies, computer use, and video games (Lowry et al., 2002; Francis & Birch, 2006; Gordon-Larsen et al., 1999), and genetic factors (Farooqi & O'Rahilly, 2000; LeStunff, 2001).

The role of healthy food choices and physical activity in the prevention of overweight among children cannot be overemphasized. High nutrient foods, including fruits, vegetables, and dairy products, have been found to be protective against childhood overweight (Carruth & Skinner, 2001; Black et al., 2002; Lin & Morrison, 2002; Forshee & Storey, 2003; Skinner et al., 2003; Zemel et al., 2000). In contrast, excessive consumption of low nutrient foods and beverages, frequent consumption of food outside the home, snacks, skipping breakfast, poverty and access to healthy foods are associated with an increase in children's Body Mass Index (BMI) and skinfold (Ludwig et al., 2001; Troiano et al., 2000; Zoumas-Morse, 2001; Bowman et al., 2004).

Several studies have also reported significant protective associations between physical activity and Body Mass Index (BMI) among children (Gordon-Larsen et al., 1999; Gordon-Larsen, McMurray & Popkin, 2000; Levin et al., 2003; Rowlands et al., 1999). Physical inactivity,

typically quantified as time spent watching television and/or playing video games, has been significantly associated with an increase in childhood obesity (Berkey et al., 2000).

Beyond the individual level, overweight among children and adolescents is influenced by their social environments, including the family, school, and community environments. The 2001 Surgeon General's call to action to prevent and decrease overweight and obesity indicates that the recent increases in obesity prevalence are largely attributed to social and environmental forces that are not under individual control – much less under the control of children – and which influence eating and physical activity behaviors in the aggregate. This study focuses on family and community social environments, specifically on the influences of family-based social capital and community social capital and collective efficacy on childhood overweight, while controlling for neighborhood structural characteristics (e.g., economic disadvantage, residential stability, and immigration concentration), social stressors, rural/urban residence and region, and individual and family characteristics.

Theoretical Background

Family Social Capital and Children's Health

A social capital framework is well suited to explain a large number of family processes and outcomes (Bokemeier, 1997), including the health practices of parents and children. According to Coleman (1988), "social capital, unlike other forms of capital, inheres in the structure of relations between and among actors" (Coleman, 1988:S98). Coleman (1988) argues that social capital is a form of social organization created when the structure of relations among persons facilitate action, "making possible the achievement of certain ends that in its absence would not be possible" (Coleman, 1988: S98; Coleman, 1990: 300). Bourdieu (1985) defines social capital as "the aggregate of actual or

potential resources linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition” (Bourdieu, 1985: 248).

Family-based social capital can be produced through various kinds of social relationships between parents and children, including obligations, expectations, trustworthiness, information exchange, and norms. The underlying assumption of Coleman’s theory is that children would benefit from strong social ties within the family, which form the backbone of norms, standards, expectations, and obligations. In our view, high expectations for healthy eating and physical activity set by parents and other adults; supportive relationships between adults and children that promote positive behavior and attitudes among children; obligations among children to fulfill parents’ expectations; norms of eating together and sharing family meals; trust between parents and children; parents’ communication to children about benefits of healthy foods and exercise; and discussions about personal problems and school activities constitute family-based social capital.

Dietary patterns and physical activity/inactivity which are associated with childhood overweight evolve within the context of the family. The family social environment, including parent-child interactions and management strategies, affects children’s eating patterns and levels of physical activity. Parents, in particular, are responsible for the physical and social environments of young children. High levels of social capital are created when couples work together and involve their children in a common enterprise (Elder & Conger, 2000).

Parental modeling of both eating habits and physical activity shapes children’s values, beliefs, and behaviors (Birch & Fisher, 1998). In addition, parents can control the frequency of watching television, playing video games, and children’s involvement in physical activity/exercise. One of the strongest and most consistent correlates of physical activity among children is the time spent outdoors, a factor largely determined by parents (Sallis, Prochaska & Taylor, 2000). Parental

encouragement, support, involvement in and modeling of activity have been shown to positively predict levels of physical activity in children (Gable & Lutz, 2000).

The main sources of family-based social capital available to a child include not only parent-child interaction and communication, but also extended families, parents’ involvement in school activities such as meetings and parent-teacher associations (PTA), intergenerational closure (Coleman, 1990) (i.e., relationships between parents and children and adults and children outside the family), and institutional resources in the community. As grandparents and other extended kin become more involved, the child (and parents) becomes embedded in a web of obligations and affiliations (Furstenberg, 2005). The role and involvement of extended families in rearing of children contribute to health and health enhancing behaviors. Past research suggests that extended families assist children in circumventing the dangers of high-risk neighborhoods (Patillo-McCoy, 1999) and expand the resource base of the poorer family members and their children and teens; they directly provide money, clothing, housing, and access to resource-rich communities and link them to institutions and social networks. Religious involvement also places children in social enclosures (Furstenberg, 2005).

Having strong social ties does not necessarily translate into positive effects and can sometimes constrain the actions of network members (Portes, 1998; Portes & Sensenbrenner, 1993). Extended family members can be a source of cultural attitudes and practices that influence the consumption of high fat, high calorie foods. These attitudes and practices are rooted in historical experiences, ethno-cultural beliefs, and values; they are often deeply held and reinforced by elders involved in caregiving or when giving advice to parents; and they may pose particular challenges for obesity prevention in ethnic minority families (Kumanyika, 2007).

The family is not an isolated entity. It is connected to and embedded within larger social structures. Children’s health, dietary patterns, levels of physical activity, parental involvement in children’s nutrition and activities, and parental

enforcement of rules and discipline are influenced by larger community social environments, including economic, social, cultural, institutional, and built and infrastructural environments and society at large.

Community Social Capital/ Collective Efficacy and Children's Health

One of the earliest studies hinting at the relationship between social capital and health is the 19th century study of suicide by Émile Durkheim (1997), who showed that social integration (or social cohesion) was inversely related to egoistic suicide rates in societies. Putnam defines social capital at the community level as “features of social organization, such as networks, norms, and trust that facilitate coordination and cooperation for mutual benefit” (Putnam, 1993: 36; Putnam, 1995: 67). He indicates that “working together is easier in a community that is blessed with a substantial stock of social capital” (Putnam, 1995: 35-36) and suggests that social capital has a beneficial effect on health and well-being (Putnam, 2000).

More recently, numerous studies have linked social capital, as a form of social cohesion, to both mental and physical health (Almedon, 2005; Islam et al., 2006; Wilkinson, 1996; Kawachi et al., 1996; Kawachi, Kennedy & Glass, 1999; Ellaway & Macintyre, 2000; Kawachi & Berkman, 2001; Subramanian et al., 2001; Browning & Cagney, 2002; Subramanian, Kim & Kawachi, 2002), improved child development (Keating, 2000), adolescent well-being (Howard et al., 2003), lower violent crime and youth delinquency rates (Sampson, Morenoff & Earls, 1999), reduced mortality (Wilkinson, Kawachi & Kennedy, 1998; Kawachi et al., 1996), increased self-related health (Kawachi et al., 1999; Subramanian et al., 2002; Lindstrom, 2004), health-related behaviors, such as smoking, leisure-time physical activity and dietary habits (Lindstrom et al., 2001; Poortinga, 2006; Carpiano, 2007), depression (Lin & Ensel, 1999), coronary heart disease (Kawachi et al., 1996), and obesity and physical activity (Kim, Subramanian & Kawachi, 2006).

Kawachi and colleagues (1996) argue that there are at least three plausible pathways by which social capital could affect individual health: (1) Social capital may influence health outcomes by increasing access to local services, including preventive and health services; (2) social capital may affect the provision of social supports such as child welfare, home visitor programs, and other state social supports; and (3) social capital may help maintain healthy norms and behaviors. It may also increase levels of informal social control and collective efficacy, and by virtue of membership and participation in social networks, sports leagues, clubs, and associations increase social cohesion in communities.

How families generate and mobilize social capital affects children's behavior and health. Parents seek resources for their children and teens by identifying institutional resources such as after-school programs, youth social service agencies, and recreational and sports centers with the assumption such investments will increase the likelihood of their offspring's success (Burton & Jarrett, 2000). Parents not only identify supportive institutions and programs in their communities, but also ensure that their children and teens receive benefits from them (Burton & Jarrett, 2000). Parental resource-seeking behaviors and parental advocacy efforts offer children a connection to organizations in the community, what Portes (2000) refers to as “bridging social capital.”

Another widely used concept related to social capital is “collective efficacy,” which refers to the linkage of mutual trust among people that combines with their willingness to engage together on behalf of the common good of the community (Sampson, Raudenbush & Earls, 1997). Collective efficacy strongly predicts neighborhood crime (Sampson et al., 1997; Morenoff, Sampson & Raudenbush, 2001), social disorder (Sampson & Raudenbush, 1999), and premature mortality and cardiovascular disease mortality (Cohen, Farley & Mason, 2003; Lochner et al., 2003). People in neighborhoods with low collective efficacy are likely to experience greater daily stress and lower levels of social support from their neighbors, which forces them to tackle local problems on their own. In contrast, in neighborhoods with high collective efficacy, adults

are more likely to express approval and disapproval about an entire range of behaviors beyond delinquency, including diet and exercise. They would also be more likely to discourage children from eating energy-dense foods and from being sedentary, encouraging instead healthy food consumption and vigorous physical activity. Cohen and colleagues (2006) found that, on average, adolescents in neighborhoods with low collective efficacy exhibited higher odds of being at-risk for overweight than those living in neighborhoods with average levels of collective efficacy. Similarly, residents of neighborhoods with low collective efficacy were more likely to be overweight than those in neighborhoods with average levels. At the state level, Kim and colleagues (2006) also found a significant negative relationship between state social capital and obesity and physical inactivity among adult populations (18 years and older). Residence in a state with high social capital (above the median) was associated with lower relative odds of obesity and physical inactivity (Kim, Subramanian & Kawachi, 2006). Based on these studies, we postulate that increasing levels of family-based social capital, community social capital and collective efficacy improve children's health status or condition, in this case reduce childhood overweight.

Social, Structural, and Spatial Contexts

While all children in the U.S. are at risk of becoming overweight, African American and Latino children are at higher risk than non-Hispanic White children (Hedley et al., 2004; Lutfiyya et al., 2008). The high prevalence of obesity among racial minorities is attributed to cultural practices and norms reflecting an acceptance of relatively high body weight and unhealthy diets (Allison & Pi-Sunyer, 1995), genetics and physiological factors such as family history (Smith, 2000), discrimination in access to and use of health, educational, and recreational facilities (Karlsen & Nazroo, 2002), high levels of stress attributable to day-to-day and systematic racial discrimination (Taylor & Turner, 2002), and preventive health practices related to diet, smoking, exercise, and use of screening tests (Cockerham, 2005). Parents,

families, and children in ethnic minority populations are likely to have higher than average levels of exposure to environmental and psychological stress (Kumanyika, 2007).

Socioeconomic status (SES) also impacts children's health and health behaviors. Numerous studies examined the relationship between SES levels and health and found that individuals in higher SES levels do better on most measures of health status than those in lower SES (Lynch & Kaplan, 2000). SES influences health behaviors and lifestyles. Poor people are especially disadvantaged with respect to positive health lifestyles, with greater cigarette consumption, unhealthier eating and drinking practices, and less participation in exercise across adulthood (Wickrama et al., 1999; Snead & Cockerham, 2002; Cockerham, 2005). In contrast, upper- and middle-classes adopt healthier lifestyles, including leisure-time sports and exercise, healthier diets, moderate drinking, little smoking, more physical checkups by their physicians, and greater opportunities for rest, relaxation, and coping with stress (Robert & House, 2000; Snead & Cockerham, 2002; Cockerham, 2005).

Family socioeconomic status affects not only the material resources, but also the family social capital. High-income families have more options to diversify their social capital through contacts outside the family while low income families do not have the same types or quantity of resources in their social networks (Hofferth, Boisjoly & Duncan, 1998). In addition, family SES may affect family stress and may indirectly affect parent-child relations, parents' ability to forge new relationships and resources, and parents' ability to adequately raise their children. Economic pressures (e.g., economic hardships and uncertainty) may increase stress within families and may indirectly affect parents' ability to engage in healthy nutrition choices and children's activities. Conger and colleagues (2000) argue that poverty is one of the most important factors that can put severe strains on families. Family distress causes problems in the relationship between adults that are, in turn, linked to less effective parenting – a complex process that involves insufficient parental surveillance, lack of control over the child's behavior, lack of warmth

and support, inconsistency, and displays of aggression or hostility by parents or older siblings (Conger et al., 1994; Conger, Conger & Elder, 1997). Stressful family relationships impact family members' mental health (Conger et al., 1993) and physical health (Wickrama et al., 1997), which can directly affect parenting, parental child-feeding patterns, and parental involvement in children's activities, and indirectly affect children's dietary patterns, levels of physical activity, and health.

Ethnic minority women, except for Asian women, have higher levels of inactivity and are more likely to be overweight (Gordon-Larsen, McMurray & Popkin, 1999). Studies have shown that minority women are more likely to be obese than minority males (Kuczarski et al., 1994). White and Latina perceptions of being overweight are more likely to be influenced by pubertal growth than are those of boys or African Americans. Also, a sense of being overweight has more negative effects on White adolescents' emotional health than on that of African and U.S. Latinos (Ge et al., 2001). Adolescent females are also generally more concerned with weight gain than adolescent males and are more likely to suffer from eating disorders (Hepworth, 2004). The thin ideal dominating Western culture (Williams & Germov, 2004) profoundly affects female eating patterns. Men and women also have different food consumption expectations and patterns, with men being more likely to eat coarser, higher calorie foods while women generally eat lighter fare (Bourdieu, 1984).

Gender interacts with class in its effects on obesity. Bourdieu (1984) argues that food preference of high-status individuals tend towards "the light, the refined, and the delicate," which sets them apart from popular, working-class tastes for the "heavy, the fat, and the coarse" (Bourdieu, 1984:185). Higher class females are more susceptible to the thin ideal and are more likely than lower-income females to perceive themselves as overweight (O'Dea & Caputi, 2001).

Differences in overweight may be due to differential exposures associated with living in a disadvantaged or geographically isolated community. Minorities, especially African Americans, tend to live in communities that are structurally disadvantaged (Jargowsky, 1997;

Massey & Denton, 1993; Wilson, 1987; Wilson, 1996). Disadvantaged communities present fewer opportunities and more constraints for consuming healthy foods. Morland & Associates (2002) have shown that low-income urban communities have fewer supermarkets and thus have less access to reasonably priced healthier foods such as low-fat snacks and fresh produce. In addition, low SES neighborhoods usually have fewer physical activity resources than medium-to-high SES neighborhoods, leading to more inactivity among neighborhood residents (Yen & Kaplan, 1999). Finally, access, affordability, quality of care and, to some extent, proximity to and availability of necessary health care services in the community affect the health of individuals and families, but differentially across social groups, such as older and young people, those fluent in English and those most comfortable using the language, the poor, racial/ethnic groups, and rural/urban residents.

Rural and urban residence and structural conditions affect children's health differently. Recent economic restructuring and the influx of immigrants into rural places has disrupted previous patterns of social relations among tightly-knit homogenous populations (Naples, 1994). Salamon (2003) argues that rural places are experiencing a post-agrarian transformation in which informal social ties, because residents' lives are less tied to the local places that they inhabit, are replacing close social relations which characterized agrarian communities.

Research Hypotheses

We postulate that family-based social capital, community social capital and collective efficacy are associated with lower odds of childhood overweight and help explain the racial/ethnic disparities in childhood overweight. Specifically, we test the following hypotheses:

H1: Parent-child involvement in activities, as measured by frequency of both mother's and father's involvement with child in indoor and outdoor activities, reduces the odds of childhood overweight.

H2: Parental enforcement of rules and discipline inside the home, including how much time a child can watch TV or play games, and how much candy, sweets, and other snacks a child has, reduces the odds of childhood overweight.

H3: Outside family social ties, as measured by intergenerational social closure, frequency of getting together with families and friends, and ties to teachers, reduces the odds of childhood overweight.

H4: Communities characterized by high levels of social capital will be associated with lower odds of childhood overweight, even after controlling for community structural characteristics (e.g., economic disadvantage, residential stability, and immigration concentration), social stressor (e.g., living in unsafe and dangerous neighborhoods), rural/urban residence, and child/family characteristics.

H5: Communities characterized by high levels of collective efficacy will be associated with lower odds of childhood overweight, even after controlling for community structural characteristics (e.g., economic disadvantage, residential stability, and immigration concentration), social stressor (e.g., living in unsafe and dangerous neighborhoods), rural/urban residence, and child/family characteristics.

Data and Methods

Data

To test the five hypotheses, we rely on data from the Child Development Supplement (CDS) to the Panel Study of Income Dynamics (PSID). The PSID is the ongoing longitudinal study of a representative sample of individuals and families in the U.S. which focuses on economic, health and social behaviors. The Child Development Supplement to the PSID was conducted in 1997

(CDS-I) and in 2002 (CDS-II). The goal of the Child Development Supplement to the PSID (PSID-CDS) was to provide researchers with comprehensive and nationally representative data relating to economic and social factors and child development. Children under 18 years of age and their primary caregivers (biological, step, foster, or adoptive parents) are included in the analysis. Data were also drawn from 2000 Census Summary Tape Files (STF3) at the census tract levels to add structural and compositional characteristics of neighborhoods, including percent of people in the census tract that are poor, percent of civilian labor force 16 years or older unemployed, percent black residents, percent Latinos/Hispanics, percent female-headed families with children, percent of households on public assistance, percent housing owners, and percent of residents who stayed in the same house in the last five years.

Measures

Dependent Variables

Overweight and at risk for overweight are defined using the Body Mass Index (BMI) of children. BMI is obtained by dividing weight (kilograms) by height (meters). At risk for overweight is defined as a BMI above the 85th percentile and below the 95th percentile for children of the same age and sex. Overweight is defined as a BMI at or above the 95th percentile for children of the same age and sex (Kuczmarski et al., 2000). In this analysis, we use *overweight* as a dummy variable, taking a value of 1, if a child's BMI is at or above the 95th percentile for a given age and sex, and a value of 0 if otherwise. We also use *at risk for overweight or overweight* as a dummy variable, Y=1, if a child's BMI is above the 85th percentile for a given age and sex, while Y=0 if otherwise. For the sake of parsimony, we refer to the latter as "at risk for overweight" and the former as "overweight."

Independent Variables

Race/Ethnicity

Race/ethnicity is taken from the primary caregiver response for race and ethnicity. We first categorized subjects as Latino or non-Latino and then categorized the non-Latinos by race as African American or Black, White, or other race/mixed race. We use three dummy variables in multivariate analyses: Latino, Black, and Other race.

Family social capital

The following measures of family social capital are included: (1) Household structure and composition, (2) Parent-child involvement in both in- and out-of-home activities, (3) Parent disciplining/enforcing rules in the home, (4) Social closure, and (5) Social ties to families, friends, and teachers.

Household structure is measured by grouping families into four constellations: (a) Both biological parents live together with the child in the household; (b) single mother separated or divorced; (c) single mother never married, and (d) stepfamilies (i.e., one biological parent and one stepparent or both stepparents). The *number of siblings* under 18 years of age in the home and the presence of *extended families* (i.e. grandparents, uncles, aunts, and other relatives) in the household are also controlled.

Parent-child involvement is a factor combining two indicators of parent and child time together in activities, including: (1) time with father; and (2) time with mother. *Time with father* is a combination of time child spent with father indoor and outdoor activities. The following question was asked: "About how often does child spend time with [you/ (his/her) (father/stepfather/adoptive father/father-figure)] in outdoor activities? Would you say never, a few times a year or less, about once a month, a few times a month, about once a week, several times a week, or at least once a day?" The same question was asked for indoor activities. *Time with father* is a mean value response for indoor and outdoor activities (mean=4.75). A similar question

was asked for indoor and outdoor activities with mother: "About how often does child spend time with (you/ (his/her) (mother/stepmother/adoptive mother/mother-figure)) in outdoor (outdoor) activities? Would you say never, a few times a year or less, about once a month, a few times a month, about once a week, several times a week, or at least once a day?" *Time with mother* is the average score response for indoor and outdoor activities (mean=4.79). The two indicators were averaged to create an indicator of parent-child involvement in activities.

Parent disciplining/enforcing rules indicator is measured using the responses to following question: "How regularly do you enforce these rules? Responses were: Never (1), less than half of the time (2), about half of the time (3), most of the time (4), all of the time (5), don't have to enforce the rules because my child follows them anyway (6). Responses to the following questions about rules were used: How much time child can watch TV in a day; what TV programs child watches; how late child can stay up at night; how much candy, sweets, or other snacks child has; which children child can spend time with; how child spends time after (school/daycare); when child does (his/her) homework; how often do you permit child to watch TV during the evening meal; how often do you set a place where (he/she) does homework; how often do you check (his/her) homework; discuss your rules and limits with child; allowing child to go on unsupervised dates; how late child can stay out on weekends; the amount of time child can work; child's friends coming over to your house while you are out of town; child's use of the car? The parent disciplining/enforcing rules indicator is the mean response to the above items (mean=2.16, a=0.69).

Social closure denotes connections between children and parents and between parents and other adults in the community (Coleman 1988). The following questions were asked: (1) "How many of (CHILD)'s close friends do you know by sight and by first and last name? Do you know none of them, only a few, about half, most of them, or all of them?" (2) "How many of (CHILD)'s close friends' parents do you know by sight and by first and last

name? Do you know none of them, only a few, about half, most of them, or all of them?” (3) How many of (CHILD)’s friends did you see last week? (4) About how often did (CHILD) do things with (his/her) friends outside of school in the last month?” Not in the Past Month, 1 or 2 times in the Past Month, About Once A Week, Several Times A Week, Every Day” (5) About how often do you know who (CHILD) is with when (he/she) is not at home? Would you say you know who (he/she) is with only rarely, some of the time, most of the time, or all of the time? Social closure measures were used not only to construct a measure of family social capital, but also to construct an index of community social capital using an average indicator of social closure at the community level.

Social ties to family and friends was measured using the following question: “About how often does your whole family (immediate family including primary caregivers, other caregivers, and their children) get together with friends or relatives? Would you say once a year or less (1), a few times a year (2), about once a month (3), two or three times a month (4), or about once a week or more (5)?” This question was also used to construct a measure of both family social capital and community social capital.

School involvement measure was assessed using the following questions: “In the past 12 months, how many times have you participated in any of the following activities at child’s school? a) volunteered in any classroom, school office, or library, b) had a conference with child’s teacher, c) had a conference with child’s school principal, d) had an informal conversation with child’s teacher, e) had an informal conversation with child’s principal, f) attended a school event in which child participated such as play, sporting event or concert, g) attended a meeting of the PTA or other such organization at child’s school, and h) met with a school counselor at child’s school. School involvement was also used to construct a measure of social ties to teachers, which is a source of family social capital, and to construct a measure of community social capital using the average parents’ involvement in school activities and meetings at the community.

Community social capital/collective efficacy

In addition to social closure, school involvement, and social ties to families and friends described above, civic engagement was used to measure social capital at the community level: *Civic engagement* is measured by involvement and participation by residents in community meetings, religious organizations, sport clubs, and other community activities, including visiting a friend’s or neighbor’s house, going to YMCA, scouting or participating in neighborhood watch programs. Response categories range from: (1) never to (7) several times a week.

Two measures were used to construct an index of collective efficacy: (1) child-centered social control, and (2) social support, which was used as an indicator of social cohesion. *Child-centered social control* is measured using responses to the following questions: How likely is it that a neighbor would do something if . . . (a) someone was trying to sell drugs to your children in plain sight? (b) Your kids were getting into trouble? (c) A child was showing disrespect to an adult? (d) A child was taking something out of a neighbor’s apartment, house, garage, car or yard? Response values included: (1) very unlikely, (2) unlikely, (3) likely, (4) very likely. Similar questions have been used in previous research on collective efficacy (Sampson, Raudenbush & Earls, 1997; Sampson, Morenho & Earls, 1999).

Social support measures satisfaction with help received. It was measured using the following question: “How satisfied are you with practical or emotional help from other caregiver, family, or friends?” Responses range from completely dissatisfied (1) to completely satisfied (7). Categories of help included: practical help from other caregiver; emotional support from other caregiver; practical help from family besides the other caregiver; emotional support from family besides the other caregiver; practical help from friends and emotional support from friends.

Control Variables

Residential location is defined using the rural-urban definition provided by the ERS/USDA rural-urban continuum code. The rural-urban residence is coded into four categories: metropolitan large (over 1 million population or more), small metropolitan area, rural adjacent to metropolitan areas, and rural not adjacent to metropolitan areas. The *south region* is included in the analysis as a dummy variable coded 1 if living in the south and 0 if living in other regions.

To assess the effects of a smaller number of community structural factors, a factor analysis was used at the neighborhood level. Four neighborhood factors are constructed using the 2000 U.S. Census Summary Tape Files 3 (STF3) at the census tract level, including economic disadvantage, affluence, immigration concentration, and residential stability. Variables that loaded high on the *economic disadvantage* factor scale include: percent of people in the census tract who are poor, percent of civilian labor force 16 years or older unemployed, percent Black residents, percent female-headed families with children, and percent of households on public assistance. Variables that loaded high on the *affluence* factor scale include percent of people 25 years or older with college education or greater, percent of people in managerial or professional occupations, and percent of households with an income of \$75,000 or above. Variables that loaded high on *immigration concentration* factor include percent foreign born and percent Latinos/Hispanics in the census tracts. *Residential stability* is a factor scale combining the percent of people who have stayed in the same house in the last five years and percent housing owners. To represent each of the above neighborhood factors parsimoniously, we calculated a factor regression score that weighted each variable by its factor loading (for similar indicators see Sampson et al., 1997) (see Appendix D for factor loadings). Because economic disadvantage and affluence factors are highly correlated (-0.542), they were further combined to create a weighted index of economic structure, a regression factor that weighted each component factor by its factor loading (higher values indicate greater economic disadvantage and lower values more affluence), and hereafter referred to as “economic disadvantage”.

Family socioeconomic status is a combination of parental education (highest education of primary caregivers in case of two parents) and family income, calculated as a principal component regression factor score of the two variables. *Health insurance coverage* is a nominal variable with three categories: (1) private/other insurance, (2) government-sponsored insurance, and (3) no health insurance. Two dummy variables were created and included as controls: government insurance and no health insurance.

Measures of mental or physical health disability and parental sense of mastery were controlled. *Mental or physical health disability* status of parents is coded 1 if at least a family member (primary caregiver, other caregiver, or other member) has a physical and/or mental disability and 0 otherwise. Self-esteem and self-efficacy are highly correlated ($r=0.57$) and are standardized and averaged to construct a measure of *sense of mastery*. *Self-esteem* was measured using the Rosenberg self-esteem scale. Items were: I feel that I'm a person of worth, at least on an equal basis with others; I feel that I have a number of good qualities; All in all, I am inclined to feel that I am a failure; I am able to do things as well as most other people; I feel I do not have much to be proud of; I take a positive attitude toward myself; On the whole, I am satisfied with myself; I wish I could have more respect for myself; I certainly feel useless at times; and At times I think I am no good at all. Responses were coded: strongly disagree (1), disagree (2), agree (3), or strongly agree (4). Answers for the negative items were reverse-coded and then averaged with the others to form a measure of self-esteem (mean=3.44; $\alpha=0.86$). *Self-efficacy* was measured using the Pearlin self-efficacy scale. Items included: There is really no way I can solve some of the problems I have; Sometimes I feel that I'm being pushed around in life; I have little control over the things that happen to me; I often feel helpless in dealing with the problems of life. Responses were reverse-coded as follows: strongly agree (1), agree (2), disagree (3), or strongly disagree (4) and then averaged with the others to form a measure of self-efficacy (mean=3.12; $\alpha=0.79$).

The following child's characteristics were also controlled: *Child age* is measured in years and ranges from 5 to 18 years; *Sex* is coded 1=female and 0=male; *Child's low birth weight* is a dummy variable coded 1 if the child's birth weight was below 2,500 grams (or 5.5 pounds) and 0 if otherwise; *TV hours* is a continuous variable that measures the number of hours TV is on per day; *Extracurricular activity* is a summed count of the number of activities a child participated in, including tutoring, religious service, lesson, sports, and community program activities. Summary statistics of variables and controls used in this study are provided in Appendices A and B.

Statistical Methods

Four types of statistical techniques are used in the analyses: descriptive statistics, exploratory factor analysis, logistic regression analysis, and hierarchical linear analysis. Descriptive statistics include frequency distributions, graphs, mean estimates, and bivariate relationships. To assess whether a smaller number of linear combinations of characteristics describe the different family and community indicators, an exploratory factor analysis is used. Logistic regression models were used to predict the odds of overweight and assess the relative effects of individual, family, and community characteristics. All models were estimated with generalized linear models (logit link) with robust standard errors.

Neighborhood social indicators, including social capital (e.g., civic engagement, social closure, social ties to family and friends, and school involvement), collective efficacy (e.g., child-centered social control, and social support), and social stressors (e.g., unsafe and dangerous neighborhoods, bad neighborhood as a place to raise children, and very difficult to recognize who is a stranger in the neighborhood) were measured using empirical Bayes residuals obtained from hierarchical linear models. Similar approaches were used in prior research (Sampson et al., 1997; Carpiano, 2007; Bryk & Raudenbush, 1992; 2002). This procedure uses primary caregivers' responses about their neighborhood in the CDS to obtain

adjusted¹, neighborhood-specific estimates of these social indicators that are standardized deviations from the neighborhood level grand mean score of each measure (see Appendix C). Our analyses proceed at estimating a series of nested logistic regression model of childhood overweight on race/ethnicity, family social capital, and community social capital and collective efficacy and then consider how much of racial/ethnic disparities in childhood overweight are explained by both family and community characteristics. We define the outcome $Y=1$ if a child is overweight and $Y=0$ if the child is not. We are interested in the probability of overweight, $\text{Prob}(Y=1) = \pi$. Rather than modeling the probability, we model $\eta = \text{Prob}[\pi/(1-\pi)]$, the natural logarithm of the odds ratio. We model $\eta = \alpha + X\beta + W\gamma$, where X is a vector of child and family characteristics and W is a vector of neighborhood characteristics. The components of β characterize partial associations of child and family characteristics and the log-odds of overweight, while components of γ characterize partial associations between neighborhood characteristics and the log-odds of overweight, and α the model intercept. All the analyses are weighted to produce reliable estimates of the population under study.

Results

Childhood Overweight

Model 1 in Table 1 presents coefficient estimates from a logistic regression model of childhood overweight on race/ethnicity, controlling for sex, age, and low birth weight, providing a baseline comparison of subsequent models that add other explanatory variables. Exponentiating the log-odds coefficients, we find that Latinos' odds are $\exp(0.477) = 1.61$ times those of Whites (95% CI=1.50, 1.73). Blacks' odds of overweight are 1.63 times those of Whites [95% confidence interval (CI) for relative odds=1.52, 1.74]. The results also indicate that childhood overweight is 0.69 times lower among girls than boys (95% CI=0.65, 0.73) and that childhood overweight is related to age in a curvilinear fashion.

Table 1. Logistic Regression Coefficients of Childhood Overweight on Individual and Family Background Characteristics

<i>Variables</i>	<i>Model 1</i> β (S.E.)	<i>Model 2</i> β (S.E.)	<i>Model 3</i> β (S.E.)	<i>Model 4</i> β (S.E.)	<i>Model 5</i> β (S.E.)
Intercept	-2.653 (0.138)***	-3.250 (0.140)***	-3.052 (0.151)***	-2.948 (0.156)***	-2.662 (0.158)***
RACE/ETHNICITY					
Latino/Hispanic	0.477 (0.035)***	0.349 (0.037)***	0.353 (0.046)***	0.382 (0.047)***	0.142 (0.049)***
Non-Hispanic Black	0.467 (0.036)***	0.241 (0.037)***	0.237 (0.045)***	0.245 (0.047)***	0.090 (0.047)***
Other race	-0.081 (0.057)	-0.170 (0.058)	-0.178 (0.045)*	-0.236 (0.060)*	-0.397 (0.060)*
Female	-0.373 (0.026)***	-0.387 (0.027)***	-0.390 (0.027)***	-0.390 (0.027)***	-0.405 (0.027)***
Age	0.227 (0.025)***	0.251 (0.026)***	0.264 (0.026)***	0.262 (0.026)***	0.227 (0.027)***
Age squared	-0.010 (0.001)***	-0.011 (0.001)***	-0.012 (0.001)***	-0.012 (0.001)***	-0.011 (0.001)***
Low birth weight	0.040 (0.033)	0.016 (0.033)	-0.002 (0.034)	0.004 (0.034)	-0.011 (0.034)
PHYSICAL ACTIVITY/INACTIVITY					
Hours of TV		0.145 (0.006)***	0.145 (0.006)***	0.139 (0.006)***	0.129 (0.006)***
Extracurricular activities		-0.099 (0.013)***	-0.087 (0.014)***	-0.082 (0.014)***	-0.033 (0.014)***
HOUSEHOLD STRUCTURE AND COMPOSITION					
2 parents, both biological			-0.053 (0.060)	-0.061 (0.061)	-0.044 (0.062)
2 parents, one/both non-biological			-0.538 (0.079)***	-0.536 (0.080)***	-0.541 (0.081)***
1 parent, separate/divorced			-0.118 (0.063)	-0.117 (0.063)	-0.091 (0.064)
Number of siblings			-0.108 (0.013)***	-0.109 (0.013)***	-0.125 (0.013)***
Extended family member			0.181 (0.076)*	0.180 (0.078)*	0.253 (0.078)***
FAMILY SOCIOECONOMIC STATUS/HEALTH INSURANCE COVERAGE					
Family socioeconomic status			-0.109 (0.016)***	-0.094 (0.016)***	-0.066 (0.016)***
Government health insurance			-0.202 (0.044)***	-0.228 (0.044)***	-0.231 (0.044)***
No insurance			0.334 (0.053)***	0.323 (0.052)***	0.265 (0.053)***
WITHIN FAMILY-BASED SOCIAL CAPITAL					
Moderate discipline/rules				-0.087 (0.031)**	-0.126 (0.032)**
High discipline/rules				-0.153 (0.035)***	-0.123 (0.036)***
Moderate parent-child activity				-0.083 (0.034)*	-0.062 (0.034)
High parent-child activity				-0.021 (0.033)	0.142 (0.034)***
PARENTAL MENTAL/PHYSICAL HEALTH					
Sense of mastery				-0.097 (0.016)***	-0.053 (0.016)***
Mental or physical disability				0.222 (0.051)***	0.226 (0.051)***
OUTSIDE FAMILY SOCIAL CAPITAL					
Intergenerational closure					-0.149 (0.008)***
Social ties (family, friends, and teachers)					-0.100 (0.016)***

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Model 2 in Table 1 controls for the number of TV hours a child watches a day and the number of extracurricular activities in which a child is involved. The results in Model 2 show that the odds of childhood overweight are 1.16 times higher for each additional increase in the number of TV hours watched in a day (95% CI=1.14, 1.17). In contrast, the odds of childhood overweight are 0.91 times lower for each additional extracurricular activity a child is involved in (95% CI=0.88, 0.93). Adding these controls reduces the logistic regression coefficient describing the gap between Latino and White children by 27%. The odds ratio describing

that gap decreases from 1.61 to 1.42 (95% CI=1.32, 1.52). Adding these controls decreases the logistic regression coefficient describing the gap between Black and White children by 50%. The odds ratio describing that gap decreases from 1.63 to 1.27 (95% CI=1.19, 1.37). The results in Model 2 simply suggest racial/ethnic differences in sedentary behaviors and involvement in extracurricular activities. The difference in the number of TV hours watched a day between Latino and White children is about 33 minutes a day on average (95% CI: 29, 43). In contrast, the difference in the number of TV hours watched a

day between Black and White children is three times higher (99 minutes) (95% CI=95,103). In addition, the average difference in the number of extracurricular activities between Latino children and White children is about -0.60 activities (95% CI=-0.63, -0.57), while the average difference in number of extracurricular activities between Black and White children is about -0.26 activities (95% CI: -0.29, -0.22) (separate regressions controlling for sex and age are not shown for either results). Thus, changing sedentary behaviors, especially among Black children, and increasing the number of extracurricular activities, especially among Latino children, would significantly reduce the odds of childhood overweight.

Family Influences

Model 3 adds household structure and composition and controls for family socioeconomic status and health insurance coverage variables. The results in Model 3 reveal that childhood overweight is significantly lower for children in step-families than those in never married female-headed families. The odds of childhood overweight in step-families are 0.58 times lower than those in single female-headed families (95% CI=0.51, 0.67). The results in Model 3 also show that the odds of childhood overweight in intact families (i.e., with two married biological parents living together) and those in formerly married female-headed families are not significantly different from those in single female-headed families once you control for child characteristics and family socioeconomic status and health insurance coverage. Consistent with previous studies, statistical runs without these controls show that the odds of childhood overweight are significantly lower in two biological-parent families, in two-parent stepfamilies, and in formerly married female-headed families than in single female-headed families.

The results in Model 3 also show that the number of siblings in the household reduces the odds of being overweight. Each additional sibling in the household reduces the odds of being overweight by about 10% $\{100*[\exp(-1.108)-1]\}$ (95% CI=0.87,

0.92). Furthermore, the results in Model 3 reveal that the presence of extended family members in the household increases the odds of childhood overweight. The odds of childhood overweight for children living with extended family members are 1.20 times those of children living in households without extended family members (95% CI=1.03, 1.39).

Model 3 in Table 1 also adds controls for family socioeconomic status and health insurance coverage. The results in Model 3 show that higher family SES is associated with lower childhood overweight, that having government-sponsored health insurance coverage reduces childhood overweight, and that having no health insurance greatly increases the odds of childhood overweight. The odds of overweight are reduced by about 10% for each additional unit of the family SES index (95% CI: 0.87, 0.93) and about 8% for children whose parents have a government-sponsored health insurance (as opposed to those with a private health insurance) (95% CI: 0.75, 0.89). In contrast, the odds of overweight for children without a health insurance are 1.29 times higher than those of children with a private health insurance (95% CI: 1.16, 1.43). Adding these controls does not change much the contrast in childhood overweight between Latinos and Whites; it only increases by 1%. However, it reduces the logistic regression coefficient that describes the gap between Blacks and Whites by 26%. The odds ratio describing that gap is reduced from 1.27 to 1.20 (95% CI=1.10, 1.30).

Model 4 in Table 1 assesses the effects of parent-child involvement in both in- and out-of-home activities and parental discipline/enforcement of rules, while controlling for parental sense of mastery and parental mental and physical health disability status. The results in Model 4 show the odds of childhood overweight are 0.92 times lower for moderate parent-child involvement in activities than for lower parent-child involvement in activities (95% CI=0.86, 0.99). Parental discipline/enforcement of rules inside the home, including how much time a child can watch TV and how much candy, sweets and other snacks a child

has reduces the odds of childhood overweight. The results in Model 4 show that the odds of childhood overweight are 0.92 times lower for moderate parental discipline/enforcing rules than for lower parental discipline/enforcing rules (95% CI=0.86, 0.97). The results in Model 4 also show that the odds of childhood overweight are 0.86 times lower for high parental discipline/enforcing rules than for lower parental discipline/enforcing rules (95% CI=0.80, 0.92).

Model 4 in Table 1 also controls for parental sense of mastery and parental mental and physical health disability status. The results in this model show that greater parental sense of mastery is associated with a reduction on childhood overweight. The odds of childhood overweight are 0.91 times lower for each additional increase in the sense of mastery scale (95% CI=0.88, 0.94). The results in this model also show that the odds of childhood overweight for children whose parents have a mental or physical health disability are 1.25 times higher than those whose parents do not have a mental or physical health disability (95% CI=1.13, 1.37).

Adding measures of within family-based social capital and controlling for parental sense of mastery and parental mental and physical health disability status increases the logistic regression coefficients that describe the gap in childhood overweight between White and Latino children by 8%. The odds ratio describing that gap between White and Latino children increases from 1.42 to 1.47 (95% CI=1.34, 1.60). In comparison, adding these variables increases the gap in childhood overweight between Blacks and Whites by 38%. The odds ratio describing that gap increases from 1.20 to 1.28 (95% CI=1.17, 1.39). These results imply that one of the reasons White children have lower levels of overweight than Black or Latino children may be attributable to differences in family-based social capital, including the differences in family structure, parental involvement in children's activities, and enforcement of rules and discipline.

Model 5 in Table 1 adds other sources of family social capital: intergenerational closure and social ties to family, friends, and teachers. The results in

Model 5 show that the odds of childhood overweight are significantly reduced when parents know the parents of their child's friends, know their child's friends, have seen many of their child's friends in the past week, and if parents gets together more frequently with family and friends and have met with child's teacher. The odds of childhood overweight are 0.86 times lower for each additional unit increase in the social closure scale (95% CI=0.85, 0.88). The odds of childhood overweight are 0.91 times lower for each additional unit increase in the social ties scale (95% CI=0.88, 0.93).

Adding these two family social capital indicators reduces the logistic regression coefficient describing the gap between Latino and White children by an additional 63%. The odds ratio describing that gap increases from 1.47 to 1.15 (95% CI=1.05, 1.27). Adding these two variables in Model 5 also decreases the logistic regression coefficient describing the gap between Blacks and Whites by 63%. The odds ratio describing that gap increases from 1.28 to 1.09 (95% CI=1.00, 1.20).

Community Influences

Model 1 in Table 2 introduces community social capital and collective efficacy measures. Community social capital is measured by a factor scale, a principal component factor scale with varimax rotation, combining four neighborhood factors: civic engagement/participation, mean social closure, mean social ties, and mean involvement in school activities. Collective efficacy is also measured by a neighborhood factor scale. Variables that load high on the collective efficacy factor include average child-centered informal social control and average social support (see Appendix C for details measures of these variables). Both community social capital and collective efficacy are negatively associated with childhood overweight. The odds of childhood overweight are 0.97 (i.e., 3% lower) times lower for each additional unit increase in the community social capital scale (95% CI=0.96, 0.98). The odds of childhood overweight are 0.70 times lower for each additional unit

increase in the collective efficacy scale (95% CI=0.59, 0.83). Adding these two community social factors decreases the logistic regression coefficient that describes the gap between Latinos and Whites increases by 5%, but does not change the odds ratio describing that gap; they remain at 1.15 to 1.43 (95% CI=1.04, 1.26). But adding these two community social indicators increases the logistic regression coefficient that describes the gap between Blacks and Whites by 27%. The odds ratio describing that gap increased from 1.09 to 1.12 (95% CI=1.03, 1.22).

The results in Model 2 in Table 2 show that the odds of childhood overweight are significantly greater in economically disadvantaged neighborhoods. The odds of childhood overweight are 1.07 times higher for each additional unit increase on the economic disadvantage scale (95% CI=1.06, 1.08). Immigration concentration is negatively associated with the odds of childhood overweight. The odds of childhood overweight are 0.95 times lower for each additional unit increase on the immigration concentration scale (95% CI=0.94, 0.97). Residential stability is positively associated with the odds of childhood overweight. The odds of childhood overweight are 1.06 times higher for each additional unit increase on the residential stability scale (95% CI=1.03, 1.08). Adding community structural characteristics increases the logistic regression coefficient describing the gap between Latino and White children by an additional 73%. The odds ratio describing that gap increases from 1.15 to 1.26 (95% CI=1.11, 1.44). Adding these community economic and demographic factors renders the logistic regression coefficient describing the gap between Blacks and Whites negative. The odds ratio describing that gap decreases from 1.09 to 0.88 (95% CI=0.80, 0.96).

Model 3 in Table 2 adds a control for neighborhood social stressor. Social stressor is a principal component regression factor score that combines three variables: unsafe and dangerous neighborhoods, poor neighborhood as a place to raise children, and neighborhood in which it is very

difficult to tell who is a stranger. The odds of childhood overweight are greater in communities with higher levels of social stressors. The results in Model 3 show that the odds of childhood overweight are 1.16 times greater for each additional unit increase on the social stressor scale (95% CI=1.12, 1.20). Thus, living in socially stressful neighborhoods increases the odds of childhood overweight. The mechanisms through which the social stressor factor influences childhood overweight may include the lack of a safe and conducive place for children to play and exercise. Controlling for neighborhood social stressor increases the logistic regression that describes the gap between Blacks and Whites by 22%. The odds ratio describing that gap increases from 0.88 to 0.85 (95% CI=0.77, 0.94). In contrast, by adding neighborhood social stressor control decreases the logistic regression that describes the gap between Latinos and Whites by 58% and makes it nonsignificant. The odds ratio describing that gap decreases from 1.26 to 1.10 and (95% CI=0.96, 1.26).

Model 4 in Table 2 adds controls for rural/urban residence and region. The results in Model 4 show that the odds of childhood overweight are 1.78 times higher in rural areas adjacent to a metropolitan area (95% CI=1.66, 1.91) than in large metropolitan areas. The odds of childhood overweight are 1.17 times higher in rural areas not adjacent to a metropolitan area (95% CI=1.08, 1.27) than in large metropolitan areas. The results in Model 4 also show that the odds of childhood overweight in the South region are 1.28 times higher than those in other regions of the country (95% CI=1.21, 1.36). Adding these residential location variables decreases the logistic regression that describes the gap between Blacks and Whites by 34% and increases the logistic regression that describes the gap between Latinos and Whites by 24%. However, adding rural/urban residence and region in addition to neighborhood structural variables made the logistic regression coefficients for both Latinos and Blacks nonsignificant.

Table 2. Logistic Regression Coefficients of Childhood Overweight on Community Characteristics

<i>Variables</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
	β (S.E.)	β (S.E.)	β (S.E.)	β (S.E.)
Intercept	-2.729 (0.159)***	-2.755 (0.161)***	-2.753 (0.161)***	-2.967 (0.165)***
COMMUNITY SOCIAL CHARACTERISTICS				
Community Social Capital	-0.029 (0.005)***	-0.033 (0.005)***	-0.031 (0.005)***	-0.035 (0.005)***
Collective efficacy	-0.359 (0.082)***	-0.349 (0.082)***	-0.588 (0.087)***	-0.694 (0.084)***
COMMUNITY STRUCTURAL CHARACTERISTICS				
Economic disadvantage		0.066 (0.004)***	0.068 (0.004)***	0.060 (0.004)***
Immigration Concentration		-0.048 (0.010)***	-0.042 (0.010)***	-0.010 (0.010)
Residential Stability		0.055 (0.013)***	0.045 (0.013)***	0.031 (0.013)*
Neighborhood Social Stressor			0.145 (0.016)***	0.128 (0.017)***
RESIDENCE/REGION				
Small metropolitan				-0.059 (0.032)
Rural adjacent to metropolitan				0.577 (0.038)***
Rural non-adjacent to metropolitan				0.159 (0.042)***
South				0.250 (0.030)***

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Controls for individual and family background variables are displayed in Table 1.

At Risk for Childhood Overweight

Table 3 displays the results of a logistic regression of at risk for overweight on individual, family, and community characteristics. The results in model 1 show that the odds of at risk for overweight for Latinos are 1.91 times those of Whites (95% CI=1.80, 2.02). The odds of at risk for overweight for Blacks are 1.48 times those of Whites (95% CI=1.39, 1.57). The odds of at risk for overweight for other racial groups are 1.55 times those of Whites (95% CI=1.43, 1.68). The results also indicates that the odds of at risk for overweight are 0.73 times lower among girls than boys (95% CI=0.70, 0.76). At risk for overweight is also related to age in a curvilinear fashion and that low birth weight is negatively associated with at risk for overweight.

Model 2 in Table 3 controls for the number of TV hours a child watches a day and the number of extracurricular activities a child is involved in. The results in Model 2 show that the odds of at risk for childhood overweight are 1.13 times higher for each additional increase in the number of TV hours watched in a day (95% CI=1.12, 1.14). In contrast, the odds of at risk for childhood overweight are 0.97 times lower for each additional extracurricular activity a child is involved in (95% CI=0.95, 0.99).

Family Influences

Model 3 in Table 3 adds household structure and composition variables. The results in Model 3 reveal that the odds of at risk for overweight are significantly lower in two parents' household with both biological parents living together, step-families, and in formerly married female-headed households than in single female-headed households. The odds of at risk for childhood overweight in with intact families (i.e., two biological parents living together) are 0.72 times lower than those in single female-headed families (95% CI=0.66, 0.79). The odds of childhood overweight in step-families are 0.54 times lower than those in single female-headed families (95% CI=0.48, 0.61). The odds of childhood overweight in formerly married female-headed families are 0.61 times lower than those in single female-headed families (95% CI=0.55, 0.68). The results in Model 3 also show that the presence of extended family members in the household increases the odds of childhood overweight. The odds of childhood overweight for children living with extended family members are 1.58 times those of children living in households without extended family members (95% CI=1.38, 1.81).

Table 3. Logistic Regression Coefficients of At Risk for Overweight on Individual, Family Background, and Community Characteristics

<i>Variables</i>	<i>Model 1</i> β (S.E.)	<i>Model 2</i> β (S.E.)	<i>Model 3</i> β (S.E.)	<i>Model 4</i> β (S.E.)	<i>Model 5</i> β (S.E.)
Intercept	-2.184 (0.113)***	-2.649 (0.117)***	-2.220 (0.126)***	-1.977 (0.130)***	-1.798 (0.132)***
RACE/ETHNICITY					
Latino/Hispanic	0.646 (0.030)***	0.573 (0.032)***	0.540 (0.039)***	0.585 (0.040)***	0.466 (0.041)***
Non-Hispanic Black	0.391 (0.031)***	0.194 (0.032)***	0.052 (0.038)	0.136 (0.039)***	0.050 (0.039)***
Other race	0.437 (0.043)***	0.397 (0.043)***	0.367 (0.044)***	0.400 (0.044)***	0.327 (0.044)***
Female	-0.318 (0.021)***	-0.338 (0.022)***	-0.346 (0.022)***	-0.351 (0.022)***	-0.359 (0.022)***
Age	0.295 (0.021)***	0.294 (0.021)***	0.298 (0.022)***	0.288 (0.021)***	0.266 (0.022)***
Age squared	-0.013 (0.001)***	-0.013 (0.001)***	-0.013 (0.001)***	-0.013 (0.001)***	-0.013 (0.001)***
Low birth weight	-0.110 (0.027)***	-0.129 (0.011)	-0.125 (0.028)***	-0.120(0.028)***	-0.013 (0.028)***
PHYSICAL ACTIVITY/INACTIVITY					
Hours of TV		0.121 (0.005)***	0.118 (0.006)***	0.110 (0.005)***	0.105 (0.005)***
Extracurricular activities		-0.028 (0.011)**	-0.016 (0.011)	-0.008 (0.011)	0.018 (0.011)
HOUSEHOLD STRUCTURE AND COMPOSITION					
2 parents, both biological			-0.330 (0.049)***	-0.304 (0.060)***	-0.289 (0.050)***
2 parents, one/both non-biological			-0.611 (0.062)***	-0.575 (0.063)***	-0.570 (0.063)***
1 parent, separate/divorced			-0.495 (0.053)***	-0.500 (0.053)***	-0.482 (0.053)***
Number of siblings			-0.013 (0.011)	-0.013 (0.011)	-0.021 (0.011)
Extended family member			0.455 (0.071)***	0.470 (0.071)***	0.505 (0.071)***
FAMILY SOCIOECONOMIC STATUS/HEALTH INSURANCE COVERAGE					
Family socioeconomic status			-0.112 (0.014)***	-0.107 (0.014)***	-0.093 (0.014)***
Government health insurance			-0.320 (0.037)***	-0.342 (0.037)***	-0.343 (0.037)***
No insurance			-0.048 (0.046)	-0.015 (0.047)***	-0.014 (0.047)
WITHIN FAMILY-BASED SOCIAL CAPITAL					
Moderate discipline/rules				-0.198 (0.026)***	-0.220 (0.026)***
High discipline/rules				-0.221 (0.029)***	-0.207 (0.029)***
Moderate parent-child activity				-0.092 (0.028)***	-0.074 (0.028)**
High parent-child activity				-0.097 (0.028)***	-0.032 (0.029)
PARENTAL MENTAL/PHYSICAL HEALTH					
Sense of mastery				-0.050 (0.013)***	-0.025 (0.013)
Mental or physical disability				0.346 (0.042)***	0.350 (0.042)***
OUTSIDE FAMILY SOCIAL CAPITAL					
Intergenerational closure					-0.074 (0.007)***
Social ties (family, friends, and teachers)					-0.065 (0.013)***

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Controls for individual and family background variables are displayed in Table 1.

Model 3 in Table 3 also adds controls for family socioeconomic status and health insurance coverage. The results in Model 3 show that higher family SES and having government-sponsored health insurance coverage reduces the odds of at risk for childhood overweight. The odds of at risk for overweight are reduced by about 11% for each additional unit of the family SES index (95% CI: 0.87, 0.92) and about 8% for children whose parents have a government-sponsored health insurance (as opposed to those with a private health insurance) (95% CI: 0.68, 0.79).

Model 4 in Table 3 adds the family-based social capital indicators, controlling for parental sense of mastery and parental mental and physical health disability status. The results in Model 4 show that the odds of at risk for overweight are 0.91 times lower for moderate parent-child involvement in activities than for lower parent-child involvement in activities (95% CI=0.86, 0.96). The odds of at risk for overweight are also 0.91 times lower for high parent-child involvement in activities than for lower parent-child involvement in activities (95% CI=0.86, 0.96). The results in Model 4 also show

Table 4. Logistic Regression Coefficients of Childhood Overweight on Community

Variables	Model 1 β (S.E.)	Model 2 β (S.E.)	Model 3 β (S.E.)	Model 3 β (S.E.)
Intercept	-1.763 (0.134)***	-1.783 (0.135)***	-1.783 (0.135)***	1.925 (0.137)**
Community Social Characteristics				
Community Social Capital	-0.016 (0.003)***	-0.018 (0.003)***	-0.017 (0.003)***	-0.022 (0.003)***
Collective efficacy	-0.600 (0.073)***	-0.552 (0.073)***	-0.280 (0.075)***	0.163 (0.075)*
Community Social Characteristics				
Economic disadvantage		0.040 (0.004)***	0.042 (0.004)***	0.038 (0.004)***
Immigration Concentration		-0.023 (0.008)**	-0.017 (0.008)**	0.016 (0.008)
Residential Stability		0.082 (0.011)***	0.073 (0.011)***	0.065 (0.011)***
Neighborhood Social Stressor			0.166 (0.014)***	0.160 (0.014)***
Residence/Region				
Small metropolitan				-0.072 (0.0326)**
Rural adjacent to metropolitan				0.422 (0.031)***
Rural non-adjacent to metropolitan				0.237 (0.035)
South				0.241 (0.025)***

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Controls for individual and family background variables are displayed in Table 1.

that the odds of at risk for overweight are 0.82 times lower for moderate parental enforcement of discipline/rules than for low parental enforcement of discipline/rules (95% CI=0.78, 0.86). The odds of at risk for overweight are 0.80 times lower for high parental discipline/enforcing rules than for low parental discipline/enforcing rules (95% CI=0.76, 0.85).

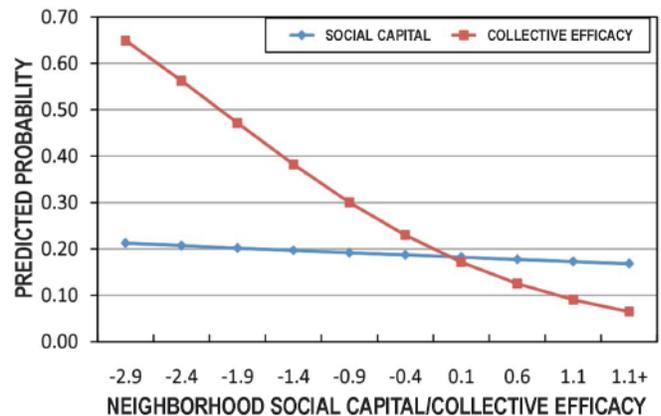
Model 5 in Table 3 adds intergenerational closure and social ties to family, friends, and teachers. The results in Model 5 show that the odds of at risk for childhood overweight are 0.93 times lower for each additional unit increase in the social closure scale (95% CI=0.92, 0.94). The odds of at risk for overweight are 0.94 times lower for each additional unit increase in the social ties scale (95% CI=0.91, 0.96).

Community Influences

The results in Table 4 include the effects of community social capital and collective efficacy (Model 1) on at risk for overweight, controlling for economic disadvantage, residential stability, immigration concentration (Model 2), social stressor (Model 3), and rural/urban and region of

residence (Model 4). The results indicate that community social capital is associated with lower odds of at risk for overweight. However, collective efficacy is associated with greater odds of at risk for overweight. The results in Table 4 show that neighborhood economic disadvantage, immigration concentration, residential stability, and social stressor are associated with greater odds of at risk for overweight. The results in Table 4 show that

FIGURE 1. PREDICTED PROBABILITIES FOR OVERWEIGHT BY LEVELS OF SOCIAL CAPITAL AND COLLECTIVE EFFICACY



living in small metro area (as opposed to large metropolitan area) is associated with lower odds of at risk for overweight. In contrast, living in rural areas adjacent to a metropolitan area and in rural areas not adjacent to a metropolitan area (as opposed to large metropolitan area) and living in the south region (as opposed to other regions) are associated with greater odds of at risk for overweight.

Figure 1 depicts the association between predicted probabilities of overweight by levels of neighborhood social capital and collective efficacy. Higher levels of social capital and collective efficacy are associated with lower probability of overweight. Figure 1 shows that the probability of overweight decreases faster (steeper slope) with collective efficacy than with social capital.

Discussion

Considerable research interest in the impact of social capital and collective efficacy on health outcomes has generated a number of empirical and theoretical efforts to assess these effects. More and more evidence suggests that social capital and collective efficacy have a positive effect on health. This research explores the impact of family social capital, community social capital and collective efficacy on childhood overweight and at risk for overweight.

Like previous studies, this study shows that the odds of childhood overweight are significantly greater among African American and Latino children than among White children. The gaps between Latinos and Whites and between Blacks and Whites in childhood overweight are fully explained by family-based social capital and community social capital/collective efficacy, controlling at the individual/family level for family socioeconomic status, health insurance coverage, sense of mastery, parental physical and mental health, the number of TV hours watched a day and involvement in extracurricular activities, and at the community level for economic disadvantage, residential stability, immigration concentration, social stressors, and rural/urban residence and region.

Our study also reveals that of all of the factors, community structural characteristics (i.e., economic disadvantage, residential stability, and immigration concentration), intergenerational social closure, and social ties to families, friends, and teachers are the most important source of the gap reduction in childhood overweight between Whites and Blacks, followed by the number of TV hours watched a day and extracurricular activities. In contrast, the within family social capital (i.e., parent-child involvement in activities and parental enforcement of rules and discipline inside the home) and neighborhood social stressors are the most important source of the gap increase in childhood overweight between Whites and Blacks.

In comparison, intergenerational social closure and social ties to families, friends, and teachers and neighborhood social stressor are the most important sources of the gap reduction in childhood overweight between Whites and Latinos. In contrast, community structural characteristics (i.e., economic disadvantage, residential stability, and immigration concentration) and residential location are the most important source of the gap increase in childhood overweight between Whites and Latinos.

Our study reveals that family-based social capital indicators have strong effects on childhood overweight. Specifically, we find that parent-child involvement in activities is associated with lower odds of childhood overweight; Parental enforcement of rules/discipline is associated with lower odds of childhood overweight; and both intergenerational closure and social ties to families, friends, and teachers are also associated with lower odds of childhood overweight. These findings support Hypotheses 1, 2, and 3 that parent-child involvement in activities, enforcement of rules, and family social ties to other parents, families, friends, and teachers significantly reduce the odds of overweight. We also find that the effects of these family social capital measures on childhood overweight vary by race/ethnicity.

Family social capital indicators are significant predictors of childhood overweight even after controlling for child and family background characteristics. This study reveals that family social conditions still matter and that differences in family social resources significantly explain the gaps in

childhood overweight. Our study also shows that changing sedentary behaviors, especially among Black children, and increasing the number of extracurricular activities, especially among Latino children, would further reduce the odds of childhood overweight.

Consistent with Hypotheses 4 and 5, this study shows that communities characterized by high levels of social capital and collective efficacy are associated with lower odds of childhood overweight, even after controlling for community structural characteristics (e.g., economic disadvantage, residential stability, and immigration concentration), neighborhood social stressors (e.g., living in unsafe and dangerous neighborhoods), rural/urban residence and region, and child/family characteristics. Our study also shows significant rural/urban residential location and regional differences in childhood overweight. Living in rural areas, particularly in rural areas adjacent to a metropolitan area, as opposed to living in large metropolitan areas and living in the South as opposed to other regions are associated with higher odds of overweight.

The results in this study have many policy implications. They suggest that family social processes and family ties to communities as well as social capital and collective efficacy at the community level matter. Childhood overweight prevention and interventions, in addition to well known food and physical exercise interventions, should target these social dimensions in children's environments. Investments in family and community social well-being may be one of the best ways to improve children's health. That may involve, for example, increasing parents and children time spent together, increasing parenting skills, reducing social and isolation by involving

parents, especially minority parents, in school and community activities and social gatherings, and collectively involving community residents in tackling this social and health problem. That also will require creating conducive environments for children, reducing already existing structural inequalities and social stressors, by economically reinvesting in disadvantaged communities and reducing crime and violence in those communities. We conclude that "it takes a village to raise a child," it will take a village to improve children's health and reduce childhood overweight and other health disparities."

The results limitations of our study raise issues for future research. First, more research on the effect of community social capital and collective efficacy on childhood overweight are needed. In particular, further research is needed to assess the impacts of the different elements, levels, and forms of social capital (bonding, bridging, and linking) in a community on childhood overweight. More data should be collected on community social capital and other social processes in different communities to effectively assess their impacts on childhood overweight, particularly on Latinos and African American communities. Finally, measures of community physical environment, including physical activity and exercise amenities (sidewalks, bike paths, crosswalks, parks), and health resources (supermarkets, types of restaurants, and retail grocery stores) are lacking.

Endnotes

1 Primary caregiver's responses were adjusted for gender, age, race/ethnicity, socioeconomic status, marital status, and length of residence.

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References

- Allison, David B., and F. Xavier Pi-Sunyer. 1995. *Obesity Treatment*. New York: Prentice Hall.
- Almedom, Astier M. 2005. "Social Capital and Mental Health: An Interdisciplinary Review of Primary Evidence." *Social Science & Medicine* 61:943-964.
- Berkey, Catherine S., Helaine R. H. Rockett, Alison E. Field, Matthew W. Gillman, A. Lindsay Frazier, Carlos A. Camargo, M.D., Jr., and Graham A. Colditz. 2000. "Activity, Dietary Intake, and Weight Changes in a Longitudinal Study of Preadolescent and Adolescent Boys and Girls." *Pediatrics* 105: e56-.
- Birch, Leann L., and Jennifer O. Fisher. 1998. "Development of Eating Behaviors Among Children and Adolescents." Pp. 539-549.
- Black, Ruth E., Sheila M. Williams, Ianthe E. Jones, and Ailsa Goulding. 2002. "Children Who Avoid Drinking Cow Milk Have Low Dietary Calcium Intakes and Poor Bone Health." *American Journal of Clinical Nutrition* 76:675-680.
- Bokemeier, Janet L. 1997. "Rediscovering Families and Households: Restructuring Rural Society and Rural Sociology." *Rural Sociology*, 62(1): 1-20.
- Bourdieu, Pierre. 1984. *Distinction: A Social Critique of the Judgment of Taste*. Cambridge: Cambridge University Press.
- Bourdieu, Pierre. 1985. The Forms of capital. In *Handbook for Theory and Research for the Sociology of Education*, ed. John G. Richardson, 241-58. New York: Greenwood.
- Bowman, Shanthy A., Steven L. Gortmaker, Cara B. Ebbeling, Mark A. Pereira, and David S. Ludwig. 2004. "Effects of Fast-Food Consumption on Energy Intake and Diet Quality Among Children in a National Household Survey." *Pediatrics* 113:112-118.p. 112-118.
- Browning, Christopher R., and Kathleen A. Cagney. 2002. "Neighborhood Structural Disadvantage, Collective Efficacy, and Self-Rated Physical Health in an Urban Setting." *Journal of Health and Social Behavior* 43:383-399.
- Burton, Linda M. and Robin L. Jarrett. 2000. "In the Mix, Yet on the Margins: The Place of Families in Urban Neighborhood and Child Development Research." *Journal of Marriage and Family*, 62: 1114-1135.
- Carpiano, Richard M. 2007. "Neighborhood Social capital and Adult Health: An Empirical Test of a Bourdieu-Based Model." *Health & Place* 13:639-655.
- Carruth, B.R. and J.D. Skinner. 2000. "The Role of Dietary Calcium and Other Nutrients in Moderating Body Fat in Preschool Children." *International Journal of Obesity* 25:559-566.
- Cockerham, William C. 2005. "Health Lifestyle Theory and the Convergence of Agency and Structure." *Journal of Health and Social Behavior* 46:51-67.
- Cohen, Deborah A., Thomas A. Farley, and Karen Mason. 2003. "Why is Poverty Unhealthy? Social and Physical Mediators." *Social Science & Medicine* 57:1631-1641.
- Cohen, Deborah A., Brian K. Finch, Aimee Bower, and Narayan Sastry. 2006. "Collective Efficacy and Obesity: The Potential Influence of Social Factors on Health." *Social Science & Medicine* 62:769-778.
- Coleman, James S. 1988. "Social Capital in the Creation of Human Capital." *The American Journal of Sociology* 94:S95-S120.
- Coleman, James. 1990. *Foundations of Social Theory*. Cambridge, MA: Belknap Press.
- Conger, Rand D., Katherine J. Conger, and Glen H. Elder, Jr. 1997. Family economic hardship and adolescent adjustment: Mediating and moderating processes. In *Consequences of Growing Up Poor*, ed. Greg J. Duncan and Jeanne Brooks-Gunn, 288-310. New York: Russell Sage Foundation.
- Conger, Rand D., Xiaojia Ge, Glen H. Elder, Jr., Frederick O. Lorenz, and Ronald L. Simons. 1994. "Economic Stress, Coercive Family Process, and Developmental Problems of Adolescents." *Child Development* 65:541-561.
- Conger, Rand D., Frederick O. Lorenz, Glen H. Elder, Jr., Ronald L. Simons, and Xiaojia Ge. 1993. "Husband and Wife Differences in Response to Undesirable Life Events." *Journal of Health and Social Behavior* 34:71-88.
- Conger, Katherine J., Martha A. Rueter, and Rand D. Conger. 2000. The Role of Economic Pressure in the Lives of Parents and their Adolescents: The Family Stress Model. In *Negotiating Adolescence in Times of Social Change*, ed. Lisa J. Crockett and Rainer J. Silbereisen, 201-223. Cambridge: Cambridge University Press.
- Durkheim, Émile. 1997. *Suicide: A Study of Sociology*. Glencoe, IL: Free Press.
- Eaton, Danice K., Laura Kann, Steve Kinchen, James Ross, Joseph Hawkins, William A. Harris, Richard Lowry, Tim McManus, David Chyen, Shari Shanklin, Connie Lim, Jo Anne Grunbaum, and Howell Wechsler. 2006. Youth Risk Behavior Surveillance — United States, 2005. *Journal of School Health*, 76(7): 353-372.
- Elder, Glen H. and Rand D. Conger. 2000. *Children of the Land: Adversity and Success in Rural America*. Chicago: The University of Chicago Press.
- Ellaway, Anne and Sally Macintyre. 2000. "Social Capital and Self-Rated Health: Support for a Contextual Mechanism." *American Journal of Public Health Urban Health* 90:988.
- Farooqi, I. Sadaf and Stephen O'Rahilly. 2000. "Recent Advances in the Genetics of Severe Obesity." *Archives of Disease Childhood*, 83(1):31-34.
- Forshee, Richard A. and Maureen L. Storey. 2003. "Total Beverage Consumption and Beverage Choices Among Children and Adolescents." *International Journal of Food Sciences and Nutrition* 54(4):297-307.

- Francis, Lori A. and Leann L. Birch. 2006. "Does Eating During Television Viewing Affect Preschool Children's Intake?" *Journal of American Dietetic Association*, 106: 598–600.
- Furstenberg, Frank F. 2005. "Banking on Families: How Families Generate and Distribute Social Capital." *Journal of Marriage and Family* 67: 809-21.
- Gable, Sara and Susan Lutz. 2000. "Household, Parent, and Child Contributions to Childhood Obesity." *Family Relations* 49: 293-300.
- Ge, Xiaojia, Glen. H. Elder Jr., Mark Regnerus, and Christine Cox. 2001. "Pubertal Transitions, Perceptions of Being Overweight, and Adolescents' Psychological Maladjustment: Gender and Ethnic Differences." *Social Psychology Quarterly* 64(4): 363-375.
- Gordon-Larsen, Penny, Robert G. McMurray, and Barry M. Popkin. 1999. "Adolescent Physical Activity and Inactivity Vary by Ethnicity: The National Longitudinal Study of Adolescent Health." *The Journal of Pediatrics* 135:301-306.
- Gordon-Larsen, Penny, Robert G. McMurray, and Barry M. Popkin. 2000. "Determinants of Adolescent Physical Activity and Inactivity Patterns." *Pediatrics*, 105: E83.
- Hedley, Allison A., Cynthia L. Ogden, Clifford L. Johnson, Margaret D. Carroll, Lester R. Curtin, and Katherine M. Flegal. 2004. "Prevalence of Overweight and Obesity Among U.S. Children, Adolescents, and Adults, 1999-2002." *JAMA*, 291(23): 2847-2850.
- Hepworth, Julie. 2004. "The Social Construction of Eating Disorders. Pp. 368-382 in John. Germov & L. Williams eds, *Sociology of Food and Nutrition*, 2nd ed. South Melbourne, Australia: Oxford University Press.
- Hofferth, Sandra, Johanne Boisjoly, and Greg J. Duncan. 1998. "Parents' Extrafamilial Resources and Children's School Attainment." *Sociology of Education* 71(3): 246-68.
- Howard, Barbara V., Michael H. Criqui, David J. Curb, Rebecca Rodabough, Monika M. Safford, Nanette Santoro, Alan C. Wilson, and Judith Wylie-Rosett. 2003. "Risk Factor Clustering in the Insulin Resistance Syndrome and its Relationship to Cardiovascular Disease in Postmenopausal White, Black, Hispanic, and Asian/Pacific Islander Women." *Metabolism*, 52: 362–371.
- Institute of Medicine. 2005. *Preventing Childhood Obesity-Health in the Balance*. Washington, D.C.: The National Academies Press.
- Islam, M. Kamrul, Juan Merlo, Ichiro Kawachi, Martin Lindstrom and Ulf Gerdtham. 2006. "Social Capital and Health: Does Egalitarianism Matter? A Literature Review." *International Journal for Equality in Health*, 5: 1-28.
- Jargowsky, Paul A. 1997. *Poverty and Place: Ghettos, Barrios, and the American City*. New York: Russell Sage Foundation.
- Karlsen, Saffron, and James Y. Nazroo. 2002. "Relation Between Racial Discrimination, Social Class, and Health Among Ethnic Minority Groups." *American Journal of Public Health*, 92(4): 624-631.
- Kawachi, Ichiro, and Lisa Berkman. 2001. "Social Ties and Mental Health." *Journal of Urban Health*, 78: 458-467.
- Kawachi, Ichiro, Bruce Kennedy and Roberta Glass 1999. "Social Capital and Self-Rated Health: A Contextual Analysis." *American Journal of Public Health*, 89:1187–93.
- Kawachi, Ichiro, David Sparrow, Avron Spiro and Pantel S. Vokonas. 1996. "A Prospective Study of Anger and Coronary Heart Disease: The Normative Aging Study." *Circulation*, 5: 2090-2095.
- Keating, Daniel P. 2000. "Social Capital and Developmental Health: Making the Connection." *Journal of Developmental and Behavioral Pediatrics*, 21: 50-52.
- Kim, Daniel, S.V. Subramanian, and Ichiro Kawachi. 2006. "Bonding Versus Bridging Social Capital and their Associations with Self-Rated Health: A Multilevel Analysis of 40 U.S. Communities." *Journal of Epidemiology and Community Health*, 60: 116 - 122.
- Kuczmariski, Robert J., Cynthia L. Ogden, Shumei S. Guo, Laurence M. Grummer-Strawn, Katherine M. Flegal, Zugou Mei, Rong Wei, Lester R. Curtin, Alex F. Roche, and Clifford L. Johnson. 2000. "CDC Growth Charts for the United States: Methods and Development." *Vital Health Statistics*, 11 (246): 1-190.
- Kumanyika, Shiriki K. 2007. "Environmental Influences on Childhood Obesity: Ethnic and Cultural Influences in Context." *Physiology & Behavior*, 94(1): 61-70.
- LeStunff, Cathernie, Daniele Fallin, and Pierre Bougneres. 2001. "Paternal Transmission of the Very Common Class I INS VNTR Alleles Predisposes to Childhood Obesity." *Nature Genetics*, 29: 96–99.
- Levin, Sarah, Richard Lowry, David R. Brown, and William H. Dietz. 2003. "Physical Activity and Body Mass Index Among US Adolescents: Youth Risk Behavior Survey, 1999." *Archives of Pediatrics & Adolescent Medicine* 157: 816-820.
- Lochner, Kimberly A., Ichiro Kawachi, Robert T. Brennan, and Stephen L. Buka. 2003. "Social Capital and Neighborhood Mortality Rates in Chicago." *Social Science & Medicine* 56:1797-1805.
- Lowry, Richard, Nancy Brener, Lee S. Epping, J. Fulton, and Eaton, D. 2004. "Participation in High School Physical Education — United States, 1991–2003." *MMWR*, 53(36): 844–847.
- Lowry, Richard, Howell Wechsler, Deborah A. Galuska, Janet E. Fulton, and Laura Kann. 2002. "Television Viewing and its Associations with Overweight, Sedentary Lifestyle, and Insufficient Consumption of Fruits and Vegetables Among U.S. High School Students: Differences by Race, Ethnicity, and Gender." *Journal of School Health*, 72: 413–421.
- Ludwig, David S., Karen E. Peterson, and Steven L. Gortmaker. 2001. "Relation Between Consumption of Sugar-Sweetened Drinks and Childhood Obesity: A Prospective, Observational Analysis." *Lancet*, 357: 505–508.
- Lutfiyya, May Nawal, Rosemary Garcia, Christine M. Dankwa, Teriya Young, and Martin S. Lipsky. 2008. "Overweight and Obese Prevalence Rates in African American and Hispanic Children: An Analysis of Data from the 2003-2004 National Survey of Children's Health." *Journal of the American Board of Family Medicine*, 21(3): 191-199.

- Lynch, John W. and George A. Kaplan. 2000. "Socioeconomic Position." In *Social Epidemiology*, ed. Lisa F. Berkman and Ichiro Kawachi, 13-35 New York: Oxford University Press Inc.
- Malik, Vasanti S., Matthias B. Schulze, and Frank B. Hu. 2006. "Intake of Sugar-Sweetened Beverages and Weight Gain: A Systematic Review." *American Journal of Clinical Nutrition*, 84: 274–288.
- Malina, Robert M. 1996. Tracking of physical activity and physical fitness across the lifespan. *Research Quarterly of Exercise Sport*, 167:S48–S57.
- Massey, Douglass and Nancy A. Denton. 1993. *American Apartheid: Segregation and the Making of the Underclass*. Boston: Harvard University Press.
- Morenoff, Jeffrey D., Robert J. Sampson, and Stephen W. Raudenbush. 2001. "Neighborhood Inequality, Collective Efficacy, and the Spatial Dynamics of Urban Violence." *Criminology*, 39: 517-59.
- Morland, Kimberly, Steve Wing, Ana Diez Roux, and Charles Poole. 2002. "Neighborhood Characteristics Associated with the Location of Food Stores and Food Service Places." *American Journal of Preventive Medicine*, 1: 23–29.
- Naples, Nancy. 1994. "Contradictions in Agrarian Ideology: Restructuring Gender, Race-Ethnicity, and Class." *Rural Sociology*, 59: 110-135.
- O'Dea, Jennifer A. and Peter Caputi. 2001. "Association Between Socioeconomic Status, Weight, Age, and Gender, and Body Image and Weight Control Practices of 6- to 19-Year Old Children and Adolescents." *Health Education Research*, 16(5): 521-532.
- Ogden, Cynthia L., Margaret D. Carroll, Lester R. Curtin, Margaret A. McDowell, Carolyn J. Tabak, and Katherine M. Flegal. 2006. "Prevalence of Overweight and Obesity in the United States, 1999-2004." *JAMA*, 295(13): 1549–1555.
- Patillo-McCoy, Mary. 1999. *Black Picket Fences*. Chicago: The University of Chicago Press.
- Portes, Alejandro. 1998. Social Capital: Its Origins and Application in Modern Sociology." *Annual Review of Sociology*, 24: 1-24.
- Portes, Alejandro and Julia Sensenbrenner. 1993. "Embeddedness and Immigration: Notes on the Social Determinants of Economic Action." *American Journal of Sociology* 98: 1320-50.
- Portes, Alejandro. 2000. "The Two Meanings of Social Capital." *Sociological Forum* 15:1-11.
- Putnam, Robert D. 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, NJ: Princeton University Press.
- Putnam, Robert D. 1995. "Bowling Alone: America's Decline in Social Capital." *Journal of Democracy*, 6: 65-78.
- Putnam, Robert D. 2000. *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon Schuster.
- Raudenbush, Stephen and Anthony S. Bryk. 2002. *Hierarchical Linear Models: Applications and Data Analysis Methods, 2nd ed.* Thousand Oaks, CA: Sage Publications
- Robert, Stephanie A. and James S. House. 2000. "Socioeconomic Inequalities in Health: An Enduring Sociological Problem." In *Handbook of Medical Sociology*, 5th ed, ed. Chloe E. Bird, Peter Conrad and Allen M. Fremont, 79-97. Upper Saddle River, NJ: Prentice Hall.
- Salamon, Sonya. 2003. *Newcomers to Old Towns: Suburbanization of the Heartland*. Chicago and London: The University of Chicago Press.
- Sallis, J.F., J.J. Prochaska, and W.C. Taylor. 2000. "A Review of Correlates of Physical Activity of Children and Adolescents." *Medicine & Science in Sports & Exercise*, 32: 963-975.
- Sampson, R., J. Morenoff, and F. Earls. 1999. "Beyond Social Capital: Spatial Dynamics of Collective Efficacy for Children." *American Sociological Review*, 64: 633–60.
- Sampson, Robert J., Stephen W. Raudenbush, and Earls Felton. 1997. "Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy." *Science*, 277: 918-924.
- Sherry B. 2005. "Food Behaviors and Other Strategies to Prevent and Treat Pediatric Overweight." *International Journal of Obesity*, 29: S116–S126.
- Skinner, Jean D., Wendy Bounds, Betty R. Carruth, and Paul Ziegler. 2003. "Longitudinal Calcium Intake is Negatively Related to Children's Body Fat Indexes." *Journal of the American Dietetic Association* 103(12):1626-1631.
- Smith, G.D. 2000. "Learning to Live with Complexity: Ethnicity, Socioeconomic Position, and Health in Britain and the United States." *American Journal of Public Health*, 90(11): 1694-98.
- Snead, M.C. and W.C. Cockerham. 2002. "Health Lifestyles and Social class in the Deep South." *Research in Sociology of Health Care*, 20: 107-22.
- Strong, William B., Robert M. Malina, Cameron J.R. Blimkie, Stephen R. Daniels, Rodney K. Dishman, Bernard Gutin, Albert C. Hergenroeder, Aviva Must, Patricia A. Nixon, James M. Pivarnik, Thomas Rowland, Stewart Trost, and François Trudeau. 2005. "Evidence Based Physical Activity for School-age Youth." *The Journal of Pediatrics* 146:732-737.
- _. 2005. "Evidence Based Physical Activity for School-age Youth." *The Journal of Pediatrics* 146:732-737.
- Subramanian, S.V., I. Kawachi, and B.P. Kennedy. 2001. "Does the State you Live in Make a Difference? Multilevel Analysis of Self-Rated Health in the U.S." *Social Science Medicine*, 53: 9–19.
- Subramanian, S.V., D.J. Kim, and I. Kawachi. 2002. "Social Trust and Self-Related Health in U.S. Communities: A Multilevel Analysis." *Journal of Urban Health*, 79: S21-34.
- Taylor, John and R. Jay Turner. 2002. "Perceived Discrimination, Social Stress, and Depression in the Transition to Adulthood: Racial Contrasts." *Social Psychology Quarterly* 65:213-225.

Appendix A. Descriptive Statistics of the Study Population (Weighted)

Variables	Minimum	Maximum	Mean	Std. Dev.
Outcomes				
At risk for overweight or overweight, %	0	1	0.338	0.473
Overweight, %	0	1	0.185	0.388
Child characteristics				
Race/Ethnicity, %				
Non-Hispanic white	0	1	0.647	0.478
Non-Hispanic black	0	1	0.145	0.352
Latino/Hispanic	0	1	0.142	0.349
Other race	0	1	0.066	0.249
Female, %	0	1	0.503	0.500
Age, years	5	18	11.705	3.731
Low birth weight, %	0	1	0.200	0.400
Hours of TV watched per day	0	24	4.997	2.268
Number of extracurricular activities	0	5	1.791	1.113
Family Characteristics				
Family Socioeconomic status	-3.146	2.608	0.147	1.078
Health insurance coverage, %				
Private/other	0	1	0.766	0.424
Government	0	1	0.173	0.377
No insurance	0	1	0.062	0.241
Family-based social structure				
Family Structure, %				
2 Parents, married both biological	0	1	0.742	0.437
2 Parents, one/both non-biological	0	1	0.070	0.261
1 Parent, never married	0	1	0.080	0.266
1 Parent, separated/divorced mother	0	1	0.108	0.310
Number of siblings	0	5	1.473	1.072
Extended family members, %	0	1	0.024	0.152
Parental enforcement of rules/discipline, %				
Low	0	1	0.356	0.477
Medium	0	1	0.285	0.451
High	0	1	0.359	0.480
Intergenerational closure	-4.000	5.150	0.095	1.913
Social ties (family, friends, and teachers)	-2.000	2.600	0.033	1.086
Sense of mastery	-3.140	1.380	-0.023	0.891
Mental or physical disability, %	0	1	0.071	0.256

Troiano, Richard P., Ronette R. Briefel, Margaret D. Carroll, and Karil Bialostosky. 2000. "Energy and Fat Intakes of Children and Adolescents in the United States: Data from the National Health and Nutrition Examination Surveys." *American Journal of Clinical Nutrition* 72(suppl 5):343S-1353.

U.S. Department of Health and Human Services. 2001. *The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity*. Rockville, MD: Public Health Service, Office of the Surgeon General.

Welsh, Jean A., Mary E. Cogswell, Sharmini Rogers, Helaine Rockett, Zuguo Mei, and Laurence M. Grummer-Strawn. 2005. "Overweight Among Low-Income Preschool Children Associated With the Consumption of Sweet Drinks: Missouri, 1999-2002." *Pediatrics*, 155: e223-e229.

Wickrama, K.A.S., Frederick O. Lorenz, Rand D. Conger, Lisa Matthews, and Glen H. Elder, Jr. 1997. "Linking Occupational Conditions to Physical Health through Marital, Social, and Intrapersonal Processes." *Journal of Health and Social Behavior* 38:363-375.

Appendix B. Descriptive Statistics of Community Characteristics (N=1514) (Weighted)

Variables	Minimum	Maximum	Mean	Std. Dev.
Social Capital				
Social closure	-0.422	0.838	-0.002	0.157
Civic engagement/participation	-0.602	0.979	-0.002	0.183
Social ties with family and friends	-1.004	1.211	-0.006	0.311
School involvement	-6.417	52.621	0.114	5.110
Child-centered social control	-0.713	0.278	-0.003	0.145
Social support	-0.365	0.295	0.000	0.079
Unsafe and dangerous neighborhoods	-2.698	1.564	-0.004	0.452
Very difficulty to recognize strangers in neighborhood	-3.1134	2.480	-0.012	0.735
Poor neighborhood to raise a child	-1.753	1.011	-0.005	0.432
% of residents that are poor	0.000	91.321	12.795	10.339
% of civilian labor force 16 years or above Unemployed	0.000	32.322	3.786	2.620
% of Black or African American residents	0.000	100.000	13.297	23.792
% of female-headed families with children	0.000	69.435	11.018	8.214
% of households on public assistance	0.000	39.620	3.691	3.901
Economic and Demographic Characteristics				
% of residents that are poor	0.000	91.321	12.795	10.339
% of civilian labor force 16 years or above				
% Unemployed	0.000	32.322	3.786	2.620
% of Black or African American residents	0.000	100.00	13.297	23.792
% of female-headed families with children	0.000	69.435	11.018	8.214
% of Households on public assistance	0.000	39.620	3.691	3.901
% of residents 25 years+ with a college or higher education	0.000	84.333	23.488	16.580
% in managerial or professional occupations	2.890	83.990	31.829	13.741
% of households with incomes \$75,000 or above	0.000	82.872	22.404	16.458
% of Latino/Hispanic residents	0.000	96.077	11.638	20.213
% of foreign-born residents	0.000	77.703	10.013	13.291
% of residents staying in the same house in the last 5 years	3.677	82.555	54.707	11.774
% of housing owners	0.000	99.672	67.551	20.180
Metropolitan/nonmetropolitan residence, %				
Large metro	0	1	0.433	0.495
Small metro	0	1	0.339	0.474
Rural adjacent to metro	0	1	0.171	0.376
Rural non-adjacent to metro	0	1	0.156	0.363
Geographic region,%				
North East	0	1	0.198	0.399
North Central	0	1	0.261	0.439
South	0	1	0.337	0.473
West	0	1	0.255	0.436

- Wickrama, K.A.S., Rand D. Conger, Lora Ebert Wallace, and Glen H. Elder, Jr. 1999. "The Intergenerational Transmission of Health-Risk Behaviors: Adolescent Lifestyles and Gender Moderating Effects." *Journal of Health and Social Behavior* 40:258-272.
- Wilkinson, R.G. 1996. *Unhealthy Societies: The Afflictions of Inequality*. London: Routledge.
- Wilkinson, R.G., Kawachi, I. and Kennedy, B.P. 1998. "Mortality, the Social Environment, Crime, and Violence." *Social Health Illness*, 20: 578-97.
- Williams, Lauren and John Germov. 2004. "The Thin Ideal: Women, Food, and Dieting." Pp. 337-367 in Lauren Williams and John Germov – eds., *A Sociology of Food and Nutrition: the Social Appetite*, 2nd ed. Victoria: Oxford University Press.
- Wilson, W.J. 1987. *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. Chicago: University Press.
- Wilson, W.J. 1996. *When Work Disappears*. New York, NY: Knopf.
- Yen, Irene H. and George A. Kaplan. 1999. "Neighborhood Social Environment and Risk of Death: Multilevel Evidence from the Alameda County Study." *American Journal of Epidemiology*, 149(10): 898-907.
- Zemel, Michael B., Hang Shi, Betty Greer, Douglas Dirienzo, and Paula C. Zemel. 2000. "Regulation of adiposity by dietary calcium." Pp. 1132-1138.
- Zoumas-Morse, Christine, Cheryl L. Rock, Elisa J. Sobo, and Marian L. Neuhaus. 2001. "Children's patterns of macronutrient intake and associations with restaurant and home eating." *Journal of the American Dietetic Association* 101:923-925.

Appendix C. Principal Component Method Factor Matrix (Varimax Rotation) (Loadings $\geq .55$) in 1514 Neighborhoods (Weighted Data from CDS)	
Variable	Factor Loading
Social Capital	
Civic Engagement	0.561
Social closure	0.577
Social ties to family and friends	0.682
School involvement	0.662
Collective Efficacy	
Child-centered social control	0.835
Social support	0.695
Social Stressor	
Unsafe and dangerous neighborhoods	0.768
Poor neighborhood as a place to raise children	0.739
Very difficult to recognize who is a stranger	0.672

Appendix D. Alpha Factoring Method Factor Pattern (Oblimin Rotation) (Loading $\geq .55$) in 1514 Neighborhoods (Weighted Data from CDS)	
Variable	Factor Loading
Economic Disadvantage	
% of residents that are poor	0.742
% of civilian labor force 16 years + unemployed	0.757
% of Black residents	0.806
% of female-headed families with children	0.877
% of households on public assistance	0.801
Concentrated Affluence	
% of residents 25 years+ with college or higher	0.978
% in managerial or professional occupations	0.913
% of households with incomes of \$75,000+	0.831
Immigration Concentration	
% of Latino/Hispanic residents	0.951
% of foreign-born residents	0.830
Residential Stability	
% of residents staying in same house last 5 years	0.756
% of housing owners	0.691

Social capital, collective efficacy, and social stressor indicators used in the analyses are empirical Bayes residuals obtained from hierarchical linear models. The modeling approach to create the above indicators is detailed below:

Level 1 (within-individual variation):

$$Y_{ijk} = \pi_{jk} + \sum_{p=1}^9 \alpha_p D_{pijk} + e_{ijk}, \text{ where } e_{ijk} \sim N(0, \sigma^2),$$

Level 2 (between-individual variation):

$$\pi_{jk} = \beta_{0k} + \sum_{q=1}^{10} \beta_q X_{qjk} + r_{jk} \text{ where } r_{jk} \sim N(0, \tau_\pi),$$

Level 3 (between-neighborhood variation):

$$\beta_{0k} = \gamma_{000} + \mu_{00k} \text{ where } \mu_{00k} \sim N(0, \tau_\beta),$$

In level 1, Y_{ijk} is the i th response to item p of person j in neighborhood k ; π_{jk} is the intercept and represents the respondent's latent score for civic engagement or one of the social capital or collective indicators in the Appendix C above; α_p is the item "difficulty"; D_{pijk} is a dummy variable coded 1 if response i to item p in, for example, the

10-item civic engagement scale and 0 if response i is to another item; e_{ijk} is an error term assumed to be independent, normally distributed, and homoscedastic (i.e., to have equal variances).

In level 2, β_{0k} is the intercept and represents the neighborhood mean civic engagement, for example; X_{qjk} represents respondent-level predictor q for individual j in neighborhood k ; β_q is the effect of predictor q on individual j 's score; and r_{jk} is an independent, normally distributed error term with variance τ_π . At this level, the model adjusts for 10 respondent's socio-demographic characteristics that might influence responses to the social capital and collective efficacy indicators, including gender (female, with male as the referent category), age, race/ethnicity (Black or African American, Latino or Hispanic, Asian or Pacific Islander, and Other race, with White being the referent category), marital status (never married, formerly married (divorced/separated/widowed), with married as the referent category), socioeconomic status (SES) (a principal component factor score that combines respondent's education, occupational prestige, and family income), and length of residence in the neighborhood.

In level 3, γ_{000} is the grand mean civic engagement or other social capital or collective efficacy indicators; μ_{00k} is a normally distributed random effect associated with neighborhood k ; and τ_{β} is the between-neighborhood variance (Sampson, Raudenbush & Earls, 1997; Raudenbush & Bryk, 2002; Carpiano, 2007). The models for social ties to family and friends, school involvement, neighborhood safety, neighborhood environment for children, and neighborhood anonymity indicators were estimated at level 2.