The Formation and Consequences of Children's Health Lifestyles*

Stefanie Mollborn

Laurie James-Hawkins

Elizabeth Lawrence

University of Colorado Boulder

Paula Fomby

University of Colorado Denver

RUNNING HEAD: Children's health lifestyles

* This research is based on work supported by a grant from the National Science Foundation (SES 1061058). Research funds were also provided by the NIH/NICHD funded CU Population Center (R24HD066613). The authors thank Richard Jessor, Joshua Goode, and Jeff Dennis for their contributions to this project. Direct correspondence to Stefanie Mollborn, Sociology and Institute of Behavioral Science, 483 UCB, Boulder, CO 80309-0483. E-mail: mollborn@colorado.edu.

Abstract

This study integrates two important developments in understanding health disparities, the concept of health lifestyles (which has examined only adults and adolescents) and the increased focus on early childhood. We introduce the concept of children's health lifestyles, identifying differences from adult health lifestyles and articulating processes of intergenerational transmission and socialization that predict children's health lifestyles and result from them. Using the nationally representative Early Childhood Longitudinal Study-Birth Cohort (2001 - 2007; $N \approx 6150$), latent class analyses establish that there are predominant health lifestyles among U.S. preschoolers. Six distinct empirical patterns representing health lifestyles emerge, three representing low, medium, and high levels of risk across all domains and three representing domain-specific risks. Social background factors predict children's health lifestyles, but the lower household resources in early childhood that result from disadvantaged social statuses usually explain these relationships. Across five measures representing cognition, behavior, and health at the start of the school transition, preschool health lifestyles predict children's development even after controlling for social background and concurrent household resources. Children with several domains of high risk (the "consistently problematic" and "food insecurity/violence/smoking" patterns) generally have the most compromised outcomes. Further research on health lifestyles throughout childhood is warranted.

Keywords: Early childhood, health lifestyles, health capital, latent class analysis, life course

The Formation of Children's Health Lifestyles

An important theoretical development in the study of health disparities is the concept of *health lifestyles*, or predominant configurations of health behaviors and health risks in the population (Cockerham 2005). Health lifestyles are shaped by social factors such as socioeconomic status (SES), race/ethnicity, and gender, which affect a person's *motivations* to adopt a particular lifestyle as well as their *means* to be able to adopt it (Pampel, Krueger, and Denney 2010). People also adopt health lifestyles because of their links to social *identities* and the social statuses and networks associated with those identities (Cockerham 2005; Stets and Burke 2000). The literature on health lifestyles has used data from adults, with the exception of a few studies of adolescents (Dodd, Al-Nakeeb, Nevill, and Forshaw 2010; Frech 2012; Sinha 1992; Stefansdottir and Vilhjalmsson 2007).

A second, equally important advance in understanding health disparities has been the attention the life course theoretical perspective has brought to the influence of early life conditions on later life outcomes (Elder 1994). Researchers have documented the role of the "long arm of childhood" in influencing health and socioeconomic status in later life (Haas 2008; Hayward and Gorman 2004). Policy analyses have particularly pinpointed *early childhood* as an important target for future research. This burgeoning focus is based on the finding that improvements in early childhood conditions pay off through the rest of the life course (Duncan, Ludwig, and Magnuson 2007). In particular, the period preceding the *transition to school* in kindergarten and first grade is important. Children's school readiness in terms of cognitive and behavioral outcomes and health is compromised by the start of the school transition in many marginalized populations, such as low-SES children, many racial/ethnic minority groups, and children of teen parents (Crosnoe and Wildsmith 2011; Entwisle, Alexander, and Olson 2004). Because these outcomes at the school transition are highly correlated with academic performance in middle and high school (Butler,

Marsh, Sheppard, and Sheppard 1985; Weller, Schnittjer, and Tuten 1992), it is an important policy goal to reduce disparities in school readiness before they can take root during the school transition.

Our study brings together these two important theoretical strands by introducing the concept of *children's health lifestyles*. We focus in particular on the critical period of early childhood. Our conceptualization of children's health lifestyles reflects most aspects of adults' health lifestyles, but there are also some clear differences. Importantly, young children's health lifestyles often do not involve their own agency, but rather are primarily a reflection on choices made by parents within the structural constraints experienced by the family. We argue that these emergent health lifestyles lay the foundation for health behaviors that children eventually adopt through their own agency, and thus represent a mechanism for the intergenerational transmission of health advantage and disadvantage. Even more than adults' health lifestyles, those of young children may have important consequences for the future. Not only are they likely to shape future health and development for the rest of the life course, but they represent a process of socialization of children into certain types of health behaviors and not others.

In this study, we use the only available nationally representative longitudinal survey of early childhood in the United States, the Early Childhood Longitudinal Study-Birth Cohort (Snow et al. 2009; U.S. Department of Education 2007), to analyze children's health lifestyles empirically. We look specifically at health lifestyles in the prekindergarten period, when children's health behaviors and risks are still strongly patterned by their families yet when they begin to exercise some amount of agency in domains such as nutrition, safety, and sleep. We address three research questions. First, *are there predominant empirical patterns of health behaviors and risks that reflect health lifestyles among preschoolers in the United States?* We use a wide variety of measures of behaviors and risk or protective factors to operationalize health lifestyles in our nationally representative sample of young children. Latent class analyses allow the optimal number of distinct empirical patterns representing lifestyles and their

composition to arise from the set of indicators we identified in the data, permitting us to examine predictors and consequences of these lifestyles in subsequent analyses. Second, *what social background factors and household resources predict children's health lifestyles?* We include predictors representing family background and concurrent financial, material, and social resources in the household to estimate children's likelihood of having different predominant health lifestyles. Third, *how are health lifestyles in preschool related to children's health and development at the start of the school transition?* Our analyses consider multiple outcomes across the cognitive, behavioral, and health domains in the fall of kindergarten. We estimate the associations between health lifestyles and child outcomes after controlling for background factors and concurrent household resources. To our knowledge, this is the first study to introduce the concept of young children's health lifestyles or to empirically analyze them.

BACKGROUND

Health Lifestyles

Health lifestyles can be defined as "collective patterns of health-related behavior based on choices from options available to people according to their life chances" (Cockerham 2007:460). The concept is rooted in Weber's idea of lifestyles as the interaction of *life choices* (agency) and *life chances* (structure), and it has been further developed by scholars such as Sobel (1981), Abel (1991), and Cockerham (2005). In Weber's conceptualization, lifestyles are not associated with individuals, but with status groups of people with similar backgrounds (Cockerham 2005), and choosing the lifestyle associated with a status group communicates one's *identity* as part of the group. Some research has expanded the definition of health lifestyles to include factors such as understandings of what good health means, norms about health, and policy environments (Krueger, Bhaloo, and Rosenau 2009).

The focus on health lifestyles arises from a broader trend among social class researchers. Scholars have argued that in general, consumption-based lifestyles have begun to complement or

replace social class as important bases of individuals' identities (Cockerham 2005; Crompton 1998; Giddens 1991; Scott 1996), although the options available for constructing these lifestyles are themselves based on social class (Bourdieu 1986a). Sobel (1981:ix) conceptualizes lifestyles as consisting of "expressive behaviors that are directly observable or deducible from observation"; the expressiveness of lifestyle behaviors implies agency. In the case of health, Cockerham points out that the strength of the idea that individuals can affect their own health outcomes—that good health is an "achievement" to be worked at—varies across societies and by social class within societies (Cockerham 2005; Cockerham 2007; Cockerham, Lueschen, Kunz, and Spaeth 1986).

Individuals' approaches towards health behaviors tend to cluster, with people who behave in one healthy or unhealthy way often behaving in others (Laaksonen, Prättälä, and Lahelma 2002). Past research has found that people from higher social classes tend to have the healthiest lifestyles across a variety of measures (e.g., Blaxter 1990; Snead and Cockerham 2002). Abel (2008) points out that many positive health behaviors cost money, and fundamental cause theory also emphasizes knowledge as important in shaping health behaviors (Link and Phelan 1995). In particular, Mirowsky and Ross (2003) have identified education as critical in shaping individuals' health lifestyles, and Abel and colleagues (1989) have found that education matters more than income for understanding American men's health lifestyles. Cockerham (2000) has found that not only class, but other social characteristics such as gender and age are linked to health lifestyles.

Children's Health Lifestyles

The idea of health lifestyles among school-aged children (Kennedy and Floriani 2008; Sinha 1992) and adolescents (Nutbeam, Aaro, and Catford 1989) has been raised in past research but not fully theoretically developed as separate from adult health lifestyles. Schuster and colleagues (2004) and Terre, Drabman, and Meydrech (1990) have found that a variety of health behaviors vary by individual characteristics and are correlated in samples of preteens and teenagers, but they did not

examine health lifestyles. No previous work has studied or theorized about health lifestyles in early childhood. Previous research on adolescents and adults has found that health behaviors and the composition of health lifestyles change over the life course (Backett and Davison 1995; Frech 2012). These findings imply that the study of health lifestyles must be tailored to the particular life stage being studied. This insight is particularly important when thinking about health lifestyles in early childhood. Here, we develop the concept of health lifestyles as it applies to young children, articulating similarities and differences between adults' health lifestyles and those of children.

Like adults' health lifestyles, children's health lifestyles are shaped by social factors that influence families' access to and their motivations to adopt particular lifestyles. And like adults' health lifestyles, those of children are linked to particular identities that lead to particular social rewards or punishments in different social networks—but children's health lifestyles can reflect on either the child's or the parent's identity, or both. Some of the behaviors and risks considered when studying adults must be altered to be applicable for young children (e.g., smoking becomes exposure to secondhand smoke), others remain the same (e.g., physical activity), and still others only apply to one of these two age groups (e.g., using a car seat for children or drinking alcohol for adults).

There are also some clear differences between health lifestyles as they apply to adults versus young children. Most importantly, they are a mixture of parents' and children's agency, structural constraints, and identities, with parents' influence waning and children's influence growing with age. Thus, similarly to notions of social class, we can talk about children starting with an *ascribed health lifestyle* and gradually transitioning to an *achieved health lifestyle* by adulthood. For these reasons, we assert that health lifestyles are part of the intergenerational transmission of social disadvantage from parents to children (Wickrama, Conger, Wallace, and Elder 1999), and as such, they are a blend of parents' behaviors (such as smoking, or ensuring automobile safety) and children's behaviors (such as nutrition and sleep). DeGenna and colleagues (2006) emphasize that intergenerational links in

health behaviors can occur through direct social learning from parents or from exposure to social environments that encourage similar behaviors as those of parents. Indeed, Abella and Heslin (1984) found that parents' and children's health behaviors were strongly linked, even though adult children did not consciously acknowledge that their parents had influenced them in this way. Wickrama and colleagues (1999) found additional evidence for links between mothers' and their teenage children's health risk behaviors.

We suggest that health lifestyles are intergenerationally transmitted through the direct impacts of parents' health lifestyles on children (e.g., smoking or family violence), through behaviors that affect children and parents alike (e.g., cooking nutritious dinners or having a smoke detector), and through behaviors that are unique to children but at least somewhat determined by parents (e.g., children's sleep patterns or car seat use). This intergenerational transmission of health lifestyles is a phenomenon our culture appears to be aware of, and reference groups evaluate parents' efforts to form their children's health lifestyles as a particularly important expression of their own identities as parents. Certain behaviors, such as co-sleeping and breastfeeding versus bottle-feeding, are culturally contested (Hausman 2003) as social actors struggle to make parents adhere to their preferred norms, and the stakes are perceived to be high because of children's future health.

The social psychological processes involving motivations and identities apply more to parents than to children when understanding young children's health lifestyles. For example, young children's food and exercise are seen as reflecting on the parent's motivations and identity, and social rewards and punishments associated with particular behaviors in particular contexts accrue to the parent more than the child. Examples relevant to preschool-aged children include unsupervised outdoor play or taking care of younger siblings. In some social contexts, a parent encouraging these behaviors in a child would be socially rewarded for instilling self-reliance and assumption of responsibility, while in other social networks she or he would be punished for insufficiently

supervising the child (Lareau 2003). The means to adopt certain lifestyles also apply to the parent rather than the child, as children have few financial, material, or social resources of their own at this age. Finally, the degree of agency in adopting one's health lifestyle differs greatly between adults and preschoolers. Generally parents are making decisions for children, although as any parent can verify, four-year-olds have some power over what they eat, when they sleep, and what free time activities they engage in. So health lifestyles at this stage in the life course are a delicate balance between parents and children that shifts more towards the child (moving from ascribed health lifestyle toward achieved health lifestyle) as he or she ages.

Even more than adults' health lifestyles, those of young children may have important consequences for the future. Not only are they likely to shape future health and development for the rest of the life course, but they represent a process of *socialization* of children into certain types of health behaviors and not others. For example, nutritious foods eaten regularly in early childhood may turn into the "comfort foods" of the adult the child becomes, resulting in health benefits compared to less nutritious choices. In his theory of health lifestyles, Cockerham (2005) views past socialization as key for understanding the health lifestyle choices people make from among the options available to them. Lynch and colleagues (1997) found that childhood socioeconomic status shapes adult health behaviors, although the mechanisms were not documented.

Shim (2010) introduced another important aspect of this socialization process that is related to children's health lifestyles: *cultural health capital*. Among the types of cultural, social, financial, and human capital to which people have differential access (Bourdieu 1986b), cultural health capital is "the repertoire of cultural skills, verbal and nonverbal competencies, attitudes and behaviors, and interactional styles, cultivated by patients and clinicians alike, that, when deployed, may result in more optimal health care relationships" (Shim 2010:1). Including differential acquisition of cultural health capital as part of children's health lifestyles expands the concept beyond specific health

behaviors. We assert that children's socialization into specific health lifestyles occurs within a socialization context of broader messages about health and agency that leads young children to simultaneously acquire differing amounts of cultural health capital that will aid their health throughout the life course. For example, a parent who offers a child nutritious food is engaging in a health behavior that can be measured as part of a child's health lifestyle. Because of this health behavior and discussions with the parent about food choices, the child is also becoming familiar with nutritional knowledge at an early age and picking up verbal and nonverbal cues about how to approach social interactions that include food. In other words, the child is acquiring cultural health capital through socialization into a health lifestyle that includes a nutrition-focused approach to eating.

Influences on and Implications of Children's Health Lifestyles

Besides identifying health lifestyles among young children, our study's focus is to investigate their predictors and consequences. For the former, we focus on social background and concurrent resources. Children's health lifestyles are expected to be shaped by their family's social background because social background factors influence their parents' health lifestyles, cultural health capital, and available resources (Bourdieu 1986a; Snead and Cockerham 2002). Independently of social background or as the mechanism through which background affects health lifestyles, we expect family resources to be another key influence on children's health lifestyles. Resources shape health lifestyles because they provide parents with the material means, knowledge, and social support to make positive changes in their children's health lifestyles. These three dimensions of resources have been recognized as important for understanding health (Link and Phelan 1995).

We also expect young children's health lifestyles to be linked to their early development. Our outcomes are measured at the start of kindergarten, which marks the beginning of the transition to school. This is a critical transition period, affecting children's school trajectories for years afterward

(Duncan et al. 2007). In particular, we examine outcomes in the cognitive, behavioral, and health domains because they have been shown to be interrelated and important both for a successful transition to school and for later outcomes (Crosnoe 2006; Entwisle, Alexander, and Olson 2004; Halonen, Aunola, Ahonen, and Nurmi 2006; Weller, Schnittjer, and Tuten 1992).

Although this study's data do not permit us to measure longer-term outcomes and other research has not addressed this topic, we expect that children's preschool health lifestyles shape their health lifestyles and health outcomes throughout adulthood. This may occur through at least two pathways. First, as articulated above, early health lifestyles may socialize children to adopt similar health behaviors in adulthood. Second, the developmental and health impacts of early health lifestyles that we document here may affect later socioeconomic and other characteristics, which in turn are linked to adult health lifestyles.

Measuring Children's Health Lifestyles

Researchers seeking to study health lifestyles empirically have to grapple with two major issues. The first is how to measure health lifestyles in a population empirically, rather than assuming that they exist or artificially imposing preconceived patterns of behaviors. This has been acknowledged as a challenge (Abel 1991; Cockerham 2005), and analytic strategies have tended to lag behind theoretical developments in this regard. Many studies have used techniques such as cluster analysis, factor analysis, or others to allow patterns of lifestyle behaviors to emerge from the data, but did not test hypotheses about the causes and consequences of these health lifestyles (e.g., Abel 1991; Burke et al. 1997; Dodd, Al-Nakeeb, Nevill, and Forshaw 2010; Patterson, Haines, and Popkin 1994). Some others have focused on specific features of health lifestyles to test hypotheses but not examined how they covary or cluster in a population (e.g., Cockerham 2007; Reijneveld 1998). In contrast, latent class analysis allows researchers both to identify empirical patterns of lifestyle indicators that emerge from the data and test hypotheses about their causes and

consequences. Krueger, Bhaloo, and Rosenau (2009) and Laska and colleagues (2009) have used this method to examine health lifestyles among adults and college students, respectively, but neither used the latent classes as outcomes or predictors to analyze the causes and consequences of health lifestyles.

The second important empirical issue is deciding which indicators of health lifestyles to use. Researchers studying adult health lifestyles have often worked with limited behavioral indicators, which has been acknowledged as a concern (Stefansdottir and Vilhjalmsson 2007). The most commonly measured are exercise, diet, smoking, and alcohol consumption (Cockerham 2005). Sometimes researchers include other behaviors, such as use of substances besides alcohol, safety measures such as seat belt use, health care seeking, sleep, and relaxation. Because of the breadth of our data, we are able to incorporate a wide variety of indicators within the domains of diet, sleep, secondhand smoke exposure, safety, and exposure to violence. Some of these domains are direct measures of health behaviors, while others (such as safety) represent parents' behavioral management of contextual risks in order to keep the child safe and healthy. Each domain has been linked to children's development and health (Butz et al. 2011; Cook et al. 2006; Dellinger and Kresnow 2010; Du et al. 2010; Durbin et al. 2005; Glewwe, Jacoby, and King 2001; Hemenway 2011; King 2012; Koulouglioti, Cole, and Kitzman 2008; Lin, Tung, Hsieh, and Lin 2011; Lucas 1998; Yount, DiGirolamo, and Ramakrishnan 2011).

METHOD

Data

Our data source is the Early Childhood Longitudinal Study-Birth Cohort (ECLS-B), which followed a nationally representative sample of about 10,600 children born in 2001 from infancy through the fall of kindergarten (U.S. Department of Education 2007).[1] No other nationally

[1] Because of ECLS-B confidentiality requirements, all *N*s are rounded to the nearest 50.

representative U.S. study has tracked children through these first years of life using parent interviews and direct assessments. The ECLS-B has the advantage of including relatively large subsamples of children of teen parents, representing 12% of the sample at Wave 1. All 2001 births registered in the National Center for Health Statistics vital statistics system were eligible, and the sample was drawn using a clustered, list frame design. Children were sampled from 96 counties/county groups. A small number of children with mothers below age 15 at their birth were excluded; there were just 0.6 births per 1,000 for ages 10-14 in 2008, compared to 41.5 for ages 15-19 (Hamilton, Martin, and Ventura 2010).

This study used data from all five waves of the survey, conducted when the children were about 11, 24, and 52 months old (typically the fall before the start of kindergarten), and in the fall of their kindergarten year at an average of 66 months old (thus, most children were interviewed in the fall of 2006 but some entered kindergarten in fall 2007). The primary parent, who was almost always the biological mother, was interviewed in person. Due to budgetary constraints, the kindergarten wave included a random subsample of about 85% of the children that had completed the parent interview of the preschool wave, though all American Indian children who completed either the 2-year or preschool wave were included (Snow et al. 2009). The weighted response rates for the parent interview were 74, 93, 91, 92, and 93 respectively for each wave. Since some of the covariates we used apply to biological mothers, we further restricted our sample those whose biological mothers completed the parent survey in the available waves of information. Thus, taking as our starting sample children who had at least two reading or math outcomes, had biological mothers complete the survey, and who had valid weights and clustering information, there were about 8150 children. This sample was used to generate the latent classes for health life styles. Cases that were missing data were used in the latent class analysis and classes were generated for all cases. However, due to missing information primarily on sample weights, but also on the various outcomes, controls, and

resources, the final analysis sample was about 6150 children. All analyses except the creation of latent classes adjusted for complex survey design using probability and replication weights.

Measures

Health Lifestyle Indicators. We used a variety of indicators that identified predominant health lifestyles among prekindergarten children in our latent class analyses, representing five domains of health behaviors and health risks. Variables included in the latent class analysis were all measured at wave 3 (52 months old). The first domain was *diet*. Household food security was constructed by ECLS-B, comparing households with uncertain food provision to those without. The other nutrition indicators measured consumption of specific foods within the last week, some beneficial for children's health and some detrimental. Children who drank milk at least once per day were coded as 1, with less than once a day coded as 0. Soda or sugary drinks (including sports drinks and fruit drinks that were less than 100% juice), fast food (meals or snack food from a fast food restaurant with no wait service), sweet snacks (such as cake, brownies, ice cream, candy, and cookies), and salty snacks (chips, popcorn, crackers, etc.) were all coded similarly to milk, with intake at least once per day coded as 1 for each separate variable, and intake less than 1 time per day coded as 0. Per nutritional guidelines, fruit and vegetable intake per day was combined, with children consuming 5 or more servings per day coded as 1 and those eating less coded as 0.

The second domain was children's average bedtime and average number of hours of *sleep*. Inadequate sleep was coded as 1 if the child slept less than 10 hours per night on average and 0 for 10 or more hours. Late bedtime was coded as 1 if the child fell asleep after 10 p.m. on average and 0 for earlier. The third domain, *secondhand smoke exposure*, was represented by a variable coded 1 if the child had a family member who smoked inside the home and coded and 0 if there were no smokers in the home or if smokers only smoked outside the house.

The fourth domain, *safety*, was represented by five indicators. A smoke detector measure was

coded as 1 if there was a working smoke detector present in the home all the time, and 0 if there was no smoke detector or the detector was not in working order all the time. Children were coded as 1 if they always wore a helmet when engaging in activities such as roller skating and biking and 0 otherwise. Children who did not ride a bike or have skates were coded as missing. Car seat use was coded as 1 if a car seat was always used and 0 for less than always. A very small number of children reported not riding in a car at all and were coded as missing. Children were coded as 1 if they always sat in the back seat when in a car, and 0 otherwise, with those reporting no car at all coded as missing. The presence of an unlocked gun in the child's home was coded as 1, with no gun present or a consistently locked gun coded as 0. The final domain, *violence*, was represented by two indicators. Respondents who indicated that the child had witnessed any violent act in the home (such as physical fighting, destruction of property, or other kinds of violence) were coded as 1 and all others as 0. Finally, children whose mothers reported were the victims of violence in the home in the last year were coded as 1 and all others as 0.

Outcomes. We used six different outcome variables to capture different facets of children's well-being. We looked at kindergarten indicators of reading, math, behavior, health, chronic illness, and asthma. Kindergarten information was taken from either wave 4 or wave 5, depending on when the survey indicated the child first enrolled in kindergarten. The two cognitive outcomes (early reading and math) came from one-on-one child assessments adapted from reputable assessment batteries developed for other child development studies or for the ECLS-B. See Nord and colleagues (2006) and Snow and colleagues (2009) for more information on these and other assessments. Interviewers administered early reading and math assessments adapted from several reputable assessment batteries developed for other large studies of preschoolers, such as the Peabody Picture Vocabulary Test, the Preschool Comprehensive Test of Phonological and Print Processing, the PreLAS® 2000, the Test of Early Mathematics Ability-3, and sister study Early

Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K).[2] Early reading was assessed by a 35-item test covering age-appropriate areas such as phonological awareness, letter recognition and sound knowledge, print conventions, and word recognition (ECLS-B-reported reliability=0.84). Early math was assessed in two stages, routed after the first stage depending on the child's score and evaluating counting, number sense, operations, geometry, pattern understanding, and measurement (ECLS-B-reported reliability=0.89). We standardized the scale scores for the cognitive, reading and math evaluations.

The behavior measure was based on parent reports. Children's behavior was captured by a standardized continuous variable, constructed from an index of 24 items in which the parent was asked how frequently the child acted in certain ways, using a 5-point scale ranging from "never" to "very often" (Cronbach's alpha=0.86). The items were drawn from the Preschool and Kindergarten Behavior Scales—Second Edition, the Social Skills Rating System, and the Family and Child Experiences Study, as well as new questions developed for the ECLS-B. The questions included items such as how often the child shares belongings or volunteers to help other children, how often the child is physically aggressive or acts impulsively, and how well the child pays attention. Negative behaviors were reverse coded so that higher behavior scores represented more positive behavior.

For a global indicator of health, we used the primary parent's report of the child's health status. We coded those reporting very good or excellent health as 1, and those in good, fair, or poor health as 0.[3] We also include an indicator of chronic health conditions. Those reporting a diagnosis by a medical professional of any chronic health condition (e.g., Down's Syndrome, epilepsy, heart defects, blindness, cognitive disability, etc.) at any wave up through kindergarten were coded as 1.

[2] The frequently copyrighted items from assessments were not available to users of the data, so we relied on scores constructed by ECLS-B staff using item response theory (IRT) modeling.
[3] The high proportion of reports of favorable child health necessitated this particular dichotomy; for example, only 3% of child health reports at Wave 3 fell into the "fair" or "poor" categories.

The dichotomous asthma measure was based on whether the parent reported at any wave up through kindergarten that any medical professional had said that the child had asthma.[4]

Independent Variables. Several variables captured social background. Child gender (with female as the reference category) was an ECLS-B-constructed measure. Child race was represented by four mutually exclusive categories (white, black, Hispanic, and other race which included Asian/Pacific Islander, Native American/Alaska Native, and multiracial children) constructed by the ECLS-B. A variable indicated whether or not the mother was foreign born. Teen parent status indicated whether or not the child's biological mother and/or father was under the age of 20 at the time of birth. We used each parent's own report when available, filling in missing data from other sources.[5]

We included Wave 3 (concurrent with health lifestyle measurement) variables capturing a variety of financial, material, and social resources in the household, as well as activities that require or contribute resources.[6] We measured three dimensions of socioeconomic status: income, education, and wealth. We used an income-to-needs ratio, which coded ECLS-B-constructed household income as a percentage of the federal poverty threshold for the appropriate household size. The mother's educational attainment, constructed by the ECLS-B, was a continuous indicator reflecting total years of education, recoded from a categorical measure. A scale of household assets reflected the wealth of the household. The following dichotomous indicators were averaged to create a proportion of assets: whether or not the household owned a car, had stocks or investments,

[4] As this question was not asked in the last survey wave, the wave 4 indicator of asthma was filled in for children who did not enroll in kindergarten until wave 5.

[5] Social background factors that were not significant in at least one latent class were removed from the analysis. These included: the biological mother having been on welfare as a child, fired, having had a drug problem, a drunk driving arrest, or another arrest. In addition, marital status at the birth of the child was removed.

[6] Resource variables that were not significant for any outcome were removed from the analysis. These included: whether the family had received WIC in the last 12 months, the child's health insurance status, receipt of welfare, the presence of a family member with special needs in the household, and all child care variables except cost and total hours in care which were retained in the analysis.

had a checking or savings account, owned their residence, and was not in subsidized housing (Cronbach's alpha = 0.71).

A dichotomous variable indicated whether the household had received food stamps in the last year. The mother's work status was reflected by three categories: working full-time (40 or more hours per week), working part-time (less than 40 hours), and not in the labor force. Similarly, the mother's school enrollment was coded from her report as full-time, part-time, or none. An indicator of time spent in nonparental child care was coded as none, part-time (1-29 hours per week), or full-time (30 or more hours per week). The monthly cost of nonparental child care was a continuous measure. We also included measures of social resources. Other measures indicated the presence of specific categories of people in the household: the number of other children besides the study child, and any coresident grandparent. A dichotomous variable measured whether the mother received advice about parenting since the last wave.

We controlled for the age of the study child at the kindergarten wave, which could affect scores on outcomes. Other control variables measured prenatal conditions and birth outcomes. Prenatal care was represented in a dichotomous variable, with those either not receiving prenatal care in the first trimester or not receiving care at all coded 1 and those receiving care in the first trimester coded 0. Birth weight, constructed by ECLS-B, was coded as moderately low (<2500g and ≥1500g) or very low (<1500g) compared to normal (≥2500g). A measure indicated whether the biological mother ever drank at least one alcoholic drink per week during the third trimester of pregnancy.[7]

Analyses

Latent classes. Because we were interested in identifying prevalent health lifestyles in early

[7] Control variables that were not significant in at least one latent class were removed from the analysis. These included: if the child's birth was preterm, the biological parents' pregnancy intentions, the number of prenatal check-up visits, and whether the biological mother smoked during pregnancy.

childhood, we conducted latent class analyses using the poLCA function in the R statistical software package. Latent class analysis differs from factor analysis in that it uses dichotomous, not continuous, indicators and assumes that there are underlying discrete groups, or "classes," of respondents. The underlying groups identified are a function of the indicators used in the latent class analysis, so they can be likened to an empirical "snapshot" of underlying patterns that may or may not reflect a more durable substantive phenomenon. To assess the robustness of our findings, we conducted latent class analyses with several variations in the indicators and the number of classes, and findings remained quite similar. We used a maximum iteration of 10,000 and repeated the six-group analysis with different starting values 30 times to ensure a global maximum. Latent classes were created from the health lifestyle indicators described above, using the full eligible sample ($N \approx$ 8150). All cases were used even if missing data was present. To determine the appropriate number of classes, we used a common fit measure, the Bayesian Information Criterion (BIC), to make comparisons across different solutions ranging from 1 to 30 classes. The BIC rewards more parsimonious models. Because analysis starting values were randomly generated and determined the maximization process, we took the average BIC for 30 different trials to ensure that results were not determined by the starting values. According to the average BIC, either a 5 or 6 class solution was optimal for the combination of variables included in the latent class analysis. Further examination found that the 6 class solution made the most theoretical sense. Each case was assigned a probability of membership in each class (similar to a factor loading), and population shares were calculated for each class. We chose the class with the highest probability of membership and assigned it to each child. See Table 1 for posterior probabilities and population shares.

INSERT TABLE 1 HERE

Other analyses. We analyzed descriptive information in Table 1, reporting means for all variables across each of the six latent classes and including significance tests for each class compared

to all others combined. Two sets of multivariate analyses were conducted. The first set predicted class membership on the basis of social background, pregnancy and birth circumstances, and concurrent household resources. These analyses allowed us to understand the social factors that influence children's health lifestyles, including possible pathways of the influence of social background through concurrent household resources and pregnancy and birth circumstances. The second set of multivariate analyses predicted children's six kindergarten outcomes on the basis of their health lifestyles. We controlled for social background, pregnancy and birth circumstances, and concurrent household resources to calculate the adjusted relationship of each health lifestyle indicator with each cognitive, behavioral, and health outcome. Predicted values/probabilities illustrated the relative strength of these relationships for an average child. Marginally significant ($p<.10$) results are indicated in the text.

RESULTS

Predominant Health Lifestyles in Early Childhood

Table 1 presents the six predominant empirical patterns representing health lifestyles (latent classes), their share of the sample, and the mean levels of each health lifestyle indicator for each class. The first three classes were differentiated based on children's average levels of risk across all domains. Class 1, labeled *consistently positive*, comprised 36% of the sample. Table 1 shows that children in this class experienced favorable conditions relative to most of their peers across nearly all indicators and domains, including nutrition, sleep, second-hand smoke, physical safety, and violence. Class 2, *consistently problematic*, consisted of 10% of the sample. These children experienced significantly more unfavorable conditions compared to peers on nearly every indicator. Class 3, *middle of the road* (19% of children), fell between the first two classes for each domain. These children were neither the best nor the worst group for any health lifestyle indicator except having an unlocked gun in the home for which they had the highest risk.

The last three classes were differentiated by a particular domain of high risk. Class 4, *food security/violence/smoking*, at 3% of the sample, was the smallest class but had a distinct profile. More than half of these children lived in households that experienced food insecurity, 85% lived with a smoker, 51% had been a victim of violence in the last year, and 100% had witnessed violence in the household. In the other health lifestyle domains, they tended to resemble children in the *middle of the road* class. Class 5, *nutrition/sleep problems*, comprised 29% of the sample. These children had fairly high levels of food insecurity in their households, as well as problematic nutrition in terms of milk and produce consumption. Children in this latent class also experienced fairly high levels of inadequate nighttime sleep (49% of children) and late bedtimes (7%). In the safety and violence domain they tended to fall between the *consistently problematic* and *middle of the road* classes. Finally, class 6 (4% of the sample) was labeled *safety problems*. These children were fairly typical in the nutrition, sleep, and violence domains, but they were usually the worst of the classes on the physical safety indicators. For example, just 30% had a smoke detector in their home compared to 99% in the *consistently positive* class, 5% sat in a car seat, and 0% consistently sat in the back seat of a car.

Predictors of Health Lifestyles

Descriptive statistics reported in Table 1 show that preschooler's predominant health lifestyles are strongly patterned by social background, health during pregnancy and birth, and household resources. Race/ethnicity was the most consistent predictor among the social background factors. Non-Hispanic white children were significantly underrepresented in the "consistently problematic" class, and overrepresented in the "consistently positive" and "middle of the road" classes, compared to others. Black children's patterns were the converse. Hispanic children were significantly overrepresented in the "consistently problematic" and "nutrition/sleep problems" classes and underrepresented in "safety problems." Children from other racial groups were significantly overrepresented in the "safety problems" class. Male children were more likely than

girls to be in the "nutrition/sleep problems" class, and children of foreign-born mothers were less likely to be in the "safety problems" class. Children with a teenage parent were underrepresented in the "consistently positive" class and overrepresented in the "consistently problematic" class.

Mother's prenatal health behaviors and birth outcomes are also related to young children's health lifestyles, in some expected and some unexpected ways. Children whose mothers got prenatal care late or not at all were significantly overrepresented in the "consistently problematic" and "nutrition/sleep problems" classes and underrepresented in "consistently positive" and "middle of the road." Children with normal birth weight are underrepresented in the "nutrition/sleep problems" class and overrepresented in the "consistently positive" class. More surprisingly, children whose mothers drank during pregnancy were significantly underrepresented in the "nutrition/sleep problems" and "safety problems" classes.

Resource patterns are more consistent and associated as expected with children's health lifestyles. For all measures of socioeconomic status (maternal educational attainment, household income as a proportion of the federal poverty line, and assets), children in the "consistently problematic" class had the lowest levels, followed by the three domain-specific classes ("food insecurity/violence/smoking," "nutrition/sleep problems," and "safety problems"), followed by "middle of the road," with "consistently positive" having the highest socioeconomic status. Socioeconomic differences across classes were stark. For example, children in the "consistently problematic" class had 11.7 years of maternal education on average and a household income just over the poverty line, while those in the "consistently positive" class had 14.6 years of maternal educational attainment and income more than 4 times the poverty line. The more problematic child health lifestyles tended to be associated with more children living in the home, receipt of food stamps, grandparent coresidence, less money spent on preschool/child care, and a lack of preschool/child care.

Table 2 combines these predictors of children's health lifestyles in multinomial logistic regression models, comparing each class to "consistently positive." Note that some predictors from Table 1 were excluded in order to estimate these data-intensive models. We estimated two models, the first with background factors and control variables and the second introducing household resources. Thus, we could assess how much resource differences explained the relationships of social background factors with different health lifestyles. We discuss each of the social background factors in turn. Girls were more likely than boys to be in the "consistently problematic" compared to the "consistently positive" class once household resources were adjusted. Black children were significantly more likely to be in each of the domain-specific risk classes, as well as the "consistently problematic" group, compared to whites. Similarly, Hispanic children were significantly more likely to be in each of the same groups except for "safety problems." Racial disparities in household resources fully or partially explained each of these racial/ethnic relationships. In contrast, the higher-risk health lifestyles among "other race/multiracial" children were generally not explained by differences in household resources. Children of foreign-born mothers were not more likely to be in the problematic health lifestyles than others. Children of teen parents were significantly more likely to be in the "consistently problematic" and the three domain-specific groups, but their lower levels of household resources fully explained all of these relationships.

INSERT TABLE 2 HERE

Among the predominant health lifestyles, it is particularly interesting to see that the "food insecurity/violence/smoking" class was only predicted by household resources in Model 2: Resources fully mediated the substantial initial disparities by race/ethnicity and teen parent status. Interestingly, food stamp receipt (which can be seen as an indicator of particularly compromised financial resources) was the most consistently predictive of all the resource measures. Among the socioeconomic status measures, maternal education most consistently predicted health lifestyles,

although income and assets were often important as well. Having additional children in the home predicted being in the "food insecurity/violence/smoking" and "safety problems" groups compared to "consistently positive," while mothers' full-time enrollment in school was protective for several latent classes.

Consequences of Health Lifestyles for Development and Health

The descriptive analyses presented in Table 1 show stark differences in children's outcomes across different health lifestyles. The lifestyle associated with the most favorable outcomes in all domains of development and health was the "consistently positive" class, with the exception of chronic illness for which "safety problems" had the lowest probability. The most unfavorable outcomes were split evenly between the "consistently problematic" and "food insecurity/violence/smoking" classes. The size of these differences was quite large, at more than two thirds of a standard deviation for reading and behavior and 0.78 standard deviations for math. Children in the "consistently positive" group were 21% more likely to be in very good or excellent health, 52% less likely to have been diagnosed with a chronic illness, and 44% less likely to have been diagnosed with asthma than those in the least favorable group for each outcome. These descriptive findings suggest that health lifestyles may be important for children's health and development, but multivariate analysis is needed to ascertain whether health lifestyles matter above and beyond social background, child characteristics, and household resources.

Table 3 reports the results of these multivariate analyses. We estimated ordinary least squares regression models for the continuous outcomes (reading, math, and behavior) and binary logistic regression models for the dichotomous outcomes (parent-reported health status, chronic illness, and asthma). The baseline model predicted outcomes based on the six health lifestyles and child age, the second model added the background and control variables, and the third model further included concurrent household resources. All models' fit was a significant improvement over the null model

(F tests), and the proportion of variance explained (R squared) in the final linear regression models ranged from 0.11 for behavior to 0.30 for reading and 0.34 for math. Across the six outcomes, nearly all lifestyles predicted significantly less favorable outcomes compared to the "consistently positive" class. Each of these significant relationships was partially or fully explained by the introduction of background factors, controls, and household resources. But many significant relationships between health lifestyles and child outcomes remained, all in the expected direction, after introducing these controls.

INSERT TABLE 3 HERE

In the final model of Table 3, all five health lifestyles predicted significantly lower behavior scores compared to the "consistently positive" class. The largest of these relationships was for the "food insecurity/violence/smoking" group, with a difference of 0.54 standard deviations. Each class except "safety problems" was significantly and negatively related to reading and math scores compared to "consistently positive" ($p<.10$ for "food insecurity/violence/smoking" and math scores). Again, the most negative relationship was for the "food insecurity/violence/smoking" group (tied with "consistently problematic" for math scores). Children in the "consistently problematic" class were 51% less likely, and those in the "nutrition/sleep problems" class were 31% less likely, to be reported in very good or excellent health compared to those in the "consistently positive" group. A diagnosis of chronic illness during early childhood was 90% more likely among children in the "food insecurity/violence/smoking" class, and 21% more likely among those in the "nutrition/sleep problems" class ($p<.10$), than among "consistently positive" children. The asthma outcome was unique because social background and prenatal/birth circumstances fully explained the initially quite large disparities between the "consistently favorable" class and children in the "consistently problematic," "food insecurity/violence/smoking," and "nutrition/sleep problems" groups. For each outcome except asthma, then, children's preschool health lifestyles do predict their

development and health at the start of the transition to school after accounting for social background, prenatal/birth circumstances, and concurrent household resources.

Figure 2 illustrates these significant relationships using predicted values/probabilities for each outcome (except asthma, which is excluded because no health lifestyle indicators were significant in the full models). These predictions were estimated using the full model (Table 3, Model 3) for a hypothetical kindergartner who had the sample's mean values for all variables except the health lifestyle indicators. The three continuous outcomes were standardized with a mean of 0, and the sample mean is indicated in the figure for the two dichotomous outcomes. We can see that otherwise typical kindergartners who were in the "consistently positive" group had considerably more favorable outcomes than the sample mean across all five domains. The hypothetical "consistently problematic" and "food insecurity/violence/smoking" cases had particularly compromised outcomes in each of the cognitive and behavioral domains. Although the "safety problems" class had significantly lower behavior scores than "consistently positive" in Table 2, the figure shows that the hypothetical "safety problems" child was actually near or better than the sample mean for all outcomes. This health lifestyle, while striking in its degree of compromised safety behaviors, does not appear to threaten children's outcomes compared to the average child. A similar pattern is apparent for the "middle of the road" and "nutrition/sleep problems" classes, which clearly have less favorable outcomes than the best case scenario of the "consistently positive" class but which are close to or better than sample means on each outcome. This figure shows, then, that at least in otherwise typical cases, the kindergartners who are most at risk of compromised health and development are those in the "consistently problematic" and "food insecurity/violence/smoking" groups.

Have we lost explanatory power by condensing such a wide variety of variable about health risks in early childhood into six latent classes? We do not directly compare our models to ones that

replace the latent classes with the health lifestyle indicators that comprise them because missing data bring the latter models down to 3500 cases. But in supplementary models with this smaller sample size, we found that the proportion of variance explained in the linear regression models when using the health lifestyle latent classes was similar to that explained when we replaced the specific health lifestyle indicators (for the full model, differences in the R squared statistic ranged from 0.004 to 0.03). F statistics, which reward more parsimonious models, were consistently higher in the models using latent classes, revealing a preference for these simpler models. In all, these preliminary analyses suggest that the operationalization of health lifestyles using latent classes does not result in an appreciable loss of explanatory power, and may even be preferable to using the individual indicators.

DISCUSSION

Our first research question asked whether there were predominant empirical patterns representing health lifestyles among preschool-aged children in the United States. Our answer is that there are. Six predominant lifestyles emerged from the data in our latent class analysis, each with a distinct sociodemographic profile and unique consequences for children's health and development. Supplemental analyses suggest that using these health profiles, rather than the individual indicators that constitute them, does not result in a meaningful loss of explanatory power and may even be preferable because of parsimony. We have followed prior literature in characterizing health lifestyles as patterns of behavior and encourage future research that also incorporates identity and other components of health lifestyles.

Our multivariate models showed that racial/ethnic minority statuses and being born to a teen parent strongly predicted membership in several of the problematic health lifestyles compared to "consistently positive." For the most part these background factors primarily influenced health lifestyles because they were linked to compromised household resources, which in turn shaped children's health lifestyles. Among these resources, maternal school enrollment and educational

attainment and indicators of financial resources (food stamp receipt—indicating constrained financial resources—and household income) were particularly important in predicting which latent class children would be in.

Our findings show that health lifestyles have a complex and multidimensional relationship with the process of child development. Three of the predominant health lifestyles, representing nearly two thirds of the sample, identified a consistently high, medium, or low risk across all of the five domains of health lifestyle indicators. The health lifestyles with high and medium overall risk were consistently associated with compromised development across all cognitive and behavioral outcomes compared to the low-risk lifestyle, but there was only one relationship with health (the "consistently problematic" class predicted lower health status).

The other three predominant health lifestyles pinpointed specific domains in which children were at particular risk. The grouping of the domains into these three profiles warrants further discussion. First, children living with fairly severe safety risks fell into their own group, with reasonably low risk in all of the other health lifestyle domains. The only compromised outcome predicted by this "safety problems" lifestyle was behavior, with a sizeable net relationship. The lack of a significant relationship with cognition or health may be because the safety risks we measured were associated with rare but severe events, so the implications of the safety risks for children may have simply been in affecting their overall sense of security in their homes. This might most likely manifest in the behavioral domain, rather than cognition or health.

Second, nutrition and sleep risks co-occurred in a latent class representing fully one third of the sample, even though the children were generally fairly secure in the other domains we measured. Children's risks in these domains might be suggestive of overly permissive parenting or low levels of monitoring. This health lifestyle predicted the highest number of compromised child outcomes in

our full models (significant for all outcomes except asthma), although the magnitude of the relationship was not as great as for other health lifestyles.

Third, the indicators of food insecurity (part of the nutrition domain, but perhaps the most severe risk among those indicators), secondhand smoke exposure, and violence co-occurred in a very small but extremely high-risk population of children. Perhaps more than the other indicators and domains, these three implied that the children's most basic needs, such as consistent access to food and freedom from physical violence in the home, were not being met. One might expect such a vulnerable situation to compromise children's cognitive and behavioral development and health fairly severely. This is indeed what we found: In our full models, this health lifestyle indicator had the largest net relationships with cognitive and behavior scores and chronic illness. For example, children in the "food insecurity/violence/smoking" group had behavior scores that were more than half a standard deviation lower than those of children in the "consistently positive" group, even after adjusting for social background, household resources, and controls. Taken together, these findings show that specific domains of health lifestyles co-occur, and some sets of risks are more consequential than others for children's development and health in the transition to school. Children may be struggling in one area of development for reasons we can best understand by considering a broad range of interconnected health behaviors.

Further studies of health lifestyles in childhood should improve upon the limitations of this one. We examined a snapshot of empirical patterns of behaviors representing health lifestyles during the prekindergarten period, when children likely have little agency in crafting their own health lifestyles. But even at this age, agency is beginning to come into play: Many children begin to request some foods and refuse others, lobby for a later bedtime, or start biking without a helmet. Earlier and later in childhood, changing developmental stages could result in different degrees of parental influence, different influences from adults such as teachers, and different types of health lifestyles

being predominant. Future research should chart these changes over time in an effort to think developmentally about health lifestyles. In-depth qualitative research is needed to complement initial work that has already been done in documenting the socialization of children into health lifestyles (e.g., Lareau 2003). Understanding the roles parents' and children's identities play in health lifestyles and the narratives people construct about their health lifestyles begs a qualitative approach. The processes linking social background and resources to children's health lifestyles, the health lifestyles of parents to those of their children, and children's health lifestyles to their subsequent development may also be best identified using an investigative qualitative approach. Absent from our analysis is an important facet of health lifestyles, the link between health lifestyles and identities. Qualitative research would be a good first step for considering these important issues as well. Additional research linking macrolevel influences such as social structures and cultural norms to health lifestyles is needed. Finally, more attention should be paid to the bidirectional relationship between socioeconomic status and health lifestyles, both in childhood and linking childhood to the remaining life course. Theoretical progress in this area has been rich when thinking about adults, and childhood is important terrain for expanding these ideas.

Our articulation of the concept of childhood health lifestyles and our empirical findings have implications for theoretical development in health disparities. The literature on health lifestyles has articulated the complicated interrelationships among health behaviors, socioeconomic status, and identities in adulthood. Life course researchers have shown that both socioeconomic status and health behaviors are dynamic processes rooted in family background and childhood. Incorporating the idea of childhood health lifestyles can help us understand these processes, as well as the intergenerational transmission of health lifestyles. Continued consideration of the dimensions that constitute health lifestyles in childhood and the roles of agency and identity will benefit theoretical development in these areas. Finally, this study has wedded the important theoretical concepts of

health lifestyles and cultural health capital. As part of broader processes of socialization, the synergy between these ideas can help us better understand health behaviors across the life course.

Although these observational data cannot substitute for randomized controlled trials, they can suggest some future directions for shaping future research and social policy. The first is that specific health risks in early childhood do not occur in a vacuum. Children with low or high risks in one domain are quite likely to have similar risks in the others as well. This means that narrow policies intended to fix one particular type of health risk, such as exposure to secondhand smoke, are likely to miss a set of interrelated risks that ideally should be addressed together to improve children's development and health. Second, we found that especially for the two most problematic groups for children's outcomes, the "consistently problematic" and "food insecurity/violence/smoking" classes, household resources were the most important predictors of class membership. In most cases, these resources even explained why children from disadvantaged social backgrounds were more likely to be members of these classes. Although these results are only suggestive, they imply that interventions to identify and help families with low levels of resources may be able to nudge families toward improved health lifestyles for their young children, reducing intergroup disparities in these health lifestyles and improving early development and health.

Third, children's health lifestyles are not just consequential for (presumably, though we could not test this directly) shaping a person's health lifestyle in adulthood, but our findings suggest they directly influence cognition, behavior, and health in early childhood. Thus, policy interventions to improve children's health lifestyles might pay off in the short term as well as the long term. Our findings argue against a one-size-fits-all approach to encouraging school readiness in favor of targeted approaches based on the desired outcome. For example, the findings suggest that to make marginal improvements on a broad set of outcomes, interventions might try focusing on improving child nutrition and sleep. To improve classroom behavior, they might instead try reducing exposure

to smoking, food insecurity, and violence. Since improvements to children's development and health by the start of the school transition are particularly important for later life outcomes, the promise of successful interventions to change children's health lifestyles is high.

Table 1. Weighted means for variables used in analyses of children's health lifestyles

Variable	Consistently positive (36%)		Consistently problematic (10%)		Middle of the road (19%)		Food insecurity/ violence/smoking (3%)		Nutrition/sleep problems (29%)		Safety problems (4%)	
Health lifestyle indicators												
Household food insecurity (6150)	0.00	***	0.50	***	0.08	***	0.53	***	0.46	***	0.23	
Milk one time per day (6150)	0.87		0.84		0.91	***	0.92	**	0.80	***	0.84	
Soda one time per day (6150)	0.04	***	0.83	***	0.42	***	0.43	*	0.36	***	0.31	
Fruit/vegetables five per day (6150)	0.93		0.96	**	0.93		0.88		0.90	*	0.92	
Fast food one time per day (6150)	0.01	***	0.43	***	0.11	*	0.12		0.03	***	0.07	
Sweet snack one time per day (6150)	0.33	***	0.92	***	0.89	***	0.64	***	0.21	***	0.32	***
Salty snack one time per day (6150)	0.06	***	0.96	***	0.78	***	0.40	+	0.08	***	0.27	
Inadequate sleep (6150)	0.30	***	0.50	***	0.43		0.33		0.49	***	0.44	
Bedtime after 10 pm (6100)	0.01	***	0.09	***	0.02	**	0.01	+	0.07	***	0.03	
Smoking in house (6000)	0.11	***	0.81	***	0.28	***	0.85	***	0.64	***	0.51	+
Smoke detector in house (6150)	0.99	***	0.76	***	0.93	***	0.84		0.86	**	0.30	***
Wears helmet when needed (5100)	0.55	***	0.16	***	0.39		0.33		0.24	***	0.25	***
Car seat used at all times (6100)	0.99	***	0.56	***	0.96	***	0.75		0.76	***	0.05	***
In back seat at all times (6100)	0.99	***	0.83	***	0.97	***	0.91		0.95	***	0.00	***
Unlocked gun in house (6150)	0.39	*	0.10	***	0.51	***	0.27		0.26	***	0.46	+
Witness of violent act (5850)	0.02	***	0.07		0.00	***	1.00	***	0.05		0.11	*
Victim of violent act (5850)	0.00	***	0.01	*	0.00	***	0.51	***	0.00	***	0.00	***
Kindergarten outcomes (wave K)												
Cognitive/reading	0.27	***	-0.42	***	0.03		-0.42	***	-0.19	***	0.02	
Cognitive/math	0.32	***	-0.46	***	0.05		-0.27	**	-0.16	***	-0.07	
Positive behavior	0.30	***	-0.16	***	0.10		-0.37	***	-0.01	***	0.04	
Very good/excellent health°	0.92	***	0.76	***	0.89		0.86		0.83	***	0.91	+
Has chronic disease diagnosis°	0.21	**	0.27		0.24		0.40	**	0.28	**	0.19	+
Ever had asthma diagnosis°	0.14	**	0.24	**	0.16		0.25	+	0.19	+	0.16	
Social background												
Male°	0.51		0.46	+	0.48		0.56		0.53	*	0.48	
Race/Ethnicity (White)°	0.61	***	0.28	***	0.59	***	0.44		0.38	***	0.48	
Black	0.08	***	0.34	***	0.11	***	0.20		0.21	***	0.21	
Hispanic	0.23	***	0.33	*	0.24	*	0.30		0.34	***	0.18	**
Other Race	0.08		0.06	+	0.07		0.06		0.08		0.13	*
Biological mother foreign born	0.20		0.24		0.22		0.18		0.23		0.12	***
Either parent a teen parent	0.06	***	0.23	***	0.10	+	0.17		0.15	***	0.15	

Variable	Consistently positive (36%)		Consistently problematic (10%)		Middle of the road (19%)		Food insecurity/ violence/smoking (3%)		Nutrition/sleep problems (29%)		Safety problems (4%)	
Current household resources												
Mother's years of education	14.59	***	11.66	***	13.71	*	12.50	***	12.60	***	13.00	*
Income (proportion of poverty line)	4.06	***	1.21	***	3.34	***	1.61	***	1.85	***	2.53	+
Asset scale	0.83	***	0.47	***	0.77	***	0.51	***	0.61	***	0.69	
Household received food stamps°	0.07	***	0.54	***	0.19	***	0.60	***	0.37	***	0.36	***
Mother's paid work (none)	0.37	***	0.53	***	0.37	*	0.48		0.42		0.42	
Part-time	0.29	***	0.18	**	0.26		0.22		0.21	*	0.21	
Full-time	0.34		0.29	**	0.37		0.29		0.37		0.37	
Mother's school enrollment (none)	0.88		0.89		0.87		0.85		0.87		0.80	*
Part-time	0.07		0.06		0.09		0.12		0.08		0.11	
Full-time	0.05		0.05		0.04		0.03		0.05		0.09	+
Hours of child care (none)	0.21	***	0.47	***	0.27	+	0.36		0.38	***	0.29	
Part-time (1-29)	0.46	***	0.26	***	0.36		0.26	*	0.31	***	0.39	
Full-time (≥30)	0.33		0.28	*	0.36	*	0.38		0.31		0.32	
Cost of child care/month	239.41	***	62.28	***	171.70		94.81	**	98.32	*	122.51	*
# of household members under 18	2.29	***	2.68	**	2.40		2.89	**	2.56	**	2.64	+
Grandparent in residence°	0.15	***	0.32	***	0.19		0.39	**	0.24	*	0.26	
Mother received parenting help°	0.09		0.08		0.09		0.17	+	0.09		0.09	
Controls												
Child age in months	68.10		67.57	*	68.12		68.73		68.18		68.08	
Late/no prenatal care°	0.04	***	0.17	***	0.06	*	0.14	+	0.11	**	13.83	
Birth weight (normal)	0.94	*	0.93		0.93		0.95		0.92	**	0.94	
Low	0.05	*	0.06		0.06		0.95		0.07	**	0.04	+
Very low	0.01		0.01		0.01		0.04		0.01		0.02	
Drank during pregnancy°	0.02	+	0.01		0.01		0.01		0.01	*	0.00	***

Source: Early Childhood Longitudinal Study-Birth Cohort, 2001-2007. N≈6150 unless otherwise noted.

Notes: Analyses account for sample design effects. Reference categories are in parentheses. ° 1 = yes.

+ p<.10 * p<.05 ** p<.01 *** p<.001; two-tailed design-based F tests comparing children in each latent class with all other children.

Table 2. Coefficients from multinomial logistic regression analyses predicting latent class membership (compared to "consistently positive" class)

Variable	Consistently problematic		Middle of the road		Food insecurity/ violence/smoking		Nutrition/sleep problems		Safety problems	
Background factors										
Male°	-0.22 +	-0.24 *	-0.10	-0.10	0.20	0.19	0.07	0.07	-0.12	-0.11
Race/ethnicity (white)										
Black	2.03 ***	0.82 ***	0.22	-0.09	1.10 ***	-0.32	1.30 ***	0.49 **	1.11 ***	0.48 +
Hispanic	1.03 ***	-0.04	-0.11	-0.40 *	0.67 *	-0.21	0.88 ***	0.17	0.20	-0.39
Other/multiracial	0.53 *	0.45 +	-0.10	-0.05	0.27	0.08	0.61 ***	0.61 ***	1.02 ***	1.03 ***
Foreign-born mother°	-0.06	-0.40 +	0.23	0.17	-0.43	-0.44	-0.23	-0.43 **	-0.82 *	-0.90
Born to teen parent°	1.12 ***	0.02	0.44 +	0.02	0.87 **	-0.13	0.74 ***	-0.10	0.72 **	0.00
Control variables										
Late/no prenatal care°	1.30 ***	0.79 **	0.39 +	0.24	1.26 ***	0.71 +	0.91 ***	0.54 **	1.19 **	0.89 *
Birth weight (normal)										
Low	-0.00	-0.20	0.14	0.10	-0.24	-0.48	0.25 *	0.12	-0.34	-0.47 +
Very low	-0.08	-0.15	-0.03	-0.05	-0.31	-0.43	0.04	-0.02	0.22	0.16
Mom drank in pregnancy°	-0.17	0.53	-0.55	-0.37	-0.44	0.36	-0.82 *	-0.12	-2.51	-2.10
Household resources										
Mother's education (years)		-0.27 ***		-0.11 ***		-0.08		-0.15 ***		-0.23 ***
Income (proportion of poverty line)		-0.31 **		0.00		-0.07		-0.20 ***		-0.01
Asset scale		-1.85 ***		-0.33		-2.57 ***		-1.13 ***		-0.33
# other children in home		0.08		0.06		0.27 **		0.07		0.20 **
Mother's school enrollment (none)										
Part-time		-0.19		0.28		0.64 +		0.08		0.60 *
Full-time		-0.76 **		-0.41 +		-1.13 **		-0.60 ***		0.21
Receives food stamps°		1.05 ***		0.80 ***		1.83 ***		0.89 ***		1.18 ***
Constant	-2.08	3.75	-0.72	1.00	-3.17	-0.63	-0.83	2.67	-2.33	0.63

Source: Early Childhood Longitudinal Study-Birth Cohort, 2001-2007. $N \approx 6150$.
Notes: Reference categories are in parentheses. ° 1 = yes. Analyses account for probability weights and clustering.
+ p<.10 * p<.05 ** p<.01 *** p<.001; two-tailed tests.

Table 3. Summary of coefficients from linear regression and binary logistic regression analyses predicting children's kindergarten outcomes (compared to "consistently positive" class)

	Baseline model		Add background/ controls		Add household resources	
Reading score						
Consistently problematic	-0.65	***	-0.27	***	-0.15	*
Middle of the road	-0.24	***	-0.14	***	-0.11	**
Food security/violence problems	-0.73	***	-0.45	***	-0.29	**
Nutrition/sleep problems	-0.46	***	-0.19	***	-0.10	*
Safety problems	-0.24	**	-0.06		0.02	
Math score						
Consistently problematic	-0.75	***	-0.30	***	-0.18	***
Middle of the road	-0.27	***	-0.16	***	-0.12	***
Food security/violence problems	-0.64	***	-0.33	***	-0.18	+
Nutrition/sleep problems	-0.49	***	-0.19	***	-0.09	*
Safety problems	-0.39	***	-0.17	*	-0.10	
Positive behavior						
Consistently problematic	-0.45	***	-0.40	***	-0.36	***
Middle of the road	-0.21	***	-0.19	***	-0.17	***
Food security/violence problems	-0.68	***	-0.61	***	-0.54	***
Nutrition/sleep problems	-0.32	***	-0.25	***	-0.22	***
Safety problems	-0.26	***	-0.25	**	-0.22	**
Very good/excellent health						
Consistently problematic	-1.25	***	-0.83	***	-0.72	***
Middle of the road	-0.33	+	-0.20		-0.16	
Food security/violence problems	-0.59	+	-0.31		-0.22	
Nutrition/sleep problems	-0.77	***	-0.46	***	-0.37	**
Safety problems	-0.01		0.13		0.19	
Ever chronically ill						
Consistently problematic	0.32	*	0.20		0.09	
Middle of the road	0.14		0.13		0.08	
Food security/violence problems	0.91	***	0.82	***	0.64	**
Nutrition/sleep problems	0.37	***	0.27	*	0.19	+
Safety problems	-0.14		-0.26		-0.35	
Ever diagnosed with asthma						
Consistently problematic	0.64	***	0.27		0.13	
Middle of the road	0.15		0.11		0.00	
Food security/violence problems	0.69	**	0.46	+	-0.28	
Nutrition/sleep problems	0.37	**	0.12		0.06	
Safety problems	0.10		-0.14		0.03	

Source: Early Childhood Longitudinal Study-Birth Cohort, 2001-2007. $N \approx 6150$.
Notes: Multivariate OLS regression (for reading, math, and behavior) and binary logistic regression (for health, chronic illness, and asthma) analyses accounted for complex survey design. Baseline adjusted for child age, each model builds on the previous one. + p<.10 * p<.05 ** p<.01 *** p<.001; two-tailed tests.

Figure 1. Conceptual model of health lifestyles in early childhood

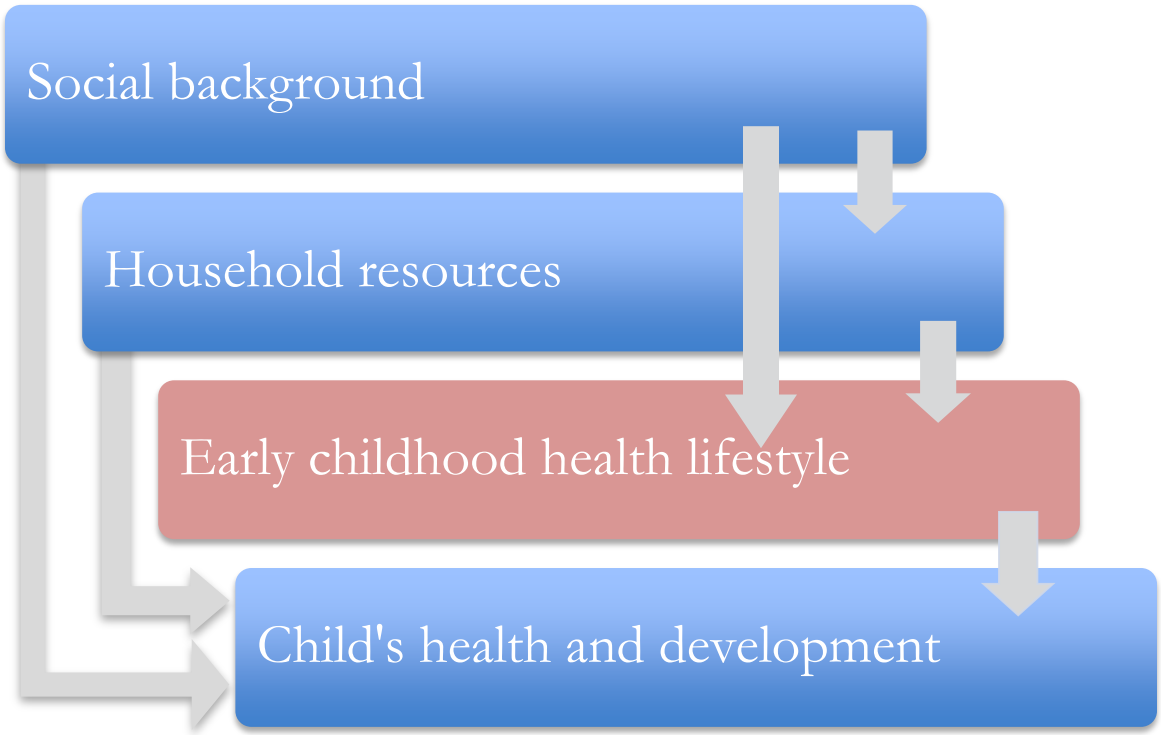
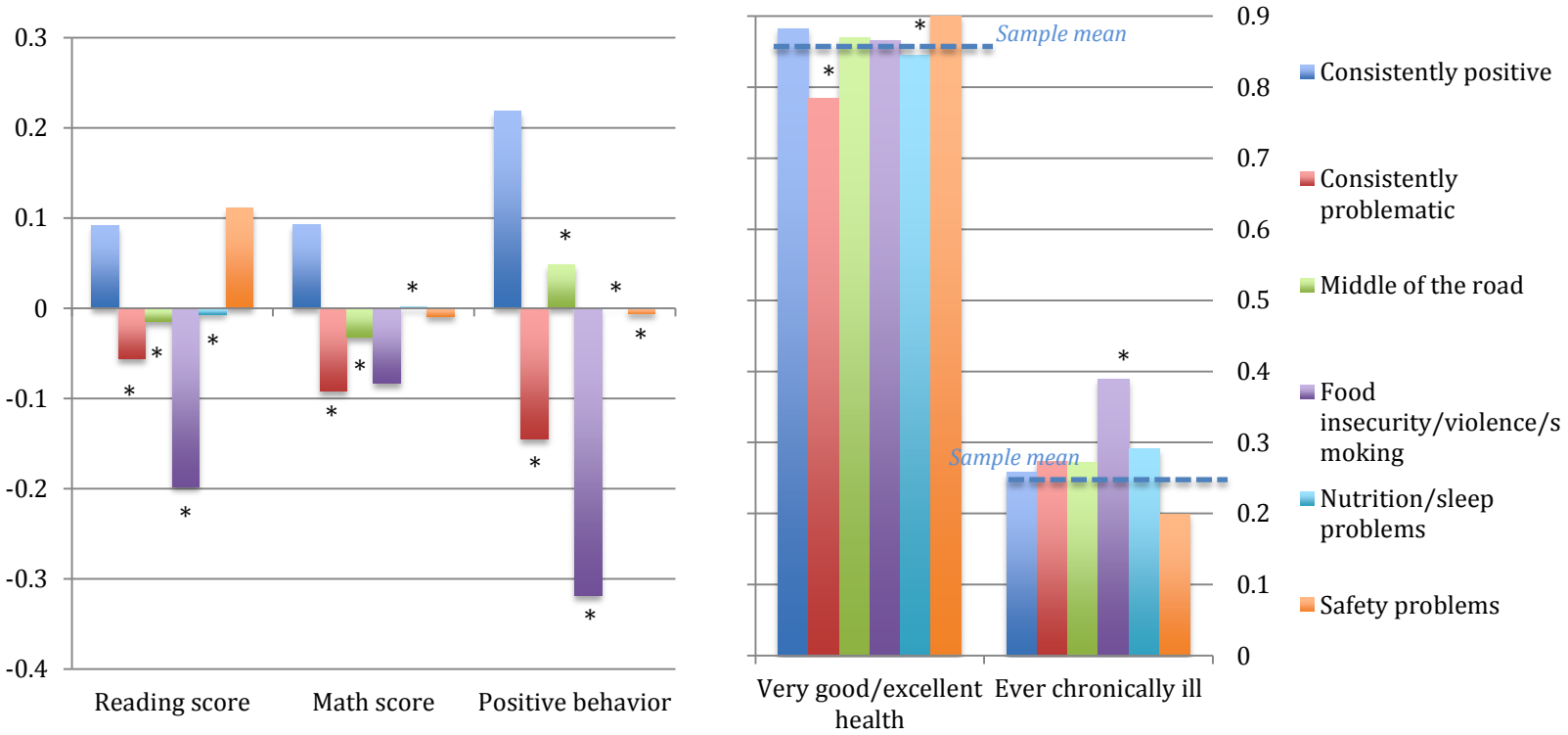


Figure 2. Predicted values from linear regression and probabilities from binary logistic regression models



Source: Early Childhood Longitudinal Study-Birth Cohort, 2001-2005. *N* ≈ 6150.
Notes: Predicted values and probabilities are drawn from Table 3, Model 3's multivariate OLS regression analyses (for reading, math, and behavior) and binary logistic regression analyses (for health and chronic illness) and accounted for complex survey design. Predicted values and probabilities are for a hypothetical child who has average values for all variables except health lifestyle class. * = p<.05 compared to "consistently positive" (leftmost bar) in multivariate models.

REFERENCES

Abel, Thomas. 1991. "Measuring health lifestyles in a comparative analysis: Theoretical issues and empirical findings." *Social Science & Medicine* 32:899-908.

—. 2008. "Cultural capital and social inequality in health." *Journal of Epidemiology and Community Health* 62:e13.

Abel, Thomas, William C. Cockerham, Guenther Lueschen, and Gerhard Kunz. 1989. "Health lifestyles and self-direction in employment among American men: A test of the spillover effect." *Social Science & Medicine* 28:1269-1274.

Abella, Rodolfo and Richard Heslin. 1984. "Health, locus of control, values, and the behavior of family and friends: An integrated approach to understanding preventive health behavior." *Basic and Applied Social Psychology* 5:283-294.

Backett, Kathryn C. and Charlie Davison. 1995. "Lifecourse and lifestyle: The social and cultural location of health behaviours." *Social Science & Medicine* 40:629-638.

Blaxter, Mildred. 1990. *Health and lifestyles*. London: Routledge.

Bourdieu, Pierre. 1986a. *Distinction: A social critique of the judgement of taste*. London: Routledge & Kegan Paul.

—. 1986b. "The forms of capital." Pp. 241-258 in *Handbook of theory and research for the sociology of education*, edited by J. Richardson. New York: Greenwood.

Burke, V., R. A. K. Milligan, L. J. Beilin, D. Dunbar, M. Spencer, E. Balde, and M. P. Gracey. 1997. "Clustering of health-related behaviors among 18-year-old Australians." *Preventive Medicine* 26:724-733.

Butler, Susan R., Herbert W. Marsh, Marlene J. Sheppard, and John L. Sheppard. 1985. "Seven-year longitudinal study of the early prediction of reading achievement." *Journal of Educational Psychology* 77:349-361.

Butz, Arlene M., Patrick Breysse, Cynthia Rand, Jean Curtin-Brosnan, Peyton Eggleston, G. B. Diette, D. Williams, J. T. Bernert, and E. C. Matsui. 2011. "Household smoking behavior: Effects on indoor air quality and health of urban children with asthma." *Maternal and Child Health Journal* 15:460-468.

Cockerham, William C. 2000. "The sociology of health behavior and health lifestyles." in *Handbook of medical sociology*, edited by C. Bird, P. Conrad, and A. M. Fremont. Upper Saddle River, NJ: Prentice-Hall.

—. 2005. "Health lifestyle theory and the convergence of agency and structure." *Journal of Health and Social Behavior* 46:51-67.

—. 2007. "Health lifestyles and the absence of the Russian middle class." *Sociology of Health & Illness* 29:457-473.

Cockerham, William C., Guenther Lueschen, Gerhard Kunz, and Joe L. Spaeth. 1986. "Social stratification and self-management of health." *Journal of Health and Social Behavior* 27:1-14.

Cook, John T., Deborah A. Frank, Suzette M. Levenson, Nicole B. Neault, T. C. Heeren, M. M. Black, C. Berkowitz, P. H. Casey, A. F. Meyers, D. B. Cutts, and M. Chilton. 2006. "Child food insecurity increases risks posed by household food insecurity to young children's health." *Journal of Nutrition* 136:1073-1076.

Crompton, Rosemary. 1998. *Class and stratification*. Oxford: Polity.

Crosnoe, Robert. 2006. "Health and the education of children from racial/ethnic minority and immigrant families." *Journal of Health and Social Behavior* 47:77-93.

Crosnoe, Robert and Elizabeth Wildsmith. 2011. "Nonmarital fertility, family structure, and the early school achievement of young children from different race/ethnic and immigration groups." *Applied Developmental Science* 15:156-170.

De Genna, Natacha M., Dale M. Stack, Lisa A. Serbin, Jane E. Ledingham, and Alex E. Schwartzman. 2006. "From risky behavior to health risk: Continuity across two generations." *Journal of Developmental and Behavioral Pediatrics* 27:297-309.

Dellinger, Ann M. and Marcie-jo Kresnow. 2010. "Bicycle helmet use among children in the United States: The effects of legislation, personal and household factors." *Journal of Safety Research* 41:375-380.

Dodd, Lorna J., Yahya Al-Nakeeb, Alan Nevill, and Mark J. Forshaw. 2010. "Lifestyle risk factors of students: A cluster analytical approach." *Preventive Medicine* 51:73-77.

Du, Wei, Caroline F. Finch, Andrew Hayen, Lynne Bilston, Julie Brown, and Julie Hatfield. 2010. "Relative benefits of population-level interventions targeting restraint-use in child car passengers." *Pediatrics* 125:304-312.

Duncan, Greg J., Chantelle J. Dowsett, Amy Claessens, Katherine Magnuson, Aletha C. Huston, Pamela Klebanov, Linda S. Pagani, Leon Feinstein, Mimi Engel, Jeanne Brooks-Gunn, Holly Sexton, Kathryn Duckworth, and Crista Japel. 2007. "School readiness and later achievement." *Developmental Psychology* 43:1428-1446.

Duncan, Greg J., Jens Ludwig, and Katherine A. Magnuson. 2007. "Reducing poverty through preschool interventions." *Future of Children* 17:143-160.

Durbin, Dennis R., Irene Chen, Rebecca Smith, Michael R. Elliott, and Flaura K. Winston. 2005. "Effects of seating position and appropriate restraint use on the risk of injury to children in motor vehicle crashes." *Pediatrics* 115:E305-E309.

Elder, Glen H., Jr. 1994. "Time, human agency, and social change: Perspectives on the life course." *Social Psychology Quarterly* 57:4-15.

Entwisle, Doris R., Karl L. Alexander, and Linda Steffel Olson. 2004. "The first-grade transition in life course perspective." in *Handbook of the life course*, edited by J. T. Mortimer and M. J. Shanahan. New York: Springer.

Frech, Adrianne. 2012. "Healthy behavior trajectories between adolescence and young adulthood." *Advances in Life Course Research* 17:59-68.

Giddens, Anthony. 1991. *Modernity and self-identity: Self and society in the late modern age*. Stanford, CA: Stanford University.

Glewwe, Paul, Hanan G. Jacoby, and Elizabeth M. King. 2001. "Early childhood nutrition and academic achievement: A longitudinal analysis." *Journal of Public Economics* 81:345-368.

Haas, Steven. 2008. "Trajectories of functional health: The 'long arm' of childhood health and socioeconomic factors." *Social Science & Medicine* 66:849-861.

Halonen, Anne, Kaisa Aunola, Timo Ahonen, and Jari-Erik Nurmi. 2006. "The role of learning to read in the development of problem behaviour: A cross-lagged longitudinal study." *British Journal of Educational Psychology* 76:517-534.

Hamilton, Brady E., Joyce A. Martin, and Stephanie J. Ventura. 2010. "Births: Preliminary data for 2009." *National Vital Statistics Reports* 59:1-29.

Hausman, Bernice L. 2003. *Mother's milk: Breastfeeding controversies in American culture*. New York: Routledge.

Hayward, Mark D. and Bridget K. Gorman. 2004. "The long arm of childhood: The influence of early-life social conditions on men's mortality." *Demography* 41:87-107.

Hemenway, David. 2011. "Risks and benefits of a gun in the home." *American Journal of Lifestyle Medicine* 5:502-511.

Kennedy, Christine and Victoria Floriani. 2008. "Translating research on healthy lifestyles for children: Meeting the needs of diverse populations." *Nursing Clinics of North America* 43:397-417.

King, W. James. 2012. "Installation of safety devices reduces the risk of home injury in children." *Evidence-Based Nursing* 15:13-14.

Koulouglioti, Christina, Robert Cole, and Harriet Kitzman. 2008. "Inadequate sleep and unintentional injuries in young children." *Public Health Nursing* 25:106-114.

Krueger, Patrick M., Tajudaullah Bhaloo, and Pauline Vaillancourt Rosenau. 2009. "Health lifestyles in the United States and Canada: Are we really so different?" *Social Science Quarterly* 90:1380-1402.

Laaksonen, Mikko, Ritva Prättälä, and Eero Lahelma. 2002. "Sociodemographic determinants of multiple unhealthy behaviors." *Scandinavian journal of public health* 30:1-7.

Lareau, Annette. 2003. *Unequal childhoods: Class, race, and family life*. Berkeley: University of California Press.

Laska, Melissa, Keryn Pasch, Katherine Lust, Mary Story, and Ed Ehlinger. 2009. "Latent class analysis of lifestyle characteristics and health risks behaviors among college youth." *Prevention science* 10:376-386.

Lin, Jin-Ding, Ho-Jui Tung, Yu-Hsin Hsieh, and Fu-Gong Lin. 2011. "Interactive effects of delayed bedtime and family-associated factors on depression in elementary school children." *Research in Developmental Disabilities* 32:2036-2044.

Link, Bruce G. and Jo Phelan. 1995. "Social conditions as fundamental causes of disease." *Journal of Health and Social Behavior* 35:80-94.

Lucas, Alan. 1998. "Programming by early nutrition: An experimental approach." *Journal of Nutrition* 128:401S-406S.

Lynch, J. W., G. A. Kaplan, and J. T. Salonen. 1997. "Why do poor people behave poorly? Variation in adult health behaviours and psychosocial characteristics by stages of the socioeconomic lifecourse." *Social Science & Medicine* 44:809-819.

Mirowsky, John and Catherine E. Ross. 2003. *Education, social status, and health*. New York: Aldine de Gruyter.

Nord, C., B. Edwards, C. Andreassen, J. L. Green, and K. Wallner-Allen. 2006. "Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), User's manual for the ECLS-B longitudinal 9-month-2-year data file and electronic codebook (NCES 2006-046)." U.S. Department of Education, National Center for Education Statistics, Washington, D.C.

Nutbeam, Don, Leif Aaro, and John Catford. 1989. "Understanding childrens' health behaviour: The implications for health promotion for young people." *Social Science & Medicine* 29:317-325.

Pampel, Fred C., Patrick M. Krueger, and Justin T. Denney. 2010. "Socioeconomic disparities in health behaviors." *Annual Review of Sociology* 36:349-370.

Patterson, Ruth E., Pamela S. Haines, and Barry M. Popkin. 1994. "Health lifestyle patterns of U.S. adults." *Preventive Medicine* 23:453-460.

Reijneveld, Sijmen A. 1998. "Reported health, lifestyles, and use of health care of first generation immigrants in the Netherlands: do socioeconomic factors explain their adverse position?" *Journal of Epidemiology and Community Health* 52:298-304.

Schuster, Tonya L., Marnie Dobson, Maritza Jauregui, and Robert H. I. Blanks. 2004. "Wellness lifestyles I: A theoretical framework linking wellness, health lifestyles, and complementary and alternative medicine." *Journal of Alternative and Complementary Medicine* 10:349-356.

Scott, John. 1996. *Stratification and power: Structures of class, status, and command*. Cambridge, UK: Polity.

Shim, Janet K. 2010. "Cultural health capital: A theoretical approach to understanding health care interactions and the dynamics of unequal treatment." *Journal of health and social behavior* 51:1-15.

Sinha, Dinesh P. 1992. "Project lifestyle: Developing positive health lifestyles for schoolchildren in Antigua." *Journal of School Health* 62:449-453.

Snead, M. Christine and William C. Cockerham. 2002. "Health lifestyles and social class in the Deep South." *Social Inequalities, Health and Health Care Delivery* 20:107-122.

Snow, K., A. Derecho, S. Wheeless, J. Lennon, J. Rosen, J. Rogers, S. Kinsey, K. Morgan, and P. Einaudi. 2009. "Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), Kindergarten 2006 and 2007 data file user's manual." National Center for Education Statistics, Washington, D.C.

Sobel, Michael E. 1981. *Lifestyle and social structure: Concept, definitions, analyses*. New York: Academic Press.

Stefansdottir, Ingibjorg Katrin and Runar Vilhjalmsson. 2007. "Dimensions of health-related lifestyle in young adulthood: results from a national population survey." *Scandinavian Journal of Caring Sciences* 21:321-328.

Stets, Jan E. and Peter J. Burke. 2000. "Identity theory and social identity theory." *Social psychology quarterly* 63:224-237.

Terre, Lisa, Ronald S. Drabman, and Edward F. Meydrech. 1990. "Relationships among children's health-related behaviors: A multivariate, developmental perspective." *Preventive Medicine* 19:134-146.

U.S. Department of Education, National Center for Education Statistics. 2007. "Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), Longitudinal 9-month/Preschool Restricted-

Use Data File (NCES 2008-024)." U.S. Department of Education, National Center for Education Statistics.

Weller, L.D., C.J. Schnittjer, and B.A. Tuten. 1992. "Predicting achievement in grades three through ten using the Metropolitan Readiness Test." *Journal of Research in Childhood Education* 6:121-129.

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.

Yount, Kathryn M., Ann M. DiGirolamo, and Usha Ramakrishnan. 2011. "Impacts of domestic violence on child growth and nutrition: A conceptual review of the pathways of influence." *Social Science & Medicine* 72:1534-1554.