The Effect of School Food Policy on Adolescent Obesity

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This paper presents evidence on the efficacy of banning the sale of junk food and soft drinks in schools as instruments to reduce adolescent obesity. The authors utilize a unique matched child-parent data set and employ econometric techniques to examine whether and to what extent school food policies affect students’ body-mass index (BMI). Preliminary results suggest a positive influence of vending contracts and a negative influence of health and physical education requirements on student obesity. We will use our results to estimate the payoff from targeting policy dollars to influence school food policy.

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ABSTRACTS

SOCIALLY CONSTITUTED FOOD CONSUMPTION OF ADOLESCENTS: THE RETAIL ENVIRONMENT
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The rising rate of obesity is a major threat to public health and increases the risk of diabetes, heart disease, cancer, and numerous other serious illnesses (Kennedy and Offut 2000). Approximately 30 percent of adolescents in the U.S. are overweight (National Center for Health Statistics 2004). There are many reasons being proposed for this weight increase, but food producers and retailers must be examined for their potential role in this escalating problem.

Convenience and time constraints are two key determinants driving these adolescent food choices (Story, Neumark-Sztainer, and French 2002). One place adolescents make food choices is at school, but adolescents have many other opportunities for eating outside the home (Brownell and Battle 2004). Many of the places where adolescents have access to food are where they gather socially, such as fast food restaurants and convenience stores. When adolescents gather in these places, eating and drinking are usually part of the social experience. The food industry has provided increasing availability and promotion of energy-dense foods and increasing portion sizes, often in these locations (Brownell and Battle 2004). Given that adolescence is the first time that disposable income allows them to consume what they want without parental supervision, this can lead to overconsumption of fast food and other high-fat foods and underconsumption of foods considered more nutritious (Dietz and Stern 1999; Lin et al. 1999; Lino et al. 1998; Munoz et al. 1997; Neumark-Sztainer 1998; Subar et al. 1998).

Existing guidelines and messages that promote healthy eating compete with food industry marketing and the social situations that promote “grab-and-go” eating and congregation at fast food outlets and convenience stores. Eating healthy is a lifestyle, and adolescents may be learning that it is acceptable to buy fast food or products from convenience stores or vending machines for a meal. The food industry is aware that adolescents purchase beverages and food independently of their parents. With adolescents, “if it goes into their mouth, it needs to get past their defenses” (Siegel et al. 2001). Target marketing and marketing communications are the methods used to achieve this. Marketing is a major expenditure for the food and food-service industry. In 2000, the food industry spent 11 billion on direct media, advertising in magazines, newspapers, radio, television, and billboards (Schlosser 2001). Therefore, research is needed on adolescents’ independent purchasing of food outside the home. Clearly, “research on environmental influences is needed” (Booth et al. 2001), and an objective of the United States Department of Health and Human Services “Healthy People 2010” (USDHHS 2000) is to “Improve Child and Adolescent Health by reducing the number of children and adolescents who are overweight or obese from 11 percent in the year 2000 to 5 percent.”

This paper describes a part of a comprehensive multi-stage, multi-method research project designed to clarify the social aspects of adolescents’ nutrition behavior outside the home and the influence of food marketing. The long-term goal of this study will help produce conceptual models of food and nutrition behavior so that strategies can be designed to improve the nutrition education of adolescents. In phases one and two, respondents participating in surveys and photo-elicitation, provide data on their food consumption behavior, including where food is purchased and/or consumed. Retail establishments near schools include convenience stores, restaurants, and grocery stores, or “food opportunities,” as labeled by University of Pennsylvania researchers in a recent obesity study (Omaha World-Herald May 31, 2005). A random sample of these establishments is included in this phase. Video cameras and/or written documentation is used to record in-store merchandising techniques, including point-of-purchase displays and signage, store and shelf layout, and other merchandising practices. In addition, personnel in these retail stores are interviewed about their perceptions about adolescent food purchasing behaviors and marketing techniques targeting adolescents. Preliminary results indicate that students do frequent many retail establishments for food purchases, and these purchases often include high-fat, high-sugar choices. Analysis of the data is ongoing.

THE EFFECT OF SCHOOL FOOD POLICY ON ADOLESCENT OBESITY

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According to a recent study, the proportions of overweight children in North and South America and in the European Union are expected to increase from one third to one half and from one fourth to one third, respectively, by the year 2010 (Wang and Lobstein 2006). This worldwide obesity crisis shows an obvious imbalance between the energy children consume and expend with an estimated 155 million children between the ages of 5 and 17 as overweight and 30 to 40 million of those being obese (International Obesity TaskForce). Further, studies have shown that overweight and obese children lead to overweight and obese adults (see Bouchard 1997; Dietz 1991, 1997; Vuille and Mellbin 1979). This cause for concern has spurred many public health groups to advocate policies aimed at promoting healthy eating and increased physical activity among children.

The causes of obesity range from genetic, metabolic, and hormonal to environmental, cultural, and socioeconomic. Because childhood obesity is more prevalent in the United States with approximately 31 percent of children ages 6 to 19 overweight and 16 percent obese (Hedley et al 2004), many studies have examined the risk factors using U.S. data. Authors have documented the influence of the types of foods children eat on obesity (Birch and Fisher 1998; Klesges et al. 1991), the relationship between fast food and body weight (Binkley et al. 2000; Chou et al. 2004; French et al. 2000, 2001), and the connection between school finances and availability of junk food in schools (Anderson and Butcher 2005). This paper focuses on the influence of the school environment on childhood obesity. Since schools are one of the primary locations where children make their food choices, those choices should reflect the education children receive about nutrition. Although many state legislatures are considering
the imposition of bans on the sale of junk food in schools to control the growing obesity problem of today’s youth, there is no empirical evidence that shows that these bans actually decrease student obesity. This paper fills that void in this important policy debate. If school food policy has a measurable effect on obesity, we can use our results to estimate the payoff from targeting policy dollars to influence school food policy.

We utilise a unique matched child-parent data set and employ econometric techniques to examine whether school food policies affect students’ body-mass index (BMI). The BMI is defined as the weight of a person in kilograms divided by the square of the person’s height in meters. This measure is frequently used by researchers as a proxy for indicating whether a person is overweight or obese. The data set is obtained through surveys of students and parents throughout schools across the United States. Specifically, the student/parent surveys are administered to 7th and 10th graders in different schools in four states. The states were chosen to allow variation in national health rankings as well as school food policies. The schools within each state were selected to ensure the student population is representative of the state demographics and to allow variation in school food policy, and health and physical education curriculum. It is the variation in school food policy that allows us to identify the effect of the specific school policy on the student’s BMI. The effect is isolated as our data allow us to control for the student’s activity level, food and drink intake, genetics, cultural environment, socioeconomic status, and the accessibility to different foods.

One problem with using cross-sectional data to estimate the effect of a policy on student obesity is the potential endogeneity of the policy variable. It is possible that more health conscious parents will provide wholesome food choices at home and also will advocate for an environment conducive to nourishing food options for their children at school. If these parents are successful at lobbying the schools, we would expect to observe those schools with potentially beneficial food policies to also have more fit students. On the other hand, in financially strapped school districts, schools are likely to engage in vending contracts that provide additional funding and low income and less educated parents are less likely to advocate for healthful school food choices. In this case, we would expect to observe those schools with potentially harmful food policies to also have less fit students.

Our unique data set provides us with information that can be used to mitigate this potential statistical problem. To isolate the effect of the policy, we need to control for the differences in the parents’ health awareness across schools. We can do this by using an instrumental variable such as parents’ employment in the health service industry for the school’s food policy. This is a valid instrument because those in health service jobs are more likely to be health conscious and are more likely to lobby for healthy school food policies. Also, the health consciousness of the parent does not directly affect the child’s BMI but only affects the BMI through the food choice environment provided by the parent.

Preliminary results based on five small rural schools in Nebraska suggest that school policy does exert an influence on children’s BMI. Students attending schools with stricter physical and health education requirements tend to be less obese than similar students attending schools without such requirements. Schools with relatively smaller vending contracts also tend to have less obese students, on average. These results are based on the pilot study data of a three-year research project and thus should be interpreted with caution. Even though these results are based on a small sample of schools that exhibit relatively little variation in the full range of school food policies that we will consider in the full study, they are encouraging. We expect that the results based on the full sample of schools will provide useful information that can be used to guide policy makers on the effect of school food policies on adolescent obesity.