

# Fast-Food Marketing and Children's Fast-Food Consumption: Exploring Parents' Influences in an Ethnically Diverse Sample

Sonya A. Grier, Janell Mensinger, Shirley H. Huang,  
Shiriki K. Kumanyika, and Nicolas Stettler

*Fast-food marketing to children is considered a contributor to childhood obesity. Effects of marketing on parents may also contribute to childhood obesity. The authors explore relevant hypotheses with data from caregivers of 2- to 12-year-old children in medically underserved communities. The results have implications for obesity-related public policies and social marketing strategies.*

**C**hildhood obesity has become a major societal concern. Rates of obesity among preschool and school-age children have more than doubled in the past three decades: 14% of 2- to 5-year-olds and 19% of 6- to 11-year-

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*Sonya A. Grier* is Associate Professor of Marketing, Kogod School of Business, American University (e-mail: griers@american.edu). *Janell Mensinger* is Director of the Clinical Research Unit, Department of Medicine, The Reading Hospital and Medical Center (e-mail: mensingerj@readinghospital.org). *Shirley H. Huang* is Attending Physician, Division of Gastroenterology, Hepatology, and Nutrition, Children's Hospital of Philadelphia (e-mail: huangs@email.chop.edu). *Shiriki K. Kumanyika* is Associate Dean for Health Promotion and Disease Prevention and Professor of Epidemiology, Department of Biostatistics and Epidemiology, University of Pennsylvania School of Medicine (e-mail: skumanyi@cceb.med.upenn.edu). *Nicolas Stettler* is Assistant Professor of Pediatrics and Epidemiology, Division of Gastroenterology, Hepatology, and Nutrition, Children's Hospital of Philadelphia (e-mail: nstettle@upenn.edu). The Robert Wood Johnson Health & Society Scholars Pilot Grant Research and Education Fund 2003–2004 supported the first author's participation in this research. The Health Resources and Services Administration's Regional Divisions II (New York City) and III (Philadelphia), the National Institutes of Health's (NIH) National Center for Minority Health and Health Disparities Project EXPORT Grant No. P60 MD000209, the General Clinical Research Center of Children's Hospital of Philadelphia Grant No. 5-M01-RR-00240, NIH Grant Nos. HL 07433 and K23 RR16073, and Children's Hospital of Philadelphia provided support for data collection and analysis. The authors thank the participating children, families, health-care providers, and leaders at Charles. B. Wang Community Health Center (New York, NY), Oak Orchard Community Health Center (Brockport, NY), Bronx Community Health Network (New York, NY), Pendleton Community Care (Franklin, WV), and Choptank Community Health System (Denton, MD). They also thank Steven Auerbach, MD, MPH, at the Health Resources and Services Administration, who served as their liaison to the community health centers, and Victor Brobbey for research assistance. The authors also thank Betsy Moore and the three anonymous *JPP&M* reviewers for their valuable insights.

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olds are obese (Ogden et al. 2006; Ogden et al. 2002).<sup>1</sup> The increased rates of obesity have become a public health concern because obesity is associated with chronic disease and adverse health outcomes (Institute of Medicine 2005). Furthermore, because obesity is now a characteristic of populations and not only of individuals, researchers, government health organizations, and advocacy groups characterize obesity as an epidemic (Institute of Medicine 2005, 2006a; World Health Organization 2003). As society searches for solutions, food-marketing practices have come under fire for targeting children and are part of the broader social controversy over marketing to children. Much of the controversy focuses on the appropriateness of particular marketing strategies in view of children's vulnerability (Austin et al. 2005; Seiders and Petty 2004). For example, food marketing has been criticized for targeting children on Saturday-morning television advertisements and for using promotional characters and sweepstakes based on frequent purchases (Institute of Medicine 2006a; International Association of Consumer Food Organizations 2003).

As policy makers consider ways to address the pediatric obesity epidemic, parents' influence on children's food intake takes center stage in the debate. Parents are a major influence on children's access to food, and parents are also exposed to marketing. Therefore, what are the ways that marketing adversely influences children's weight by means of its effects on parents, such as by influencing the types of foods parents buy for their children or allow their children to buy? What policy options are needed and appropriate to address such influences? These questions, different from those related to marketing directed at children, have not

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<sup>1</sup>The definition of obesity is having a body mass index (calculated by dividing weight in kilograms by the square of height in meters) that is at or above an age- and sex-specific cutoff point (the 95th percentile) on standard curves published by the Centers for Disease Control and Prevention (CDC). The CDC uses the term "overweight" rather than "obesity" when referring to children who meet this criterion. We use "obesity" here for simplicity, as this is the term most people recognize.

previously been a focus of research. This oversight may have occurred because adults are assumed to be competent consumers who, in general, are skeptical of commercial information and recognize its limitations and usefulness (Calfee and Ringold 1994). From this perspective, the influence of marketing on adults' food selection is an issue of individual responsibility and personal choice. Thus, policy that regulates marketing to adults may not only face First Amendment challenges in the United States but also be viewed as unethical or paternalistic (Hoek and Gendall 2006; Ringold 1995; Smith and Cooper-Martin 1997).

Nonetheless, parents are a central influence on children's consumption and an important target in efforts to improve the healthfulness of children's diets (Institute of Medicine 2006a; Lindsay et al. 2006). A systematic review of pediatric weight-control intervention studies shows that parents' involvement helps children lose weight (McLean et al. 2003). A recent Institute of Medicine (2006a) report on food marketing to children also emphasizes the importance of studying parents as a major influence on children's food environment and food intake.

In this study, we examine fast-food marketing as an influence on the fast-food consumption of 2- to 12-year-old children who attended community health centers (CHCs) in medically underserved areas. In particular, we explore the potential mediating role of parents' attitudes and normative beliefs on how often their children eat fast food. It is important to understand the mediating processes between marketing and fast-food consumption behavior in order to design public policies and related social marketing interventions (Institute of Medicine 2006a). In addition, obesity rates vary significantly by ethnicity; there is a higher prevalence of obesity among African Americans, Hispanics, American Indians, and Pacific Islanders than among non-Hispanic whites. Government agencies have made the reduction of such ethnic disparities a national priority (U.S. Department of Health and Human Services 2000). However, relevant research with ethnically diverse populations is lacking. Therefore, we also explore whether there is ethnic variation in perceptions of marketing exposure, attitudes, normative beliefs, and behavior.

We first review the relationship between fast-food consumption and obesity and the influence of marketing on the relationship in general and on ethnic minority populations in particular for obesity prevention. We then describe our conceptual framework and hypotheses about how fast-food marketing might influence parents' food choices for their children and why there may be ethnic variation in parents' perceptions. Then, we report the results of an exploratory empirical study that examines the relationships among parents' perceptions of their exposure to fast-food promotion and access, their attitudes and normative beliefs about fast food, and how frequently their children eat fast food. We then describe the limitations of the results in some detail to provide guidance for further research. Last, we discuss the implications of the results in terms of their relevance to public policies and the design of social marketing interventions for obesity prevention and, ultimately, for children's health.

## Background

### Fast Food, Obesity, and Health

The public health concern with fast-food marketing lies in the proposed relationship between fast-food consumption and obesity in both children and adults, as well as in the nutritional profile of most fast-food menus. The basic cause of obesity is an imbalance between the amount of energy taken in, through eating and drinking, and the amount of energy expended through metabolism and physical activity—and, in the case of children, through energy deposition for growth. It is estimated that, in children, a sustained imbalance of approximately 2% of energy results in the development of obesity over time (Goran 2001). For a child, a 2% imbalance corresponds to about 30 kilocalories per day, or less than one-fourth of a can of soda, two-thirds of an Oreo cookie, or fewer than two French fries. Foods' energy density is a key determinant of energy intake, and most fast foods have extremely high energy density (Prentice and Jebb 2003). Physiologically, humans are poorly able to differentiate between high- and low-energy density foods. Consequently, it is difficult for people to regulate energy balance, and passive overconsumption can occur (Prentice and Jebb 2003). Research indicates that fast-food consumption leads to excess energy intake and, in turn, increased risk of overweight and obesity (French, Harnack, and Jeffery 2000; French et al. 2001b; Paeratakul et al. 2003). Adults' frequency of dining in fast-food restaurants is associated with increased body weight and obesity (French, Harnack, and Jeffery 2000; Pereira et al. 2003). Among adolescents, fast-food consumption is positively associated with higher intake of total energy and percentage of energy from fat and inversely associated with daily servings of fruit, vegetables, and milk (French et al. 2001a). Zoumas and colleagues (2001) find that the calorie content of out-of-home meals that children consumed was 55% higher than that of in-home meals. Thus, frequent fast-food consumption is also a health concern because most fast foods are rich in saturated fats, trans fats, simple carbohydrates, and sodium—all of which are nutrients associated with hypertension, cardiovascular disease, and type 2 diabetes (World Health Organization 2003).

If consumers ate fast-food meals only occasionally, the higher energy intake from such foods would be of less concern and intake would minimally affect long-term energy balance (Harnack and French 2003). However, nowadays, consumers obtain less of their energy intake at home and more at restaurants and fast-food outlets (Nielsen, Siega-Riz, and Popkin 2002). Fast food has become a regular part of the American diet, and on average, almost one-third of youths aged 4 to 19 eat fast food on a typical day (Bowman et al. 2004; Guthrie, Lin, and Frazão 2002). Other studies have found that youths aged 11 to 18 eat at fast-food outlets an average of twice per week (Paeratakul et al. 2003).

The fast-food industry has responded to the public's health concerns by altering marketing strategies and product offerings to help consumers make healthier choices (Institute of Medicine 2006c; Seiders and Petty 2004). Some companies now provide consumers with nutritional information about product composition, and others have

added healthier alternatives such as apples, salads, and vegetarian burgers (Abramowitz 2006; Institute of Medicine 2006c; Seiders and Petty 2004). One major fast-food franchise plans to provide nutrition information on food packaging, tray liners, and brochures and to present the information in child-friendly ways (Institute of Medicine 2006c). Another fast-food chain has created a program that targets Latinos with education on healthful meal selection and product composition as well as strategies for improving physical fitness (Institute of Medicine 2006c). Concern about childhood obesity has also prompted fast-food industry collaborators to make strategic changes. For example, industry observers attribute Disney's nonrenewal of a long-term promotional partnership with a fast-food franchise to growing concerns about childhood obesity (Abramowitz 2006).

### Fast-Food Marketing

The U.S. fast-food market has grown faster than most other segments of away-from-home foods for most of the past two decades (Jekanowski 1999). In 2003, the fast-food market grew 2.6% to reach \$148.6 billion in sales. The industry's marketing and promotional strategies emphasize the convenience, taste, and low cost of fast food. Product development is important to the industry because taste is so important to consumers. Fast-food restaurants rely heavily on the billion-dollar flavor industry, which manufactures the chemicals that give distinctive flavors to processed foods (Schlosser 1999). Products have also been reformulated to provide more convenient packaging, shapes, and sizes (e.g., pancake sticks). The increase in fast-food distribution to create ease of access for consumers is also a key marketing strategy (Glanz et al. 1998; Jekanowski 1999). Fast-food franchises are found in gas stations, department stores, zoos, schools, and other nontraditional outlets, which enables consumers to eat in the midst of performing other activities.

Fast-food promotions, especially advertising and in-store promotions, are important components of fast-food marketing. Advertising creates overall awareness and establishes brand equity. Fast food accounts for almost 30% of food advertising, and this amount has been growing steadily over the years (Gallo 1999). The expenditures on marketing in the media of the top ten fast-food chains in the United States total more than \$2.2 billion (Institute of Medicine 2006a). Although major fast-food chains spend a significant amount of money on national and regional advertising, neighborhood promotions—frequently price promotions—focused on local areas fuel their sales (Feltenstein 1983). Price promotions create awareness of specific menu items, provide purchase incentives, or create repeat purchases among frequent patrons. For example, the value menu became a popular price-promotion strategy in the early 1990s to attract customers and to raise profit margins, and many fast-food outlets rely on price discounts to drive consumer patronage (Smith 2003; Wilkie 1994). Some franchises promote tiered pricing to encourage consumers to think in terms of price segments, such as a \$.99 menu (Wilkie 1994).

Because they fulfill consumers' desires for tasty, convenient, and inexpensive food, fast-food outlets have become

a "home away from home for breakfast, lunch and dinner" among consumers of all ages (Kara, Kaynak, and Kucukemiroglu 1995, p. 319). Fast-food restaurants market heavily to children and adolescents (Nestle 2002; Schlosser 1999). A recent study found that 36% of advertisements during children's programming were for fast food (Outley and Taddese 2006). Research suggests that fast-food marketing influences children's food preferences and what they repeatedly ask their parents to buy for them (Hastings et al. 2003; Institute of Medicine 2006b). Through children's purchase requests, fast-food marketing to children also reaches parents indirectly.

Fast food is also marketed directly to adults, both for themselves and for feeding to their children. More than one-third of U.S. parents say they eat takeout food regularly (Gardyn 2002), and fast food contributes more than 12% of U.S. adults' caloric intake (Guthrie, Lin, and Frazão 2002). A survey found that 24% of adults noted that they ate fast-food meals or snacks with children younger than 12 (Barbour 2004). Fast food is especially attractive to busy parents. The number of single parents (both mothers and fathers) grew to 12.4 million in 2003, up from 10.9 million in 1993, and families in which both parents work are the norm (Gardyn 2002; U.S. Census Bureau 2003). Because families' spending is three times that of a single adult, fast-food marketers consider parents a core consumer (Schlosser 2001). Fast-food marketing to adults reaches children through the foods that parents either purchase for their children or allow them to eat. Whether parents like a product is a primary influence on children's preferences (McNeal 1999; Moore, Wilkie, and Lutz 2002). Parents are only one of several influences on children's consumption, along with peers and the media (Story, Neumark-Sztainer, and French 2002). However, parents are considered the primary socialization agent, the gatekeepers of the family food supply, and important role models for children's eating behaviors, especially for young children (Golan and Crow 2004).

### Parents' Role in Children's Fast-Food Consumption

Parents influence children's eating habits through their implicit and explicit modeling of food consumption behavior (Fisher and Birch 1995). For example, the children of parents who consume fruits and vegetables do the same (Nicklas et al. 2001). Likewise, the children of parents who consume large amounts of fast food may also do the same. Thus, parents influence children's eating habits through the foods they purchase for and serve in the household, as well as through their selection of places to eat and foods to buy. From this perspective, parents influence children's exposure to particular foods and potentially their habits and preferences. Children who develop particular habits and preferences in childhood may establish them as a lifelong pattern. Research on intergenerational influences demonstrates how information, beliefs, and resources are transmitted from one generation to the next and implies a particular mechanism by which parents' attitudes and beliefs related to fast food affect children's fast-food consumption (Moore, Wilkie, and Lutz 2002). Parents' brand preferences create comfort in children and set the stage for compliance with their chil-

dren's request for a brand (McNeal 1999). The formation of children's attitudes and beliefs about fast food in the context of family life may imbue the attitudes and beliefs with sustaining characteristics over time (Moore, Wilkie, and Lutz 2002). Accordingly, the fast-food industry focuses on children because childhood memories of fast-food products may translate into adult visits (McNeal 1999; Schlosser 2001). However, the indirect aspect of fast-food marketing to parents as an influence on children's consumption behavior is less well studied (Lindsay et al. 2006; Ward, Wackman, and Wartella 1977).

### Ethnic Minority Populations

Food marketers target ethnic groups with different amounts and types of strategies, and research implies that the different ethnic groups may have different levels of exposure to fast-food marketing. Therefore, beliefs related to fast food and fast-food consumption may also differ among various ethnic groups. Understanding any potential ethnic variation is important because, in the United States, rates of childhood and adult obesity, diabetes, and cardiovascular disease are significantly higher among certain ethnic minority populations (Daniels et al. 2005; Smith et al. 2005). For example, although obesity rates have increased for boys and girls in all ethnic and racial groups, they have increased the most and are the highest for African American girls and for Mexican American boys (Ogden et al. 2006). Data from the U.S. national health examination survey for 2003–2004 indicate that for children aged 6 to 11, 27% of African American girls are obese compared with the still-high 17% of non-Hispanic white girls and 19% of Mexican American girls. Among boys aged 6 to 11, 25% of Mexican American boys are obese compared with 19% of non-Hispanic white boys and 18% of non-Hispanic black boys (Ogden et al. 2006).<sup>2</sup> The prevalence doubles with a lower cutoff that includes children who have high weight levels but do not meet the overweight cutoff.<sup>3</sup> The disparities pose a major challenge for policy makers, the public health community, and the food-marketing industry (Kumanyika and Grier 2006). However, academic research on marketing and food-related perceptions among ethnically diverse populations is lacking, even though such populations are growing (Population Reference Bureau 2006).

### Conceptual Framework and Hypotheses

How does fast-food marketing influence parents' behaviors with respect to feeding their children in ways that promote the development or maintenance of obesity in their children? Our conceptual framework, shown in Figure 1, is based on attitude and behavior models used to understand consumption behaviors across various domains (Fishbein and Ajzen 1975; Grier, Brumbaugh, and Thornton 2006;

<sup>2</sup>All the black respondents in our sample are not African Americans, though they all are non-Hispanic black. That said, most of the research we quote is specific to African American respondents. Thus, we use the terms "African American" and "non-Hispanic black" for specificity, not interchangeably.

<sup>3</sup>The CDC uses the 85th percentile of the body mass index standard as the definition for "at risk of overweight" or "overweight" under the assumption that at-risk children are most likely to become overweight (obese) if they have excessive weight gain.

Sheppard, Hartwick, and Warshaw 1988). The models maintain that people's attitudes toward a behavior and their beliefs about the normative nature of the behavior ultimately influence their behavior.

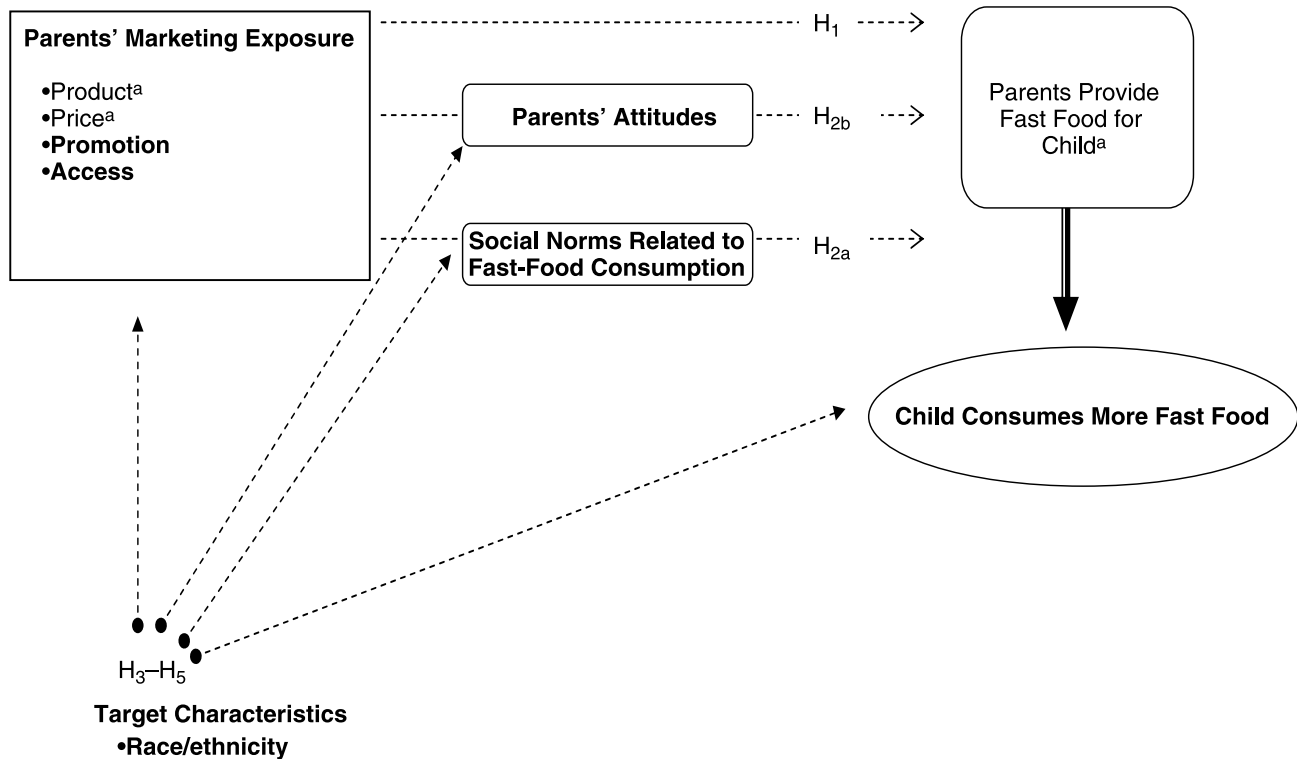
### Parents' Attitudes and Beliefs

As Figure 1 shows, attitudes and social norms are the belief mechanisms through which marketing activities influence parents' behavior related to their children's fast-food consumption. Attitudes are the degree to which a person has a favorable or unfavorable evaluation of an object or behavior (Fishbein and Ajzen 1975). Social norms are shared beliefs about behavior and are intended to capture the social influence that a consumer perceives regarding consumption behavior (Fishbein and Ajzen 1975). Social norms are of two types. First, subjective norms involve people's perceptions of what is appropriate behavior and reflect their beliefs that people important to them believe that they should perform a particular behavior (Fishbein and Ajzen 1975). Second, descriptive norms pertain to people's perceptions of the behavior of people important to them (Fishbein and Ajzen 1980). The high prevalence of a behavior or perceived approval of the behavior among important reference groups influences a person's performance of that behavior (Bagozzi et al. 2000; Cialdini, Kallgren, and Reno 1991). As a result, norms can either tax or subsidize choice (Sunstein 1996).

In general, more favorable attitudes and norms about a particular behavior lead to a higher likelihood that a person will perform the behavior. Thus, fast-food marketers aim for their activities to create positive attitudes and to influence social norms such that they increase the consumption of their products. Not only marketing but also news and entertainment media, family, other people (e.g., health-care providers), and personal experiences influence attitudes and normative beliefs. Fast-food marketing contributes to consumers' beliefs through the persuasiveness with which strategies communicate specific benefits and reinforce existing behavioral patterns. For example, price promotions can increase a consumer's preference for a promoted product, encourage repeat purchases, and contribute to parents' beliefs that the promoted items are frequently eaten (Hoek and Gendall 2006; Naylor, Raghunathan, and Ramanathan 2006). Favorable attitudes or the belief that a behavior is normative in a community may send a subtle message that the behavior is supported and facilitate the likelihood of the behavior.

Thus, we hypothesize that fast-food marketing not only affects consumption levels in the community of interest (children) but also influences parents' attitudes toward fast food and their beliefs about social norms surrounding fast-food consumption. In turn, more positive fast-food attitudes and the degree to which parents perceive fast-food consumption as socially normative are associated with children's greater fast-food consumption. Furthermore, parents' attitudes and beliefs about fast food mediate the relationship between parents' reported exposure to fast-food marketing and their children's fast-food consumption. The five hypotheses, formally stated subsequently, are identified with dotted lines in Figure 1.

**Figure 1. Conceptual Framework for Hypotheses About How Marketing to Parents Influences Children's Fast-Food Consumption and Weight Levels**



<sup>a</sup>Not assessed in the study.

Notes: Bolded text represents constructs and relationships investigated in the study.

**H<sub>1</sub>**: Parents' reported access to fast-food restaurants and exposure to fast-food promotion are associated with their children's greater frequency of fast-food consumption.

**H<sub>2</sub>**: Parents' (a) beliefs about community norms surrounding fast food and (b) attitudes toward fast food mediate the relationship between parents' reported access to fast-food restaurants and exposure to fast-food promotion.

### Ethnic Differences

Exposure to fast-food marketing differs by ethnicity as a result of the amount and types of targeted marketing strategies and different amounts of media exposure. Marketing targeted at ethnic minority groups has increased significantly in the past decade. Industry observers note that ethnic minority families are an especially attractive target market because they tend to be younger and have more children than the general market. Most spending on ethnic target marketing is geared toward Hispanics and African Americans, with 2004 totals of \$3.9 billion and \$1.7 billion, respectively, and only \$100 million dedicated to Asian Americans (Huang 2006). The numbers represent a small part of the estimated \$139 billion advertising spending in the United States in 2004 (Bachman 2005). Some ethnic minority consumers have disproportionate exposure to marketing activities because their rates of media exposure are

higher than those of the majority population (Rideout, Roberts, and Foehr 2005; Roberts et al. 1999; Woodard and Gridina 2000). For example, a Kaiser Family Foundation report found that African American and Hispanic youths spend significantly more time watching television and movies and playing video games than non-Hispanic white youths (Rideout, Roberts, and Foehr 2005). Higher media exposure has been found among African American adults as well (Steadman 2005). In addition, the Asian American population has fewer heavy television viewers than other ethnic groups (Tharp 2001).

The information to which ethnic minority consumers are exposed may also differ significantly among ethnic groups. A recent study found that the percentage of television fast-food advertising was significantly higher during children's shows than targeted African Americans than during general-market children's programming (Outley and Taddese 2006). Content analyses have found that there are more food commercials during African American shows than during general-market prime-time shows and that the commercials feature more energy-dense foods (Henderson and Kelly 2005; Tirodkar and Jain 2003). Tirodkar and Jain (2003) find that 31% of all advertisements during prime-time programs targeted at African American audiences were for fast food. Similarly, promotion to ethnic minority adults in magazines is dominated by low-cost, energy-dense

foods of low nutritional value and is less likely to contain health-oriented messages (Duerksen et al. 2005; Pratt and Pratt 1995, 1996). As a result, members of different ethnic groups may see different amounts and types of fast-food advertising.

Given residential segregation, fast-food promotions such as in-store deals may also reach specific groups more easily. More promotion of less-healthy menu options and more in-store advertisements have been found in poorer African American neighborhoods than in more affluent white areas (Lewis et al. 2005). Furthermore, there is evidence that ethnic minorities are more responsive to targeted advertisements and that different underlying processes drive the differential response (Aaker, Brumbaugh, and Grier 2000; Grier and Brumbaugh 1999, 2003). Targeted advertisements have been found to be more persuasive among African Americans than among white Americans because they are more likely to prompt identification with the promoted attitudes (Aaker, Brumbaugh, and Grier 2000). In Hispanic communities, parents often take pride in taking their families to a fast-food restaurant as a sign of status and financial well-being (Kipke, Iverson, and Booker 2005).

Fast-food locations may also be differentially convenient to members of different ethnic groups. Block, Scribner, and DeSalvo (2004) find that predominantly African American neighborhoods in Louisiana had 2.4 fast-food restaurants per square mile compared with 1.5 restaurants per square mile in predominantly white neighborhoods. Lewis and colleagues (2005) report that twice as many restaurants were full service in areas of South Los Angeles with fewer African American residents than were limited service, fast-food type restaurants in areas with a higher African American population. With respect to food access, fast-food restaurants may be more important in such neighborhoods because the availability of other types of retail food outlets and restaurants, as well as healthier food items, is lower (Lewis et al. 2005; Morland et al. 2002; Sloane et al. 2003).

Research supports the idea that access to fast food and exposure to fast-food promotion differ by ethnicity and that African Americans and Hispanics have more positive attitudes toward fast food than whites. Data for other ethnic groups are less prevalent and less equivocal. We build on the documented differences in targeted media expenditures, media usage, and fast-food promotion and examine the following exploratory hypotheses regarding ethnic differences across the key variables in our framework:

- H<sub>3</sub>: Reported access to fast-food restaurants and fast-food promotional exposure is greater among African Americans and Hispanics than among non-Hispanic whites.
- H<sub>4</sub>: Reported fast-food attitudes and norms are more favorable among African Americans and Hispanics than among non-Hispanic whites.
- H<sub>5</sub>: Reported fast-food consumption is higher among African Americans and Hispanics than among non-Hispanic whites.

## Methods

### Participants

We conducted a cross-sectional study at eight CHCs in medically underserved communities on the East Coast of

the United States (New Jersey, New York, Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia) and in Puerto Rico. The Health Resources and Services Administration funds such CHCs, which serve more than 14 million predominately poor and minority clients with incomes significantly below the federal poverty level (Rosenbaum and Shin 2006). The CHCs represent a federal investment in community health and had operating revenues of \$6.7 billion in 2004 (Rosenbaum and Shin 2006). Children who receive health care at CHCs have a greater prevalence of obesity and are at a particularly high risk for obesity and related health problems (Stettler et al. 2005). Research conducted with a representative sample of children at CHCs found that 18.2% of Asian Americans, 24.6% of Hispanics, 25.6% of non-Hispanic blacks, and 22.8% of non-Hispanic whites were obese, with rates higher than those observed in the general population (Stettler et al. 2005). We selected the 8 centers from which we obtained the data reported herein from 30 centers that participated in a previous study of obesity prevalence (Stettler et al. 2005). We selected the centers on the basis of distribution in urban and rural locations,<sup>4</sup> interest in participation, and availability of adequate time and resources for data collection. For the initial subject-sampling strategy, we randomly selected parents of children aged 2 to 12 from the 8 CHCs using a centralized file of chart numbers of children within the age group.<sup>5</sup> We provided each CHC with a table of numbers corresponding to each day and instructed the study administrators to approach all families for which a child of the eligible age had a chart number finishing with the numbers. Because of recruitment difficulties, it was necessary to expand efforts to include on-site recruitment of children using a randomized process with medical record numbers. Specific recruitment challenges involved unreliable or missing contact information, limited telephone access, lack of availability, mistrust of research, and limited transportation. Our final convenience sample included 312 parents of children aged 2 to 12.

### Measures

We designed measures to capture parents' self-reports of five key constructs: (1) fast-food access, (2) exposure to fast-food promotion, (3) fast-food attitudes, (4) social norms about fast food, and (5) their children's fast-food consumption. We developed the fast-food access and exposure to fast-food promotion measures specifically for this study to reflect observed fast-food marketing strategies and tactics. We adapted the fast-food attitudes and social norm measures from those used in prior research on the influence of attitudes and norms on consumption (Bagozzi et al. 2000; Fishbein and Ajzen 1975). We measured the access, promotion, and social norms variables on five-point scales, where 1 = "disagree," and 5 = "agree." We measured attitudes on five-point semantic differential scales, where 1 = "negative," and 5 = "positive."

<sup>4</sup>We sampled from both urban and rural health centers because fast-food access and other influences on obesity may vary on this dimension.

<sup>5</sup>We screened for the primary caregiver of the child, defined as the main person responsible for attending to the needs of the child at home. Responses demonstrated that this person was usually a parent or grandparent.

We measured parents' perceptions of fast-food access by their agreement with two items: "I can easily walk to several fast-food restaurants" ( $M = 2.61$ ,  $SD = 1.91$ ), and "I can easily drive or take public transportation to fast-food restaurants" ( $M = 4.60$ ,  $SD = 1.08$ ). Because the responses to access variables clustered at extreme ends of the distribution, we combined items for analytic purposes. We created a three-level ordinal variable with the following categories: (1) cannot easily walk or drive, (2) can either walk or drive, and (3) can easily both walk and drive. We measured parents' perceived exposure to fast-food promotion by their degree of agreement or disagreement with the item "My local fast-food restaurants often have special deals."<sup>6</sup>

We assessed five key fast-food attitudes: "I think fast food is (1) not enjoyable/enjoyable, (2) foolish/wise, (3) bad/good, (4) inconvenient/convenient, and (5) value for money/waste of money" (Cronbach's  $\alpha = .69$ ). We operationalized social norms by measuring parents' beliefs that their family members, friends, children's friends, and community members often eat fast food (descriptive norms) and approve of eating fast food (subjective norms). We averaged the responses to the eight questions to derive parents' perceptions of social norms (Cronbach's  $\alpha = .87$ ). We measured each child's fast-food consumption by asking, "How often does [child's name] eat at fast-food restaurants?" Possible responses were "Never," "Less than once a week," "One to two times per week," "Three to four times per week," and "More than four times per week." As a result of a skewed distribution, we coded responses to this question on a three-point ordinal scale including "never," "sometimes (less than once a week)," and "frequently (one or more times per week)." We assessed the child's race and ethnicity with two questions: "What do you consider your child's ethnicity to be?" and "What do you consider your child's race to be?" We assessed parents' education and income with standard demographic questions. An accredited professional communications company translated the questionnaire into Chinese and Spanish. Native speakers who were experienced translators checked the questionnaire for accuracy and understandability, maintained it at the same reading level as the English version, and adapted it to the other cultures as necessary.

## Procedure

Designated "study leaders"—dietitians, nurses, or health educators who had received training—directed question-

naire administration and measurements. One of the authors trained the study leaders at each site on research-quality anthropometric measurements and reviewed the execution of the procedures. A trained study leader who spoke the parent's preferred language (English, Chinese, or Spanish) administered on-site a questionnaire that included the measures of interest to parents with the child present. On separate occasions, another one of the authors observed the quality of interview protocol at three CHCs. We obtained children's height and weight using standard research procedures with standardized Tanita HD351 digital scales and a portable stadiometer. We calculated body mass index (BMI) as weight (kg)/[height (m)]<sup>2</sup> and computed z-scores for BMI (BMIZ). The z-score, or standard deviation score, adjusts for sex and age to characterize the degree of overweight. We classified children as at risk of becoming overweight if their BMI for age and sex was between the 85th and 95th percentile and as overweight if their BMI was at or above the 95th percentile, using the 2000 Centers for Disease Control and Prevention (CDC) growth charts (Kuczmarski et al. 2000).

## Results

### Participant Characteristics

Table 1 shows the characteristics of the 312 Asian American, non-Hispanic black, Hispanic (black and white), and non-Hispanic white children whose parents completed the survey. Approximately half the children were female. Children ranged from 2 to 12 years of age, 58% were younger than 7, and there was no significant difference in age distri-

**Table 1. Summary of Sample Characteristics**

	N	Percent-age
Total sample	312	100%
Female	162	52
Younger than age 7	181	58
<b>Race/Ethnicity</b>		
Asian	52	17
African American	25	9
Hispanic (black and white)	100	33
Non-Hispanic white	114	37
Mixed race	12	4
<b>Household Income</b>		
Less than \$30,000 per year	190	69.6
\$30,000 to \$54,999	48	17.6
\$55,000 to \$75,000 or more per year	35	12.8
<b>Parents' Education</b>		
12th grade or less, no diploma	81	26
High school graduate or GED equivalent	130	41.7
College degree (associate level or higher)	87	27.9
Urban residence	200	64
Overweight	72	23
At risk of overweight	44	14

<sup>6</sup>Our questionnaire included an assessment of advertising ("I see advertising for fast-food restaurants"), which, combined with our price-promotion variable (i.e., a summed score of the two variables), gives us the same results (i.e., the mediation effect). Specifically, reported exposure to fast-food marketing is directly associated with the child's consumption of fast food ( $\chi^2 = 4.73$ ,  $p = .03$ ) after we control for the child's age, race, and weight status, and for the parent's education and income. Furthermore, fast-food marketing is associated with social norms ( $t = 4.05$ ,  $p < .0001$ ). Finally, in support of a mediation model, when we added social norms regarding fast food to the model predicting fast-food consumption ( $\chi^2 = 8.2$ ,  $p = .004$ ), the marketing variable was no longer significant ( $\chi^2 = 1.51$ ,  $p = .22$ ). However, despite a significant correlation of .253, the alpha of the two variables is only .40, which is why we did not use the combined variable in the analysis.

bution by ethnicity (not shown). Approximately two-thirds of the children were non-Hispanic whites or Hispanic, and Asian Americans (primarily Chinese American) constituted the next largest group (17%). The small number of African American participants ( $n = 25$ ) likely reflects the population of the specific centers sampled. Parents' education ranged from having completed second grade to having completed a professional school degree, and most (68%) had completed a high school degree (41.7%) or less (26%). Household income ranged from \$10,000 to more than \$75,000 per year, and most parents (70%) were in the category of less than \$30,000 per year. Income and education differed across ethnicity: Asians had significantly lower levels of education than all other participants, and whites had the highest. Furthermore, Hispanics had the lowest income level, and whites had the highest (not shown). As we expected on the basis of prevalence data from the overall CHC sample (Stettler et al. 2005), a high proportion of the children were overweight (23%) or at risk of becoming overweight (14%), which is higher than would be expected for children in this age range in the U.S. population as a whole (Ogden et al. 2006). In terms of overweight status across the various ethnic groups, 33% of the Hispanic children, 25% of the children identified as mixed, 18.5% of the African American children, 18.4% of the white children, and 15.4% of the Asian children were overweight. The only

statistically significant difference existed between Hispanic and Asian children, for which the odds of a Hispanic child being overweight were more than double those of an Asian child (OR = 2.41 [1.09, 5.36]).

### Summary of Key Measures

Tables 2 and 3 show responses for parents' reported exposure to fast-food promotions, access to fast-food restaurants, and attitudes and social norms, and Table 4 shows the frequency of children's fast-food consumption. We present data for the total sample and by race/ethnicity. For the total sample, mean scores for promotion, attitudes, and norms were at the midpoint of the 1 to 5 response range (Table 2). Access to fast-food restaurants was high: 93% of parents reported that they could walk, drive, or either walk or drive to a fast-food restaurant (Table 3). Most children (93%) consumed fast food at least sometimes, and nearly one-third of children consumed fast food once or more times per week (Table 4). We discuss racial and ethnic differences in relation to  $H_3$  in a subsequent section.

### Tests of Hypotheses

To test the hypothesis that parents' higher reported exposure to fast-food promotions is associated with their chil-

**Table 2. Summary of Racial/Ethnic Differences in Reported Marketing Exposure and Fast-Food Beliefs**

Race/Ethnicity	Parents' Marketing Exposure, Attitudes, and Norms Related to Fast Food		
	Promotion	Attitudes	Norms
	M (SE)	M (SE)	M (SE)
African Americans	3.64 (.37)	2.90 (.21)	2.73 (.27)
Asians	2.13 (.24)	2.69 (.14)	2.17 (.16)
Non-Hispanic whites	2.62 (.17)	2.81 (.09)	3.11 (.11)
Mixed race	3.93 (.49)	2.81 (.27)	3.17 (.33)
Hispanic (black and white)	3.98 (.17)	3.15 (.10)	3.28 (.12)
Total sample	3.07 (.10)	2.91 (.05)	2.94 (.07)

Notes: We adjusted values for income, education, child age, and BMI z-score. Total sample means are unadjusted for income, education, and child BMI. Responses were on five-point ordinal scales, where higher numbers mean greater marketing exposure (promotion) or more positive beliefs (attitudes and norms).

**Table 3. Percentage Distribution of Parents' Access to Fast Food by Race/Ethnicity**

Proximity to Fast-Food Restaurants (n = 301)	Race/Ethnicity					Totals
	African American (n = 25)	Asian (n = 52)	Non-Hispanic White (n = 114)	Mixed Race (n = 12)	Hispanic (n = 98)	
Cannot easily walk or drive	4	4	12	17	3	7
Can either walk or drive	33	24	78	58	46	55
Can easily both walk and drive	63	73	8	25	51	38
Totals	100	100	100	100	100	100

Notes: Some variables had missing data for this analysis; therefore, numbers do not add to the total sample size of 312. The majority (74) of the 114 non-Hispanic whites in our sample came from CHCs in more rural areas, which likely influenced the results with respect to access. To factor this confounding variable out of the model, we controlled for urban/rural locality in all analyses related to access.



**Table 4.** Percentage Distribution of Children's Fast-Food Consumption Frequency by Race/Ethnicity

Frequency of Children's Fast-Food Consumption (n = 301)	Race/Ethnicity					Totals
	African American (n = 25)	Asian (n = 52)	Non-Hispanic White (n = 114)	Mixed Race (n = 12)	Hispanic (n = 98)	
Never	16	2	9	0	7	7
Sometimes (less than once per week)	40	69	70	83	50	62
Frequently (one or more times per week)	44	29	21	17	43	31
Totals	100	100	100	100	100	100

Notes: Some variables had missing data for this analysis; therefore, numbers do not add to the total sample size of 312.

dren's more frequent fast-food consumption ( $H_1$ ; see Figure 1), we performed multiple regression analysis for ordinal outcomes with the three-category measure of children's fast-food consumption as the dependent variable. Parents' reported exposure to fast-food promotion was directly associated with children's consumption of fast food ( $\chi^2 = 5.23$ ,  $p = .02$ ), after we controlled for the child's age, race, and weight status and for the parent's education and income. When we used the same covariates but controlled for urbanicity, parents' perceived access to fast-food restaurants was not associated with the child's consumption of fast food ( $\chi^2 = 1.12$ ,  $p = .29$ ); therefore, we did not consider access in tests of  $H_2$ .

We next determined whether social norms mediate the association between fast-food promotion and children's fast-food consumption ( $H_{2a}$ ). To establish the first path of  $H_{2a}$ , we performed a multiple linear regression to test whether parents' reports of higher exposure to fast-food promotion are associated with more positive social norms surrounding fast food, after we controlled for the child's age, weight status, and race/ethnicity and for the parent's education and income. The analysis supported the relationship ( $t = 2.68$ ,  $p = .008$ ). To demonstrate whether a parent's perceptions of social norms regarding fast food mediate or account for the relationship between reports of fast-food promotion and fast-food consumption, we performed a second ordinal regression analysis. The model included the independent variable—fast-food promotions, the putative mediator—social norms, and the covariates included in the original model. Parents' perceived social norms regarding fast food were directly associated with consumption ( $\chi^2 = 8.74$ ,  $p = .003$ ). However, in this model, parents' perceived exposure to marketing promotions was no longer related to frequency of fast-food consumption ( $\chi^2 = 2.40$ ,  $p = .12$ ), which suggests a mediation effect (Baron and Kenny 1986). Specifically, the results suggest that fast-food promotions affect the frequency of children's fast-food consumption through influences on parents' perceptions about social norms, which provides support for  $H_{2a}$ .

We tested the first path of  $H_{2b}$  by modeling parents' attitudes toward fast food as a function of reported exposure to fast-food promotions, after we controlled for the covariates discussed in the previous models. We found no association ( $t = -.87$ ,  $p = .39$ ), though attitudes did have a direct effect on consumption ( $\chi^2 = 10.01$ ,  $p = .002$ ). Thus, parents' atti-

tudes do not appear to be an intervening variable that explains the relationship between parents' reports of fast-food promotions and their children's fast-food consumption. Thus, there is no support for  $H_{2b}$ .

To evaluate  $H_3$ , we performed ordinal multiple regression for the categorical outcome variables (parents' fast-food access and child's fast-food consumption) and an analysis of covariance for the continuous outcome variables (parents' reported exposure to fast-food promotion, attitudes toward fast food, and perceived social norms related to fast food). In all cases, we controlled for the parent's income and education, for the child's weight and age, and, in the case of access, for urban versus rural environment. Furthermore, we identified hypothesized group differences by comparing predicted population marginal means using the least-squares means statement.

As  $H_3$  predicts, we observed significant ethnic differences for both reported fast-food promotion exposure ( $F = 13.95$ ,  $p < .001$ ; Table 2) and perceived access ( $\chi^2 = 16.86$ ,  $p = .002$ ; Table 3). Hispanics and African Americans reported greater exposure to fast-food promotions than whites ( $p < .001$ , and  $p = .023$ , respectively). Hispanics and African Americans also reported that fast-food restaurants were more conveniently located to them than whites ( $p < .001$ , and  $p = .016$ , respectively).

In partial support of  $H_4$ , we observed marginally significant ethnic differences for parents' reported attitudes ( $F = 2.32$ ,  $p = .06$ ). Hispanics reported significantly more favorable attitudes toward fast food than whites ( $p = .038$ ), but there were no evident differences between African Americans and whites. Furthermore, although we observed significant ethnic differences for norms ( $F = 8.75$ ,  $p < .0001$ ; Table 2), our hypothesized comparisons ( $H_4$ ) between both Hispanics and African Americans and whites were not significant. Rather, post hoc analyses revealed that Asians report fast food as significantly less normative than all other groups ( $ps < .01$ ) except for African Americans, for whom the difference was only marginally significant ( $p = .07$ ).

As  $H_5$  predicts, we observed significant differences by ethnicity for child's consumption ( $\chi^2 = 11.92$ ,  $p = .02$ ; Table 4), and parents of Hispanic children reported more frequent fast-food consumption by their children than parents of white children ( $p = .007$ ; Table 4). However, we observed no differences between African Americans and whites. The results suggest that ethnic differences exist but

that the patterns are complex. Additional research is needed to fully understand the nature and scope of the differences.

## General Discussion

In the ethnically diverse sample of parents of 2- to 12-year-old children in medically underserved communities, greater exposure to fast-food promotion is associated both with beliefs that eating fast food is normative to participants' friends, family, and community members and with children's more frequent fast-food consumption. Furthermore, parents' perceptions of more favorable social norms toward fast food mediate the association between exposure to fast-food promotion and children's more frequent consumption of fast food. To our knowledge, this is the first study that has empirically examined how parents' exposure to fast-food marketing may influence children's consumption of fast food and the mediating role of relevant attitudes and social norms. The associations do not provide evidence for causal relationships. Nonetheless, the results show the pathways by which marketing may adversely influence children's weight through its effects on parents. The apparent mediating role of social norms that we observed suggests an approach for decreasing fast-food consumption. Interventions that aim to correct misperceived social norms have increased in recent years, funded by federal and state agencies, nonprofit organizations, and industry (Berkowitz 2004). Such an approach aims to correct misperceptions of group norms to reduce unhealthful behaviors or to increase healthful ones (Berkowitz 2004). Such social marketing techniques have been used to promote healthful alcohol use on college campuses (for a review, see Berkowitz 2004). The approach, not without precedent, is a potentially useful framework for the design of social marketing interventions. For example, attempts to restructure social norms surrounding the consumption of specific foods were used successfully during World War II (Wansink 2002). An important next step is to better understand the normative beliefs of specific intervention targets in the fast-food context and to determine whether they are indeed misperceptions. Even if the beliefs are not misperceptions, social marketing may still positively influence them.

The results also identified differences among ethnic groups in parents' perceptions of exposure to fast-food promotions, access, attitudes, norms, and consumption. Although our analysis was exploratory, the results suggest an important area for additional study. If fast-food marketing contributes to perceived social norms about fast-food consumption in a community, and if parents of different ethnic backgrounds report different exposure to fast-food promotions, the differences in the amount and content of targeted food marketing may create, shape, support, or maintain ethnic differences in the healthfulness of attitudes and norms toward fast food. Notwithstanding debates about the appropriateness of target marketing to specific groups (Petty et al. 2003; Ringold 1995; Smith and Cooper-Martin 1997), the results imply that additional research is necessary on the potential contribution of target marketing to observed differences in parents' behavior with respect to feeding their children. Research that examines the food-marketing environments of specific groups or that compares

the marketing environment of multiple groups may provide particular insights. This is especially important because limited access to more affordable and healthier foods may challenge the development of healthful eating habits in ethnic minority communities (Kumanyika and Grier 2006).

The two hypotheses that were not supported also merit discussion. First, parents' perceived exposure to marketing promotion is not related to their attitudes toward fast food. The lack of an association between marketing and attitudes is noteworthy, because marketing promotion frequently aims to influence attitudes through persuasion. Given the multidimensional nature of attitudes (Wilkie and Pessemier 1973), the null results may be due to a measurement issue. In addition, the relationship between sales promotion and attitudes may not be direct but rather influenced by other factors. This explanation and our results are consistent with the idea that marketing activities are most effective at reinforcing and maintaining existing behavior patterns, not persuasively prompting people to enact specific behaviors (Hoek and Gendall 2006).

Second, we did not find an association between fast-food access and consumption. In some ways, this is contrary to our expectations, because public health researchers have assumed that the close proximity of fast-food restaurants is associated with more frequent fast-food consumption. However, given the relatively high levels of access among participants, the variability in access in our sample is likely insufficient to demonstrate an effect. It is also possible that where access to fast-food restaurants is sufficiently high in general, other factors determine frequency of use (i.e., access is influential, but the influence is constant above an usually exceeded threshold). Consistent with this interpretation, proximity to a fast-food restaurant is not associated with overweight levels of low-income preschool children (Burdette and Whitaker 2004), and the presence of more fast-food restaurants in a certain zip code is not a significant predictor of weight gain among kindergarten children older than four years (Sturm and Datar 2005).

## Study Limitations and Implications for Further Research

Our exploratory empirical study has several limitations that further research can address. We discuss the limitations of the study in some detail to provide guidance to future researchers on how to resolve some of the methodological challenges evident herein.

### Questions of Causality

The cross-sectional survey method we used challenges our ability to establish the direction of causality in the relationships studied. Thus, it is possible that the direction of the mediated relationship of marketing promotions, perceived social norms, and children's fast-food consumption works in the reverse. That is, the parents of children (and families) who eat a lot of fast food may pay more attention to promotions or have different perceptions of social norms. The issue of reverse causality in cross-sectional data is an important limitation that subsequent studies should address. For example, further research might employ longitudinal

designs with multiple repeated measures of parents' perceptions and children's fast-food consumption. Experimental studies that manipulate promotional activity and measure behavioral response may also help establish causal direction.

### **Sampling Procedures**

Given the self-selection of the CHCs and the selection of the respondents within the CHCs, the study sample does not represent the U.S. population either overall or within ethnic groups. For example, Asian American participants were mainly recruited in one CHC in New York, where exposure to fast-food promotion, access, attitudes, and beliefs may be different from those of non-Chinese Asian Americans or Asian Americans from other parts of the country. However, because CHC clients are at high risk for obesity and are accessible through such settings, our findings are relevant for any interventions to such an important population. The extent to which selection bias exists on characteristics that are directly relevant to the hypotheses under study is unknown, though the recruitment challenges suggest that this is possible. Selection bias is likely more of a concern with respect to the generalizability of the estimates of prevalence of children's fast-food consumption (e.g., if more-health-conscious parents were selected to participate) than for the associations we report based on analyses in the sample. In any case, further research should examine a wider array of populations to inform particular marketing and public policy questions related to marketing and children's food consumption. For example, researchers might use data sets such as the U.S. Department of Agriculture's (1998) Continuing Survey of Food Intakes by Individuals and the Supplemental Children's Survey to examine nationally representative samples. In contrast, scholars can focus on specific populations defined by geographic location, race/ethnicity, sex, or other characteristics of interest to policy makers and marketers concerned with the influence of marketing on children's food consumption.

### **Use of Self-Reports**

Another type of limitation emerges from the use of parents' self-reports. The results may be subject to parents' recall bias, whereby the extent to which parents "see" fast-food promotions and easy access may not accurately reflect their objective exposure. Nonetheless, marketing and public health research commonly use self-reports as both predictor and outcome variables (Stone and Shiffman 2002). However, the incorporation of objective data could strengthen self-report measures of fast-food marketing exposure. For example, recent studies in population health have used analyses based on geographic information systems to ascertain the specific promotions, types of food, and food outlets available to local residents (Burdette and Whitaker 2004; Lewis et al. 2005; Sloane et al. 2003). Researchers might endeavor to characterize the actual marketing environment of specific groups at various levels of analysis. In particular, understanding local targeting efforts appears warranted. Self-reported data can also produce a reporting bias in that parents may be prone to give more socially desirable responses to fast-food-related questions. However, the

effect of socially desirable responses likely lends a conservative bias to our findings (i.e., makes the detection of differences less likely if parents with overweight children are less likely to admit that they buy fast food for their children). The significant associations we found among perceived exposure to fast-food promotions, social norms, and children's fast-food consumption argue against a bias of social desirability as a major factor that influences the interpretation of our results.

Use of parents' reports about their children's food consumption is also a limitation. There may be cases when the children's own reports are more accurate. In this case, the frequency questions may not have been developmentally appropriate for children in the age range we studied. Young children have less-developed networks for storing their knowledge than older children and adults, which makes them less efficient at extracting information from memory (John 1999; Peracchio 1990). Even older children may not understand questions with phrases such as, "How often in the past?" Therefore, use of children's self-reports would also have had limitations. In the current study, the parents completed the questionnaire in the presence of their children, which allows for some corroboration of the parent's report regarding the child's fast-food consumption, especially for older children. Nonetheless, we believe that it is important to attempt multiple ways of eliciting this information and to use alternative research methods in further studies to reduce any method bias associated with self-report data. For example, in addition to surveying the child, further research might survey multiple adults (e.g., two parents, one parent and a grandparent) who have knowledge of the child's eating behavior. The issue of children's self-reports also emphasizes the importance of age considerations when designing studies to examine issues relevant to obesity. In general, data are not generalizable across younger (e.g., 2- to 4-year-olds) and older (e.g., 9- to 11-year-olds) age groups. In our sample, we include the child's age as a covariate in all analyses. In further studies, researchers should consider age as a potential effect modifier or interaction variable.

### **Measurement Issues**

Finally, the use of single-item indicators for fast-food promotion and children's fast-food consumption limits our results. Multiple-item measures for these variables are preferable. The strength of the observed relationships based on the parents' perceptions of their promotional exposure measures suggests that the items account for a significant proportion of the variance explained in the outcome. In addition, our results are consistent when we use a combined advertising and promotion variable, which provides additional support. Relatedly, the wording of questions in this domain varies considerably across studies. Further research might develop and validate scales of both perceived and actual marketing exposure and of children's fast-food consumption. The use of a multiple-choice format or of specific products, occasions, or timing in the question itself (e.g., "When was the last time ...") is another possible approach. The use of dietary intake data captured by food diaries or dietary recall methodologies may also enhance the predictive accuracy of consumption data.

## Moving Research Forward

That children and adults are experiencing epidemics of obesity during the same time frame shows how much remains to be learned about the mechanisms of intergenerational obesity influences (Institute of Medicine 2006a). An area of research relevant to issues at the intersection of marketing and obesity is the food- and nutrition-related attitudes and behaviors of parents and their role in shaping their children's food- and nutrition-related perceptions and behaviors. In addition, the incorporation of other marketplace and child-related factors that affect intergenerational influences (e.g., peers, competition; Moore, Wilkie, and Lutz 2002) would provide a more complete picture of how marketing influences parents' behavior with respect to feeding their children.

The requiring of fast-food restaurants to provide nutritional information at the point of purchase is a widely discussed industry approach that may have a positive effect through parents. Most consumers are unaware of the high levels of calories, fat, and sodium in restaurant foods; thus, labeling may help reduce consumption of less healthful foods (Burton et al. 2006). Such information policies may increase consumers' knowledge and influence their attitudes. However, it is unclear what role such efforts may play in influencing social norms, which our research suggests is an important factor. Examination of the relationship between the provision of nutritional information in restaurants and perceived social norms may be a fruitful area for research. Furthermore, public health campaigns focused on changing individual behavior have not been as successful as anticipated (Raeburn et al. 2002). It may be that commercial marketing efforts inhibit or counteract social marketing and other initiatives designed to influence what parents feed their children. Policy makers and researchers should consider how diverse marketing contexts (i.e., interactions of consumer factors and marketing activities) support or reinforce particular consumption patterns. Intervention attempts must be considered from the pragmatic reality that targets and environments create (Rothschild 1999).

Our framework provides a conceptual structure in which to study the relationship of marketing influences on parents to what their children consume. In applying this framework to marketing promotions, we begin to understand how parents' perceptions of their exposure to marketing may be related to their children's fast-food consumption. However, we examine only a subset of the variables included in our conceptual model. The limitations of our study emphasize that it may be beneficial to replicate the present findings and to examine pieces of the framework that we did not test. Studies that apply this framework to other marketing promotion activities (e.g., coupons, samples), products, distribution and pricing strategies, relevant attitudes and normative beliefs, and combinations of these variables across populations and consumption contexts will illuminate intervention strategies.

Overall, the results of this study show that fast-food marketing influences parents' behavior with respect to feeding their children. Thus, for a more comprehensive understanding of approaches to reduce childhood obesity and related cardiovascular risk factors, research that assesses the influ-

ence of marketing on children's eating behaviors and policy debates about food marketing to children should consider parents' marketing exposure. Additional insight into marketing as an influence on parents' behavior with respect to feeding their children will assist researchers, policy makers, and marketers in developing interventions to ensure that food marketing plays a positive role in children's health.

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