

Chapter 13

The Role of Schools in Food and Beverage Marketing: Significance, Challenges, Next Steps

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Introduction

The potential detrimental effects of food and beverage advertising through television and print have been documented (e.g., Institute of Medicine [IOM], 2006; Holt, Ippolito, Desrochers, & Kelley, 2007; see also Chap. 8), however less research has examined this type of advertising in schools. It is necessary to further the literature in this area, because children spend a great deal of time in schools (Frumkin, 2006) and begin to form life-long habits during these age periods (Birch, 1999). In order to further our understanding of the influence of in-school food and beverage marketing and promotion, the current chapter aims to do the following (1) present a brief review of the current literature on in-school food and beverage promotion; (2) describe the development of a tool to assess in-school food and beverage promotion (as defined as advertising and product promotion); (3) present data from a pilot study that used the new in-school observation tool; and (4) highlight challenges and future goals in this area of research.

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The School Environment and Child Health

Children in the USA spend more time at school than in any other environment outside of the home (Frumkin, 2006). Over 48 million students attend 94,000 elementary, middle, and high schools daily (Wirt et al., 2005). Most youth eat at least one meal or snack at school a day, and some estimates show that children may consume approximately 26–47% of daily energy at school (Briefel, Crepinsek, Cabili, Wilson, & Gleason, 2009). Healthy eating and physical activity lessons are key components in public school curriculum, and school settings provide opportunities for students to make food-related decisions and engage in physical activity. While the obesity epidemic may not singlehandedly be reversed by school-based interventions, it is likely that any major strides in decreasing obesity among children and adolescents will involve changes in the school environment (Evans, Finkelstein, Kamerow, & Renaud, 2005; Waters et al., 2011). Despite the promising role of schools in promoting children's health, there appears to be room for improvement. For instance, a recent review of child-targeted obesity interventions concluded that significant changes in body mass index have resulted (Waters et al.). However, these changes were small and the effectiveness of specific intervention components was not established.

The School Food Environment

The school food and beverage environment is one area that may need to be addressed in order to make strides in reducing childhood obesity. The school food environment is composed of food availability, accessibility, and advertising. Foods available in schools are provided primarily through national school breakfast and lunch programs and through competitive outlets, or those that offer food outside of the standardized school menu. Foods offered through the National School Lunch Program (NSLP) and the School Breakfast Program (SBP) must meet federally regulated standards for energy, macronutrients, and key vitamins and minerals (IOM, 2007). The school lunch menu and associated marketing techniques (e.g., signs promoting certain menu items) constitute the promotion of this program and the foods it provides.

Competitive foods are those foods that are available in schools that compete with the federal meal programs. These foods and beverages may be sold in vending machines, a la carte lines by the cafeteria during meal periods, snacks bars, classrooms, school stores, and canteens, through fundraisers, or at sporting events and concession stands. Competitive foods are typically low in nutrient density and contain high levels of fat, sugar, and calories (Gordon, Crepinsek, Nogales, & Condon, 2007). At the federal level, competitive foods are not regulated, with the exception of foods of minimal nutritional value (FMNV). FMNVs include chewing gum, soft drinks, certain candies, and water ices (Gordon et al.). Under federal guidelines, if a school participates in the federal meal program, FMNVs cannot be sold in the

cafeteria during meal periods. However, although individual states may have additional rules concerning competitive foods, accessibility of FMNVs is still an issue in the school food environment, as students may purchase these items sold outside of the cafeteria during, before, and after meal times.

It is possible that children see the school as an endorser of these types of foods simply because of their presence in the school environment, regardless of explicit support by the school or school staff. Research suggests that restrictions on unhealthy competitive foods in schools may help decrease middle- and high school students' daily intake of these products at school (e.g., Cullen & Zakeri, 2004; Cullen, Watson, Zakeri, & Ralston, 2006; Hartstein et al., 2008; Neumark-Sztainer, French, Hannan, Story, & Fulkerson, 2005). Additionally, qualitative data show that elementary children view a high number of unhealthy foods available in school stores as a barrier to healthy eating at school (Hesketh, Waters, Green, Salmon, & Williams, 2005), and parents and teachers feel that schools should prioritize students' nutritional health, but feel that schools do not adequately address student nutrition (Kubik, Lytle, & Story, 2005).

In addition to food availability and accessibility, food and beverage advertising is common in the school environment. In 2006, The Federal Trade Commission (FTC) found that approximately \$870 million was spent on promoting food to children in marketing channels other than traditional television advertisements, with \$186 million of that allocated to advertising in schools (FTC, 2008). Examples of food advertising in the school environment include posters and other signage, advertising in school newspapers, and corporate-sponsored classroom activities, lessons, and book covers (IOM, 2005). Newscasts and other broadcasting (i.e., Channel One) and beverage contracts are also forms of school-based food and beverage advertising. Although it is common for this type of commercialism to exist in school, it is likely shaping students' views on food and beverage products and is not necessarily what school stakeholders advocate. For instance, parents and teachers feel that the advertisements displayed in schools influence students to purchase the advertised product (Kubik et al., 2005), and teachers believe that food and beverage advertisements should be prohibited in schools (Kubik et al., 2005).

The Significance of the School Food Environment

It is not surprising that food and beverage companies find schools an ideal environment to promote their products. Children are required to attend and spend about 7–8 h in school daily, and they constitute a captive audience who is less likely to play an active role in types of product promotions they are exposed to. Specifically, while children may have input on the types of items that are purchased for the home and the opportunity to change channels when television advertisements appear, they have less input in what is promoted in the school environment. As such, it is hard to ignore the pervasiveness of commercial products in competitive food outlets in schools, including the presence of product logos and brand promotion. As students

are repeatedly exposed to these products and images in school, they may choose these items both in- and outside of the school environment. There is evidence to show that repeated exposure to unhealthy advertising may influence children's requests for, attitudes toward, and selection of similar foods (e.g., Goldberg, Gorn, & Gibson, 1978, Gorn & Goldberg, 1982, Borzekowski & Robinson, 2001, Dixon, Scully, Wakefield, White, & Crawford, 2007). While most advertising exposure research has predominantly focused on television, it is plausible that a similar relationship exists between in-school food and beverage promotion exposure and related choices and preferences. Additionally, in-school product promotion may be all the more persuasive, since previous qualitative research shows that children may view things promoted in the school environment as inherently healthy (Hesketh et al., 2005). Specifically, children may view unhealthy items available in schools as relatively healthy because of the environment in which they are promoted, despite contradictions with school-based nutrition education (Hesketh et al.) and may associate certain products with the power and prestige of school officials, teachers, or coaches (Palmer et al., 2004).

Schools may also provide a beneficial environment for commercial companies to market products. Marketers gain access to a large, captive group of young consumers whose attendance is required. In turn, food and beverage promotion often fills a funding gap for schools, because they receive incentives from companies for selling and promoting certain products (IOM, 2006), which may replace some of the funding cuts many schools have experienced. Contracts between companies and schools typically involve the sale and promotion of energy dense/low nutrient foods, such as sodas. Schools of lower socioeconomic level may be more dependent on incentives provided by commercial food companies, which is especially disconcerting because of the disproportionate effects of obesity among this population (Palmer et al., 2004).

The School Food Environment: Current State of the Literature

While the potential negative effects of television advertisements on youth food and beverage choices and weight-related outcomes are well documented (e.g., Halford, Gillespie, Brown, Pontin, & Dovey, 2004; IOM, 2006; Halford, Boyland, Hughes, Oliveira, & Dovey, 2007; Chou, Rashad, & Grossman, 2008; Risvas, Panagiotakos, & Zampelas, 2008), a paucity of research exists on in-school marketing specifically, and its association with food preferences, choices, and obesity-related outcomes. Research that has been conducted in this area, however, points to the likelihood that children's exposure to food and beverage marketing in the school environment influences them to choose products similar to those promoted and available in the same environment. For example, the availability of snacks and drinks sold in schools has been associated with higher student intake of total calories, fat, saturated fat, and soft drinks, and with lower intake of milk, fruits and vegetables, and vital nutrients (Cullen, Eagan, Baranowski, Owens, &

de Moor, 2000; Kubik, Lytle, Hanna, Perry, & Story, 2003; Cullen & Zakeri, 2004; Cullen & Thompson, 2005).

Much of the research on the school environment has focused primarily on the existence of competitive foods (i.e., vending machines, a la carte lines), and has found that students who have access to a la carte lines in school may have a lower intake of fruits and vegetables (Kubik et al., 2003; Cullen & Zakeri, 2004), and a higher intake of sweetened beverages (Cullen & Zakeri, 2004). Additionally, the availability of vending machines has been positively associated with student BMI z-scores (Fox, Hedley-Dodd, Wilson, & Gleason, 2009).

Little has been done to examine food and beverage promotion in schools, either through traditional advertising channels, such as posters displaying commercial brands, or through products as a form of promotion. One study documented the existence, locations, and prevalence of soft drink advertisements in over 200 Pennsylvania high schools from food service director reports (Probart, McDonnell, Bailey-Davis, & Weirich, 2006). Specifically, participants indicated the existence of a pouring-rights contract, average daily lunch participation, incentives from soft drink companies, Channel One subscriptions, time of the first lunch period, locations of soft drink advertisements, and the extent of access to vending machines. About 63% of schools had soft drink machines owned by a commercial company that provides funding to the school based on revenue percentage, and 48.5% of schools had an exclusive pouring-rights contract with a soft drink bottler. Sixty-two percent of respondents reported soft drink advertisements were present on vending machines. Twenty-seven percent of schools reported soft drink advertisements on school grounds (i.e., on the exterior of the school, but not on the building itself, such as playing fields), 10.6% were in cafeterias, and 9.3% were in other areas of the school building. The majority of respondents (66.5%) indicated that soft drink advertisements existed in at least one location in the school. Analyses showed that average number of daily National School Lunch Program participants was significantly and inversely associated with the number of advertisement locations, indicating that the higher the number of advertisement locations, the lower the level of average daily participation. Given the positive associations of exposure to advertising and food preferences among youth, such that youth tend to prefer advertised products over other items (IOM, 2006), these findings are cause for concern.

Mazur et al. (2008) explored the impact of food advertising in schools on food purchases in a sample of about 15,000 primary and secondary students in forty-four schools in Poland. Data were collected from food shop workers on student food purchases in the shop for the preceding week. The types of foods displayed in the shop were documented and categorized by researchers as “healthy” (those recommended by the US Department of Agriculture’s My Pyramid) or “unhealthy.” These food types were then placed into categories based on if they were advertised and/or purchased in the school. Additionally, any direct corporate advertising present in the school was documented. Alarming, results showed that more than half of the schools did not offer any type of “healthy” food in the school food shop and, even in the shops that did

offer “healthy” foods, sales of these types of foods were low. Significant correlations between advertisement of a specific food and purchasing of the specific product were found, which showed that increased advertising of specific foods was associated with an increased purchase rate of those foods. There was no significant difference in purchasing behavior and location of advertisements (near the food shop versus elsewhere on campus) and no commercial advertisements for “healthy” foods were found in any school. These results suggest that any advertising for and availability of “unhealthy” foods in schools likely contributes to student purchases of these foods.

Recently, cross-sectional data on school food environment characteristics and student dietary behavior from 287 schools in seven different US geographical regions were examined (Briefel et al., 2009). School environment was measured through surveys of principals and food service employees, lunch menus, and on-site observations. Child dietary behavior was measured by consumption of the following: low-nutrient/energy-dense foods, sugar-sweetened beverages, and fruits and vegetables. Results for over 2,300 students in grades one through 12 showed that attending a school without snack bars significantly reduced kilocalorie intake from sugar-sweetened beverages in middle- and high school students by 22 and 28 kcal/day, respectively. Significantly less energy came from sugar-sweetened beverages among students who attended middle schools with no pouring rights contract, a la carte lines with no low-nutrient energy-dense items, and no a la carte lines. A significant and positive relationship was found between the absence of low-nutrient, energy-dense foods in a la carte lines and vegetable intake (excluding French fries) among middle-school students. Overall, study results indicate that students who are not exposed to low-nutrient energy-dense foods in school may be less likely to consume similar types of food and may be more likely to consume healthier options.

Minaker, Storey, Raine, et al. (2011) conducted a study that examined associations between the school food environment, specifically vending machine availability and the presence of food/beverage logos, and students’ BMI and food behaviors among Canadian students in grades 7–10. Students were also asked if snack and beverage vending machines and logos were present in their school, with response options of “yes,” “no,” or “don’t know.” The majority of students reported the presence of snack and/or beverage vending machines, about 40% reported snack logo presence, and 57% reported beverage logo presence in their schools. Even after adjusting for possible confounding variables (consumption of items from vending machines, overall soda or sugar consumption, presence of snack vending machines, and snack or beverage logo presence), students who reported the presence of beverage vending machines had a 27% greater chance of being overweight or obese, compared with students who reported no beverage vending machines. Additionally, students who indicated the presence of snack and/or beverage logos in school were significantly more likely to consume snacks from a vending machine than students who reported no logos, and the presence of snack logos was significantly associated with a higher likelihood of candy and salty snack consumption. The authors posited that the mere presence of vending machines in the school environment implies that it is acceptable for students to consume items traditionally sold in vending machines,

even if they are not purchasing these items in school. Additionally, they suggested that the finding that snack and beverage logo presence, but not the presence of vending machines, was associated with soda, salty snack, and candy consumption may reflect the effects of brand marketing in that logos oftentimes exist in areas of the school other than vending machines (e.g., logos on clocks or scoreboards, branded items that are available in a la carte lines).

Summary

The literature reviewed here supports the hypothesis that food and beverage promotion in schools may encourage consumption of unhealthy foods while deterring the intake of healthy options. However, due to the lack of empirical evidence to show the effects of in-school food promotion, broadly defined to include both advertisements placed in the school as well as commercial foods that are promoted in the school, research is needed in this environment. Few studies have incorporated direct observations of the school food environment, and most have been dependent on information provided by school administration or cafeteria staff. Additionally, most of this research has not examined all forms of advertisements and signage, including product logos and products in the schools as a form of promotion.

Given these limitations of the current body of research described above, the development of practical and effective assessment methods are needed in order to study the prevalence and effects of in-school food and beverage promotion. Ideally, assessment methods should be discreet, allow for efficient data collection in order to minimize disruption in schools, and increase the precision of measurement. The following section describes the development of an observational method for assessing the food-promoting environment in schools based on the experience of researchers working with school-based health promotion efforts in elementary and middle school students in central Texas. The description includes the history, iterations, challenges, and future directions of developing a food and beverage promotion assessment method.

Measuring the In-School Food Promotion Environment: Experiences from CATCH

The Need for an Assessment Tool

Given the importance of the in-school promotion environment and the limited research in the area, it was decided in the spring of 2007, while developing a process evaluation framework for the Travis County CATCH (Coordinated Approach to School Health) elementary school dissemination research study in central Texas, that there was a need for a method to document food and beverage signage within

schools. CATCH is an evidenced based coordinated school health program aimed at increasing healthy eating, and physical activity and reducing the prevalence of obesity (Luepker, Perry, McKinlay, et al., 1996; Nader, Stone, Lytle, et al., 1999, Coleman et al., 2005; Hoelscher et al., 2010). As part of implementing the CATCH Program, schools were provided CATCH promotional materials, including a banner and various posters to hang in the school. Additionally, schools were encouraged to create a CATCH bulletin board and to use nutrition and physical activity (PA) promotion signage provided by other organizations. The signage checklist was created as a process measure to record if schools were implementing this portion of the program, and to assess the relationship between health promotion signage and study outcomes, such as the prevalence of obesity and overweight, student fruit and vegetable consumption, and student physical activity levels.

The elementary schools where the CATCH dissemination study was conducted had very little food and beverage promotion signage, as the school districts and State of Texas have policies in place to limit unhealthy food sales, which in turn had the effect to limit signs promoting these foods. As we entered into a subsequent study with middle schools known as the Central Texas CATCH Middle School Project (Springer et al., in press), we discovered the policies on food sales were more lenient for middle schools. Due to the volume of food promotion signs and the impact these professionally created signs are designed to have, we realized the checklist would have to be modified to capture the extent of food marketing and promotion within the schools.

Instrument Development

Many versions of the checklist have been created, with many similarities, in order to find the optimal version. The main objective that guided checklist development was a need to find a balance between recording all the data of interest with the amount of time and staff it would take to gather. For the original checklist, we decided to only look for signage in the school's gym, cafeteria, and main hallways as this was where the majority of students gathered, had access to, or passed through regularly. There were several reasons for the decision to limit locations in the school to document. First, recording signage in all hallways would be time consuming, and the research study was not budgeted for this. Second, it was assumed that signage placed in grade-level hallways would not be observed by all students at the school; therefore, we could not assess the reach of those signs. Finally, with the exception of the gym, we did not want to go into individual classrooms because we (1) did not want to interrupt classes and (2) we could only enter classes when they were not being used. These procedures for locations to document remained consistent under all versions of the checklist.

With these criteria in mind, our CATCH team created the "School Health Promotion Signage Observation Checklist," which comprised a data collection tool and data collection protocol. The data collection tool included specific categories

for signage as well as the locations in which the signage is observed (i.e., main hallway, gym, or cafeteria). Signage categories included nutrition, physical activity, other public health (e.g., smoking, hand washing), and Whoa Foods. Whoa Foods stem from the Go, Slow Whoa classification system in CATCH and refer to low nutrient, energy dense foods that students are encouraged to limit their consumption (Perry et al., 1997; see Table 13.2). Additionally, the observer would record if CATCH signs were posted. A response of yes or no was recorded for each area of the school, indicating whether or not the specific signs were present. This version worked well as a process measure for the implementation of the CATCH program, as we could document if signage provided by the program had been posted. However, we wanted to be able to investigate if students at schools with higher amounts of signage had healthier eating habits, participated in more physical activity and had lower rates of obesity than students at schools with less signage. It seemed unlikely that the dichotomous responses would be sensitive enough to correlate with difference in these behaviors.

The next version consisted of a checklist where the original dichotomous (yes/no) scale was expanded to a 4-point scale. Specifically, the scale points were none, low, medium, and high, and for each area of a school the observer would record the amount of signage for each category. When the definitions for the categories were first created they were solely based on the number of signs present. For instance, “low” was recorded if one sign was present, “medium” if there were two to three signs, and “high” was recorded for more than three signs. However, this purely objective scale did not take into account the visibility of the signs. Some schools’ have much larger cafeterias, gyms, and especially main hallways than others. This scale also did not take into account that a small school may not have to have as many signs posted to reach the same level of visibility as a large school. The main hallways posed another problem, in that they can represent a very large area. It was often the case that one corner of a hallway, such as immediately outside the gym, would have more than three physical activity promoting signs, but the rest of the hallway was void of any physical activity signage. According to the objective definitions, this would be recorded as high. However, students would only be exposed to these signs when they went to physical education class. We wanted to set a higher bar for the high category. To address this, subjective definitions were added for low, medium, and high. “None” was defined as “no signs are present.” “Low” was defined as “one sign is present and/or the signs are not very visible. It is very easy to miss or ignore promotional messages.” “Medium” signified that “two to three signs are present and/or signs are moderately visible or dense,” and “high” was classified as “more than three signs are present and/or the sign(s) are highly visible. It is hard to ignore the signs due to their volume or their size”. In general, this checklist could be completed in less than 20 min, which was similar to the time required for the previous version with the dichotomous scale. Additionally, when inter-rater reliabilities were performed the measurement performed well, despite the scale’s slight subjectivity. In general, the ratings assigned for the cafeteria and gym used the numerical definition of the scale. However, when rating the main hallways, the observer would often employ the subjective definition.

With the new version of the checklist, for the middle school study, several descriptors for each sign of interest were included. The first descriptor was the location—gym, cafeteria, or main hallway. The second was the size—small, medium, or large. Third was a place to mark whether the message on the sign was passive or direct. Signs defined as direct contained a message encouraging or directing people to action, or providing them with knowledge concerning the main category (e.g., consuming vegetables prevents heart disease). Additionally, food logos were classified as direct. This was based primarily on previous research with children and food branding, which indicates that children can recognize logos and associate them with products (Arredondo, Castaneda, Elder, Slymen, & Dozier, 2009) and that food branding has the potential to influence children's food preferences (Robinson, Borzekowski, Matheson, & Kraemer, 2007). Signs defined as passive contained messages where the explicit intent was not to provide knowledge or promote an activity that would improve an individual's health. However, the sign may indirectly do this through images, such as pictures of sports equipment, fruit and vegetables, families eating together, or people exercising. The fourth attribute was if the sign was CATCH branded. Fifth, the data collector could indicate if the sign was printed professionally or not. If a sign was printed in color on glossy paper, then it was recorded as being professionally printed. If the printing of the sign was of a lesser quality, or if the sign was hand-made, it was recorded as not professionally printed. The sixth attribute was a list of all the CATCH-provided signs, where the observer would mark if the sign was present or, in the case of a bulletin board, how many signs were present. The last section was a series of boxes where the general content of the sign could be recorded (e.g., nutrition, physical activity, water promotion, food promotion/advertising, etc.). In these boxes, the observer would check off if the content was present and what percentage of the sign was devoted to that specific content. To make data collection more efficient, each row on the data collection tool contained a space to indicate how many of each type of sign was observed as schools often had multiple versions of the same sign.

Pilot Assessment of the In-School MEDIA DOT

As a first step toward assessing the food and beverage and PA promotion environment in middle schools, we conducted a pilot assessment with the newly developed In-School Measuring and Evaluating the Determinants and Influence of Advertising Direct Observation Tool (In-School MEDIA DOT). This tool is based on the most recent version of the CATCH School Health Promotion Signage Observation Checklist described in the previous section of this chapter. The primary purposes of the pilot assessment were to: (1) determine the logistics and feasibility of conducting a similar, larger scale study; (2) develop an electronic version of the data collection tool, based on the previously described iterations,

Table 13.1 Descriptive data for pilot schools ($n=5$)

Mean SES (average % on free/reduced lunch)	41.62
Ethnicity	
African-American	14.7%
Asian/Pacific Islander	4.175%
White	49.2%
Hispanic	31.275%
Mean number of students in each school (SD)	1,041 (200)

to use in a larger study; and (3) obtain preliminary data to gain a better understanding of the prevalence and type of in-school food and beverage promotion and the prevalence of CATCH-specific signage. Five schools in central Texas were chosen for the pilot study (Table 13.1). These schools were chosen by a CATCH team member based on availability and the likelihood that the sample would provide an accurate and diverse picture of all the middle schools that would be used for a larger project.

Pilot Data Collection Methods

Two research team members went to each of the five schools, and the duration of data collection ranged from approximately 20 to 75 min per school. Both team members worked together to methodically move through the school and identify food, beverage, and PA signage in the main hallways, gym, and cafeteria (including the dining room, main, and a la carte lines) at each school. We defined food and beverage promotion as any type of signage that had a picture of foods or beverages, words that advertised a product, or a food/beverage-related behavior. We also documented any commercial products we encountered, defined as those packaged with a visible logo or product name and unpackaged a la carte items (e.g., whole fruit such as apples and bananas). We walked through every major hallway, which varied between the schools. For instance, we did not limit observations to halls in or outside of the gym or cafeteria necessarily. We looked at each school map as a whole to see how the halls were arranged and determined which would logically be the busiest. We documented types of signage if they could be seen without moving objects or opening doors. As signage was identified, the researchers would discuss categorization, description, and other pertinent details. One person took a picture of the sign and the other recorded information with pencil and paper.

Several key lessons were identified with this first pilot data collection. First, it became apparent that, while the data collection was feasible for one person to do, it would be more efficient and streamlined for two data collectors to work together. Because one of the goals of a larger scale project is to collect data with as little interruption in the schools as possible, limiting the amount of time data collectors spend

in the school is of primary importance. Second, the pilot study was conducted with a pencil and paper version of the preliminary tool; however, an electronic measure of data collection would allow for quicker data collection and for taking pictures of the advertisements and products. Therefore, an iPod Touch® will be used for the next study phase in order to enhance efficiency with collecting data. The iPod Touch® is a handheld device, about the size of a cell phone, which has a touch screen and capabilities for photographs and electronic applications. Thus, some of the feasibility issues (e.g., taking time to write descriptions for each sign or product) will be reduced or eliminated. Conducting pilot data collection allowed researchers to gain a better understanding of what may be encountered in the school environment, some potential obstacles, ideas for improvement of an electronic-based tool, and key aspects of a research protocol for a future, larger scale study.

Pilot Study Results

Many of the signs and items were consistent between all of the pilot schools. For instance, all schools had at least one “multi-sign board,” a label we assigned to a freestanding, moveable board that displayed multiple signs. The contents of the multi-sign boards varied between schools, but all of the signs were related to nutrition and/or PA. Often the nutrition signs displayed on the multi-sign board contradicted each other, promoting “healthy” foods on some signs and “unhealthy” foods on others. For instance, one school had a multi-sign board that included a sign promoting green vegetables and one promoting lean protein sources, both of which are healthy choices. On the same multi-sign board, there was a promotion for “epic burgers,” which displayed large pictures of hamburgers with various toppings, but no vegetables, and a promotion for Chick-Fil-A, a popular fast-food chain restaurant that offers a limited menu in most middle school cafeterias in this district.

Many of the signs promoting unhealthy items in the pilot schools were found in the cafeteria, which is noteworthy since this is where most of the students’ food-related decisions are made. Most schools had advertisements, menus, and/or price lists for Otis Spunkmeyer cookies, Blue Bell ice cream, and Tyson chicken, as well as non-commercial products such as pizza, chicken strips, popcorn chicken, cookies, and burgers sold in the main or a la carte cafeteria lines. Some schools had advertisements for Dasani water and Coca-Cola, usually on the side of a drink cooler or vending machine (vending machines did not contain Coca-Cola but the advertisements still remained on the machines).

Additionally, every pilot school had foods and drinks for sale and openly displayed in the a la carte and/or main lines. Products included snack foods (e.g., Doritos, Chex Mix, cereal bars, pretzels, Rice Krispie Treats) and drinks (e.g., Gatorade, V8 Splash, Milk, Sweet Leaf Tea, water, 100% juice). Because of the associations between product branding and children’s food preferences (e.g.,

Table 13.2 CATCH Go, Slow, Whoa criteria**Go**

- “Whole foods,” or those that are minimally processed, and low in salt, sugar, and unhealthy fats

Examples

- Fresh or frozen fruit
- Fresh, frozen, or canned vegetables
- Whole-grain bread, pasta, rice, crackers; corn tortillas, baked tortilla chips
- Unsweetened skim/1% milk, low-fat cheese, unsweetened or 100% fruit-juice sweetened yogurt

Slow

- These foods are moderate, relative to “go” and “whoa” foods

Examples

- Fruit canned in light syrup, dried fruit with added sugar
- Baked French fries or fresh/frozen/canned vegetables prepared with vegetable oil
- From refined, white flour: bread, pasta, rice, low-sugar cereal, and low-fat crackers
- Baked potato chips, pretzels, cereal/fruit bars
- 2% milk, flavored fat-free milk, low-fat yogurt (sweetened), low-fat ice cream or frozen yogurt

Whoa

- Generally the most processed and highest in unhealthy fats, added sugar, and/or salt

Examples

- Fresh/frozen/canned vegetables prepared with solid fats, battered, and/or fried
- Fruit canned in heavy syrup or fruit roll-ups
- Muffins, donuts, pancakes, waffles, and French toast made with solid fats
- Potato chips, cheese puffs, high-fat crackers, high-sugar cereal
- Whole milk, flavored 2% milk, whole-milk yogurt, processed cheese, ice cream, whole-milk cheese

Robinson et al., 2007; Arredondo et al., 2009), these displayed products likely serve as a form of food and beverage promotion. Every school had large, fountain-type drink machines that contained food-colored fruit juice offered with the NSLP meal and/or a fruit juice slushy sold a la carte (juices range from 50 to 100% fruit juice).

Very few signs were found in the school gyms, and the signs that were posted in gyms promoted healthy foods and beverages and PA predominantly. CATCH signage was found posted throughout the building in most of the pilot schools. Information on these signs included the general promotion of staying healthy by eating nutritious foods, being physically active, and drinking more water. Most schools displayed at least one CATCH banner, which promoted physical activity and healthy eating through pictures.

Based on CATCH Go, Slow, Whoa criteria (Table 13.2), data provided in Table 13.3 show preliminary categorization of signs and items documented in the pilot schools as healthy or unhealthy. These preliminary results indicate that every school has Slow/Whoa food and beverage signs posted, and, among three of the five schools, Slow/Whoa food and beverage signs were more prevalent than Go signs. All schools have more Slow/Whoa items available than Go items, and only one school had more than 1% of documented items available that were healthy.

Table 13.3 Categorizations of food and beverage promotion in five middle schools in central Texas

School	Items		Signs	
	“GO” Items	“Slow & Whoa” Items	“Go” Signs	“Slow & Whoa” Signs
1	0.02%	97.4%	30.4%	69.5%
2	0.02%	97.6%	52.1%	74.9%
3	0%	100%	36.6%	63.3%
4	0.06%	93.6%	75%	25%
5	21.9%	78.1%	60.9%	39.1%

Challenges

In addition to the difficulties encountered in creating and using the checklist, there are some general limitations to this method of data collection. First, simply posting a sign does not mean that it is in a prominent location. We tried to address this by recording signs in areas where we believed all students travel. However, without studying the traffic patterns and policies of a school (e.g., where students are supposed to wait for buses, or where students congregate in the morning), we do not know if we are observing high-traffic locations of a school or if we are observing places where students rarely travel. A second challenge, which is much more difficult to address, is that we do not know which signs are the most effective. We are using sizes and counts as proxies for a sign’s impact. While this may not be completely unreasonable, it is possible that it does not capture the true effectiveness of a sign. One factor may be that a sign may have more impact if is complemented by messages or advertising students are receiving elsewhere. For instance, the CATCH program provides schools with nutrition education signage meant to complement CATCH classroom lessons. The impact of the signs may be compromised if the lessons are not being taught. Also, even a small food product logo posted in a school may have a large impact if the logo is used in a national advertising campaign.

Another challenge is accurately recording the size of the signs. Data collectors are prompted to record the size as small, medium, or large, where the definitions for each category are, index card to tabloid poster, 24" × 36" to 48" × 72", and greater than 48" × 72", respectively. The definitions established here are common dimensions of posters and bulletin boards found in schools. Through pilot testing, we found most data collectors were good at identifying these dimensions. However, when signage was encountered that had different proportions it could be difficult to identify the correct size category. To be completely accurate, the sign definitions would need to be given in square inches instead of dimensions, for instance instead of 24" × 36" it would be 864 in.². However, few people can visualize 864 in.², and we did not want to have to measure each poster. Additionally, most data collectors had difficulty distinguishing between small and medium. A possible solution may be to have data collectors carry a tabloid sheet of paper to use as a size reference.

Beyond documenting food and beverage promotion, in-school data collection efforts present some specific challenges. For instance, taking quality pictures of types of food/beverage and PA promotion quickly and without including students, proved to be difficult in some cases. Working around school schedules and interacting with staff were also challenging in some instances. Additionally, minimizing time spent in schools without sacrificing quality of the data collected was also a challenge. In some schools, timing was an issue, as the cafeteria staff stocks the main and a la carte lines before the first lunch period. Specifically, if data collectors arrived before the first lunch period, there were more items to document; for later data collections or those that took place during a lunch period (when students had already purchased many of the items), the amount of items documented may not be representative of what some children are exposed to. In most schools, staff replenished items between lunch periods. These circumstances indicate that representative data may be best collected just prior to a lunch period beginning. However, it should be noted that this requires quick data collection, as there is a small window of time when the cafeteria is stocked and open for data collectors before students are present. This also reinforces the need for a new, faster data collection tool, which we aim to accomplish with the development of the electronic In-School MEDIA DOT.

Next Steps

Electronic In-School MEDIA DOT Development

For the pilot study, data collectors used the paper and pencil version of the In-School MEDIA DOT. Based on the pilot study, we were able to better determine which aspects were most useful and those that needed to be modified or deleted, which will be discussed below. For next steps, an electronic data collection tool will be developed in FileMaker®, database software that allows for data collection and entry to occur simultaneously. Data may be managed through this software and accessed on multiple devices, including an iPod Touch® through the use of the FileMaker Go® application, which can be used for future data collections.

Data collectors wrote a lot of information freehand because the collection tool lacked appropriate ways to document the a la carte items and signs that were found primarily in the cafeteria. A descriptive, useful, and discreet way to estimate the size and space available for a la carte items is needed in the final tool. Also, preset categories and options, based on the pilot data, will be included in the FileMaker® program.

Additionally, a larger study will be conducted to assess the in-school food and beverage advertising environment in 30 middle schools. Through this study we will be able to link in-school advertising findings with the behaviors and obesity status of eighth grade middle school students to determine if students in schools with more unhealthy in-school advertising are more likely to make unhealthy choices and be overweight or obese.

Conclusions

Although schools have particular aspects that present research challenges, there is a clear need to assess this environment and its possible effects on child health. This chapter provides a place from which to build regarding the assessment and evaluation of food and beverage promotion in schools. Further examination of the school food and beverage environment is necessary to gain a clearer picture of the prevalence, type, and range of this type of promotion that is aimed at children. Other research in this area may include identifying possible policy implications regarding food and beverage promotion in schools and using the In-School MEDIA DOT to assess other environments where children spend time.

Schools are unique in that they represent a setting where children spend a significant amount of time, have limited food and beverage options, make food-related decisions, and develop habits that may track into adulthood. While the school environment has been understudied with regard to food and beverage promotion, previous research on the possible health-related outcomes associated with food and beverage advertising in other environments provides evidence that the effects of the school atmosphere should be further examined. Given the current childhood obesity crisis, it is necessary to examine all surroundings where youth may be exposed to food and beverage promotion, in an attempt to find promising solutions.

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