

“How Can We Stay Healthy When You’re Throwing All of This in Front of Us?” Findings From Focus Groups and Interviews in Middle Schools on Environmental Influences on Nutrition and Physical Activity

Katherine W. Bauer, SM
Y. Wendy Yang, BS
S. Bryn Austin, ScD

This study aimed to identify factors in school physical and social environments that may facilitate or compete with programs and policies to improve student physical activity and nutrition. Focus groups and interviews were conducted with students, faculty, and staff of two public middle schools. Participants identified numerous aspects of the school environments as significant. Competition, teasing and bullying, time, and safety were described as major barriers for students to be physically active during physical education class, on sports teams, and before and after school. The quality of the food served, easy access to nonnutritious snacks, limited time for lunch period, and weight concerns emerged as significant reasons why students do not eat nutritious meals in school. When developing programs and policies to improve the health of students, environmental influences that undermine efforts to improve student health behaviors must be addressed.

Keywords: nutrition; physical activity; school environment; school health; adolescence

Poor eating habits and inactive lifestyles that begin during childhood can lead to numerous health problems, including obesity, diabetes, heart disease, and cancer.¹ Only one in five children eat five servings of fruit and vegetables a day as recommended by the National Cancer Institute to reduce cancer risk later in life.² In addition, almost one-third

Katherine W. Bauer, Division of Adolescent and Young Adult Medicine, Children’s Hospital Boston, Boston. Y. Wendy Yang, Daly City, California. S. Bryn Austin, Division of Adolescent and Young Adult Medicine, Children’s Hospital Boston, Boston.

Address reprint requests to S. Bryn Austin, Division of Adolescent and Young Adult Medicine, Children’s Hospital Boston, 300 Longwood Avenue, Boston, MA 02115; phone: (617) 355-8194; fax: (617) 232-1851; e-mail: bryn.austin@tch.harvard.edu.

We would like to thank Cindy Hannon and the faculty, staff, and students of participating middle schools for their generous contribution of time, energy, and ideas to this project. This project was supported by grants from the Boston Obesity Nutrition Research Center, Massachusetts Health Research Institute, McCarthy Family Foundation, and Leadership Education in Adolescent Health Grant 6 T71 MC 00009-11 S1R0 from the Maternal and Child Health Bureau, Health Resources and Services Administration, U.S. Department of Health and Human Services.

Health Education & Behavior, Vol. 31 (1): 34-46 (February 2004)
DOI: 10.1177/1090198103255372
© 2004 by SOPHE

of high school students do not exercise even moderately for at least 20 minutes 3 days a week as recommended by the Centers for Disease Control and Prevention.³

Being overweight is increasing dramatically among children and adolescents in the United States. Eleven percent of U.S. adolescents are overweight (body mass index [BMI] \geq 95th percentile for age and sex standardized cutoffs), and 14% of high school students are at risk for being overweight (BMI between 85th and 95th percentiles).³ For students of all racial/ethnic groups, the prevalence of being overweight increased significantly every 2 years from 1986 to 1998.⁴ This increase in childhood overweight seen during the past decade has been accompanied by an increase in Type 2 diabetes in children and adolescents.⁵

A sizable minority of adolescents is also affected by disordered eating behaviors. A national study of children in Grades 5 through 12 conducted in 1996 to 1997 found that 13% of girls and 7% of boys displayed some form of disordered eating as defined by binge-purge behaviors.⁶ Nationwide in 2001, 19% of female high school students and 8% of male high school students had gone without eating for more than 24 hours to lose weight or avoid gaining weight.³ Thirteen percent of female students and 6% of male students reported having taken diet pills, powder, or liquids without their doctors' advice to lose weight or avoid gaining weight. In addition, 8% of female students and 3% of male students had vomited or abused laxatives as weight control strategies.³

Theoretical Model

An individual's social and physical environment, whether their family, workplace, neighborhood, or school, can directly and indirectly affect health beliefs and behaviors.⁷⁻⁹ Urie Bronfenbrenner proposed an ecological model to describe the multiple levels of influence in the environment including interpersonal relationships, organizations, and institutions that affect individual behavior.⁷ Stokols expanded upon Bronfenbrenner's model to elucidate the multiple means by which individuals are influenced by, and interact with, their environment. These means include the environment acting as a stressor, exerting unhealthful influence on mood, performance, and physiology, and the environment acting as an enabler of healthful behaviors.⁹

In recent years, there has been a strong push to develop environmental-level health interventions in schools to expand beyond programs that exclusively target individual-level behaviors.¹⁰⁻¹² As illuminated by Bronfenbrenner and Stokols, interventions that target the environment may be more efficient and potentially more effective than individually targeted interventions because they are designed to change the context in which people live and work to create conditions more supportive of healthful behavioral choices. Although working with individuals to affect behavior is difficult and resource consuming, interventions that influence policies and group-level behaviors can in turn affect individual-level behaviors among a much larger group of people and thus be more resource efficient.⁹

Individual and family influences are important in shaping childhood health habits, but school physical and social environments may be especially important influences on the dietary and physical activity patterns of early adolescents.^{10,11,13,14} Many have recommended the development of such interventions, but there has been little formative research to identify specific factors in the social and physical environments of schools that may facilitate or undermine efforts to promote healthful nutrition and physical activity.

The middle school years represent a pivotal period of development to positively affect adolescents' physical activity and nutrition patterns. During adolescence, students are striving for independence and autonomy. As parental control lessens, adolescents begin to develop behavior patterns shaped by peer norms and actions.¹⁵ Behaviors developed at this stage are likely to influence long-term patterns.^{10,11,16} In a study following adolescents' nutritional and physical activity patterns from 6th through 12th grade, Kelder et al.¹⁶ found that both healthful and unhealthful behaviors that had emerged by 6th grade remained constant throughout high school. In this study, students who scored in the highest or lowest quantile of healthful dietary or physical activity behavior at the beginning of the study remained in the highest or lowest quantile, respectively, through the 12th grade.¹⁶ These findings provide evidence for the need for interventions to promote healthful dietary and physical activity patterns early in middle school and in elementary school. In addition, because adolescents spend such a large proportion of their day in school and have one to two of their meals there each weekday, schools provide an ideal setting to positively influence diet and physical activity.¹¹

While many schools offer opportunities for students to participate in programs that promote healthful nutrition and physical activity, such as the National School Lunch Program and the School Breakfast Program, physical education classes, extracurricular sports, and health education, there may be aspects of school environments that prevent students from gaining the full benefits of these programs. To identify factors in middle school social and physical environments that support or interfere with efforts to promote healthful nutrition and physical activity, we undertook a qualitative research study involving a series of focus groups and interviews with students, faculty, and staff in two public middle schools. This research offers the unique opportunity to hear from students, faculty, and staff about their experiences with, and perspectives on, nutrition, physical activity, and their schools' environments.

METHOD

Study Sample and Research Design

The study sample was drawn from two suburban public middle schools in New England in spring 2000. Total student enrollment at one school was almost 500 students and the other nearly 800. The ethnic composition of the student body was similar at the two schools, with approximately 80% White, 12% Asian American, and the remainder African American and Latino. Nearly 10% of the student body at the two schools were eligible for free or reduced-price lunch. Schools within this district were chosen because their ethnic and socioeconomic composition is representative of suburban public school districts in New England.

Twenty-six students and 23 faculty and staff members took part in the study, making a total of 49 participants. Seven focus groups were conducted with seventh- and eighth-grade students. The student groups were divided by gender and grade and were composed of an average of four students. Homogeneity in gender and grade and small group size were intended to enhance the adolescents' comfort in discussing their personal perspectives and experiences among classmates and to encourage full participation by all members of the group.¹⁷

Approximately 80% of student participants were of White ethnicity, and 20% were primarily Asian American or African American. Three focus groups were conducted

with faculty and staff members, and 10 individual interviews were conducted with key informants, including administrators, cafeteria managers, physical education directors, school nurses, guidance counselors, and health educators.

A variety of recruitment methods were employed to include students, faculty, and staff in the project. All students in the seventh and eighth grades were made aware of the option to participate in the focus groups by their homeroom teachers, and during staff meetings, all faculty members were invited to participate. Each school's study liaison also helped to recruit students, faculty, and staff for the study. Key informants who were knowledgeable about the schools' physical activity and nutrition opportunities were identified by the study liaisons and recruited for individual interviews. The liaison was a guidance counselor in one school and a health educator in the other.

Focus groups were led by a clinical social worker experienced in focus group moderation. The study principal investigator (SBA) assisted moderation of focus groups and conducted all individual interviews. Focus groups and interviews were conducted with students and staff during school hours. Two semistructured focus group moderator's guides were developed for use during the student and faculty/staff focus groups. Questions used in individual interviews with key informants followed the format of the faculty/staff focus group moderator's guide, with additional questions relating to specific responsibilities of the staff person. Moderator's guides were developed by members of the research team with consultation from experts in the fields of adolescent and school health.

Questions addressed in the focus groups and interviews were designed to solicit information about the physical and social environments in the schools and how the environment influences students' nutrition and physical activity choices. Consistent with our theoretical model, students and staff members were asked to discuss the multiple levels of influence found in their school environments. Discussion topics included access to healthful and unhealthful foods in school, opportunities for physical activity, traffic safety near school, policy and handling of weight-related harassment, and student dieting practices. Examples of questions used in focus groups and interviews include the following: What kinds of things do kids do to stay healthy? How can you be physically active during school time or after school? What kinds of things do you think keep students from getting more exercise? How does food or nutrition usually get talked about with students at school? What kinds of comments do you hear students make about other people's body size or weight? What are the different ways that teachers and staff have tried responding to these comments? What kinds of things do you think schools could do to make it easier for students to eat in healthful ways at school? What kinds of things do you think schools could do to make it easier for students to get more physical activity at school? The focus groups and interviews took approximately 45 to 60 minutes to complete and were audiotaped and transcribed verbatim.

Student assent and active parental consent were obtained from adolescent participants. Informed consent was obtained from adult faculty and staff participants. Adolescent and adult participants received a gift certificate to a local record store as an incentive for taking part in the study. The study was approved by the Children's Hospital Boston Institutional Review Board.

Data Coding and Analysis

Beginning with an understanding of the current research on ways in which physical and social environments can influence health behaviors,^{9,14,18} the research team analyzed

transcripts derived from the audiotapes of the focus groups and interviews using the grounded theory approach.^{19,20} Via an iterative process, the concepts, categories, and themes that arose during the focus groups and interviews were identified to develop an understanding of the schools' physical and social environment and its influence on student physical activity and nutrition. Through a series of meetings with the research team, themes were grouped together based on their relationships with one another to form a more formal framework for transcript analysis. Using this framework, codes were developed, and the software package NUD*IST Vivo²¹ was used to assist the research team with organizing the data.

The framework included two overarching health domains: opportunities for physical activity and nutrition in school. Within each domain, three mechanisms of influence within the school environment were identified: institutional policy and programs, teacher management of students in and out of the classroom, and peer interactions. Identification of these three mechanisms was informed by themes emerging from the data and our application of the ecological model to categorize levels of influence within school communities.

RESULTS

Opportunities for Physical Activity: Physical Education Class and Other Activities

Both schools offered physical education (PE) class to all students in addition to a variety of sports teams. In focus groups and interviews, students and staff described several significant barriers to physical activity in school, including athletic competitiveness in PE classes and open gym periods and on sports teams, as well as problems with time and safety in walking or riding bicycles to and from school.

Competition. PE class is the primary opportunity for students to be physically active during the day, but students had mixed feelings about the classes. Many reported that they like PE because it gave them an opportunity to be active, relax, and socialize with friends. However, differences in gender, physical ability, and overweight caused many students to feel uncomfortable participating. Students and staff often expressed that athletic competition and teasing and bullying among students were the predominant barriers to students fully participating in class. Two female students explained,

Sometimes like people feel embarrassed because they're not good at it. And then the boys are like . . . making fun of you so you don't participate that much. (1, FG3, 3.4, 556)

I think that gym can get sometimes really competitive. I know that when I'm in gym, there are a lot of really good people, especially the guys. And I'm not that great at gym, and they are, and sometimes it makes me uncomfortable. And they do tease me a lot because I'm not that great at something, and sometimes I get yelled at by them. (2, FG3, 3.4, 351)

Students also reported that the staff has on occasion made negative comments regarding some students' athletic abilities. This criticism can be so upsetting, students said, it leads them to feel self-conscious and to avoid participating.

Both of the schools offered open gym time in the morning before school for all students to play basketball. Staff members are available during this time but do not lead the

group, so students are allowed to play on their own without instruction. One staff member commented,

It's a nice opportunity for a lot of the kids, because they get here and either they get dropped off early or they take the bus. They'll get in, work on their game. This also serves as a social function for a lot of kids. (1, I2, 2, 17)

While both genders are welcome, many more boys than girls attend. The small number of girls that do attend are mostly those who play basketball on the school team. One staff member remarked that some of the girls may prefer it as more of an opportunity to socialize than to get exercise and work on their basketball skills. In one school, girls used to attend open gym and spend the time jumping rope; however, they had not been doing that lately. One staff member spoke about ways to make morning gym more attractive to girls:

I mean, my own feeling is it would [require that] a teacher said, "Okay, we're going to take this section of the gym [for] anybody who wants to do a dance class or who wants to do volleyball." I notice that when they do set up a volleyball net on one part and it's open gym, or it's been set up for an activity, I'll see more girls getting involved. (2, I1, 3, 100)

This staff member felt the unstructured format of morning open gym time did not provide a comfortable environment for many girls and allowed boys to dominate the space.

Similar issues presented barriers to participating in extracurricular sports teams. Due to limited coaches, playing space, and sports equipment, there is a great amount of competition for the limited spaces on teams. Many students commented that they were discouraged from trying out for teams because they were not as skilled as the more athletic students. Staff also noted that there are few opportunities for students to learn sports skills, therefore the students who make the teams are those who are skilled already and regularly physically active. One staff member noted,

There aren't a lot of alternatives to encourage students . . . here to get involved in some physical activity that doesn't require trying out, the possibility of failure, not making it. (2, FG5, 3.1, 201)

A student we spoke with said that he chose to participate in track rather than other sports because it is less competitive and open to more students. One student suggested,

Make it easier to get on the teams. You don't . . . really want to have competitiveness or otherwise half the kids won't do it. But you want to address certain kids, let them know that it's great, it's healthy for you. It's fun to get on a team. (1, FG2, 3.4, 412)

Time and Safety Getting to and From School. Walking or riding bikes to school gives students an opportunity to be physically active outside of PE classes, open gym time, and extracurricular sports. Students reported that they liked walking and biking home. They said that it gives them the chance to socialize with friends and provides flexibility if they want to stay after school for sports or other activities. Safety and time related to walking or biking to school was addressed by both the students and the staff. Many staff members discussed how they often see students without bike helmets and have to remind them to wear one.

At one school, some expressed concern that there had been incidents in which students were approached by strangers while walking to school. As a result, administrators discouraged parents from letting their children walk to school without adult supervision. In addition, they felt the students' safety was compromised by the high density of car traffic in areas around the school. The elementary schools in the area had crossing guards to assist children walking to school, but the middle schools did not. Therefore, students who walk to school often have to cross over large, dangerous roads with no assistance. One teacher noted that if she saw students walking to school, she would often pick them up and drive them so they could avoid walking through high-traffic areas.

There were clearly many barriers to students walking and biking to school. In addition to safety concerns, time was also an important factor. Staff members remarked that many parents rush to work in the morning and feel more comfortable dropping their children off at school rather than letting them walk. Furthermore, students would have to make time in their morning routines to walk to school. One teacher commented,

I think that by implication we discourage it, because kids themselves have busy lives. The school has kids involved from the very beginning of the day. And if we were to say, "Well, we think it would be a good idea for kids to walk to school just for the sake of the exercise," the response would be, "There is not enough time for that." (2, FG1, 2.2, 68)

Nutrition in School

In both schools, breakfast was offered to students who arrived to school early, and lunch was provided in the cafeteria to all students. Full lunches available in the schools were required to meet the United States Department of Agriculture (USDA) minimum nutrition standards as part of the National School Lunch Program. Competing pressures in the schools and cafeterias, however, undermined these efforts to encourage all students to eat balanced meals at school. Students and staff described several overwhelming barriers to healthful nutrition: (1) poor quality and palatability of food served in the cafeteria; (2) presence of snack carts and vending machines that serve nonnutritious foods; (3) the short time schools allow for lunch period; and (4) student dieting, weight concerns, and weight-related teasing.

Quality of Foods Served in Cafeteria. The most frequently cited barrier to healthful nutrition by both students and staff was the quality of the foods served. Many criticized the food offered in the cafeteria as greasy and high in fat. Both students and staff felt there was a lack of healthy options and would prefer to have more fruits and vegetables available. The students said that if the cafeteria offered fruits and vegetables in greater quantity and quality, they would choose to eat them instead of the less nutritious entrees or snack foods. One student remarked,

They just like deep-fry everything that they have and it's just like, you get it—I've seen people take napkins and they . . . [pat] their pizza down and it comes up and you could like ring the napkin out. That's not what it should be. It should be better than that. (1, FG2, 2, 96)

Snack Carts and Vending Machines. Both staff and students discussed how the presence of snack carts and vending machines selling nonnutritious snacks and sugar-sweetened beverages influence students' food choices. Staff members repeatedly commented on the abundance of nonnutritious snack foods available to the students. Many

noted that when these options are available, students are less likely to select nutritious foods for lunch. One teacher observed, “I see the majority of kids eat two bags of chips and maybe an ice cream for lunch every day” (2, FG4, 3, 161). Another said, “When kids are in that situation like that, how can they not go to the snack machine?” (1, F3, 3.1, 109).

Students were well aware of the presence of these nonnutritious snacks and the influence they have on their meal choices. They said they often will not eat a nutritious lunch and instead select chips, candy, and ice cream to eat during the lunch period. Two students commented,

You’re going to find all sweet foods and maybe like one thing of animal crackers in the snack bar. Like I think that maybe they should still be there, but there should also be a way to get healthy food. There should be a salad bar or something. (2, FG3, 3.1, 109)

It’s a big problem with this. I mean, we have juice machines and candy machines. The juice machines, they are like 85% sugar, and I mean there is like no real juice. And you know, our principal tells us how healthy we should stay, and it’s like, “How can we stay healthy when you’re throwing all of this in front of us?” (2, FG3, 3.1, 107)

Although some of the staff members felt that students would not eat the healthy foods even if they were available, the majority of the students said they would choose nutritious foods over the snacks at lunchtime if they were more readily accessible and palatable. To improve nutritious options in the cafeteria, one student recommended,

I think the biggest thing is to remove the snack machines or get some healthy choices. Because not only do we have tons of snack machines, but with your lunch, you’re supposed to get fruit and milk and like salad. The salad is like a plastic, not even plastic container, like a little thing. (2, FG3, 4, 423)

Eliminating snack sales in the cafeteria and around the school, however, would be difficult, school administrators told us, because the profits from sales contribute to school programs and scholarships to school events for low-income students. One administrator told us that the school sells snacks and sodas to students after the lunch period and that profits from these sales are used to subsidize an annual student trip. She explained,

We sell Coke in the store after school because it’s a moneymaker. And we help raise money to send them on [field trips], for those who need scholarships, and we sell candy after school. For example, our eighth graders are going to [the beach]. That costs \$96. There are a number of eighth graders who can’t afford that. They can’t afford one penny of that. So the money that we raise there helps defray those costs, plus other field trips that we take. (1, I3, 6, 193)

Time Limitations. Students and staff both noted that a major barrier to eating nutritious meals is the small amount of time allotted for lunch. Many students pointed out that once they had finished waiting on line for lunch, they did not have time to eat it. As a result, they explained, they often chose unhealthy food from the snack cart, which they are able to eat quickly. One student explained,

Everyone is like “Eat your food at lunch” and I’m like, “I don’t have time.” Some people don’t even eat their lunch; they just take snacks and stuff, so everyone finishes in like 5 minutes, and then they come out talking and stuff. So it’s even worse than eating actual lunch, because they’re not even eating lunch, just snacks. (1, FG2, 3.1, 123)

Another student added,

Well, some people don't have time to finish their lunch, so they try to bring it back [to the classroom], try to sneak it out. Like I sneak food out of the cafeteria a lot of times, and usually it gets taken away. That's the penalty. (1, FG2, 3.2, 235)

Several staff members also commented on the limited amount of time students have to eat lunch. Many agreed that the short lunch period encouraged students to buy snack foods instead of the full lunch. One teacher attributed the short lunch period to the large student population of the school and the low seating capacity of the cafeteria, which force administrators to schedule a series of short lunch periods beginning in the late morning. She explained, "They have it broken up into sessions, four lunch sessions, because there are, I think, close to 800 kids here. It's just to get them all in and out" (2, I3, 1, 24).

Teasing, Dieting and Weight Concerns. Many students and staff discussed dieting and weight concerns and the influence they feel these concerns have over student food choices at school. Weight-related teasing was also described as a problem in the schools. Students observed that overweight peers are targeted for teasing especially if they eat nonnutritious foods during lunch. One student explained, "Sometimes if the guy is like overweight . . . they don't usually make fun of them, they'll just be like, 'What are you eating?' Like with the attitude in your voice" (1, FG1, 3.1, 112).

Students acknowledged that teasing and harassment are in violation of school policy; however, many felt that there was little to no enforcement of those rules. Both students and staff felt that teasing and bullying occurs so frequently that it would be impossible for the staff to monitor and discipline everyone. One student commented on the inability of teachers to adequately monitor students during the lunch period: "We only have like four teachers on lunch duty, and we have tons of kids, probably around 300 kids in the cafeteria at one time. So the teachers don't usually catch what we're saying" (2, FG3, 3.1, 148).

Dieting and discomfort eating in front of boys were important barriers to healthful nutrition discussed by girls. Many of the female students noted that *talking* about dieting was widespread, but changing eating and exercise patterns to lose weight was not nearly as common. A female student explained,

Recently, because it's like the end of the year, we're having all of these parties and stuff, and I go, "Oh, my gosh, I gained at least six pounds today," but you're never serious. But you could always talk to friends and stuff about that. (2, FG3, 2, 72)

While most of the students felt that their friends talked more about dieting than actually did it, some students have observed girls drastically altering their eating in order to lose weight. Students in the focus groups described this behavior as upsetting. One female student said of girls who diet, "They want to be like a Barbie, kind of. Like a starving Barbie" (2, FG2, 3.2, 209). Another female student commented,

I know a few friends who are just like, "If I would only lose another 10 pounds." Sometimes that disturbs me because I'm wondering what's going on. Why are they doing this? Are they taking this too far? (2, FG3, 2, 77)

Many of the girls discussed how they felt uncomfortable eating in front of the boys in the cafeteria because they feel eating in public makes them look unattractive and do not

want to be seen “stuffing their face” (1, FG3, 3.1, 214) as one girl said. Also, many students observed that girls and boys often make different food choices for lunch. One girl explained,

Guys usually eat more. And also because some girls are like, they’re shy and they don’t want to eat in front of guys. . . . Like a lot of girls just purposely don’t eat because they don’t want to like be seen eating. This is a fact, because some of my friends do this, just because like, they just don’t like want to eat in front of other people because they just think they don’t look good when they eat or something. (1, FG3, 3.1, 205)

Another girl expressed exasperation with peers when she sees them not eating at lunchtime:

It could be like, you hear tables talking about people at other tables. And you see some of the girls with nothing in front of them. They either have like nothing or too much, and it’s just like, “Just get healthy!” (2, FG3, 3.1, 143)

DISCUSSION

Schools may be one of the most important settings in which to promote and sustain healthful nutrition and physical activity among the nation’s youth.^{6,10,11,13} A wide variety of programs and policies in schools are designed to offer opportunities for students to eat a balanced diet and be physically active. The results of our study, however, suggest that even with recommended nutrition and physical activity programs and policies in place, barriers within the school environment inhibit students from taking advantage of these opportunities. Students, faculty, and staff of the middle schools participating in our study identified a number of contradictory pressures within their school environments. For instance, lunches meeting the USDA minimum nutritional standards for the National School Lunch Program were served in the cafeterias, and yet these meals were often unpalatable. Easy access to nonnutritious snack foods in the cafeteria, combined with unpalatability and insufficient time in which to finish eating a full lunch, leads students to select nonnutritious snacks instead of the provided lunch.

Similarly, although schools offer PE classes, open gym, and after-school sports to allow students to be physically active, athletic competition and frequent gender- and weight-related bullying inhibit many students from enjoying and fully participating in these activities. Although walking or biking to school would give students another opportunity to be physically active during the day, safety concerns and time restrictions lead many parents to drive their children to school even when they are within walking distance.

Finally, both middle schools provided health education to their students in a variety of forums, including family and consumer sciences, PE, science classes, and organized discussions with guidance counselors. However, teachers and staff felt there was a significant disconnect between what is taught to the students about healthful nutrition and exercise and the ways in which the school environment constrains and compromises healthful choices.

Prior literature has highlighted the need to improve school programs and policies regarding physical activity.^{11,13,18,22} Our results are consistent with other studies examining environmental pressures in schools affecting nutrition and physical activity, such as

sales of nonnutritious competitive foods, palatability, dieting, and weight-related stigma.^{10,22-27} Our results are also consistent with an ecological model of levels of influence within school settings. Data gathered from the three primary constituencies within schools—students, faculty, and staff—support a model in which peer interactions, teacher management of students, and school programs and policies represent significant spheres of influence in school environments on student nutrition and physical activity. In addition, our findings indicate that students, faculty, and staff are keenly aware of the importance of the school environment and barriers within the environment that undermine health-promoting initiatives. Throughout the many focus groups and interviews, students, staff, and faculty clearly articulated how the lack of nutritious food choices, high levels of competitiveness, and bullying in PE class, and numerous other pressures create significant obstacles to students establishing healthful behaviors during their middle school years.

It is important to note that the public schools participating in this study were fairly well resourced and located in suburban locales, yet even in these schools, multiple pressures worked to undercut the schools' health-promoting initiatives. Of great concern are the ways in which these same barriers would play out in underresourced schools that are not able to support as many health-promoting programs and policies as these two schools were able to do.

To improve the physical and social environment in the schools participating in our study, reports were prepared using school-specific data that included student and staff member quotes, information on the importance of a healthful school environment, and recommendations and resources for improving students' health and well-being. These reports were distributed to staff in both participating schools and the school district health administrator. In addition, a report that combined data from both schools but without school identifiers was prepared. This report was disseminated to health professionals in the region who are involved in nutrition and physical activity promotion in schools.

Recommendations for changing school environments in order to increase student opportunities for healthful nutrition and physical activity were developed based on the results of our research. Recommendations that addressed physical activity included developing schoolwide policies to reduce competition, teasing, and harassment in PE classes; increasing the frequency and time in PE classes; offering sports clubs and teams that involve students with low to average athletic skills; and offering additional opportunities for physical activity that are appealing and comfortable for female students. Recommendations to improve nutrition opportunities around school included increasing the fruit and vegetable options sold in the cafeteria, decreasing the nonnutritious snack and beverages sold in school, and increasing time for the lunch period.

A strength of this study was that the focus groups and interviews included individuals with a wide range of perspectives on the school environment, including faculty, administrators, other staff, and students, who are the most personally and directly affected by school programs and policies. Consistency of findings from multiple sources across two different schools suggests that contradictory pressures and barriers identified are pervasive throughout school environments and widely recognized by the primary constituencies within school communities.

Limitations of the study include our reliance on self-report data without an objective data source to supplement focus group and interview findings. As a result, we may not have identified other important factors in school social and physical environments that participants were unable to or unwilling to discuss. Because our research was conducted within cohesive school communities, participants in focus groups knew each other,

which might have led some to be less candid in their comments, perhaps because of reluctance to be perceived as criticizing peers or colleagues. On the other hand, shared experience of group participants may have facilitated deeper levels of discussion and ultimately richer data collection.²⁸ Another limitation of this study was that recruitment and data collection were carried out during school hours. As a result, students who were frequently absent and faculty and staff who were busy during the times when focus groups and interviews were conducted would not be able to participate, nor were we able to include parents. Perspectives of students, staff, and parents who did not take part in the study may differ significantly from those of participants who were willing and able to attend the research sessions. While study participants included African American, Asian American, and White students in similar proportion to the ethnic composition of the overall student body in the two schools, we were not able to explore in depth the experiences of students of color in relation to social and physical environmental influences on nutrition and physical activity.

IMPLICATIONS FOR PRACTICE

Middle schools participating in our study had a variety of programs and policies in place to promote healthful nutrition and physical activity. However, our findings indicate that there are also numerous competing pressures and barriers in school environments that compromise these same programs and policies. When designing school-based initiatives to improve physical activity and nutrition, it is essential to examine the school environment and develop ways to mitigate obstacles in the social and physical environment in order to create successful interventions. Members of the school community, including students, faculty, staff, and parents, are essential sources for a thorough assessment of environmental pressures relevant to nutrition and physical activity initiatives. Researchers and program planners designing interventions to improve nutrition in school cafeterias need to be cognizant of the reasons why students are currently selecting unhealthy foods, including ease of access, time limitations, and availability of “junk” foods and unpalatability of healthful food offerings. Similarly, interventions designed to increase student physical activity are likely to achieve greater success if methods to reduce gender- and weight-related harassment are implemented and activities are offered that have less emphasis on competition and athletic skills. Our findings indicate that simply adding programs or policies intended to be health promoting is not sufficient where there are countervailing pressures within the school environment.

References

1. U.S. Department of Health and Human Services: *Nutrition and the Health of Young People: Fact Sheet*. Atlanta, GA, Centers for Disease Control and Prevention; National Center for Chronic Disease Prevention and Health Promotion, 1997.
2. Krebs-Smith SM, Cook A, Subar AF, Cleveland L, Friday J, Kahle LL: Fruit and vegetable intakes of children and adolescents in the United States. *Arch Pediatr Adolesc Med* 150(1):81-86, 1996.
3. Grunbaum JA, Kann L, Kinchen SA, et al: Youth risk behavior surveillance—United States, 2001. *Mor Mortal Wkly Rep* 51(SS04):1-64, 2002.

4. Strauss RS, Pollack HA: Epidemic increase in childhood overweight, 1986-1998. *JAMA* 286(22):2845-2848, 2001.
5. Sinha R, Fisch G, Teague B, et al: Prevalence of impaired glucose tolerance among children and adolescents with marked obesity. *N Engl J Med* 346(11):802-810, 2002.
6. Neumark-Sztainer D, Hannan PJ: Weight-related behaviors among adolescent girls and boys: Results from a national survey. *Arch Pediatr Adolesc Med* 154(6):569-577, 2000.
7. Bronfenbrenner U: *The Ecology of Human Development: Experiments by Nature and Design*. Cambridge, MA, Harvard University Press, 1979.
8. McLeroy KR, Bibeau D, Steckler A, Glanz K: An ecological perspective on health promotion programs. *Health Educ Q* 15(4):351-377, 1988.
9. Stokols D: Translating social ecological theory into guidelines for community health promotion. *Am J Health Promotion* 10(4):282-298, 1996.
10. Story M, Neumark-Sztainer D, French S: Individual and environmental influences on adolescent eating behaviors. *J Am Diet Assoc* 102(3 suppl.):S40-51, 2002.
11. Centers for Disease Control and Prevention: *Guidelines for School Health Programs to Promote Lifelong Healthy Eating* (Vol. 45). Atlanta, GA, Centers for Disease Control and Prevention, 1996.
12. U.S. Department of Health and Human Services: *The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity*. Rockville, MD, U.S. Department of Health and Human Services, Public Health Service, Office of the Surgeon General, 2001.
13. Nestle M, Jacobson M: Halting the obesity epidemic: A public health policy approach. *Public Health Rep* 115:12-24, 2000.
14. Neumark-Sztainer D: The social environments of adolescents: Associations between socio-environmental factors and health behaviors during adolescence. *Adolesc Med* 10(1):41-55, v, 1999.
15. Erikson E: *Identity: Youth and Crisis*. New York, Norton, 1968.
16. Kelder SH, Perry CL, Klepp KI, Lytle LL: Longitudinal tracking of adolescent smoking, physical activity, and food choice behaviors. *Am J Public Health* 84(7):1121-1126, 1994.
17. Krueger RA: *Focus Groups: A Practical Guide for Applied Research* (2nd ed.). Thousand Oaks, CA, Sage, 1994.
18. Neumark-Sztainer D, Story M, Perry CL, Casey MA: Factors influencing food choices of adolescents: Findings from focus-group discussions with adolescents. *J Am Diet Assoc* 99:929-934, 937, 1999.
19. Strauss A, Corbin J: *Basics of Qualitative Research: Grounded Theory, Procedures, and Techniques*. Newbury Park, CA, Sage, 1990.
20. Glaser BG, Strauss AL: *The Discovery of Grounded Theory: Strategies for Qualitative Research*. New York, Aldine, 1967.
21. Quality Solutions and Research, Pty Ltd. *NUD*IST Vivo for Qualitative Research* [computer program]. Version 4. Bundoora, Australia, Sage Publications Software, 1999.
22. Jeffery RW, French SA, Raether C, Baxter JE: An environmental intervention to increase fruit and salad purchases in a cafeteria. *Prev Med* 23(6):788-792, 1994.
23. U.S. Department of Agriculture. *Foods Sold in Competition With USDA School Meal Programs: A Report to Congress*. Washington, DC, U.S. Department of Agriculture, 2001.
24. Austin SB, Rich MR: Consumerism: Its impact on the health of adolescents. *Adolesc Med* 12(3):389-409, 2001.
25. Croll JK, Neumark-Sztainer D, Story M: Healthy eating: What does it mean to adolescents? *J Nutr Educ* 2001(33):193-198, 2001.
26. Neumark-Sztainer D, Martin SL, Story M: School-based programs for obesity prevention: What do adolescents recommend? *Am J Health Promotion* 14(4):232-235, 2000.
27. U.S. Department of Agriculture: *Healthy eating and the school environment: What research tells us*. Washington, DC, U.S. Department of Agriculture, 1999.
28. Rice P, Ezzy D: *Qualitative Research Methods. A Health Focus*. Boston, Oxford University Press, 1999.