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## Perceptions of Healthy Eating and Influences on the Food Choices of Appalachian Youth

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### Abstract

**Objective**—Patterns of overweight and obesity are unequally distributed geographically, with elevated rates in Appalachia. Appalachian youth's perceptions toward healthy eating and influences on food choice were examined as part of formative research to address these disparities.

**Methods**—Eleven focus groups, averaging 6 youth (n=68) and moderated by experienced local residents, were conducted with participants aged 8–17. Session transcripts were coded for thematic analysis, using measures to enhance rigor and transferability.

**Results**—Participants discussed numerous internal and external factors affecting dietary choices. While expressing confidence in their own nutritional knowledge, they stressed the importance of taste preferences, cost, convenience, social influences, and advertising on diet.

**Conclusions and Implications**—Appalachian youths' awareness of the multiple influences on diet may create opportunities for multi-faceted, ecologically-based interventions. In particular, participants stressed the importance of social influences on diet and on successful nutrition programming.

### Keywords

Children/Adolescent; Appalachia; dietary perceptions; Food Choice

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## INTRODUCTION

Overweight and obesity, particularly among children, is one of the most pressing public health threats in the United States. Childhood overweight and obesity have been linked to adult weight problems, type 2 diabetes, metabolic syndrome, social isolation, and other physical, social and emotional problems.<sup>1,2</sup> The 2007 National Survey of Children's Health reported that 31.7% of children ages 10–17 were obese (BMI 85<sup>th</sup> percentile).<sup>3</sup> One important correlate of obesity is low fruit and vegetable (FV) consumption. An analysis using 1999 – 2000 NHANES data found that more obese children consumed less fruit and fewer vegetables than children who were normal weight.<sup>4</sup> Low FV consumption, like the prevalence of overweight and obesity,<sup>5</sup> is especially problematic in Kentucky, where only 17.1% of youth eat 5 or more servings of FV daily<sup>6</sup> versus 20.1% nationally.<sup>7</sup> While regional data on children's produce consumption is not available, produce consumption by Appalachian adults is significantly below national levels.<sup>8</sup>

The historic physical isolation and economic deprivation of Appalachia has had long-term consequences for residents' diet and health. Physical isolation led to a long history of subsistence food production, family gardening and preservation, and extensive food trading between households.<sup>9,10</sup> Today, Kentucky's Appalachian counties are among the poorest in the country, with per capita incomes approximately 2/3 of the national figure, poverty rates over twice the national average and unemployment nearly twice the national average.<sup>11</sup> The health profile of Appalachian Kentuckians reflects these socioeconomic conditions, with rates of obesity, diabetes, cardiovascular disease, and various cancers exceeding national averages.<sup>12,13</sup>

While research has been conducted on specific intervention strategies both nationally<sup>14,15</sup> and in the region,<sup>16,17</sup> qualitative research exploring Appalachian youths' perceptions on the wide range of personal and environmental influences on diet is lacking. As part of a faith-based Community Based Participatory Research (CBPR) project to design, implement and evaluate an intervention through churches to promote energy balance in central Appalachia, this research sought to elicit perspectives on healthy eating from youth residing in this under-resourced region. Following the tenants of CBPR, local community members are engaging in all aspects of this project, from the identification of the problem to be addressed to sharing decision-making on formative research conduct to joint ownership of the processes and products of the project.<sup>18,19</sup>

The ecological model guiding this research suggests that health behaviors, including dietary habits, are the product of individual, social, environmental, and policy factors.<sup>20</sup> This multiple-level theoretical approach is particularly appropriate for complex behaviors such as diet, which is shaped by individual factors such as self-efficacy,<sup>21</sup> the social influences of family and friends,<sup>22</sup> features of the physical environment such as access to foods,<sup>23</sup> and policies such as the federal school nutrition and Women, Infants, and Children programs.<sup>24,25</sup> One of the most important features of the ecological model is the attention it draws to the interconnectedness of these multiple levels of influence, including the individual-level perspectives on and reactions to larger social and structural influences. The focus group discussions reported in this study provide those individual perspectives for Appalachian youth, perspectives that can inform both the current CBPR project and the work of other researchers and practitioners working in this and other underserved regions.

## METHODS

### Study Design

Eleven focus group discussions with youth ages 8–17 were conducted in 2 small, rural counties in Appalachian Kentucky. Focus groups were used due to their ability to capitalize on the strong oral traditions and dense social networks frequently associated with rural Appalachian populations.<sup>26</sup> Researchers experienced working with children and adolescents, as well as with Appalachian populations in general, developed a series of open-ended questions. These initial questions were discussed, edited, and pretested in 8 in-depth interviews with local youth (ages 8–17), who also provided insights into preferences for conducting focus group discussions with this population. For example, youth suggested and the local moderators concurred that focus groups be kept small (4–6 per group) and be separated by age but not gender. A total of 11 focus group discussions were convened involving 68 youth, with 4 focus groups each for children ages 8–10 and 15–17 and 3 focus groups for 11–14 year olds.

Theoretical sampling, primarily via area churches, provided a broad cross-section (socioeconomic status, age, residential location) of the targeted population (Appalachian children) while capturing culturally-consistent themes.<sup>27</sup> In theoretical sampling, participants are selected according to how appropriate they are to the research focus, or the extent they may shed light on a particular phenomenon. As is standard in this sampling approach, relevance of the venue (e.g., churches) and participants (church youth) rather than representativeness was a primary consideration.<sup>28</sup> Because this project was designed to inform the development of a faith-based, intergenerational energy balance project, churches were the primary means of recruitment. In rural central Appalachia, churches are widely attended, allow for recruiting a diverse array of participants, and potentially represent important social networks. Inclusion of community centers ensured that findings were applicable to non-church going residents. These community centers are nonprofit service organizations that provide educational and cultural experiences for youth and adults, including after-school activities, art classes, day camps, and tutoring. Selection of churches (n=4, varied denominations, areas of the county, populations served) and community centers (n=2) was designed to ensure inclusion of a broad cross section of the population.

CBPR project staff discussed the research with church/community leaders and, with their assistance, children were invited to attend the focus groups held at the church or community center. Parents participated in the informed consent and sociodemographic survey portions of the protocol, but did not attend the focus group discussions. All protocols were approved by the University of Kentucky Institutional Review Board.

### Data Collection

Two local and experienced moderators administered informed consent and assent documents and explained the focus group protocol to children and parents. Then, 1 moderator read aloud the sociodemographic questions to parents who recorded their responses on a survey form, while the other moderator did the same among children. Staff then asked the parents to depart and once they did, the focus group began. Moderators asked children an ice breaker question, followed by the main focus group questions. Questions focused on perspectives on healthy/unhealthy food and eating, determinants of healthy/unhealthy dietary intake, and ideas for useful programming in their communities. Examples of these questions include: When I say “eating right” or “eating healthy” what comes to mind for you?; What foods do you think of as unhealthy?; What makes it hard to not eat these unhealthy foods?; What are some of the things that could help you eat healthier foods?; and If you could create a healthy eating program within your community, what are some things you would like to include?

The sessions generally lasted 45 minutes to 1 hour. All focus groups sessions were tape recorded, with the permission of children and their parents/guardians, and then transcribed verbatim. Transcribers reported the gender of each speaker, verified by the focus group moderators.

## Data Analysis

Focus group transcripts were read multiple times by 3 researchers in order to become immersed in the content and flow of the discussion. Line-by-line analysis guided hand coding, leading to a detailed codebook.<sup>29</sup> The 3 researchers engaged in codebook refinement multiple times, debating coding categories and data interpretations. Data collection, immersion in the transcripts, and subsequent coding and development of a codebook occurred iteratively.<sup>29</sup> Once the codes were identified, the researchers employed focused coding to identify sub-themes. With the identification of recurring themes and sub-themes, data analysis focused on clustering pieces of text that related to various themes. Finally, and until no new themes emerged, data analysts engaged in axial coding, wherein various codes are linked by making connections along thematic axes. The coding process continued until no new themes emerged.<sup>30</sup>

To insure the rigor and trustworthiness of data analysis, the moderators who supplied memo-writing and field observations provided member checks (since they, too, live in the Appalachian communities), as did members of the last 3 focus groups. Member checks are a qualitative approach to assess validation or corroborate findings. Often considered a way of meeting the criteria of confirmability, member checks solicit feedback from appropriate respondents who offer their views on whether the researcher has adequately captured the perspectives of participants.<sup>31</sup> Additionally, the 3 researchers co-coded 20% of the transcripts in order to assess interpretation of the transcripts. After extensive modification of the codebook and debate over interpretations until analysts agreed on the codes, co-coders achieved 86% inter-coder reliability. We determined this measure of agreement in coding interpretation by comparing codes each analyst affixed and calculating the percentage of agreement.<sup>32</sup>

## RESULTS

### Sample Description

Participants ranged from 8–17 years, with 87% identified as White, non-Hispanic. Fifty-five percent were girls and 45% boys, and 85% of participants lived with both of their biological parents. Almost half (42%) of the youth stated that their household had “more than they needed to live well”; 23% believed their families had “enough to get by”; 18% described their households as “sometimes struggling to make ends meet”; and the remaining 18% either did not respond or reported not knowing their financial status. These participants represent a relatively diverse cross-section of Appalachian Kentucky, but are not exceptional. For example, although the region is approximately 95% White,<sup>33</sup> by selecting diverse churches and community centers, 10% of participants were African Americans. Furthermore, participants were nearly equally divided between girls and boys and had a range of parental educational and income backgrounds.

### Themes

Themes derived from these focus group discussions can be grouped into 3 categories – 1) themes related to perceptions of healthy eating and nutrition knowledge; 2) themes related to influences on food selection; and 3) themes related to recommendations for programming to promote healthy eating. Within each of these categories, key themes are identified below. In addition, differences in participant perceptions based on gender and age are noted.

Several themes concerning perceptions of healthy eating and nutrition knowledge emerged, including the identification of healthy eating with the consumption of fruits and vegetables, the importance of portion control, and the importance of physical activity in the energy balance equation. Asked about healthy eating, 1 girl in the 11–14 year group stated “eating right is like eating fruits and vegetables. The food pyramid.” Another suggested that “...we should eat healthy vegetables. I think we should eat healthy food every day. I think we should eat carrots, broccoli, onions, and I think we should eat healthy, not junk food.” Participants also discussed the importance of portion control (“getting right portions, not getting too much”) and limitation of suboptimal foods. A boy in the 8–10 year group offered the following solution to dealing with unhealthy food “A good thing to do would be to order a small bag of chips and a small drink.” Another theme that emerged, despite the lack of directly related questions or prompts, was the importance of considering both diet and physical activity. When asked if she thought she ate too many unhealthy foods, a girl (15–17 year group) responded “Yeah, but I walk with my mom a lot,” expressing a common sentiment that physical activity balances out unhealthy eating.

Despite widespread recognition of the benefits of healthy food, another important theme was the belief by youth that this awareness wasn’t enough to change their dietary behavior. A girl in the 11–14 year group said “Broccoli’s a healthy food but most people don’t like broccoli. But it’s a healthy food.” While this research did not assess nutritional knowledge, participants in all 3 age groups (8–10, 11–14, and 15–17) expressed confidence in their own knowledge about healthy versus unhealthy food, including the importance of healthy diets. Despite this self-assessed awareness, several participants suggested that their own knowledge about healthy foods did not discourage them from eating foods they themselves characterized as less healthy.

Themes emerging about influences on food selection centered around taste preference, convenience, costs, and sensory cues. The importance of taste preference emerged as a particularly important theme, with participants suggesting that taste is a key behavior motivator. For example, responses to questions about healthy foods included “I don’t eat them because they taste nasty” (boy, 11–14) or simply “I just don’t like healthy food” (girl, 8–10).

The convenience associated with foods they considered unhealthy was an over-riding influence for the 15–17 year olds, who cited multiple constraints on their time from school, church, sports, and other activities. As 1 teenage girl (15–17) explained, “...if you’re going somewhere and you don’t have a lot of time, it’s so much easier to go through a drive-through than it is to stop off at home and make something or go to a sit-down place long enough to make a salad or something healthy like that.”

The influence of the perceived higher costs of healthy foods was another recurring theme. When asked if she thought she ate enough healthy foods a 15–17 year old participant replied “I don’t know if I eat as much as I should, but fruits and vegetables are so expensive. If they weren’t so expensive I would eat them all the time.”

Participants also recognized the influence of sensory triggers promoting less healthy foods, triggers that are difficult to ignore. Participants stated “When you see it (unhealthy food), you wanna have it.” (boy, 11–14) and another “You smell it...you dream it.” (boy, 11–14). Many participants also recognized the persuasive powers of advertising in triggering the senses. “Advertisements are everywhere. And they’re so good. I have dreams about a big Wendy’s burger sometimes.” (girl, 15–17) “Like you see a commercial on TV of like this steak hitting the grill and it’s all sizzling everywhere....” (boy, 11–14). When asked for advice on how to encourage youth to eat more healthy food, 1 girl (11–14) suggested, “If it

had a catchy label or a name or something, or like a nice catchy tune on the commercial for cauliflower or something.”

Several key themes emerged when participants were asked for recommendations for designing future healthy eating promotion efforts. The role of social influences on healthy eating was the over-riding theme emerging from participants’ recommendations for future programming. As 1 girl (11–14) described it, “...it’s kind of hard to go to a group where people don’t want to eat healthy and you’re the only one sitting there eating an apple or something.” This social aspect of eating led many participants to emphasize the importance of social interaction and fun in designing healthy eating programming. Additionally, participants thought that incentives should be offered as an inducement to join healthy eating programs.

In response to questions, prompts, and group interaction, participant perspectives about the utility and desirability of possible healthy eating programs fell into 2 subgroups – those seen as desirable and those viewed negatively. However, many youth also expressed ambivalence about some types of programming. Most participants reacted positively to prompts about gardening and cooking classes. “I think that (cooking classes) would be a good idea because we could show kids how to eat healthy but it would show them other things like that it’s fun to eat healthy.” (girl, 11–14). “And you can like hang out with your friends and cook. So you learn and hang out and have fun.” (girl, 15–17). Participants also indicated that adding some kind of physical activity component to a healthy eating program would be useful.

Another strong theme emerging from participants about the design of health promotion programming was the lack of interest in traditional nutrition education. Participants expressed no interest in attending nutrition classes, which were seen as an ineffective and undesirable activity. “...we have our health classes at school and those are kind of hard to pay attention in. Cause you hear it from when you’re really, really little all the way up to when you’re the age that we are now.” (girl, 15–17)

While not a theme, it is notable that perceptions of healthy eating, influences on food choices, and recommendations for an effective healthy eating intervention appeared to vary by gender and age. Boys more often discussed healthy eating in terms of specific dietary knowledge or beliefs, often referencing the food pyramid, talking about how food and nutrients function in the body, and foods’ benefits. In contrast, girls were more likely to discuss how cost and convenience influence their food choices and consumption practices. Girls were also more likely to discuss the influence of taste preferences in guiding their food choices. The influence of sensory cues such as seeing or smelling certain foods were cited as a strong influence on food choice and consumption practices more frequently by girls than boys. Girls were also more likely than boys to perceive themselves as being stubborn about changing food habits. When asked about potential healthy eating programming ideas, girls more frequently suggested cooking classes, community gardens, working with a healthy eating coach, attending nutrition classes, and keeping track of what they eat as possible effective healthy eating activities. The major gender difference in support for program activities was in response to the idea of cooking classes, which boys often, but not always, saw as an activity for girls that they would not want to do.

Age-based differences were also apparent in the group discussions. In general, younger children tended to focus on nutrition facts and knowledge, regardless of gender. Children in the middle age group (11–14) commonly stressed the importance of taste, typically describing healthy foods as less appealing than foods they considered unhealthy. Children in the oldest age group (15–17) were particularly likely to emphasize the social aspects of eating when designing healthy eating interventions.

## DISCUSSION

Among the many themes reported above, several in each category offer important insights and suggest future directions for research and practice. Two key themes related to perceptions of healthy eating are the equation of healthy eating and healthy foods with fruits and vegetables and the belief by participants that lack of nutrition information is not a significant barrier to healthier eating. While the simplification of dietary recommendations to just greater consumption of fruits and vegetables suggests that participants' nutritional knowledge might be more limited than they themselves perceive, the vitally important health message of "eat more fruits and vegetables" seems to be well understood. Perhaps in part because of this limited definition of healthy eating, participants did not see lack of nutrition information as a barrier to healthy eating. While this research did not assess nutritional knowledge and cannot test the relationship between nutrition education and behavior among this population, it is clear that these participants themselves do not see lack of knowledge as a problem, a finding consistent with existing research. As Contento's<sup>34</sup> recent review of nutrition education research in this journal suggests, the past decade has seen "increasing recognition that behavior change or outcome-based interventions need to address social and physical environments, including policy and social structures, in addition to personal motivations and skills."

Discussion of influences on dietary choices led to several important findings. The importance of taste preferences presents a critical challenge for healthy eating promotion – convincing people to eat less tasty foods is a difficult challenge at the least. However, research has found a wide range of factors to be associated with food preference, including exposure and availability, modeling of eating behavior, and genetics or biological factors.<sup>35,36</sup> These youth also stressed the role of food advertising in shaping their taste preferences, a finding paralleled in the research literature.<sup>37,38</sup>

Participants also focused on how their own food decisions were shaped by environmental factors, including food availability, convenience and cost. In this low-income region, classified as a rural food desert because of the lack of accessible supermarkets or warehouse stores,<sup>39</sup> issues of cost of and access to healthy foods were consistent themes throughout the focus groups. Qualitative research with low-income urban adolescents has similarly emphasized the importance of environmental factors in shaping eating at home, in schools, and at restaurants.<sup>40,41</sup> The present study adds to the growing evidence base concerning the many ways social and physical environmental factors shape eating behaviors and demonstrates how clear these factors can be to the adolescents affected by them.

A theme noticeably missing from these focus group discussions was the role of traditional Appalachia food practices. Despite past research suggesting that rural Appalachians tend to rely more on gardening, food preservation and the bartering of food items than their urban counterparts,<sup>9,10</sup> few of these youth participants mentioned such practices. While some youth may continue to participate in these traditional Appalachian practices, the lack of discussion of such activities in the focus groups suggests they are clearly not the dominant family activity described in the historical ethnographic literature. At the same time that these traditional health-promoting practices may be receding, other research suggests that the influence of media and increasing availability of convenience foods into previously semi-isolated communities may be extending the reach of less healthy foods.<sup>42</sup> Healthy eating barriers experienced by urban residents decades ago (children's busy schedules with organized activities, both parents working out of the home, exposure to screen time and messages) now appear to be exerting an increasing influence on food choices and energy balance in rural areas as well. Rural Appalachian children may be caught in an unfavorable situation—experiencing many of the disadvantages (ubiquity of high calorie convenience

food, limited access to healthy foods) that modern society brings to healthy eating with few of the benefits (wider array of produce in super and mega-markets) enjoyed in more urban and suburban locales.<sup>43</sup>

Some differences in perceptions of healthy eating appeared to emerge by age and sex. Younger children were most likely to discuss the factual components of healthy eating, likely reflecting widespread nutrition education in the region's elementary schools. Older children, particularly girls, more frequently describe personal food preferences and barriers related to convenience and cost, concerns commonly found among adult populations.<sup>44</sup> Perhaps the identification of these particular barriers is attributable to girls being more attuned to what their mothers say about food choices. Understanding the influence of age and gender on youth dietary perceptions is critical in designing effective health communications campaigns targeted at this population.

Some limitations to these findings should be noted. Focus group participants were solely from 1 region in Appalachian Kentucky, limiting the generalizability of these results. Additionally, although selection of recruitment venues intentionally targeted a broad range of local residents, it is possible that such choices could result in selection bias. For example, the large majority of participants from 2-parent households and the predominance of white participants may make these findings less applicable in other communities. Also, statements made by several individuals should not be generalized to every focus group participant. However, the repeated appearance of the themes discussed here suggests that these barriers are widespread in rural Appalachian communities. Finally, because focus groups were not separated by gender, the distinction between what boys said and what girls said must be tempered by the unknown effects of mixed gender groups. It is possible that the gender distinctions noted here are due to youth participants patterning their responses after same-gendered members of the focus groups. However, because these gendered differences only appeared in relation to a few topics, it seems likely that these differences reflect real differences in boys' and girls' perspectives.

## IMPLICATIONS FOR RESEARCH AND PRACTICE

The findings from the present study suggest several areas for further research, both in Appalachia and among other populations. First, the self-confidence in nutritional knowledge by these youth, coupled with the fairly simplified perception of what represents healthy eating suggests the need for research on nutrition knowledge, self-perceived knowledge, and behavior. Second, research is needed to explore how healthy eating perceptions change as children move through adolescence. The ways those perceptions change as children age may also have implications for the interaction between generations within families, an area in which more research is critically needed.<sup>45</sup>

The resistance of youth participants to further nutrition education programming may suggest limitations on the types of healthy interventions likely to be accepted by this population. Because of this resistance, and because nutrition education is already offered routinely through the public schools, other types of programming may need to be given higher priority. These findings, like similar findings among low-income urban adolescents,<sup>40,41</sup> stress the need to expand healthy eating interventions beyond education into multi-level programs incorporating individual-level, community, environmental, and policy factors. The existing awareness on the part of these adolescent participants may suggest ways in which ecologically-designed interventions should focus efforts. For example, participants were quite aware of the impact of food advertising on their diets, and might be receptive to a campaign about food industry marketing practices, similar to the successful "truth" campaign targeting tobacco company business practices.<sup>46</sup>



Finally, while many nutrition and healthy eating interventions are already tailored by age, our findings concur with others that suggest such efforts may also need to be tailored by gender for maximum impact.<sup>47,48</sup> For example, while healthy cooking classes are more likely to be accepted by girls, such classes may need to be specifically tailored to increase their acceptability with boys. In contrast, both sexes were responsive to campaigns emphasizing how healthy foods can be tasty, appealing, and quick. Developing such programs may help counter the association of healthy foods with bad taste and inconvenience expressed in the focus groups. While the gender findings reported here are not definitive due to research design issues, notable thematic trends within this research speak to the need to tailor healthy eating interventions both to specific communities and to subgroups within those communities. Given the ever increasing problems of overweight and obesity, such creative, population-grounded programs are critical.

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