Children’s Discourse of Liked, Healthy, and Unhealthy Foods

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ABSTRACT

Background: Food literacy and nutrition education from kindergarten to 12th grade is a recommended strategy to address obesity prevention. However, limited research has explored children’s understanding and conceptualization of food and healthy eating to inform the development of curricula and messaging strategies.

Objective: To explore and identify patterns and themes regarding how children discuss and describe food and healthy eating.

Design: Focus groups were conducted during which children were asked to identify and describe foods they liked and perceived as healthy and unhealthy. To triangulate findings, children also completed written worksheets on which they identified and described foods. Discourse analysis was used to code and interpret data by focusing on the language children used in relation to different types of food.

Participants/setting: Seven focus groups were held with children in grades 3 through 7 (n=38) from one rural community.

Results: Analysis indicated four main themes. Children used a heuristic based on major food groups to determine healthfulness, did not strongly connect health values with liked foods and foods perceived as unhealthy, expressed that taste, texture, and visual appeal primarily shaped likeability, and associated liked foods with positive home and family experiences.

Conclusions: Children’s descriptions of liked and unhealthy foods were largely disconnected from health values and connected to taste and familiarity. Nutrition education should expand strategies beyond promotion of health benefits to include taste and sociocultural familiarity.


Children’s Poor Dietary Behaviors Have Led to Increased Risk for Conditions Such as Obesity and Type 2 Diabetes.1 During the past decade, energy intake from major food groups, including fruit and vegetables, meat, fish and poultry, and milk significantly decreased and energy intake from sugar-sweetened beverages, candies, and dessert significantly increased among children aged 6 to 11 years.2,3 To address these trends, food literacy and nutrition education is recommended.4 Yet, limited research has explored children’s understanding of food and healthy eating to inform the development of curricula and messaging.

The Institute of Medicine identified implementation and monitoring of food literacy and nutrition education from kindergarten to 12th grade as a key strategy for accelerating progress in obesity prevention.4 Childhood is a time of significant cognitive and psychosocial development, and considered an important period for the formation of eating habits.5 Education during this time has potential to shape food-related perceptions and behaviors and contribute to the development of lifelong healthy eating habits.

Research indicates that individuals have personal systems of food values, knowledge structures, and heuristics that influence their food choices and behaviors.6 These personal food systems are shaped by social and cultural contexts and simplify mental processing of food choices made on a daily basis. Children are more likely to respond to education and messaging strategies that correspond to their personal food systems.7

Qualitative research of children’s food and healthy eating perceptions has uncovered several important factors related to their food choices (eg, taste and accessibility).8,9 Research studies have also asked children to sort or categorize pre-defined lists of food items in terms of healthfulness to assess their nutrition knowledge.10-13 However, there are limitations in these studies and gaps in knowledge remain. Much of this research has focused only on fruits and vegetables, and many of the studies have been directed by health behavior theories criticized for assuming relatively high rationality and cognitive processing of food choices.9,14 These assumptions may limit insight regarding children’s food and healthy eating values and knowledge structures that form as a result of their social and cultural context.

Qualitative research with inductive frameworks can generate rich descriptions about how food and healthy eating
is understood within one's social and cultural context. For example, adults’ descriptions of food values and choice processes from in-depth interviews and focus groups have been used to understand how adults construct and negotiate food values, classify foods, and form and revise strategies for choosing foods. The purpose of this study was to explore how children understand and conceptualize food and healthy eating to inform nutrition education and messaging strategies. The specific aim was to identify patterns and themes in data gleaned from children’s discussions and respective descriptions of food and healthy eating.

METHODS

Study Setting
This study was conducted in a rural county school district in Virginia. In 2012, the county had a population density of 29.6 people per square mile and a total population of 17,088 (62% white and 35% African American). More than half of students in the elementary and middle school in this community were eligible for free and reduced lunch, 70% and 60%, respectively. The county’s median household income is $36,378; 57% of the Commonwealth average. This study was approved by the institutional review boards at the University of Nebraska Medical Center and the University of Virginia.

Subjects and Procedures
To gain a range of child perspectives, school administrators selected and recruited children (quasirandomly from arbitrarily chosen class lists) from grades 3 through 7. Administrators were asked to exclude participants with behavior disorders or disabilities that would limit their ability to participate in the session. Administrators sent parents materials about the study and a consent form, which was resent until a sufficient number of students returned signed consents. Children with parental permission were invited and assented to participation. We used an emergent process of preliminary analyses (assessing for saturation of themes) and data collection to refine sampling and data collection methods. Seven focus group sessions were conducted (n=37). Each session targeted four to five participants per session based on recommended practices for focus groups with children. Two sessions each were held with third-graders (n=9), one session with children in grades 3 and 4 (n=8), and one session each with children in grades 4 (n=4), 5 (n=6), 6 (n=6), and 7 (n=4). Two research team members with prior training in focus group facilitation methods led moderation of the focus groups, taking turns moderating and note-taking. Another team member was also trained on the moderation of the focus groups, taking turns moderating and note-taking. Participants as needed to solicit responses. Probing and clarifying questions such as, “How do you describe [these foods]?” were used to generate additional discussion and descriptions as participants answered the leading question. The first three focus groups were analyzed for preliminary themes, which indicated potential differences in how children described foods they understood as healthy, unhealthy, and liked foods. A Food Descriptor Grid was administered to strengthen validity of findings and provide a second data source for triangulation in the final four focus group sessions (one each with children in third grade and children in fifth through seventh grade [n=21]). Participants recorded responses in the written Food Descriptor Grid that had prompts similar to the focus group questions. Grid prompts included a request to name as many food items as desired in three categories (ie, food I like, food I think is healthy food, and food I think is unhealthy food), followed by a short description of each of these items. The participants could list the same item in multiple categories. During the first 15 to 20 minutes of the sessions, moderators answered clarifying questions while the participants completed the grid. During the remaining time, the moderators asked the focus group questions and also asked participants to share and discuss descriptor grid responses.

Data Analysis

Focus group audio files were transcribed and analyzed using NVivo 10 (2014, QSR International). Discourse analysis was used to examine how children’s discussions and descriptions of food and healthy eating reflected social and cultural context. Coding and interpretation focused on identifying themes as signified by use of language. For example, units of data (words, sentences, and phrases) were coded based on the language children used to describe foods and compared across foods they liked, and foods perceived as healthy and unhealthy. Three research team members, including one not involved in conducting the focus group sessions, used an iterative process to review transcripts and develop a coding scheme, and consulted with other team members to discuss emerging themes. Two team members independently applied the final coding scheme on a subset of two focus group transcripts. Interrater reliability was measured using Cohen’s kappa and was found to be of substantial agreement (0.77). One team member finished coding the remaining transcripts. Responses provided in the Food Descriptor Grid were manually entered into a spreadsheet. The foods children listed were coded by categories aligned with US Department of Agriculture MyPlate food groups (eg, fruit, starchy vegetable, and lean protein). Thematic analysis was used to code the descriptions children provided. The number of participants who listed at least one item in the major food groups and descriptive theme under the liked, healthy, and unhealthy food categories were used to summarize food descriptor data, which were compared and contrasted with focus group themes to triangulate findings.

RESULTS

Four major themes arose from focus group sessions, which were supported by findings from the Food Descriptor Grid, regarding how participants described food and healthy eating. Children used a heuristic based on major food groups
to determine healthfulness; did not strongly connect health values with liked foods and foods perceived as unhealthy; expressed that taste, texture, and visual appeal primarily shaped likeability; and associated liked foods with positive home and family experiences (Figure 1).

**Food Group Heuristic to Determine Health Value**

The participants often categorized items as unhealthy or healthy based on its corresponding food group. Desserts and snack foods (eg, chocolate and ice cream) were considered unhealthy because they were high in sugar. Fruits and vegetables were considered healthy because they had qualities such as being “fresh” or “nutritious.” There were mixed views and confusion regarding meats and dairy, but many believed these foods were unhealthy and connected with “fattening” or “greasy” qualities.

The Food Descriptor Grids revealed a similar categorization. In the healthy category, brightly colored vegetables and fruit items were listed by the most participants, 81.0% (n = 17) and 66.7% (n = 14), respectively (Figure 2). In the unhealthy category, the most common food was “high-sugar foods or drinks,” listed by 90.5% (n = 19) of participants. In addition, the fourth most common descriptive theme of unhealthy food items was an indication of its fat content, noted by 19.0% (n = 4) of participants (Figure 3).

Younger participants (in third and fourth grades) sometimes made erroneous and instant connections between descriptions of “fresh” and “healthy” with any item labeled as a fruit or vegetable. For example, a third-grade girl said, “...[pectin-based fruit-flavored snacks] are made of fruit so they are healthy.” Similar errors appeared less, but still presented a source of confusion, among older participants. For example, during a session with sixth graders, one participant asked, “Are chocolate-covered cherries...fruit or candy?” and during a session with seventh-graders, the participants debated the health value of desserts with fruit.

**Health Values Disconnected from Liked and Unhealthy Foods**

Participants’ descriptions of foods they categorized as healthy commonly reflected nutritional value, whereas descriptions of foods they liked did not. For example, a third-grade boy asked to describe his lunch responded, “The sandwich is healthy and [the gelatin dessert] is something that tastes good.” Children’s descriptions of foods perceived as healthy often specifically included the term “healthy” or referred to health-related concepts (eg, containing vitamins or their ability to “make you stronger”). Conversely, children’s descriptions of foods perceived as unhealthy rarely included the term “unhealthy” or referred to its health value.

The food descriptor grid similarly revealed a difference in the descriptions of the liked, healthy, and unhealthy food items (Figure 3). The foods that participants listed as “liked” and “unhealthy” were more often described with specific tastes (eg, sweet, salty, and sour) than “healthy” foods. Liked, unhealthy and healthy foods were described with specific tastes by 52.3% (n = 11), 38.1% (n = 8), and 9.5% (n = 2) participants, respectively.

Among younger children, foods in any category were not often described with terms denoting health values. Older children commonly described food items they listed in the Food Descriptor Grid as healthy with the word “healthy” itself (60.0%; n = 6), whereas fewer used terms related to health (or lack thereof) to describe foods they listed as unhealthy (30.0%; n = 3) and none used health terms to describe liked foods (Figure 3).

**Taste, Texture, and Visual Appeal Shaped Likeability**

The participants shared diverse food preferences and noted favorite items within all food groups. Mixed dishes, including items such as pizza, pastas, and tacos were often noted as favorites, as were red and fried meats (eg, chicken nuggets). During focus group sessions, the participants provided explanations of their food preferences most often in terms of taste (eg, “I like it mostly because it tastes good”). Participants also discussed preferences in relation to appearance and texture. For example, a fifth-grade girl noted that “sometimes food shows its expressions on how it looks. Broccoli is one of those examples ... It’s sort of like the food is trying to persuade you.”

The descriptor grid corroborated these results. Mixed dishes and red or fried meat foods were the two types of foods participants most often listed in the liked category, listed by 90.5% (n = 19) and 76.2% (n = 16) of participants, respectively (Figure 2). Similarly, participants’ descriptions of foods (liked, healthy, and unhealthy) were most commonly general positive feelings toward the food or its taste (eg, “it’s good” or “yummy”) (52.4%; n = 11) (Figure 3). Texture was used by 42.9% (n = 9) and 33.3% (n = 7) of participants to describe foods listed as liked and healthy, respectively, but was not a common descriptor of foods listed as unhealthy (Figure 3).

Younger participants’ descriptions of liked foods were more superficial than older participants’. In the Food Descriptor Grid, younger participants often used “good” (72.7%; n = 8) or denoted a general positive taste (63.6%; n = 7) in their descriptions of liked foods. Older participants used “good” and general descriptions less often, 10.0% (n = 1) and 40.0% (n = 4), respectively.

**Family and Home Experiences Associated with Food Likeability**

In general, the participants brought up home and family interactions in relation to liked foods. Several participants noted family members were avid hunters and an associated preference for meats such as deer, bear, and rabbit. Home gardens were also often central to discussions related to preferred foods that participants perceived as healthy (eg, fruits and vegetables).

The association of liked foods with home and family experiences was consistent across age groups. For example, a third-grade girl mentioned, “We have a garden at our house, and grow corn, cucumbers, potatoes” and that she liked “…to eat foods from the garden.” Similar discussion was found among older children. For example, a sixth-grade boy discussed, “…My dad cooks hamburgers, chicken wings, green beans, pasta salad and like we just watch the whole game and it’s like awesome.”

**DISCUSSION**

This study is one of the first to examine young children’s conceptualization of food and healthy eating. By using novel
Table 1. Focus group themes with illustrative quotes from participants.

<table>
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<th>Theme</th>
<th>Illustrative quote</th>
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| Food group heuristic to determine health value | “…[pectin-based fruit-flavored snacks] are made of fruit so they are healthy”  
—Third-Grade Girl  
Moderator: “Anything besides fruits and vegetables that are healthy?”  
Participant: “You mean like categories? … like grains…”  
—Fourth-Grade Boy  
Participant: “If you have brownies with nuts [they are healthy]”  
Moderator: “What makes them healthy?”  
Participant: “The nuts”  
—Sixth-Grade Girl  
“Ice cream has sugar in it, frozen yogurt is like just yogurt and it’s fruit. Most of the time I have, like depending on what type of yogurt you get, you can get like fruit [unintelligible] stuff in it”  
—Seventh-Grade Boy (in response to why he thinks frozen yogurt is healthy and ice cream is not) |
| Health values disconnected from liked and unhealthy foods | “The sandwich is healthy and [the gelatin dessert] is something that tastes good”  
—Third-Grade Boy  
“I mainly [choose chocolate milk because it] tastes better, because … if I get something like spinach, I want something that tastes a little bit better… because I eat spinach to make my muscles to be stronger”  
—Third-Grade Girl  
Participant: “Regular carrots have like no flavor. They’re just not meant for it. But sweet carrots have like a sweet taste to it that isn’t gross and has no flavor. It’s kind of like a candy that melts in your mouth, very sweet, but really soft at the same time”  
Moderator: So raw carrots, they’re healthy…  
Participant: “…But gross”  
—Fifth-Grade Girl (when asked to describe why she doesn’t like regular carrots but likes canned “sweet” carrots)  
Moderator: What’s the difference between white and brown rice or white and brown bread?  
Participant #1: Different color  
Participant #2: The taste is different  
—Sixth-Grade Boy (Participant #1) and Girl (Participant #2)  
Participant: “I like corn, but I don’t like cabbage”  
Moderator: “What is the difference?”  
Participant: “Corn is sweet”  
—Seventh-Grade Boy |
| Taste, texture, and visual appeal shape likeability | “I don’t like a lot of fruit, and only fruits like bananas are ok and if I get grapes… I just suck the juice out… I don’t like the skin or inside… and I do the same to oranges”  
—Third-Grade Girl  
“Sometimes food shows its expressions on how it looks. Broccoli is one of those examples […] It’s sort of like the food is trying to persuade you”  
—Fifth-Grade Girl |

Figure 1. Focus group themes with illustrative quotes from participants.
qualitative methods that focused on children’s own descriptions of foods, the study found distinct differences in how children conceptualized foods perceived as healthy, unhealthy, and liked. Healthy foods appeared to be conceptualized largely in terms of food groups and nutrients, whereas liked and unhealthy foods were conceptualized in relation to taste, texture, and visual appeal. Family and home experiences with food also appeared to shape positive attitudes and likeability of certain foods.

This study’s findings supports other research that has found that children tend to view fruits and vegetables as healthy and understand nutritional properties make certain foods unhealthy (eg, cake has too much sugar). These views have potentially been shaped by dominant nutrition education curricula that use food group-based guidelines as a framework and healthy eating marketing campaigns that focus on fruit and vegetable promotion. However, similar to other studies, children in this study were unclear about meats, dairy, and items that include multiple food groups. The findings from this study indicate that this lack of clarity is possibly due to children’s use of a heuristic based on major food groups and nutrient properties to determine healthfulness.

The importance of taste on children’s food preferences indicated in this study has been highlighted by other qualitative studies. This study’s participants most commonly preferred red and fried meats and mixed dishes, and used simple indications of the food being “good” or “yummy” to convey positive taste. Other studies have found that appearance and texture can influence children’s liking of vegetables (eg, children tend to prefer vegetables that are crunchy). Children in this study also provided descriptions that indicated appearance and texture was important to them.

No other studies have compared how children describe different types of foods. This study found that younger children did not often describe foods with health terms and values, which may be due to a limited understanding of what healthy means. Older children’s descriptions of foods they considered healthy were often related to healthfulness, whereas healthfulness factored little into their descriptions of foods they perceived as unhealthy or liked. Across all ages, taste factored more into descriptions of liked and unhealthy foods. A previous study indicated that parents who regularly disguise healthy foods to increase their consumption appear less successful at encouraging long-term healthy eating practices. Encouraging children to develop a taste for healthy items (as opposed to understanding nutritional value) may be more appropriate to improve likeability.

This study provides further evidence regarding the important role of home and family environments in shaping children’s eating behaviors. Other qualitative studies, using frameworks that focus on barriers and facilitators of healthy eating, have found that parental control and modeling influences are important factors. This study provides evidence about the important influence of home and family environments in shaping children’s food values. According to Lazarfeld’s principle of specification, why question probes, as used in this study, elicit responses regarding influences and desirable attributes. This study’s themes suggested that children’s familiarity and positive attitudes toward food (including healthy items) is influenced by social connections with food (eg, home vegetable gardens and hunting with family members).

This study had several limitations. The study was conducted in an elementary and middle school in one rural community, which may limit generalization to other community settings and populations. Selection bias is a concern—participants who agreed to participate may have been more health-oriented. The sample size limited the study’s ability to assess whether there were significant differences between age groups in granular aspects of the themes. For example, it appeared that older children had slightly more nuanced understanding of nutrition concepts, but data saturation was not adequate to make strong conclusions regarding these differences. Nonetheless, data saturation was achieved for overall findings across all ages. Social desirability bias is a

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<th>Theme</th>
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<td>Family and home experiences associated with food likeability</td>
<td>“I don’t like them chunky. I like them nice and soft” —Sixth-Grade Girl (discussing mashed potatoes)</td>
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<td>“What I like is Chinese food, spicy and it has like texture, with like the bamboo shoots.” —Seventh-Grade Boy</td>
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<td>“We have a garden at our house, and grow corn, cucumbers, potatoes” —Third-Grade Girl</td>
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<td>“You can eat lots of different stuff that [is from] the garden—I like to pick things and eat them straight from garden, like cherry tomatoes…” —Fourth-Grade Girl (discussing her home garden)</td>
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<td>“…My dad cooks hamburgers, chicken wings, green beans, pasta salad and like we just watch the whole game and it’s like awesome” —Sixth-Grade Boy</td>
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<tr>
<td></td>
<td>“My mom puts cheese in them and it’s really good” —Seventh-Grade Girl</td>
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Figure 1. (continued) Focus group themes with illustrative quotes from participants.
Figure 2. Number of participants who listed items in each food group under liked, healthy, and unhealthy categories on the Food Descriptor Grid. The bar graphs indicate the number of participants who listed at least one item in the major foods groups under the liked, healthy, and unhealthy categories on their respective Food Descriptor Grids. The top row of graphs represents all participants. The second and third represent younger (third- through fifth-grade) and older (sixth- and seventh-grade) participants, respectively.
Figure 3. Number of participants who provided each of the thematic descriptions of food items under liked, healthy, and unhealthy categories on the Food Descriptor Grid. The bar graphs indicate the number of participants who listed the thematic descriptions at least once under the liked, healthy, and unhealthy categories on their respective Food Descriptor Grids. The top row of graphs represents all participants. The second and third rows represent younger (third- through fifth-grade) and older (sixth- and seventh-grade) participants, respectively.
concern because it potentially influenced participant responses. For example, the participants may have exaggerated their preferences for items such as fruits and vegetables because they were viewed to be healthier.

CONCLUSIONS
This study's findings suggest that nutrition education needs to consider the human predisposition for using heuristics to make food choices, but go beyond food group- and nutrient-based strategies. The children in this study appeared to have internalized messages that fruits and vegetables are healthy. However, they also appeared to use simplified strategies to determine health value based on major food groups, which may be problematic for children when navigating the modern food environment. The Academy of Nutrition and Dietetics recommends using a total diet approach that focuses on concepts such as variety, moderation, and proportionality instead of targeting specific food nutrients. These concepts need to be introduced with strategies that aid decision making without high levels of cognitive processing. For example, curricula such as that developed by Food Day includes visual media strategies that teach children to evaluate a food as whole, changed a little, or changed a lot (eg, whole corn, canned corn, and sugary breakfast cereal). These types of strategies hold potential and should be more rigorously evaluated.

Nutrition education and food literacy curricula may also need to expand the definition of health and consider strategies that emphasize the taste appeal and positive social experiences around healthy foods. This study's findings were aligned with the notion that scientific constructions of nutritional values of food may be incongruent with cultural expectations and beliefs. Health as an attribute factored little into children's perceptions of unhealthy and liked foods, and food preferences were considerably shaped by taste, texture, and visual appeal and familiarity. For example, children liked foods that they associated with hunting and gardening with parents and family, which indicates the potential of experiential-based programming such as garden-based nutrition education. In addition, there is a need for more development and research of healthy food marketing strategies that apply similar visual-based branding and imagery (eg, use of bright colors and cartoon characters) to improve visual appeal that are prevalent among high-fat and high-sugar food marketing practices.

Finally, this study indicates the need to increase children's exposure to healthy foods, which must be ubiquitous because broad and diverse exposure improves lifelong healthy eating habits. In the United States, a culture and entire industry focused on kid food that largely consists of highly processed and high-sugar foods has been criticized for limiting exposure to healthy foods and perpetuating perceptions that children do not like healthier food items, thereby creating a mutually reinforcing cycle. Children in this study had a preference for mixed dishes (eg, tacos, pastas, and pizza). Opportunities to introduce greater diversity and larger quantities of healthy items within these dishes (eg, improving visual appeal by using colorful vegetables and/or pairing with meats) should be explored across multiple settings. For example, healthy version recipes of these types of foods can be developed and incorporated into family-based nutrition education as well as school foodservice menus.

Overall, this study provided new information regarding how children conceptualize food and healthy eating. Children appeared to have been influenced by nutrition education and mass media campaigns and used food group-based strategies to categorize and understand healthfulness; however, health values appeared to be disconnected from food preferences. Future research needs to explore food literacy and nutrition education strategies that emphasize social experiences and emphasize taste qualities.

References


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**STATEMENT OF POTENTIAL CONFLICT OF INTEREST**

J. Brittin and T. T.-K. Huang are consultants to VMDO Architects on projects unrelated to this study. No potential conflict of interest was reported by the other authors.

**FUNDING/SUPPORT**

This study was funded in part by a grant from the University of Virginia, Youth-Nex program.

**ACKNOWLEDGEMENTS**

The authors thank the school board, administrators, teachers, and staff of the Buckingham County Public School District for their support of this research.