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The Relationship Between Health Literacy and Health Conceptualizations: An Exploratory Study of Elementary School-Aged Children

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ABSTRACT

Analyzing children’s conceptualizations of health and body and health literacy will significantly add understanding to how problematic health attitudes and behaviors may take root (Driessnack, Chung, Perkhounkova, & Hein, 2014). The knowledge gained from such an assessment can be applied towards communication contexts that aim to promote children’s health literacy and their well-being. With increased health literacy, children can actively participate in decision-making regarding their own health and can understand why healthy behaviors are important to adult health (Borzekowski, 2009). The purpose of this exploratory study was to examine the understudied intersection between health literacy and health conceptualizations in children in order to elaborate on health literacy theory. Specifically, the findings contribute to health communication between children and their caregivers, and between children and health care providers. Qualitative, in-depth interviews were conducted with elementary school children. The significance of the study is its contribution to health communication for children, where interventions can consider health literacy types and levels before addressing children’s health outcomes. Findings show how we can understand children’s conceptualizations and can address health literacy skills inside and out of the classroom in ways that resonate with children.

Health-related knowledge, attitudes, and behaviors—including those related to food, activity, and weight—develop during childhood and become deeply rooted such that they are resistant to change later, when children become adults (Driessnack, Chung, Perkhounkova, & Hein, 2014). Thus, studies have shown that promoting healthy behaviors during early childhood can have sustained benefits on attitudes and later behaviors (Jones, Hinkley, Okely, & Salmon, 2013; Neumark-Sztainer, Wall, Larson, Eisenberg, & Loth, 2011). Analyzing children’s conceptualizations of health and body and health literacy will significantly add understanding to how problematic health attitudes and behaviors may take root (Driessnack et al., 2014). The knowledge gained from such an assessment can be applied toward communication contexts that aim to promote children’s health literacy and their well-being.

A few studies have explored children’s conceptualizations of health (e.g., Atencio, 2010; Burrows, Wright, & Jungerson-Smith, 2002; MacNeil & Rail, 2010; Rail, 2009; Wright, O’Flynn, & Macdonald, 2006). However, none were found that examined the role health literacy plays in shaping conceptualizations. Drawing from theorists such as Freire, Piaget, and Vygotsky, Borzekowski (2009) wrote that education and literacy allow children to achieve ownership and empowerment over their own lives, increase ability to improve health on their own, and increase problem-solving skills. She emphasized that since children and adolescents regularly interact with health messages and health practitioners, health literacy skills should be encouraged at a very young age. With increased health literacy, children can actively participate in decision making regarding their own health and can understand why healthy behaviors are important to adult health (Borzekowski, 2009). Moreover, children with low literacy generally have worse health behaviors and parents with low literacy have lower health knowledge and behaviors that are less beneficial to their children’s health (DeWalt & Hink, 2009).

The purpose of this exploratory study was to examine the understudied intersection between health literacy and health conceptualizations in children in order to elaborate on health literacy theory. To achieve this aim, qualitative, in-depth interviews were conducted with elementary school children. The significance of this study is its contribution to children’s health communication at school, in health care settings, and at home. Specifically, findings show how we can understand children’s health conceptualizations and can address health literacy skills when designing and communicating health messages such that they resonate with children.

Literature Review

Health Literacy Models

There are various definitions of health literacy, and efforts to operationalize this construct vary in scope, method, and quality (Sørensen et al., 2012). One of the most common definitions of health literacy is “the degree to which persons have the capacity to obtain, process, and understand the basic health information and services needed to make appropriate decisions about their own health care” (Sørensen et al., 2012).
health-related decisions” (Nielsen-Bohlman, Panzer, & Kindig, 2004). Peerson and Saunders (2009) argue, however, that many studies that claim to discuss health literacy actually focus on the limited and easily measurable concept of “medical literacy,” which refers to the knowledge, skills, and abilities that pertain to interactions with the health care system (e.g., the ability to read, understand, and act on instructions for taking a cholesterol-lowering drug). In contrast, broader notions of “health literacy” include the capacity to understand and act on messages that are central to making critical judgments and decisions not only in health care-related settings, but also about health (e.g., the ability to access information about cholesterol, to understand it, and to apply it to one’s own life) (Peerson & Saunders, 2009).

Nutbeam (2000) presents a more comprehensive and critical model that extends the concept of health literacy to include dimensions beyond individual competencies in the medical context. He argued that there are three dimensions of health literacy: (a) functional: the basic skills in reading and writing that are necessary to function effectively in everyday situations; (b) communicative: more advanced cognitive and literacy skills, which, together with social skills, can be used to actively participate in everyday situations, extract information, derive meaning from different forms of communication, and apply this to changing circumstances; and (c) critical: more advanced cognitive skills, which, together with social skills, can be applied to critically analyze information and use this to exert greater control over life events and situations (Nutbeam, 2000). As Rudd (2015) suggested, an understanding of health literacy requires attention to individuals’ embeddedness within multiple layers of physical, social, and political systems. Thus, Nutbeam’s model reflects a more holistic definition of health literacy.

Nutbeam’s model for health literacy has been applied in a few research studies with adult participants. Ishikawa, Takeuchi, and Yano (2008) evaluated the reliability and validity of an instrument that included Nutbeam’s scales for functional, communicative, and critical health literacy in a sample of adult outpatients with type 2 diabetes in Japan. They found that all three health literacy dimensions were positively associated with diabetes knowledge and that self-efficacy was positively associated with communicative and critical health literacy scores. Drawing from this study, Ishikawa, Nomura, Sato, and Yano (2008) administered a five-item scale for communicative and critical health literacy to office workers in Japan and evaluated how health literacy compared to health-related behaviors and coping with job stress. They found that those with higher communicative and critical health literacy were more likely to have regular eating patterns, exercise weekly, and to have never smoked compared to those with lower scores. In coping with job stress, those with higher communicative and critical health literacy were more likely to actively solve problems or seek support from others, whereas those with lower health literacy were more likely to be submissive to the situation. Another study, by Chinn and McCarthy (2013), piloted a tool with Nutbeam’s measures for functional, communicative, and critical health literacy in an adult primary care setting in England (n = 146). The overall scale had adequate reliability (Cronbach’s alpha = .74), though reliability of each subscale was less consistent.

**Children’s Health Literacy**

Eight- to 11-year-old children comprise a specific developmental stage called “middle childhood” (Berk, 2003; Collins, 1984; McDevitt & Ormrod, 2002). More than any other developmental period, middle childhood sets the stage for health literacy, self-discipline, the ability to make good decisions about risky situations, eating habits, and conflict negotiation (U.S. Department of Health and Human Services [USDHHS], 2014). Yet, there is a dearth of research that addresses health literacy in this age group. Researchers have argued that children’s health literacy studies, to date, have used reading ability as an (inadequate) proxy measure for health literacy (Abrams, Klass, & Dreyer, 2009). Few studies were found that focus on a broader set of functional skills, let alone communicative or critical literacy skills (DeWalt & Hink, 2009; DeWalt & Pignone, 2005).

Nutbeam (2000) identified several potential benefits of functional, communicative, and critical health literacy that are applicable to children’s health over their life course. For example, functional health literacy could lead to an improved knowledge of the risks associated with disease, compliance with prescribed actions, awareness of available health services, and increased participation in population health programs. Communicative health literacy could lead to an improved capacity to act independently, an improved motivation, more self-confidence, and the capacity to influence social norms and interact with social groups. Critical health literacy could lead to improved individual resilience to social and economic adversity, improve community empowerment, and enhance the capacity to act on social and economic determinants of health. However, the role of functional, communicative, and critical health literacy in influencing children’s conceptualizations of health, healthy bodies, and health practices has not been empirically explored.

**Research Questions**

With such a gap in scholarship on children’s health literacy, an initial step is exploratory studies to connect health literacy to health conceptualizations, knowledge, and attitudes. This research explores these connections. This study was guided by the following research questions:

RQ1: How does children’s functional health literacy connect to their conceptualizations of health, healthy bodies, and health practices?

RQ2: How does children’s communicative health literacy connect to their conceptualizations of health, healthy bodies, and health practices?

RQ3: How does children’s critical health literacy connect to their conceptualizations of health, healthy bodies, and health practices?
Method

Participants

The sample consisted of children from an after-school child care program at a public elementary school in the Mid-Atlantic region. Children were between the ages of 8 and 11 years. Out of the sample, 20 children were white, five were African American, three were Asian/Pacific Islander, and one was Hispanic/Latino. There were 12 males in the group of 29 children. One factor that could have influenced the sample demographics is that the elementary school is located in close proximity to a large, state university. All study procedures were approved by the university’s institutional review board (IRB), as well as by the school district’s research oversight board.

Study Procedures

Given the exploratory nature of the study and research questions, qualitative in-depth interviews were used as the research method. Semistructured, one-on-one interviews were conducted with 29 children in private rooms at their school. Each child was interviewed twice, for a total of 58 interview sessions. Each interview did not exceed 30 minutes, given the children’s developmental ability to concentrate and stay on task. All interviews were audio-recorded and conducted by one of the trained researchers. During the interview sessions, there was also an undergraduate student in the room with the interviewer and child (participant) in order to take notes. All the interviews were conducted by the same interviewer.

Interview Protocol

An interview protocol with a script and questions was developed and used during each interview session. It included open-ended questions addressing conceptualizations of health (What does healthy mean to you? What does unhealthy mean to you?) and of healthy bodies (Can you describe a healthy body to me?). Conceptualizations of health practices were elicited through a task of drawing a picture with a follow-up prompt (On this sheet of paper, draw an image of a girl/boy doing something healthy/then something unhealthy; Tell me about what you drew). The act of drawing has been found to be developmentally appropriate for children this age and helpful to inspire conversations when children are not familiar with the topic or interviewer (Einarsdottir, Dockett, & Perry, 2009; Gonzalez-Rivera & Bauermeister, 2007). The questions were adapted from previous studies on children’s ideas regarding health, healthy bodies and health practices (e.g., Atencio, 2010; Burrows et al., 2002; MacNeill & Rail, 2010; Rail, 2009; Wright et al., 2006).

The protocol also had questions measuring functional, communicative, and critical health literacy. The Newest Vital Sign (NVS) is a screening tool for functional health literacy that extends beyond reading ability (Weis, Mays, Martz, Castro, DeWalt, Pignone, Mockbee, & Hale, 2005). The original NVS asks respondents to read a nutritional label from an ice cream carton and answer six questions. Psychometrics showed good internal consistency (α = .76) and criterion validity (r = .59, p = .001) (Weis et al., 2005). Recently, Driessnack et al. (2014) explored the feasibility, utility, and validity of using the NVS to assess health literacy in children between the ages of 7 and 12 years. They found that in a sample of 47 parent–child dyads, children were able to complete the NVS in the same time and with the same distribution of results and difficulty as adults. However, both parents and children had difficulty with one of the questions that asked for calculating percentages. Chinn (2011) argued that qualitative facets of health literacy can focus on the detail of how people actually interact critically with health information in real-life situations. Therefore, in this study, participants were given the same nutrition label from the original NVS instrument but were asked developmentally appropriate questions. The first question asked the children whether they knew what the label was and to describe it. Then they were asked the following: “What do you notice first on this label?”; “Can you point to the words you understand and tell me what they mean?”; “Can you find the word sugar?”; “Can you tell me how much sugar is in this ice cream” (similar question to original NVS item); “Let’s pretend you are allergic to peanuts. Where on this label would you look to see if you could eat this ice cream”; and “Could you eat this ice cream” (same question as on the original NVS). Finally, with no formerly published, developmentally appropriate scales to assess communicative and critical health literacy in children, we developed items to explore these constructs (see Table 1 for items).

<table>
<thead>
<tr>
<th>Construct</th>
<th>Dimension</th>
<th>Question asked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicative health literacy</td>
<td>Extract information</td>
<td>Where do you get information about health from? (Ask the following after participant provides answers) Anyone else or anywhere else?</td>
</tr>
<tr>
<td></td>
<td>Extract information</td>
<td>What information about health do you get from ______ (each source)?</td>
</tr>
<tr>
<td></td>
<td>Extract information</td>
<td>When you get information about health from different people or places, how do you decide which information to pay attention to?</td>
</tr>
<tr>
<td></td>
<td>Derive meaning from different forms of communication</td>
<td>Is it easy or hard to understand the health information you get from ______ (each source)? (Based on answer, ask the following for each source mentioned by the participant) What makes it hard/easy to understand?</td>
</tr>
<tr>
<td></td>
<td>Apply new information to changing circumstances</td>
<td>Do you use the health information you get? (If yes) How do you use it?</td>
</tr>
<tr>
<td>Critical health literacy</td>
<td>Critically analyze information</td>
<td>Are there times when the information you get about health is different depending on where or who you get it from (If yes) Can you give me an example? (After participant responds, ask the following) Any other examples?</td>
</tr>
<tr>
<td></td>
<td>Critically analyze information</td>
<td>How do you decide if the health information you get is correct?</td>
</tr>
<tr>
<td></td>
<td>Using information to exert greater control over life events and situations</td>
<td>Do you make decisions about your own health? (If yes) Can you give me an example? (After participant responds, ask the following) Any other examples?</td>
</tr>
</tbody>
</table>
Data Analysis

All recorded interviews were transcribed verbatim, and all transcripts and drawings were scanned and uploaded into Atlas.ti, a qualitative data management program (Atlas.ti, 7.5.7 ed., 2015). Prior to data collection, a coding dictionary that included terms related to each research question was developed. The codes in the coding dictionary were given operational definitions to guide the coding process. With the coding dictionary open in Atlas.ti, transcripts were read and codes were manually assigned to highlighted quotes. Based on each child’s verbal descriptions of what he or she drew, codes were also manually assigned to relevant drawn components (e.g., foods, activities, behaviors, places) and captions (e.g., word bubbles, labels) given each drawing. There were also some overlapping codes. For example, if a child alluded to a conceptualization of health while responding to a health literacy question, this data segment was coded under the domain “conceptualizations of health,” as well as under a domain for health literacy.

Once all the drawings and transcripts were coded using the coding dictionary, researchers trained two external coders and provided each with the coding dictionary and a set of transcripts and drawings. Both coders independently coded four drawings and four transcripts using the coding dictionary, resulting in 84 coded data segments. A code-by-code comparison of the 84 pieces of data was performed to assess inter-coder reliability. Percent agreement was 90%, and Cohen’s kappa was .378 (p < .001). The researchers then performed a final analysis of all transcripts and drawings.

Once coding was finalized, a series of steps was performed to complete the analysis.

First, queries were run to capture narrative segments related to the three health literacy domains for each participant. Second, coded segments were sorted according to health literacy domain in a separate document. Third, coded segments were consolidated to generate themes for each child’s functional, communicative, and critical health literacy. These three steps were then repeated for each child’s conceptualizations of health, healthy bodies, and health practices. Finally, each child’s functional, communicative, and critical health literacy was connected to his or her conceptualizations of health, healthy bodies, and health practices. Once this was done for each participant, we looked for commonalities and differences across the data to generate a set of emergent themes for the entire sample.

Results

Functional Health Literacy

Theme 1: The Children’s Interpretations of the Information on the Nutrition Label Coincided with their Conceptualizations of Health

There were patterns between the information that the children noticed on the nutrition label and their conceptualizations of health. For instance, when asked to describe the words she understood on the nutrition label, one girl said:

When asked to describe what the word “healthy” meant to her, this same participant said:

When asked to describe what she noticed first on the nutrition label, another girl said, “I noticed the . . . top that says Nutrient Facts. Then I noticed like, sugar . . . because it’s like sugar, and sugar’s awesome, but it’s bad for you.” This same participant said the word “unhealthy” meant “if you’re eating lots of sugar, sweets, and salts.” A boy had a broader interpretation of some of the information on the label. He said, “Percentage daily value are based on a 2000 calorie diet for daily values . . . higher or lower depending on your calorie needs.” When asked to describe what the word “healthy” meant to him, he said “never have too little food, always have about as much as you should.”

Theme 2: The Children’s Interpretations of the Information on the Nutrition Label Coincided with their Personal Health Experiences

How information was described on the nutrition label coincided with personal experiences regarding those nutrients or ingredients. For instance, when asked what she noticed first on the label, a girl said, “I noticed the ingredients . . . because usually if I look at the nutrition facts, I look at the ingredients first . . . because sometimes if I’m sharing it with people and I want to make sure that they’re not allergic.” The same participant shared her experience regarding a friend with food allergies interacting with a supermarket employee:

One time it happened to one of my friends . . . they couldn’t have peanuts, and so they told the person that my friend couldn’t have peanuts and the guy said “no, no, it doesn’t have peanuts in it” but it was really made in a peanut factory so there was like peanut stuff in it, and he got sick after he ate it.

The participants used their own frame of reference to describe the ingredients in the ice cream. For instance, when asked to describe the word “carbohydrates” on the label, one girl said that this meant the ice cream “comes in a box.” She said she thought this was the case because “sometimes my mom says when like I’m eating something that came from a box, like spaghetti, she says you need to eat your carbohydrates.” Another girl said the carbohydrates on the label were “like dry food like pretzels . . . I think they’re like pretzels and they’re like things with salt. And they’re kind of like dry.” When asked what it means to have carbohydrates, she said, “Then it is a little bit hard. It’s not like totally soft.”

Communicative Health Literacy

Theme 1: Health Information Children Extracted Aligned with their Conceptualizations of Health

The predominant sources of health information were parents; health class at school or other teachers; and doctors, other family members, and food labels. Print and Internet sources were rarely mentioned.
There were perceived links between health information learned and conceptualizations of health. For instance, one girl said she learned from her doctor that she should “eat five fruits and vegetables every day and its bad if you eat lots of junk food.” Her parents said she should “not eat too much junk food and that’s all [her parents said].” In comparison, when asked to describe what the world “healthy” meant to her, this same participant said, “Healthy means when a person is eating like vegetables and fruits and not a lot of junk … when you’re fat, it means you’re eating too much junk food and junk food is bad for you.” A boy said his mom is “always saying ‘oh this has too many calories in it,’ and ‘oh this is unhealthy, oh this is healthy, you shouldn’t eat too much of this.’” He learned from his aunt to “check the back before you get it … see what it has in it … ‘oh this, it has too many calories.’” When asked to describe what the word “healthy” meant to him, this same participant said healthy foods “don’t have too many calories in them or anything.”

In contrast, children who reported receiving more complex health information also seemed to have more nuanced health conceptualizations. One girl said that she learned from health class “information about foods, amounts of foods, different types of food that you should eat.” In her response to what the word “healthy” meant to her, this same participant said the “right food is a rainbow. So like, um, eating lots of fruits and vegetables and the right types of carbohydrates and stuff like that … like purple foods, green foods, brownish foods like breads and stuff.” Another girl said she learned from health class that “if a tiny person eats too much food, like they eat as much as a really tall person then that wouldn’t be healthy … ‘cause they need enough to like help sustain a healthy lifestyle. Not too much, not too little.” When asked to describe what the word “healthy” meant to her, this same participant said, “Balance. Like it depends on who you are.” Another girl described health information she asked her doctor about:

Most of my friends are skinnier than me, and only me and two sisters that I know are like bigger. I asked about that when I went to the doctor and she says that everyone is made differently.

When asked to describe what the word healthy meant to her, this same participant said, “There are different kinds of healthy.”

**Theme 2: The Children Applied the Health Information they Received to their Own Lives when it Aligned with their Conceptualizations of Health**

The way the participants applied the health information they received seemed to coincide with their conceptualizations of health. For instance, one girl provided an example of how she made use of the health information she received by looking for “good” or “bad” amounts:

If I’m like shopping with my mom and she’s like “go buy cereal for yourself,” … usually I look to see how much sugar there is in it and how much fat there is in it and to see if it’s a good amount or a bad amount.

When asked to describe what the word “healthy” meant to her, this same participant said, “You don’t have too little of something or too much of something. It’s at the right area of like good.”

One boy described not only how he uses the health information he receives, but how he encourages others to do so as well: “Like sometimes I ride my bike or go outside and play and exercise. Sometimes I give them like an example of how to do it … like they could go ride their bike or go outside and play for a little bit … like my own family or my cousins.” This same participant said that the word “healthy” meant to “go outside, play, exercise, you know, all that … ride safely, if you ride anything.”

**Critical Health Literacy**

**Theme 1: The Children Critically Analyzed the Accuracy of the Health Information they Received According to their Own Health Experiences or Conceptualizations**

There was evidence of critical thinking regarding health, but due to the developmental stage of these children, it was based on personal experience and not on evidence-based sources. For instance, when asked how she decides whether the health information she receives is correct, one girl reflected on how following her parents’ advice led to her to a positive outcome: “Because I do what [my parents] tell me and I don’t get, like, overweight.” The girl whose friend with the peanut allergy bought the juice that was made in a peanut factory explained how, based on this negative experience, she does not always trust salespeople because “sometimes, the sales people just tell you things about your food that aren’t true because they just want you to buy them. They just want the money. They don’t really care about who you are.” Another girl described how she believes it is true that there is a relationship between what you eat and your body size based on her observation:

Because a girl in my class, I mean, yea, she is not skinny, but not like fat. She’s sort of like that [shows size with her arms]. Um, she’s not as skinny as me and for her lunch, she has chips and juice and all these unhealthy stuff … and all the unhealthy stuff has sugar. So, I sort of know it’s true.

**Theme 2: The Children who Actively Participated in their Own Health Decisions Had More Complex and Nuanced Conceptualizations of Health**

The children who appeared to be more actively engaged in making decisions about their own health (e.g., what to eat, what foods to purchase, when to participate in physical activity, etc.) had more nuanced conceptualizations of health in comparison to children who did not actively participate in these decisions. For instance, one girl described how she makes decisions about her own health: “I think to myself, like especially when we have the school lunches, this is probably not healthy, so I’m not going to like eat all of it.” She also explained what she does when she encounters varying health information: “I kind of sort through it myself … try to find other sources to see … and then if there’s more sources supporting one answer than another.” When asked what someone does to be “unhealthy,” this participant took the opportunity to clarify:

Maybe they think the unhealthy things are healthy because sometimes different like fast food places have ads on TV saying that
they are healthy and stuff and also maybe like all the friends were like “oh that’s healthy” or something.

Another girl described how she makes health decisions on her own and with her family:

At a sleepover, they’ll be like “let’s stay up till 5 o’clock in the morning,” and if I have like a synchronized swimming meet the next day, I’ll be like “you know what? I’m going to go to bed early ‘cause I need my energy. It’s not good to stay up too late.”

When asked to describe what the word “healthy” meant to her, this same participant spoke about factors beyond food and activity choice:

Unhealthy and healthy doesn’t just mean what’s good in exercise and food, it’s also just what’s good and bad for you . . . like holding things that are way too heavy on your back for a long amount of a time; like a heavy backpack is unhealthy for you and you could hurt your body.

When asked to describe what a “healthy body” looks like, this same participant described how the answer was not straightforward:

Sometimes if you eat a lot of junk food and stuff and you get kind of overweighted, like something like that, that’s not really a healthy body. But even if you are overweighted and you eat a lot of healthy foods that’s a healthy body . . . like it depends on what you eat.

In contrast, one boy said he just listens to everything his teacher and parents tell him because they are “smart.” When asked to describe the word “unhealthy,” he had a more simplistic response that alluded to the direct relationship between health behaviors and body size: “You don’t go outside . . . because if you don’t go outside, you’re going to get like really fat just sitting there.” When asked who makes decisions regarding her health, another girl said, “Um, my parents. Sometimes me because sometimes I watch too much TV.” When asked what the word “unhealthy” meant to her, this same participant also suggested the narrower, direct relationship between food, body size, and health: “You eat junk food a lot and not really vegetables and fruits a lot of the time, so you may get fat . . . ‘cause when you’re healthy you’re usually not fat, and not skinny.”

Discussion

This study contributes to the body of knowledge in health communication by examining children’s functional, communicative, and critical health literacy, and by exploring the relationship between these constructs and children’s conceptualizations of health, healthy bodies, and health practices. Results indicated that health literacy had bearing on the way the children constructed meaning around health information.

Even at these young children’s developmental level, there was still evidence of functional health literacy. As in DeWalt and Pignone’s (2005) study, reading and understanding visual health information was still a critical component to health literacy in these young children. Participants were able to read parts of the nutrition label and understand its purpose. They had knowledge about foods and ingredients that were “bad” for you and those that were “healthy.” It appeared that making meaning of health information (e.g., understanding what sugar is) was more relevant to the way children conceptualized health than their “factual” understandings of the information (e.g., identifying how much sugar was in the food).

With regard to communicative health literacy, children’s main source for health information was their parents, and secondly, school. Their beliefs were matched with what they said they heard from a parent or from a teacher. What information the children extracted—and how they applied this information to their own lives—was more pertinent to their conceptualizations of health than what the sources of information were. While all of the children attended the same school, ate in the same cafeteria, and had exposure to health class, they reported learning different health information from sources. Findings support the argument that research on children’s health and literacy should include components of communication as well (DeWalt & Hink, 2009).

Finally, while the participants were obviously not at a developmental level to engage in deep critical thinking, they did engage in some critical analysis by linking knowledge to their own personal experiences. For example, when a child felt empowered to go against peers who were making unhealthy decisions, the child seemed to connect facts with personal experience to express nuanced health beliefs. The children who played more active roles in their own health decisions had more complex concepts of health beyond just that which was told to them as “good” or “bad” for health.

By offering a methodological approach that gathered visual as well as verbal, qualitative data, this study showed support for distinguishing types of health literacy (Nutbeam, 2000). Looking at health literacy beyond the functional realm was helpful to grasp how children considered health for themselves and within a family structure. The data also supported Rudd’s (2015) argument for attention to multiple physical, social, and political systems. Findings showed that children’s sources of information were primarily not online or in print, but rather were other people in their lives that represent the layers of systems children have little control over, such as school, health care, and home. Yet while there may be limited control over their circumstances, the children in this study still illustrated critical thinking and reflected confidence in making health decisions.

Limitations

While the data collected were rich with meaning, the study had some limitations. The sample was derived from one school setting in one geographical region. The breadth of children’s experiences cannot be captured by this microcosm of a setting. Also, while this study allowed the children’s voices to be heard, we did not include interviews with the grown-ups (e.g., teachers, parents, coaches, siblings) whose perspectives may have affected children’s beliefs. Finally, the data may have been different if the interviewer was not a stranger to the children, since at such a young age, children may be anxious about someone they do not know asking them about their health.
Implications for Scholarship

The findings of this research contributed to theoretical support and elaboration of Nutbeam’s (2000) health literacy model. It allowed us to add communication as a measurable concept in children’s understandings of health, as well as to note the importance of critical thinking among children. At the developmental stage of young children, we found that critical thinking is not yet a honed skill, but it is present and playing a role in health decision making. While Nutbeam’s model may be more applicable for adolescent and adult populations, it provided for a deeper analysis of children’s health literacy in our study.

This study has implications for the scholarship in health literacy because it used a qualitative approach to better understand and illuminate how health literacy functions in children. Evaluating health literacy constructs qualitatively allowed the children in this study to “speak” for themselves (Becker, 1996). Researchers captured nuance and rich context that offered a deeper understanding of the various ways the children interacted with health information they encountered, similar to previous research that supported the inclusion of children’s voices in health research (Devers, 1999; Ragan, Nagel, & White, 2004).

Study findings also have pragmatic implications for the field of health literacy in that they have created a path to developing skills in children that focus on communication and critical thinking. When designing children’s health promotion programs, it is worth considering whether children are (a) encouraged to make accurate and meaningful connections between the health information they encounter and their own lives; (b) equipped with the appropriate tools to extract and apply accurate and meaningful health information to their own lives; and (c) empowered to more critically examine the bias in health communications and actively participate in their own health decisions. As Rudd (2015) suggested, an understanding of health literacy requires attention to individuals’ embeddedness within multiple systems. Findings here supported this argument, and a focus on enabling or constraining structures of information sources, such as schools and families, would benefit future research.

Conclusion

This study contributes to the field of children’s health literacy and its connections to health conceptualizations. Findings offer several avenues for future research. Efforts should be made to develop scales for measuring health literacy at different developmental levels for children. While the REALM Teen addresses adolescent ages and focuses on verbal articulation, elementary school age children as shown here are beginning to build health literacy skills, but have limited reading ability.

Developing an assessment that taps into alternative ways to explore health literacy, through drawing or speaking extemporaneously, for example, may be used to reflect the health literacy in younger children. Similarly, ways to assess communicative and critical components of health literacy are needed. One way to do this is to include children’s support systems and to collect data regarding health literacy and/or communication skills from other individuals in children’s social networks (e.g., health practitioners, teachers, parents) to provide a broader perspective of how these individuals influence the health literacy of the children. Another way is to consider adding visual cues—such as drawings or narratives—rather than just verbal ones to allow developmentally varied ways to consider communication and critical thinking in young populations. This study revealed that children do think critically, at their developmental level, about health decisions and about healthy and unhealthy bodies. We hope that other researchers follow the lead and explore in more depth the role of health literacy at an early age and its impact on health knowledge, attitudes, and ultimately, behavior.

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References

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