

Acceptability of School Nutrition Marketing Materials  
with Adolescents Grades 6-12

by

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## ABSTRACT

**Objective:** It's not well understood how youth perceive existing fruit and vegetable (FV) marketing materials available in schools. This ancillary study sought to assess the acceptability of FV marketing materials freely available to schools among adolescents in grades 6-12.

**Methods:** Middle and high school adolescents (n=40; 50% female; 52.5% Hispanic) in the Phoenix, AZ area were asked to rank marketing materials (n=35) from favorite to least favorite in four categories: table tents, medium posters, large posters and announcements. Favorites were determined by showing participants two items at a time and having them choose which they preferred; items were displayed to each adolescent in a random order. Adolescents participated in a 20-30 minute interview on their favorite items in each category based on acceptance/attractiveness, comprehension, relevance, motivation and uniqueness of the materials. A content analysis was performed on top rated marketing materials. Top rated marketing materials were determined by the number of times the advertisement was ranked first in its category.

**Results:** An analysis of the design features of the items indicated that most participants (84%) preferred marketing materials with more than 4 color groups. Participant preference of advertisement length and word count was varied. A total of 5 themes and 20 subthemes emerged when participants discussed their favorite FV advertisements. Themes included: likes (e.g., colors, length, FV shown), dislikes (e.g., length, FV shown), health information (e.g., vitamin shown), comprehension (e.g., doesn't recognize FV), and social aspects (e.g., peer opinion). Peer opinion often influenced participant opinion on marketing materials. Participants often said peers wouldn't like the

advertisements shown: "...kids my age think that vegetables are not good, and they like food more than vegetables." Fruits and vegetable pictured as well as the information in the marketing materials also influenced adolescent preference.

Conclusion: Students preferred advertisements with more color and strong visual aspects.

Word count had minimal influence on their opinions of the marketing materials, while information mentioned and peer opinion did have a positive effect. Further research needs to be done to determine if there is a link between adolescent preferences on FV marketing materials and FV consumption habits.

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## CHAPTER 1

### INTRODUCTION

Food and beverage marketing strongly influences children's dietary preferences and can lead to an increase in unhealthy dietary habits<sup>1,2</sup>. Not only are children exposed to food marketing on TV, billboards and in restaurants, but 70% of elementary and middle school students are exposed to some form of food marketing while they are at school<sup>1-3</sup>. That number rises to 90% when these students enter high school<sup>3</sup>. Given the amount of advertisements children are exposed to, it's important for schools to provide effective marketing with the goal of improving diet quality<sup>2,4</sup>.

Common food and beverage marketing strategies in schools include posters and selling of branded foods<sup>1,5,6</sup>. However this became limited when in 2014, the United States Department of Agriculture (USDA) enacted "Smart Snacks in Schools" which required schools to eliminate the sale of foods not up to their nutrition standards on school campus until 1 hour after the bell ring<sup>7</sup>. This policy includes all foods sold from in the cafeteria to vending machines<sup>7</sup>. Additionally, schools under this policy were limited in the types of marketing placed in their schools<sup>7</sup>. Smart Snacks in Schools has proved to have some success as it decreased the amount of energy-dense foods available<sup>7,8</sup>.

Other policies have been enacted that support the Smart Snacks in Schools policy. For example, the Fresh Fruit and Vegetable Program (FFVP) passed first in 2004 aimed to provide fresh fruits and vegetables to elementary schools with the aim to increase consumption, further improving school food quality<sup>9</sup>. Under the Healthy Hunger-Free Kids Act of 2010, districts participating in the program enacted their own wellness policies to help improve nutrition and physical activity<sup>10</sup>. Wellness policies can include

nutrition education classes, integrated health lessons and even nutrition posters in the cafeteria<sup>10</sup>. Beyond local wellness policies, many districts have used techniques such as price incentives or giving healthy products more appealing names with the goal of increase consumption of healthier foods<sup>3,4,11</sup>. Other districts have enacted a campus-wide ban on all energy-dense food and beverage marketing<sup>8</sup>.

Outside of school lunch, different companies have created effective marketing strategies that have increased their sales<sup>1,12,13</sup>. Many fast food companies use toys or focus on fun and popularity to encourage children to buy their products<sup>12-14</sup>. In supermarkets, over half of products use bright colors, cartoon characters and childish script to influence children and parents to purchase their products<sup>4</sup>. However, with all the success the food industry has had with increasing sales, this has not been seen with healthy school lunches<sup>1,3,4,11</sup>. Determining what appeals to children and what influences them to choose certain foods is imperative to fruit and vegetable marketing in schools<sup>3,15</sup>.

Even with policy changes on a national and district level, there has been conflicting evidence to support an increase in fruit and vegetable consumption or a decrease in the consumption of energy-dense foods<sup>3,4,11</sup>. Much of the research that supports federal and district programs shows a modest improvement in diet quality at best<sup>3,11</sup>. Currently, no literature exists examining children's opinions of school nutrition marketing materials.

### **The Purpose of Study**

This research aims to determine the acceptability of current fruit and vegetable marketing materials among children grades 6-12 and analyze what techniques and themes are preferred. Further, this study will look at what children perceive will motivate them to

consume a healthier school lunch and how certain marketing materials elicit emotion from them. This information can be used to assist with the development of future school marketing materials with the intention of increasing consumption of fruits and vegetables for school lunch.

### **Research Aim and Hypotheses**

Research Question: How will current fruit and vegetable marketing materials be perceived by adolescents grades 6-12 and what themes will be favored?

H<sub>A</sub>: Fruit and vegetable marketing materials with more pictures and low word count will be preferred over marketing materials with a high number of words in adolescent's grades 6<sup>th</sup>-12<sup>th</sup>.

### **Definition of Terms**

**USDA:** United States Department of Agriculture

**Healthy Hunger-Free Kids Act:** A bill passed in 2010 to increase access and availability of healthy foods by low-income children<sup>16</sup>

## CHAPTER 2

### REVIEW OF LITERATURE

#### **Fruit and Vegetable Consumption**

##### ***Fruit and Vegetable Consumption Standards***

The Dietary Guidelines for Americans are updated every 5 years and provide a framework for Americans above the age of 2 years old and their diets<sup>17</sup>. The 2015-2020 dietary guidelines consider the amount of fruits, vegetables, protein, dairy, grains and oils consumed for people in different age groups<sup>17</sup>. The recommendations for adolescents age 9-18 years old include consuming 1.5-2 cups of fruit and 2-3 cups of vegetables a day for a total of 5 servings of fruits or vegetables per day<sup>17</sup>. Vegetables are recommended to be consumed weekly from a variety of subgroups such as red and orange vegetables, legumes, starchy and dark green vegetables<sup>2</sup>. Fruits can be consumed a variety of way, with whole fresh fruits being the most recommended<sup>2</sup>. Other ways to consume fruit are canned, dried and fruit juice although these varieties typically contain more added sugar<sup>2</sup>. One way the dietary guidelines recommend meeting the five servings a day goal is for every plate consumed to be half fruits or vegetables. The dietary guidelines also provide standards for other food nutrients such as sodium, sugar and fat<sup>17</sup>. The guidelines recommend that 10% of calories or less come from sugar and 10% or less from saturated fat. The USDA also recommends to have half of all grains consumed be whole grain, consume fat-free dairy products and consume a variety of protein<sup>17</sup>. Following the dietary guidelines, including the fruit and vegetable recommendations, can help increase overall health as well as reduce the risk of chronic disease into adulthood<sup>17</sup>.

Adolescent fruit and vegetable intake in the US is far below adequate. One study looked at 2003-2004 National Health and Nutrition Examination Survey (NHANES) data and found that on average, adolescents are consuming far under the recommended amount of fruits and vegetables per day<sup>6</sup>. NHANES data showed that around 6.2% of adolescents ages 12-18 met the recommendations for fruit consumption while 5.8% met the recommendations for vegetables<sup>6</sup>. When looking at the amount of vegetables consumed per day, the average amount consumed including potatoes was 1.21 cups; without potatoes that number decreased to .72 cups<sup>6</sup>. Furthermore, according to NHANES, in the vegetable group, potatoes were the most consumed<sup>18</sup>. This includes french fries which are high in carbohydrates and fats<sup>18</sup>. When looking at the amount of fruit consumed per day, NHANES found that only 27.3% of fruit consumed was from whole fruits<sup>18</sup>. The most common source for fruit was 100% fruit juice which accounted for 31.3% of fruit consumption<sup>18</sup>. Due to the health benefits associated with consuming adequate amounts of fruits and vegetables, it's important to explore the factors influencing diet habits.

### ***The Importance of Fruit and Vegetable Consumption***

The Center for Disease Control and Prevention (CDC) defines obesity in children as having a BMI  $\geq$  95% on the BMI-for-age growth chart<sup>19</sup>. According to NHANES 2017-2018 data, an estimated 18.5% of 13.7 million children ages 2-19 are obese<sup>20</sup>. This is higher among adolescents age 12-19 with the prevalence of obesity being 20.6%<sup>20</sup>. Compared to non-Hispanic whites (14.1%), Hispanics also had an increased obesity prevalence of 25.8% and non-Hispanic blacks had a rate of 22%<sup>20</sup>. Research shows that

individuals who are overweight or obese as children have a higher chance of being obese as adults<sup>20</sup>. For example, adolescents who are overweight at age 15 have over a 60% chance of being obese as adults<sup>20</sup>. The rate of obesity rises to above 80% when the child is obese at age 15<sup>20</sup>. Obesity at any age can be associated with many health conditions such as diabetes<sup>21</sup>, CVD<sup>22</sup>, and cancer<sup>23</sup>. These chronic health conditions can lead to a decreased quality of life as well as a decreased life expectancy<sup>24</sup>. Many people who are overweight or obese report eating a diet high in calories, refined sugars and saturated fat<sup>25</sup>.

Increasing fruit and vegetable consumption also increases the number of vitamins and minerals a person consumes therefore reducing the risk of chronic health conditions related to obesity<sup>25,26</sup>. Fruits and vegetables are high in Vitamins A, C, D, E, K and well as potassium, iron and many other nutrients<sup>26</sup>. Consuming fruits and vegetables has been associated with decreased risk of type 2 diabetes<sup>27</sup>, heart disease<sup>28</sup> and cancer<sup>29</sup>. Furthermore, consuming fruits and vegetables can also help increase bone density, which is important in children and adults<sup>30</sup>. Some research suggests that people who consume adequate amounts of micronutrients are more likely to be within a normal weight range when compared to those who eat an energy dense diet, further decreasing their risk of metabolic conditions<sup>31</sup>.

## **Influences on Children and Adolescent Dietary Habits**

### ***Environment and Community Impact on Diet***

Where an adolescent lives can have a large impact on their diet<sup>32-35</sup>. In one study, researchers recruited participants from two low-income neighborhoods and surveyed

them about their food environment and diet choices<sup>32</sup>. In both neighborhoods, only two of the twenty-four food retail locations sold fruits and vegetables and only one sold fresh fruits<sup>32</sup>. Because many of the participants didn't own a car, these local food shops are where 75% of participants did their shopping<sup>32</sup>. The nearest supermarket was on average, 2.4 km from the respondent's home<sup>32</sup>. Although the supermarkets had much more variety, only 51.2% of participants drove to a supermarket outside their neighborhood<sup>32</sup>. This finding suggests that proximity to food outlets has an association with overall diet quality. This study is further supported by other research, which supports that food availability has a large effect on diet<sup>36</sup>. One study looked at how the different types of food outlets near schools effected 7<sup>th</sup> and 8<sup>th</sup> grade students diet<sup>36</sup>. Researchers used a modified Healthy Eating Index (HEI) to determine overall diet quality of the participants<sup>36</sup>. The study found that student who attended schools further than 1km from fast-food outlets had a higher HEI than those who attended schools with fast food outlets less than 1km from their school<sup>36</sup>. The same relationship was found when looking at participants' home proximity to fast food locations<sup>36</sup>. Another study that analyzed the relationship between the distance from home to supermarket and its effect on diet<sup>37</sup>. Researchers found that if a supermarket was located within ¼ mile of a participant's house, they were less likely to eat out<sup>37</sup>. These studies support that the food environment adolescents are in have an influence on what they are consuming.

Many studies have been done with the goal of improving diet quality in a variety of communities<sup>38-41</sup>. One study focused on the promotion of a nutrition education program at 14 different recreation centers in a low-income community<sup>38</sup>. The goal was to teach "youth leaders" nutrition and cooking skills so they could pass the skills to the

community<sup>38</sup>. Lessons in the nutrition education program focused on decreasing consumption of sugary beverages, increase water consumption, increasing the consumption of fruits and vegetables and included cooking classes<sup>38</sup>. Research supports that empowering peer and community leaders to improve the overall health of their community can have an impact in reducing health disparities<sup>40</sup>. Although intensive studies have been done in the community, little research has been done on more cost-effective, simpler methods of promoting a healthy diet such as marketing.

### ***Parent and Family Influence on Diet***

In many ways, a child's dietary habits can be linked to family habits. One study looked at how parent and child diet are related to each other<sup>42,43</sup>. Researchers found, on average, children had very similar intake habits as their parents<sup>42,43</sup>. One study looked at the correlation of fruit and vegetable intake among parents and their child or adolescent daughters<sup>43</sup>. Researchers found that the more fruits and vegetables parents consumed, the higher the intake of their daughters<sup>43</sup>. The relationship between parents and their children's diet consumption is further supported by another study that looked at diet quality and total energy intake between 6-12 year old participants and their parents. The study found both children and their parents consumed a significantly similar amount total calories, fruit, vegetables, sodium and protein<sup>42</sup>. Parenting style also has an effect on overall diet quality and health of their children<sup>44</sup>. The four main parenting styles were initially described in 1966 are authoritative, authoritarian (disciplinarians), uninvolved and permissive (indulgent)<sup>45</sup>. Parenting style and its effects on children's health has been well studied<sup>44,46,47</sup>. One study determined how parenting style is associated with the

weights of preschool and school-aged children<sup>44</sup>. Researchers found that authoritarian parents had the lowest rates of obesity, far below the obesity rates of authoritative and permissive parents<sup>44</sup>.

Beyond parenting styles, parents can influence their child's eating behavior in other ways as well. A study done on fourth and fifth grade students in the Baltimore, MD area looked at several characteristics to determine what influenced their fruit and vegetable intake<sup>48</sup>. Researchers asked participants questions about home engagement of fruits and vegetables as well as parent modeling and participant preferences<sup>48</sup>. Participants who reported their parents eating fruits and vegetables the previous day consumed almost a serving more than their peers (1.8 servings vs 1.3 servings)<sup>48</sup>. Additionally, students who reported that they go shopping with their parents for their favorite fruit or vegetable also reported to consume 2 servings of fruits and vegetables a day (compared to 1 serving)<sup>48</sup>. Overall, parent modeling and behavior around foods can have an impact on their child's consumption inside the house and during the school day.

### ***Peer Impact on Diet***

As children get older their peers begin to play a larger role in their behavior. Peers can effect choices made in school regarding diet and exercise<sup>49</sup>. One study surveyed adolescents and found that participants had a positive correlation between their peers dietary habits and their own.<sup>49</sup> Students were likely to consume whole-grains, dairy and vegetables in similar amounts as their peers.<sup>49</sup> In contrast, they were also more likely to consume energy dense foods if their peers did as well.<sup>49</sup>

Among adolescents, peers influence can effect both boys and girls dietary choices<sup>50-52</sup>. One study looked at 423 adolescents in several different schools to determine what factors affected their eating habits<sup>52</sup>. Researchers found that boys were more affected by peer influence than females and that males thought peers were less likely to support their efforts to eat healthy<sup>52</sup>. Alternatively, females were more influenced by media when it came to perceived social norm and its effects on their eating habits<sup>52</sup>. Other studies also found a link between perceived peer opinion and the desire to fit into the social norm with dietary habits<sup>53,54</sup>. One study exposed participants to one of three conditions<sup>54</sup>. They were either exposed to positive or negative social norm messages or were in the control group<sup>54</sup>. Researchers found that social norm messaging significantly increased both fruit and vegetable consumption while leading to a decrease in high energy dense foods.<sup>54</sup> This suggests that students are highly influenced by their desire to fit in with their peers. To effectively market fruits and vegetables to adolescents, it would be helpful to use social marketing techniques to influence them to select fruits and vegetables over other unhealthy options.

## **The Role of Schools in Promoting Fruits and Vegetables**

### ***School Lunch Standards and Federal Programs***

In 2010, The Healthy Hunger-Free Kids Act was passed and provided updated policy requirements for many of the USDA's childhood nutrition programs<sup>26</sup>. It created a framework to address not only nutritional needs but also hunger problems for children all over the country<sup>26</sup>. Some of the programs the USDA funds The Healthy Hunger-Free Act

outlines include WIC, the Summer Food Service Program, the School Breakfast Program and the National School Lunch Program<sup>26</sup>.

In the United States, approximately 30.4 million children participate in the USDA funded National School Lunch Program (NSLP)<sup>55</sup>. The NSLP is a federally funded program that provides school lunch to public and private schools as well as child care programs<sup>55</sup>. The NSLP provides meal requirements for both breakfast and lunch that must be followed for schools to receive reimbursement<sup>55</sup>. Requirements are split up by age into K-5th grade, 6-8th grade and 9-12 grade. All meals must contain a certain amount of fruits, vegetables, grains, meat/meat alternate and milk to be compliant with the requirements in order for the school to receive reimbursement for the meal<sup>55</sup>. The guidelines are based of the federal regulations and provide schools with a framework to provide students with adequate nutrition. At the minimum, children in grades 6-8 must be served 2.5 servings/week (.5 per day) of fruits and those in grades 9-12 must be served 5 servings/week (1 per day)<sup>56</sup>. No more than half of the fruits offered can be fruit juice<sup>56</sup>. Vegetable requirements are broken up into further categories<sup>56</sup>. Schools must serve a minimum of 3.75 servings a week or .75 a day to those in grades 6-8 (5 servings a week's/1 per day in grades 9-12)<sup>56</sup>. They must also offer servings of vegetables weekly in the following categories: Dark green, red/orange, legumes, starchy and other<sup>56</sup>. Children from low-income families participating in this program may qualify for free or reduced meals<sup>55,56</sup>. To qualify for free meals, children's families must have incomes at or below 130% of the federal poverty level<sup>55,56</sup>. If the family income is between 130-185% the federal poverty level children are eligible for reduced meal prices<sup>55,56</sup>. Schools can be

reimbursed for these free or reduced meals, as long as the meals served meet required meal standards<sup>56</sup>.

In addition to the NSLP, the USDA also has The School Breakfast Program (SBP)<sup>56</sup>. This program is very similar to NSLP and the guidelines are similar<sup>56</sup>. All meals must include fruits/vegetables, whole grains, milk, and meat/meat alternative<sup>56</sup>. Free and reduced breakfasts are also offered through this program<sup>56</sup>. With both the NSLP and SBP many children near or at the federal poverty level can receive two free or reduced meals a day, taking financial strain off low-income families and increasing the nutritional quality of that child's diet<sup>55</sup>.

Another program offered by the USDA with the goal of promoting a healthier school environment is The Fresh Fruit and Vegetable Program (FFVP)<sup>9</sup>. FFVP is offered to elementary schools in all 50 states who participate in the National School Lunch Program<sup>9</sup>. The program prioritizes elementary schools with a high percentage of free or reduced eligible children<sup>9</sup>. One study assessed the effectiveness of this program by comparing consumption of fruits and vegetables in 4-6th graders (n=4,696) who participated in FFVP to those who did not<sup>9</sup>. It concluded that those in the sample who were enrolled in school participating in FFVP, consumed .32 cups more fruits and vegetables per day compared to those schools that were only participating in the NSLP/SBP or to those that did not participate in any meal program at all<sup>9</sup>.

More recently, the USDA passed rules for those schools participating on the NSLP or SBP regarding all food served on campus including vending machine requirements<sup>57</sup>. Vending machines, a la cart lines and other competing foods with the NSLP or SBP must clearly show calories for all food and beverage items sold<sup>57</sup>.

Additionally, all products sold in participating schools must fit the nutrition standards of Smart Snacks in Schools<sup>57</sup>. These standards include: being whole grain or having the first ingredient be a fruit, vegetable, dairy product or protein<sup>57</sup>. All snacks sold must be under 200 calories and all entrees must be less than 350 calories<sup>57</sup>. There are also standards for limiting saturated fat and sodium allowed<sup>57</sup>. In addition, the ruling limited unhealthy food and beverage marketing on the schools campus<sup>57</sup>. All food and beverage items that are marketed, not only have to fit the USDA Smart Snacks in School nutrition standards, but the marketing of specific brands was also limited<sup>57</sup>.

### ***School Food Environment***

Many factors impact a child's dietary choices from parental eating habits to foods offered in their school cafeteria. The food environment in a school can have significant impact on fruit and vegetable consumption among youth. Although the USDA has released several guidelines schools participating in NSLP must follow, not all participating schools follow them<sup>58,59</sup>. One study looked at 36 different Massachusetts school districts participating in NSLP and found that in 2014 only 60% of competitive foods were compliant with the Smart Snacks in School Standards<sup>58</sup>. This study did show a large increase in compliance (46.2%) but it was still not 100% compliant, suggesting that many children are not being offered the healthier food options required for the NSLP<sup>58</sup>.

Among low income youth, school lunch offerings can have a larger impact on total fruit and vegetable consumption<sup>60-62</sup>. A study done in 4 low-income, urban elementary schools in Minnesota found that on average children consumed 3.6 servings

of fruits and vegetables a day and 80% of all participants consumed less than the 5 recommended daily servings<sup>61</sup>. Of the fruits and vegetables students consumed, over half of their servings were consumed during the school day<sup>61</sup>. The result of this study suggests that if schools focused on providing more fruits and vegetables to their student's, it could be associated with an overall higher intake<sup>61</sup>. To support this result, another study conducted in Mississippi provided free, fresh fruits and vegetables snacks in their school throughout the day<sup>62</sup>. Researchers found that student intake of fruits increased from .34 servings per day to .61 servings per day<sup>62</sup>. There was not, however, an increase in fruit or vegetable consumption at home<sup>62</sup>. Due to there not being an increase of consumption at home, the results further supports the claim that providing children with access healthy foods at school is important, as they may not have access otherwise<sup>62</sup>. Marketing fruits and vegetables effectively in schools can possibly increase the consumption further during the school day and at home.

### ***Initiatives to Improve Fruit and Vegetable Consumption in Schools.***

In many schools and districts, interventions are being utilized with the goal of increasing fruit and vegetable consumption<sup>63-66</sup>. One district in Quebec City, Canada took a new approach to fruit and vegetable promotion and created a 6-week web-based program<sup>63</sup>. During and after the program, participating students increased their fruit and vegetable consumption by an average of 3 servings a day while the control group stayed the same<sup>63</sup>. This result was not found to be true at a follow-up 10 weeks after the intervention ended, suggesting that children need continuous encouragement to meet daily recommendations<sup>63</sup>. This can be seen in other fruit and vegetable school

interventions as well<sup>63,64</sup>. A study conducted in 42 middle schools in various states, followed students from 6th-8th grade and implemented a 5-semester nutrition education intervention<sup>64</sup>. At the end of the study, participating students reported consuming 10% more fruits (not including fruit juice)<sup>64</sup>. There was no statistically significant change in vegetable consumption<sup>64</sup>. Both short and long-term nutrition interventions have shown positive results on fruit and vegetable consumption, however, the long-term studies are more likely to have a significant, lasting effect on participants<sup>63,64</sup>. The results of these studies further support the need for continuous nutrition interventions and promotions to increase positive nutrition outcomes on adolescents.

In some schools, interventions are designed to provide hands on experiences and non-food related prizes<sup>67</sup>. One intervention provided children had children watch a video clip that encourages vegetable consumption at lunch<sup>67</sup>. They found a large increase in consumption during the intervention when compared to the control group<sup>67</sup>. At follow up, 4 months later, consumption had decreased but had not returned to baseline, showing a moderate increase in vegetable consumption over the long term<sup>67</sup>. The lack of long-term effect emphasizes the importance of continual nutrition promotion to encourage children to make long term improvements to their consumption of fruits and vegetables.

Many other schools try methods such as salad bars, gardens and taste testing to encourage fruit and vegetable consumption in schools, but whether these interventions help make a statistically significant difference is up for debate<sup>68</sup>. Studies have found that school gardens can help encourage children to try new fruits and vegetables but results are mixed on whether or not it increases overall consumption without other

interventions<sup>68-70</sup>. Further research is needed to determine what nutrition interventions have a long-term effect on consumption among adolescents.

## **Marketing Fruit and Vegetables**

### ***Food Company Advertisements***

Food marketing has a strong influence on what products parents buy and what food their children eat. Children see food advertisements everywhere they go, from schools and grocery stores to TV and online advertisements in the comfort of their own homes<sup>71</sup>. Marketing and advertisements are important for any business selling food to increase their sales and popularity. It's estimated that in 2012, food companies spent \$4.6 billion on advertisements<sup>72</sup>. This is around 12.5 times higher than the estimated amount of money spent on fruits, vegetables, water and milk (\$367 million)<sup>72</sup>. Not only are these advertisements in stores, they are on TV and on various websites popular with children<sup>72</sup>. A study done in New Zealand had children wear a camera for four consecutive days to determine what food marketing they were exposed to<sup>71</sup>. They found that children saw unhealthy food marketing 27.3 times a day<sup>71</sup>. Healthy food marketing was only seen by children 12.3 times a day<sup>71</sup>. Participants were exposed to food marketing at home, in public (signs, retail, public transportation), at restaurants and sporting events<sup>71</sup>. Another study conducted a content analysis by watching 31 hours of children's television programming to determine what types of foods were marketed and what methods were used<sup>73</sup>. Of the 987 advertisements, 35% of them were for food products/restaurants<sup>73</sup>. When looking at the types of products featured, researchers found 38% was for breakfast cereal or other breakfast foods<sup>73</sup>. There were no fruits or vegetables featured in any of the

commercials at all<sup>73</sup>. Throughout the advertisement, the most common themes used were having fun (75%), good taste (54%) being cool/ popularity (43%) and toy prizes (35.1%)<sup>73</sup>. As many as 35% of advertisements also claimed their product increased athletic ability<sup>73</sup>. These advertisements are increasing sales and popularity among youth. When asked how often they bring their children to fast food restaurants, 37% of parents asked said greater than once a month<sup>74</sup>. Of the children who went to the fast food restaurants, 54% of them specifically asked to go to that establishment<sup>74</sup>. Additionally, 29% of the children who went to fast food establishments received a toy from the meal they bought<sup>74</sup>. The study also found a clear correlation between amount of television watched and the amount of times a family went to fast food restaurants<sup>74</sup>. Media is a powerful tool that many food companies and restaurants use to market their products to children<sup>71,73,74</sup>. Through TV and social media platforms, unhealthy foods are being advertised to people of all ages every day<sup>71-74</sup>.

### ***Grocery Store and Fast Food Marketing***

Beyond restaurants, grocery stores and fast food establishments provide specialized marketing to youth to increase their sales. A study conducted in Australia looked at marketing techniques used on products intended for children in supermarkets<sup>4</sup>. After looking at 157 core and noncore products (foods recommended for daily consumption vs. food high in fat and sugar) they found the most commonly used techniques were bright colors (93.6%), childish script (84.7%), and child sized packaging (53.5%)<sup>4</sup>. In addition, 77% of products cross-promoted, many of which combined five or more popular marketing techniques<sup>4</sup>. A study done in the northeastern region of the US

looked at how products are being promoted in their grocery stores<sup>75</sup>. Researchers found that 70% of products marketed included third party characters in popular TV shows and movies<sup>75</sup>. Many of these companies (35%) also had advertisements on TV to encourage purchasing<sup>75</sup>. Of the foods advertised, only 1.7% were for fruits and vegetables which is minimal. The amount of fruits and vegetables advertised was minimal when compared to the large amount of advertisements for cereal (38.9%), fruit snacks (16.9%), candy (8.4%) and cookies (7.8%)<sup>75</sup>. The small amount of fruit and vegetable advertising was further supported by a study done in supermarkets in North and South Carolina, US<sup>76</sup>. This study looked specifically at the cereal items and found that items specifically marketed to children tended to have a high sugar and lower protein content compared to items not marketed to children<sup>76</sup>. Cereal and breakfast foods represent a large amount of the food items marketed to children, and many of them are high in sugar as well<sup>76</sup>. Similarities found in several studies on grocery stores supports that certain themes, such as bright colors and childish script, help food companies appeal to children to increase their sales<sup>75-78</sup>. Additionally, many of these marketing tactics are used on unhealthy food products instead of fruits and vegetables<sup>76,77</sup>.

Many themes were found when looking at fast food and grocery store food marketing. In both instances marketing was aimed mostly to children to help increase their sales<sup>4,75</sup>. Some studies, however, aimed to appeal to parents<sup>79</sup>. Parent advertisements were more likely to contain health/nutrition messages, child gratitude, and families spending time together<sup>79</sup>. Another theme is the lack of fruit and vegetable marketing. When looking at these studies, less than half of marketing was targeted fruits and vegetables. Many studies found advertisements in their sample didn't include fruits and

vegetables at all<sup>71,79,80</sup>. Much of the food marketed was high in sugar and fat which can not only have a negative effect of health, but also lead to an increase of sales for unhealthy foods, increasing their prevalence in stores and restaurants<sup>28,79</sup>.

### ***Marketing Fruits and Vegetables in Schools***

There are many different methods schools use try to promote the consumption of fruits and vegetables at lunch<sup>63,64,81-84</sup>. One study measured the impact of exposure to branded marketing materials and their effect on vegetable selection in elementary school children with salad bars<sup>85</sup>. One of three treatments were placed in schools: a vinyl banner with vegetable characters, a television segment played in the cafeteria with vegetable characters, or a combination of both<sup>85</sup>. Students in 10 schools were observed over a 6-week period to see how vegetable selection changed<sup>85</sup>. The study concluded that all three treatments increased selection of vegetables but a combination of both vinyl banners and television segments had over a 200% increase in both girls and boys<sup>85</sup>. It was also found that both boys and girls increased selection when exposed to the vinyl banner, but boys responded better to television segments<sup>85</sup>. Other studies have also found short term success when using cartoon/media characters such as to promote fruit and vegetable consumption among elementary children, however, these studies failed to see an increase in consumption over a long period of time<sup>81,82</sup>. One study asked elementary aged children “What would Batman eat?” and gave them the option of apple slices or French fries<sup>81</sup>. Of the children who were given the option, 45% of them chose apple slices instead of French fries<sup>81</sup>. Another study also utilized media by implementing a program called The Food Dudes Program<sup>82</sup>. This program used DVD episodes of their own characters to encourage

children to consume fruits and vegetables<sup>82</sup>. At a follow up of 3 months, there was a significant increase in fruit and vegetable consumption among the intervention group<sup>82</sup>. Consumption was also measured at 12 months, and researchers found that by then the effects had diminished and consumption of fruits and vegetable had returned to baseline<sup>82</sup>. Although there is research on marketing fruit and vegetables among children, there is little data looking at how various marketing techniques influence children in middle and high school.

### **Summary**

Throughout the United States, billions of dollars are put into food advertising every year<sup>72</sup>. Many of these advertisements are for fast-food restaurants such as McDonalds and Subway, which promote primarily energy-dense foods<sup>72</sup>. Food companies all over the country use tools like bright colors, childish script and themes of inclusion to successfully draw children to purchase and eat their products<sup>4</sup>. While these tactics been successful among fast food companies, little research supports the long term success of in school marketing<sup>82,85</sup>. In the last decade, schools around the country have tried to increase the healthfulness of the foods they provide by enacting several policies and programs such as the FFVP and Healthy-Hunger Free Kids Act<sup>9,16</sup>. Although many of these programs have led to a decrease of consumption of high sugar, high fat foods, research is mixed on whether they increase the consumption of fruits and vegetables<sup>9</sup>. In order to succeed in the same way food companies do, research needs to be done to determine what motivates adolescents to eat fruits and vegetables as well as determine what makes fruit and vegetable marketing materials successful. Much of the research done so far has been with children under the age of 12 and looks at how popular media

characters influence fruit and vegetable consumption. Very little research has looked at marketing among adolescents where more complicated variables such as decreased interest in cartoons and increased peer influence come into play.

## CHAPTER 3

### METHODS

#### **Study Design and Participants**

The aim of this research is to assess how adolescents in grades 6-12 perceive fruit and vegetable marketing materials and determine common themes in their responses that develop from the interview. In this study, a sample of 40 middle and high school students (grades 6-12<sup>th</sup>) participated in an interview and brief demographic survey with trained research staff on their opinions of selected fruit and vegetable marketing materials used in schools (i.e., posters, table tents, and announcements). Sample size was determined with the goal of reaching saturation or when no new relevant information can be obtained through further sampling<sup>86</sup>. Participants were recruited from around the Phoenix metro area through parental permission slips. Subjects were excluded if they were not English speaking or if they had not returned a signed parental consent form. Written parental consent was obtained from all participants. Children and adolescents who returned the permission slip were invited to participate in an interview and were assented. Recruitment and data collection took place from October-December of 2018. The estimated length of these interviews was 30 minutes and participants received a \$10 gift card for participating. This study was approved by the Arizona State University Institutional Review Board (Appendix A).

#### **Procedures**

All participants completed an audio recorded one-on-one interview assessing their perception of select marketing materials with trained research staff (Appendix C). During the interview participants were asked to rank 35 different marketing materials from

favorite to least favorite in four categories: table tents (n=10), medium posters (n=10), large posters(n=7), and announcements(n=8). All marketing materials were selected from free, online resources<sup>87-99</sup>. The final materials tested with the youth were selected based on the top 75% of rated materials by school nutrition professionals<sup>87-99</sup>. In this study, the tested marketing materials were randomized so that order did not impact the adolescent rankings<sup>100</sup>. Marketing material were ranked by showing two marketing pieces to participants and having them select their favorite of the two pieces. The third marketing material was then compared to the favorite in the last pairing. This was done until the current category of marketing materials was finished. The trained research staff recorded the order in which marketing materials were selected as well as their favorite in each of the four categories. Participants were then asked a series of questions on their favorite marketing material in each of the four categories of FV marketing materials.

### ***Demographic Survey***

A demographic survey was administered prior to the interview. Youth responded to the question “*What grade are you in?*” and checked a box with options from 3<sup>rd</sup>-12<sup>th</sup> grade available. Next participants were asked “*What is your age?*” and participants wrote their age. “*What is your gender?*” was also asked and participants marked “*male*”, “*female*” or “*other.*” The next question asked, “*Are you Hispanic or Latino?*” and participants marked yes or no. Lastly, participants were asked “*What is your race?*” Participants could select as many options as were applicable. Options included “*American Indian or Alaskan Native*”, “*Asian*”, “*Black or African American*”, “*Native Hawaiian or Other Pacific Islander.*”

### ***Interview Questions***

Interview questions were developed based on John Hopkins social marketing guide constructs and asked based on determining how the participant perceives the marketing material's 1) acceptance/attractiveness, 2) comprehension, 3) relevance, 4) motivation and uniqueness<sup>101</sup>.

To assess acceptance/ attractiveness, participants were asked three questions. In order to determine what the participant liked about the image they were asked *"What do you like best about this ad"* and *"What do you think other high school students would like best about this piece?"* In order to determine dislikes, participants were asked *"What, if anything, do you not like about the ad?"*

To assess comprehension, participants were asked a series of six questions. These questions included: *"What do you think this ad is about?"*, *"What in the picture makes you think that?"*, *"What do you think of that message? Does it make you feel any certain way?"*, *"Are there any other messages that you get from this ad?"*, *"Do you think these messages are important to kids your age? Why?"* and *"What age of students do you think would like this ad?"*

To assess relevance, five questions were asked: *"What is the name of the fruit or vegetable in this advertisement?"*, *"What kind of foods does this ad show that you like?"*, *"How much do you like [f/v] in this advertisement?"*, *"Does this ad make you like it any more or less?"* and *"What do you think your friends would think of this advertisement?"*

When looking at motivation, only one question was asked: *"Does this ad make you want to do anything? If so, what?"* The last category researchers looked at was

uniqueness. For assessing the advertisements uniqueness they asked the following:

*“What much does this ad remind you of other ads you’ve seen before?”*

All questions asked to participants were open ended. If a participant answered a question vaguely, interviewers would probe to get a more complete answer. At the end of the interview, the final favorite items from each category of marketing material (table tents, posters, announcements) were ranked from favorite to least favorite to determine the overall favorite of the participant.

### **Analysis**

All interviews were audiotaped and transcribed by research staff before being analyzed for common themes. Researchers found themes by listening and analyzing dialogue across all participants. A code book for themes and subthemes was created by SP and KK. Transcriptions were coded twice using Nvivo software by SP and KK

Using the rankings from each interview, the overall favorite marketing material in each category was determined by the number of times it was ranked first. A set of codes was created to analyze each marketing material for word count, and number of colors used. Color groups were split up into six categories: red/pink, blue, yellow/orange, green, purple, grey/brown/black. Number of words was counted in each marketing material as well. The max number of color groups each advertisement could have was six. From this code book, popularity of certain themes throughout the marketing materials was determined.

## CHAPTER 4

### RESULTS

#### Demographics

A total of 40 participants completed the demographic survey. Of those participants 50% were in middle school and 50% in high school (table 1); half of participants were female. A total of 52.5% of respondents identified as Hispanic or Latino. Of the 40 participants, all attended a school in the Phoenix, AZ area and only one participant didn't attend a NSLP participating school (table 2).

**Table 1: Participant demographics (n=40)**

	n (%)
<b>GRADE</b>	
6th	7 (17.5%)
7th	9 (22.5%)
8th	4 (10%)
9th	4 (10%)
10th	2 (5%)
11th	9 (22.5%)
12th	5 (12.5%)
<b>GENDER</b>	
Boy	20 (50%)
Girl	20 (50%)
<b>RACE</b>	
Black or African American	2 (5%)
White	22 (55%)
Multiple	4 (10%)
Other	12 (30%)
<b>Ethnicity</b>	
Hispanic or Latino	21 (52.5%)
Not Hispanic or Latino	19 (47.5%)
<b>NSLP Participation</b>	
Yes	39 (97.5%)

**Table 2: Participants' schools**

	n (%)
Washington School District	16 (40%)
Phoenix Union High School District	6 (15%)
Tempe Union High School District	5 (12.5%)
Laveen Elementary District	4 (10%)
Kyrene Elementary District	4 (10%)
Deer Valley School District	2 (5%)
Peoria School District	2 (5%)
Basis Mesa*	1 (2.5%)
<i>*Not participating in NSLP</i>	

### Content Analysis

The average number of color categories throughout all the posters and table tents was  $3.9 \pm 1.5$  (table 3). The average word count throughout all the posters and table tents was  $130.9 \pm 185.8$  (table 3). Additionally, the average number of words found throughout the announcements was  $46.1 \pm 27.3$  words (table 3).

**Table 3. Descriptive factors of the content analysis of the rated 35 materials**

	n (%)
Number of Color Groups	
1	2 (7.4%)
2	4 (14.8%)
3	3 (11.1%)
4	7 (25.9%)
5	7 (25.9%)
6	4 (14.8%)
Number of color groups in each image	
mean $\pm$ SD	$3.92 \pm 1.5$
median	4

range	1-6
Word Count of Posters and Table Tents	
mean±SD	130.9± 185.8
median	36
range	0-653
Word Count of Announcements	
mean±SD	46.1±27.3
median	46
range	15-86

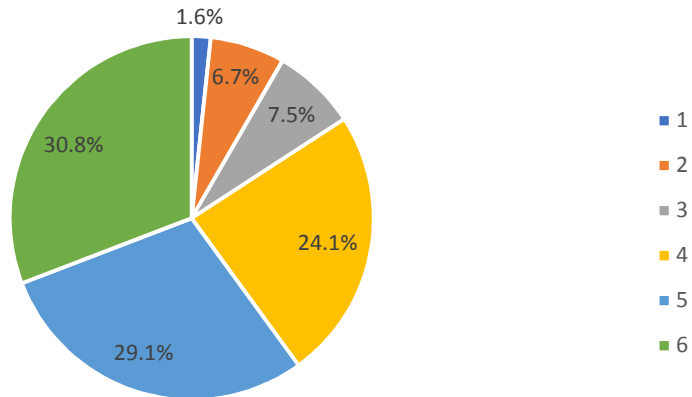
### ***Color***

The average number of color categories throughout top ranked marketing materials by participants was 4.65. The distribution among color categories was: 1.6% at one color category, 6.7% at two, 7.5% at three, 24.1% at four, 29.2% at five and 30.8% at six (table 4). Additionally, 84% of participants favored marketing materials with four or more color groups compared to 16% of marketing materials with one to three color groups (figure 1).

**Table 4: Frequency of Color Groups Ranked First Among Participants**

# of groups	n (%)
1	1.6%
2	6.7%
3	7.5%
4	24.1%
5	29.2%
6	30.8%

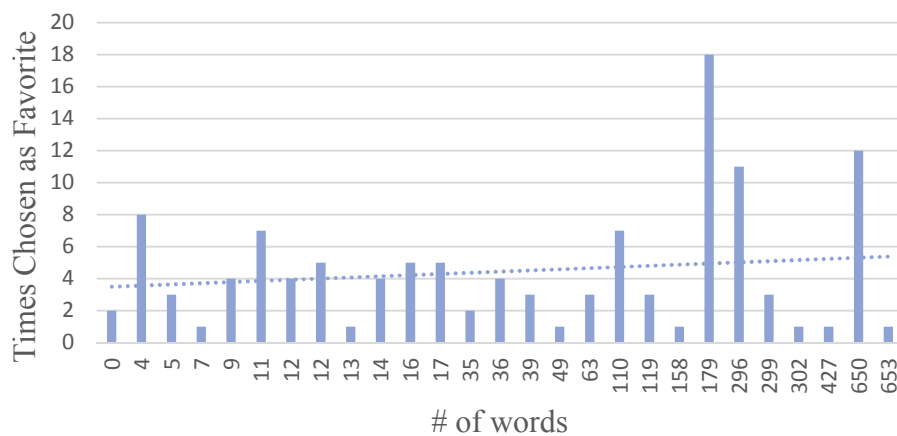
Figure 1: Percent of Color Groups Among Marketing Materials Ranked First



### Word Count

The average number of words in the top ranked table tents and posters was 148.3+<sub>207.7</sub>. The average number of words among top ranked announcements was 49.2+<sub>26.7</sub>.

Figure 2: Number of Words Among Top Ranked Posters and Table Tents



### Interview Analysis

Among the 40 interviews, five themes were identified: likes, dislikes, comprehension, social aspects, and health aspects. Twenty-two subthemes were identified related to these themes (Appendix D).

### ***Likes***

Likes were defined as student preferences among the marketing materials. Five subthemes emerged under this when students discussed their preferences. These subthemes include: visual aspects, characters, fruit and/or vegetable, information, and length. The most common subtheme in this category was fruit and/or vegetable which was found in 97.5% of interviews with 136 quotes. This subtheme was identified by participants describing a fruit and/or vegetable they liked in the advertisement. Students made comments such as "“Do I like? Um all the, most of the fruits, um, not a lot of the vegetables. I don’t eat a lot of vegetables. But um, they look really, they look really like appetizing in this picture.

Another prominent subtheme was visual appeal, which appeared in 67.5% of interviews with 70 quotes. Visual appeal was defined as any color, images, graphic design or other visual aspects that appealed to the participant. One participant said, “I chose this one for kind of the, like the visual aspect of it. And like the graphic design. Because I think it would be also eye catching. I think that’s like a very important part”

The third subtheme under the “likes” theme is characters and media. Characters and media is defined as any character, cartoon, celebrity or movie reference the participants liked. Popular media was identified in 40% of interviews with 27 quotes. One student said, “I feel it’s about trying to get kids interested in fruits. And it’s kind of

like a play-off of a really good movie.” Another student said, “I think I first of all like the visual. So like, the woman as the spin attendant, the DJ.”

Information is the forth subtheme under the likes category with 61 quotes found in 72.5% of interview. This subtheme is defined as liking FV facts or nutritional information in the advertisements. One student said, “Um it’s unlike the other ones it has like more information about it then just like what it looks like I guess. Like it talks about how it can like help protect against cancers, the red fruits and vegetables, so it's informative.”

The last subtheme under the likes category is length. The length subtheme has 21 quotes and was found in 32.5% on interviews. Its defined at the participants preference of the advertisement length, either short or long. One participant said, “I like that it’s really simple because if it was really long then probably a lot of people wouldn’t listen to it and they would kind of just avoid it.”

### ***Dislikes***

The dislikes theme is defined as the participants dislikes about the marketing materials they chose. The dislikes category had five subthemes: word count, font, fruit and/or vegetable, color, and age appropriateness. The first subtheme, word count, has 18 quotes and appears in 30% of interviews. One participant said, “This one’s really long too. I don’t know. This one, this other one went straight to the point.” Another participant said, “..it can seem a little too, too much text, maybe... or a little too much yeah too much information... like it’s not as like visually appealing as the other ones that I had chosen.”

The second subtheme in the dislikes group is font. Font can be defined as, hard to read, either from size of type of font. Seven quotes were found for this subtheme, throughout 17.5% of interviews. One example of this theme is when a participant said, “ I think this fonts kinda hard to read.” Another participant also found the font hard to read, saying “I think the print is a little too small.”

The next subtheme found was fruit and/or vegetable. Under the dislike theme, this subtheme is defined as a dislike of a certain FV pictures or mentioned in the marketing materials. This subtheme had 28 quotes across 45% of interviews. One participant said “ [I like] fruit and everything else in this whole ad- except for the vegetable I don’t like.” A second participant said about an advertisement, “It makes me like eggplants less.”

The fourth subtheme in the “dislikes” category was color and was found in 25% of interviews with 28 quotes. In this context, the subtheme color can be defined as a participant disliking the color or thinking there’s not enough color. One participant said “maybe like the brown color. In the background maybe uh something that’s lighter and more like a brighter color would probably be cooler cause it would catch the eye easier.”

The last subtheme in this category is age-appropriateness of the marketing material. Age-appropriateness is when the participant believed the advertisement was better suited for children not in their age group. This subtheme was found in 22.5% of interviews and had 14 quotes. One participant said, “maybe it would be kind of childish for like high schoolers. Maybe, I think it would really work in elementary school.” Another participant said, “It’s probably too childish to be shown to high school students.”

## ***Comprehension***

The comprehension theme is defined as the students' understanding of the advertisement messaging and the FV pictures/message. The comprehension theme has 3 subthemes: confusing messages, doesn't recognize a FV, and hasn't tried a FV. The first subtheme under comprehension is confusing messaging which appeared in 20% of interviews and had 8 quotes. One participant thought an advertisement was promoting foods either than fruits and vegetables and said "makes it kinda look like French fries and onion rings are healthy." Another participant was also confused on the message of the advertisement they were shown and thought it was about digestion. They said "talking about the food and your digestive system and what digests like faster and what digests slower."

The second subtheme under comprehension is doesn't recognize a FV, which was found in 40% of interviews with 22 quotes. This subtheme is defined as a participant not recognizing a FV or not knowing the name of it. One participant said, "I can't really tell what that is. There's onions, there's cucumbers, there's peas. There's onions. I can't tell if that's onion or um.. I don't know what it's called." Another participant said, "I think it's um giving like some like the names of the, the vegetables cause a lot of people probably don't know most vegetables or the vegetables that aren't like bananas and or like cucumbers."

The final subtheme in the comprehension category is hasn't tried a FV. This subtheme was found in 15% of interviews with 22 quotes. One participant said, "Because it's a lot of um vegetables that like maybe you never tried before or never heard of. And

you could be like oh what's that? And you could search it up and maybe try it." A second participant said, "I never had celery or tomatoes."

### *Social Aspects*

The social aspect theme is defined as the participants perception of themselves, their peers' diet and their FV preferences. This theme has three subthemes: peers like FV, peers eat unhealthily, and perceives own diet as unhealthy. The first subtheme in this category is peers like FV. This subtheme is described as the participant perception that peers would like the FV pictures/mentioned in the advertisement. One participant said, "...one of my friends does like vegetables a lot... Whenever we have salad bar at school, they get salad bar." Another participant said about a different ad, "I think they'll also like how it's based around strawberries cause that's like a popular fruit and like how they have a lot of description of it."

The second subtheme under this theme is "peers eat unhealthy" which has 51 quotes in 67.5% of interviews. This subtheme is defined as participant perception that peers eat unhealthy and their opinions on the advertisements based on perceived diet preference. For example, a participant said, "... That they shouldn't- like that they wouldn't care because they- the kids like don't care what they eat or what anybody tells them to." A second student said, "kids are more leaning towards junk foods or foods that are fast food made and they're not really healthy for you so this message is something that a lot of people need to hear now."

The third subtheme in this theme is "perceives own diet as unhealthy/" This theme can be defined as participant believes their own diet to be unhealthy; they either claim to eat a lot of "junk food" or not enough FV. This subtheme had 14 quotes from

25% of participants. One participant said, “it makes me wanna like moderate all of these bad foods, cause of man, I don’t have the best diet but it, it reminds that you should, you should be eating more of these daily and like less of the stuff”

### ***Health Aspects***

The final theme, health aspects, is defined as participant recognition of the healthy aspects of FV and its implications. The health aspect theme has 4 subthemes: vitamins and minerals, future impact of diet, current importance of FV and certain foods are unhealthy. Vitamins and minerals are defined as any mention of vitamins and/or minerals influence on student choice of advertisement. This theme appeared 49 times in 65% of interviews. One participant said, “I like the, the information about vitamins, because I think a lot of people don’t know um like the benefits of eating vegetables or, or healthier foods. Like you just you just eat them because like you know you’ve heard that they’re healthy. But knowing uh like knowing the examples of what-what parts of the body it helps and the like which specific vitamins. So that’s why I picked this one over the other ones.”

Future impact of diet is the second subtheme under the health aspect theme. This subtheme appeared in 25 quotes in 45% of interviews and be defined as the participant seeing the future implications of their dietary choices. For example, one participant said, “if we don’t start eating healthy at a younger age you can grow up to be unhealthy and it will be harder to go back to being healthy.”

The third subtheme under this theme is the importance of fruit and/or vegetables. This subtheme is defined as the participant mentioning that FV are important for daily

functions, such as sports or school. Importance of FV had 23 quotes in 40% of interviews. This is exemplified by one participant that said, “that one was good, I always like to hear that I’m being helped by what I’m eating and uh that- uh for encouragement for getting people to eat more fruits I like the health benefits that are there”

The last subtheme in this section is certain foods are unhealthy which appeared in 10 quotes in 12.5% of interviews. This subtheme can be defined as the participant states that certain foods are unhealthy. Some participants mentioned that certain foods should be avoided. One participant said, “I think they pronounced something good because, I mean yeah, could you know that bacon isn’t that great if for your system and sugar cereal and all that isn’t the best for you”

### **Themes Throughout Highest Ranked Marketing Materials**

The top four images were chosen by participants 31.9% of the time and come from four different marketing campaigns (table 5).

**Table 5: Marketing Material Popularity and Campaign**

Marketing Material Randomized #	Times Chosen	Marketing Campaign
33	18	American Heart Association/Healthy for Good
44	12	NIH We Can
99	11	Kids Discover
66	10	Action for Healthy Kids
13	8	Team Fruits and Vegetables
70	8	Team Nutrition Iowa
74	7	USDA SNAP
43	7	USDA Team Nutrition
90	7	Team Nutrition Iowa
79	5	MOVE2HEALTH
86	5	USDA Team Nutrition
12	5	Team Fruits and Vegetables

83	4	CT Dept of Ed
73	4	Smarter Lunch Rooms
17	4	Eat Right
40	4	National Watermelon Promotion Board
97	4	Team Nutrition Iowa
92	4	Team Nutrition Iowa
20	3	USDA MyPlate
77	3	CATCH
45	3	Idaho Child Nutrition Program
36	3	Fruits and Veggies More Matters
76	3	USDA Dig In
100	3	District of Columbia Education Dept.
89	3	Team Nutrition Iowa
38	2	<a href="#">USDA</a> MyPlate
10	2	FNV
82	1	Cooking matters
19	1	Smarter Lunch Rooms
24	1	Iowa Dept Public Health
26	1	yli.org/HEY + Team Nutrition
75	1	Team Nutrition Iowa
35	1	Idaho Child Nutrition Program
25	1	Iowa Nutrition Network
88	1	Team Nutrition Iowa

### ***Table Tents***

The top three table tents were ranked as the best by 55% of participants. The top three advertisements were from We Can!, Move2Health and Team Fruits and Vegetables, in that order (fig. 3). The number of color groups in each of the top three marketing materials was varied with 5 color groups, 6 and 4 (mean=5). Word count was also varied among the three table tents with 650 words, 16 words and 17 words (mean= 227).

Some participants mentioned they liked the “We Can!” advertisement because of the color and information it provided. One participant said, “I think I like-like the color

and also the way that it um it's organized. As well, as like all the essential information being provided." The theme of color was also seen for the advertisement by Move2Health. A participant said one of the reasons they chose this advertisement as a favorite was, "all the different colors around it. Or how it has a bunch of different, a bunch of different foods." For the third advertisement by Team Fruits and Vegetables, students described liking not only the color but also the length. One participant described this by saying, "I like the colors and like the simplicity of it. It has a message but it's also short. You just read it and you're like oh that's fun."

**Fig 3: Top three table tents**

Campaign	Marketing Material #	Image
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# U R What U Eat

Food makes the difference. Remember that your body is your performance tool. So, What U Eat is made up to integrate basic food into the everyday diet.

There are 4 food groups that we eat every day. They are: fruits, vegetables, grains, and protein. These are the building blocks of a healthy diet. They are the foundation of a healthy diet. They are the foundation of a healthy diet.

There are 4 food groups that we eat every day. They are: fruits, vegetables, grains, and protein. These are the building blocks of a healthy diet. They are the foundation of a healthy diet. They are the foundation of a healthy diet.

Food Groups	GO	SLOW	WHOA
<b>Fruits</b> Fruit is the best source of vitamins and minerals. It is also a good source of fiber. Fruit is the best source of vitamins and minerals. It is also a good source of fiber.			
<b>Vegetables</b> Vegetables are the best source of vitamins and minerals. They are also a good source of fiber. Vegetables are the best source of vitamins and minerals. They are also a good source of fiber.			
<b>Grains</b> Grains are the best source of vitamins and minerals. They are also a good source of fiber. Grains are the best source of vitamins and minerals. They are also a good source of fiber.			
<b>Milk</b> Milk is the best source of vitamins and minerals. It is also a good source of fiber. Milk is the best source of vitamins and minerals. It is also a good source of fiber.			
<b>Meats &amp; Beans</b> Meats and beans are the best source of vitamins and minerals. They are also a good source of fiber. Meats and beans are the best source of vitamins and minerals. They are also a good source of fiber.			

Remember that your body is your performance tool. So, What U Eat is made up to integrate basic food into the everyday diet.

There are 4 food groups that we eat every day. They are: fruits, vegetables, grains, and protein. These are the building blocks of a healthy diet. They are the foundation of a healthy diet. They are the foundation of a healthy diet.

There are 4 food groups that we eat every day. They are: fruits, vegetables, grains, and protein. These are the building blocks of a healthy diet. They are the foundation of a healthy diet. They are the foundation of a healthy diet.

## Sweets and Snacks

“Sweet” and “Wheat” foods are highest in fat, added sugar, and/or calories and tend to be limited so you do not eat more calories than your body needs. Remember if you eat sweets and snacks, eat them in moderation.

GO	SLOW	WHOA

1-4 “Go” snacks, either before, after, or with your “slow” or “whoa” foods, are fine.

## Combining Food Groups

“Slow” and “whoa” are usually a combination of ingredients from the “Go” food groups. A bowl of macaroni and “Go” wheat (like “Whole Wheat” pasta) or “Go” wheat (like “Whole Wheat” bread) are good examples. The macaroni comes from the “slow” products, grains, vegetables, and fruit groups. The “Go” wheat comes from the “whoa” products, grains, vegetables, and fruit groups.

Combined Foods	GO	SLOW	WHOA
<b>Pizza</b>	English muffin plus wheat flour bread	Spaghetti or lasagna, meatloaf, chicken or vegetable pizza	Onion, the vegetable pizza, chicken or vegetable pizza
<b>Pasta</b>	Spaghetti, whole wheat or whole grain	Spaghetti or lasagna, meatloaf, chicken or vegetable pizza	Onion, the vegetable pizza, chicken or vegetable pizza

## Move More

Exercise is a healthy energy booster you can use along with eating right. Move more often. Try to get 30 minutes of physical activity every day. Move more, like taking the stairs, play, bike, swim, and, find a few games you enjoy. Move it!

For more information, visit [www.healthykids.org](http://www.healthykids.org). We have a lot of information about healthy kids. You can also visit [www.healthykids.org](http://www.healthykids.org) for more information about healthy kids.

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we can!



Team Fruits and 73  
Vegetables



### ***Medium-sized Posters***

The top four medium posters accounted for 70% of those ranked first. The top advertisement was by American Heart Association and was ranked as the number one favorite medium-sized poster by 45% of participants (fig. 4). The second top ranked medium-sized poster was created by National Watermelon Promotion Board (fig. 4). Third place was a tie between two medium-sized posters from USDA's MyPlate and Fruits and Veggies More Matters (fig. 4). The number of color groups in the top four marketing materials was 5, 3, 6, and 4 (mean=4.5). The word count of the favorite marketing materials was 179, 12, 299, and 5 (mean=123.75 ).

The advertisement from American Heart Association was popular due to the color and graphic design of the marketing material. One participant said "I think it's a good one because most people when they see vegetables in the stores they think they look weird but this is vibrant colors so it like pops and it catches your eye." Another participant agreed but went further, saying he also liked the categories. They said, "I like the colors. I feel like it's really cool that they put it in like different categories and had it so you can read it." The advertisement from National Watermelon Promotion Board was also popular among participants. Many cited that they chose it as a favorite because they like watermelon. When asked why they liked this advertisement, one student just simply said, "the watermelon." while another agreed, answering the same question with, "it has watermelon."

**Fig 4: Top Four Medium Posters**

Campaign	Image #	Image
----------	---------	-------



National  
Watermelon  
Promotion Board

40



USDA MyPlate

20



Fruits and 36  
Veggies Matter  
More



### ***Large Sized Posters***

The top 4 large posters were chosen among 82.5% of participants. The most popular poster was created by Kids Discover and was chosen 11 times (27.5%). The second most popular large poster was from Team Nutrition and was chosen 8 times (fig. 5). Third was a tie between advertisements from SNAP and FNV, being chosen 7 times each (fig 5). Of the top three ranked large format posters, 100% had four or more color groups. Word count was varied among the top large posters with 296, 4, 110 and 11 (mean=105.3) words respectively.

Many participants talked about how they liked they information about vitamins in the advertisement from Kids Discover. One participant said that they liked this

advertisement because it gave them, “awareness to the types of vitamins in what foods you can ingest to attain those vitamins” Another participant agreed saying that the information was helpful to people their age. They said, “I know some students at my school, they’re like vegetarians. so like they’ll like know which ones which ones are which and like then it’ll also help them like know which one like vitamin D which one has vitamin C.” The advertisement by Team Nutrition was very popular as well. Participants were mixed on whether or not they liked the character. One participant said, I like it cause it’s like monster. And it’s like yeah, creative,” while another said, “It's kind of like a little kiddish, I don’t know, I just thought it was kinda cute.”

**Fig 5: Top Four Large Posters**

Campaign	Image #	Image
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## Eating Your A, B, C's...

You don't need much of them, but you can't live without them. Vitamins are a group of 13 substances that the body needs. For the most part, you get vitamins and minerals from the food you eat.



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**Vitamin A** is also called retinol. It is necessary for healthy vision and also helps create strong bones and teeth, as well as a strong immune system.



**Vitamin D** is made by the body when it is exposed to the sun. The vitamin is also found in certain foods. Vitamin D helps the body absorb the mineral calcium. It also helps build strong bones and teeth.



**Vitamin E** helps maintain healthy red blood cells and muscle tissue.



**Vitamin B** is a group of vitamins that help the body turn food into energy. They are also needed to make red blood cells and the genetic materials DNA and RNA.

The vitamin B group includes:

- \*B1 (thiamin)
- \*B2 (riboflavin)
- \*B3 (niacin)
- \*B5 (pantoic acid)
- \*B6 (pyridoxine)
- \*B9 (folic acid)
- \*B12 (cobalamin)
- \*Biotin



**Vitamin C**, also called ascorbic acid, is necessary for making collagen, which holds body cells together. It also aids in the healing of wounds and burns and helps build strong teeth and bones.



**Vitamin K** is necessary for blood to clot when you get a cut. Half of the vitamin comes from the food you eat; the other half is manufactured by bacteria in your intestines.

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USDA Team 43

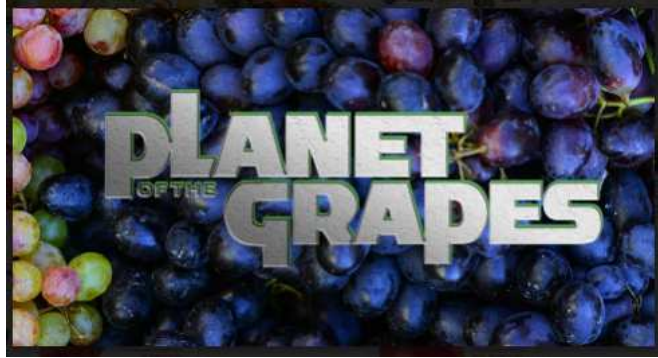
Nutrition



USDA SNAP 74



Team Fruits and 13  
Vegetables



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### *Announcements*

The top three announcements were selected as favorites by 62.5% of participants. These three announcements were from the campaigns Action for Healthy Kids and Team Nutrition Iowa (fig. 6). The average word count among the top three favorite announcements was 63 words. This word count is higher than the average word count of all announcements at 46.2 words. Many participants like the advertisement about red fruits and vegetables because of its mention of health benefits. One student said, “It’s unlike the other ones it has like more information about it then just like what it looks like I guess. Like it talks about how it can like help protect against cancers, the red fruits and vegetables, so it's informative.” Both Team Nutrition Iowa advertisements were popular due to the fruit being mentioned. One participant said, “I like how they talk about strawberries but also include the nutrition facts” while another said the advertisement, “it reminds me like to eat watermelon. Like I haven’t eaten watermelon in a while and now I’m kind of craving it I guess.”

**Fig 6: Top Three Announcements**

Campaign	Image X
Team Nutrition Iowa	70

The following public announcement would be read aloud to students during the school day or at lunchtime:

**What am I? I am bright red, heart-shaped fruit with seeds on the outside and a green cap. I am a tender, sweet fruit packed with Vitamin C. I am a member of the Fruit Group. I grow on a plant in a garden, a pot, or on a farm. Everyone, no matter the size, has about 200 seeds. I am a strawberry!**

Team Nutrition Iowa	90
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The following public announcement would be read aloud to students during the school day or at lunchtime:

**What am I? I am green and round or oblong, weighing between 5 and 30 pounds. Inside, I have red flesh. Some have seeds and some are seedless. I am a sweet and juicy fruit, which is loaded with vitamins C and A. I am a member of the Fruit Group. I like to lie around on the ground attached to a vine in large gardens where it is warm for most of the year. Americans eat about 17 pounds of me a year. I am a Watermelon!**

Action for Healthy Kids	66
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The following public announcement would be read aloud to students during the school day or at lunchtime:

**Red fruits and vegetables contain nutrients that promote a healthy heart, memory function, and help protect against certain types of cancers. Fruits and vegetables that fit within the red category include: Red apples, cherries, strawberries, rhubarb, beets and tomatoes.**

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***Overall Favorite Marketing Materials***

Overall, several different marketing materials emerged as favorites throughout the interviews and ranking (table 6). The top 9 marketing materials were chosen by a participant 55% of the time. Several different marketing materials were chosen by 5 participants, so only marketing materials chosen over 5 times were included. The mean number of color groups in the top 9 marketing material was 4.83. Additionally, 100% of the posters and table tents in the top 9 marketing materials had 4 or more color groups (Table 6).

**Table 6: Top 9 Ranked Marketing Material Descriptives**

	Times chosen (%)*	Type	# of colors	# of words
Image #				
33	18 (45%)	Medium	5	179
44	12 (30%)	Table Tent	5	650
99	11 (27.5%)	Large	6	296
66	10 (25%)	Announcement	N/A	39
13	8 (20%)	Large	4	4
70	8 (20%)	Announcement	N/A	64
90	7 (17.5%)	Announcement	N/A	86
74	7 (17.5%)	Large	5	110
43	7 (17.5%)	Large	4	11
*percentages based on number of times chosen by participant, n=40				

### **Themes Throughout Lowest Ranking Marketing Materials**

Throughout all the marketing materials, several emerged as least favorites. In all four categories (Table tent, medium sized posters, large sized posters and announcements) 8 marketing materials were only ranked first by one participant making them the least popular.

#### ***Table tents***

In this category, three marketing materials were only ranked first one time. These marketing materials were from the campaigns Idaho Child Nutrition Program, Iowa Nutrition Network and Cooking Matters (fig. 7). The average number of color groups in the category is 2.3. The average word count among these three marketing materials is 412 words. When asked about the broccoli advertisement from Idaho Child Nutrition Program a participant stated, “about this is ad is that most people find it nasty and it’s not that people say it’s not that good. But there’s certain different ways you can cook it. And it’s not always the worst tasting thing you could imagine.” The Iowa Nutrition Network advertisement was also one of the lowest ranked (fig. 7). The one participant that ranked it highly said they liked the color but it wasn’t age appropriate. The participant said, “I feel like little kids will like it more because of the color.” The advertisement by Cooking Matters was also ranked poorly. One participant said that advertisement had too many words and that, “It should have a little bit more like pictures.”

**Fig 7: Lowest Ranked Table Tents**

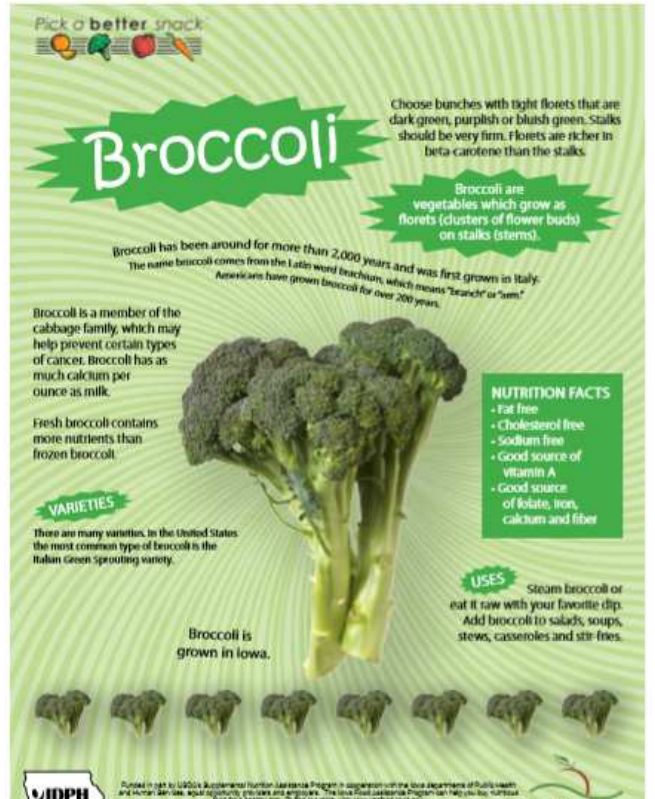
Campaign	Image #	Image
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Idaho Child

25

Nutrition

Program



**COOKING MATTERS PRESENTS**  
**Make Your Plate a Rainbow**

**Go crazy for colors!**  
 Colorful fruits and vegetables help you grow and get strong. Plus they look great on your plate! See if you can eat at least 3 different colors of fruits and veggies each day.  
 How many fruits and vegetables can you think of for each color? Write them in or draw pictures of them below. Color is the ones already shown.

**Red**  


**Orange**  


**Yellow**  


**Green**  


**Blue or Purple**  


**DID YOU KNOW?**  
 Eating different colors helps your body and your brain! Red, blue, and purple fruits and veggies can boost your memory. Green ones give you strong bones and teeth. Orange and yellow ones keep your eyes sharp and help you fight off colds!

**TIP:** The next time an adult you know goes food shopping, go with them! Look for a fruit or vegetable you've never seen or tasted before. Ask if you can try it together at home.

**DID YOU KNOW?**  
 Circle the fruits and vegetables you are wondering how many colors that you eat!

**DID YOU KNOW?**  
 Draw a box around the fruits and vegetables you would like to eat today. Try to pick at least 3 colors!

**DID YOU KNOW?**  
 Your school serves colorful fruits and veggies every day at lunch! Draw a star on the ones you love to eat every day (not week).

**Fruits and veggies make great snacks or desserts!**  
 Work with a friend or family member to make these colorful fruit and veggie treats after school or on the weekend!

**Fruit Salad**

- Wash and peel a variety of colorful fruits.
- Cut fruits into bite-size pieces. Combine in a large bowl.
- Cut a lime in half. Squeeze the juice over the fruit.
- Drizzle a tablespoon of honey if you like.
- Mix ingredients to combine and enjoy!

**Veggies with Dip**

- Cut up any colorful veggies you like. Try broccoli spears, bell pepper strips, celery sticks, cucumber slices, or carrot sticks.
- Mix 1/2 cup nonfat plain yogurt, 1/2 cup low-fat mayonnaise or sour cream, 1/2 teaspoon dried parsley, 1/2 teaspoon garlic powder, 1/2 teaspoon salt, and 1/2 teaspoon pepper.
- Dip the veggies and enjoy!

**Fruit and Cheese Kabobs**

- Cut block cheese into small cubes.
- Wash, peel, and cut a variety of colorful fruits into bite-size pieces.
- Slide food onto coffee stirrer "skewers" or whole wheat pretzel sticks. Switch between fruit and cheese pieces.

**Fill in the blanks – then fill up on yummy fruits and veggies!**

Guess these **GREEN** fruits and veggies.

B \_ \_ \_ C \_ \_ L \_  
 K \_ \_ W \_ \_  
 \_ P \_ \_ C H

Guess these **RED** fruits and veggies.

B \_ \_ \_  
 W A T \_ \_ M \_ \_ N  
 R A \_ \_ H

Guess these **ORANGE** fruits and veggies.

\_ \_ \_ R \_ \_ T \_  
 \_ A N S \_ \_ R \_ \_ \_  
 \_ W \_ \_ T P \_ \_ \_ O

Guess these **YELLOW** fruits and veggies.

C \_ \_ \_ N \_ \_  
 P \_ \_ A P P \_ \_  
 \_ G U \_ \_ \_

**Word bank**

Squash	Spinach
Sweet potato	Corn
Kiwi	Pineapple
Beet	Radish
Broccoli	Corn
Tomato	Watermelon

**CONAGRO FOODS FOUNDATION**  
**Walmart**

## TOMATO

Tomatoes are often served raw on salads and sandwiches, or can be added to soups, casseroles, and stews. Tomatoes can be baked, broiled, roasted, juiced, blended, boiled, or stewed, and may be used in a variety of dishes.

**FUN FACT:**  
While a tomato is botanically considered a fruit, it is considered a vegetable for culinary uses.

Tomatoes are rich in vitamin A and vitamin C and are a RED/ORANGE vegetable. Tomatoes are also a rich source of lycopene, an antioxidant which may help prevent disease. Lycopene in tomatoes is enhanced by cooking them.

Source: USDA Agricultural Research Service, National Center for Food Safety and Inspection, Food Safety and Inspection Service, Food Safety and Inspection Service

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## TOMATO

<b>Soil:</b>	<p>Plant tomatoes in sunny, well-drained soil (at least 1000 hours of sunlight per year).</p> <p>Tomatoes are a heavy feeder. Soil should be rich in nutrients. Soil should be amended with compost.</p> <p>Tomatoes are a heavy feeder. Soil should be rich in nutrients. Soil should be amended with compost.</p>
<b>Water:</b>	<p>Tomatoes need about 1 inch of water per week. Water should be applied at the base of the plant.</p> <p>Tomatoes are a heavy feeder. Soil should be rich in nutrients. Soil should be amended with compost.</p>
<b>Light:</b>	<p>Tomatoes need at least 6 hours of sunlight per day. Tomatoes are a heavy feeder. Soil should be rich in nutrients. Soil should be amended with compost.</p>
<b>Temperature:</b>	<p>Tomatoes are a heavy feeder. Soil should be rich in nutrients. Soil should be amended with compost.</p>
<b>Harvesting:</b>	<p>Tomatoes are a heavy feeder. Soil should be rich in nutrients. Soil should be amended with compost.</p>
<b>Storage:</b>	<p>Tomatoes are a heavy feeder. Soil should be rich in nutrients. Soil should be amended with compost.</p>

Source: USDA Agricultural Research Service, National Center for Food Safety and Inspection, Food Safety and Inspection Service, Food Safety and Inspection Service

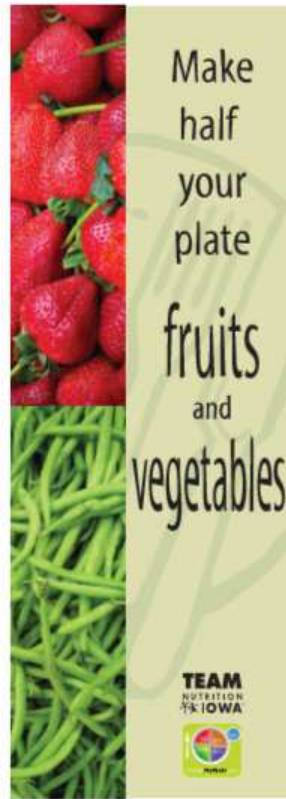
### ***Medium sized posters***

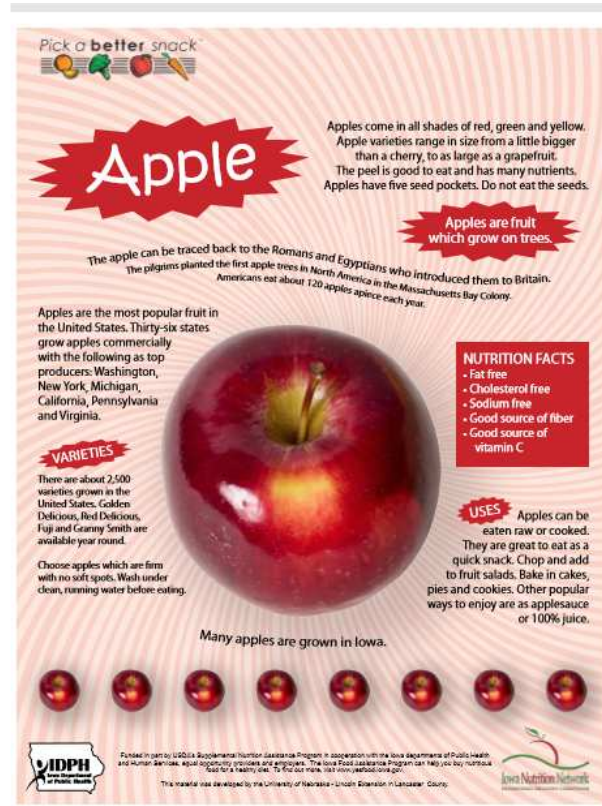
Throughout the ranking of medium sized posters, two marketing materials were ranked first by a single participant. These marketing materials were from Team Nutrition Iowa and Iowa Nutrition Network (fig. 8). The average number of color groups in this category is 2 and the average number of words in 154.5. One participant described the advertisement by Idaho Child Nutrition Program by saying “it looks plain.” The participant that chose the Team Nutrition Iowa poster understand the message but didn’t have any positive or negative feelings towards it. The participant mentioned, “And, I actually had a health class in church where we found that it’s more healthy to have half your plate with fruits and vegetables.”

**Fig 8: Lowest Ranked Medium Posters**

Campaign	Image
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Team Nutrition 75  
Iowa





### *Large sized posters*

In this category, two marketing materials were ranked first only one time. These large-sized posters were from the campaigns Smarter Lunch Rooms and YLI.org+ Team Nutrition (fig. 9). These marketing materials had an average of 3 color groups and 30.5 words. One participant didn't like the slogan of the YLI.org+ Team Nutrition advertisement. When asked what they didn't like about the piece, the participant said, "that is has- put some crunch in your lunch."

**Fig 9: Lowest Ranked Large Posters**

Campaign	Image	Image
	#	
Smarter Lunch Rooms	19	
YLI.org+ Team Nutrition	26	

## Announcements

In this category, only one marketing material was ranked first once. This announcement was from Team Nutrition Iowa and had 53 words (fig. 10). One participant described this advertisement as “a little long,” and didn’t seem to understand

the message. When asked what the vegetable was in the advertisement the participant said “cabbage flower.”

**Fig 10: Lowest Ranked Announcement**

Campaign	Image	Image
	#	
Team Nutrition Iowa	88	<p>The following public announcement would be read aloud to students during the school day or at lunchtime:</p> <p><u>What am I?</u> Some people call me cabbage flower. I have a compact head of white flower buds surrounded by green leaves. My flowers are packed with Vitamin C. I am a member of the Vegetable Group. The green leaves that surround my head keep the flower buds from sunlight. <u>I am Cauliflower!</u></p>

## CHAPTER 5

### DISCUSSION

The purpose of this study was to better understand how adolescents view different marketing materials and what themes are prevalent among their favorites. There has been research in how marketing influences children's eating habits, but no studies have been conducted asking youth, especially adolescents, their opinions on school marketing materials. This study found that many different factors influence how adolescents perceive marketing materials. Some of the most prevalent subthemes found were the mention of FV that the adolescent liked, peer opinion, color and length of the marketing materials. Students also chose marketing materials with a high number of colors pictured. The findings of this study can be used to understand what causes students to be drawn to specific school lunch marketing materials and give a better picture of what might possibly help increase FV consumption in schools.

One aspect of the interviews that's important to discuss is the idea of novelty. For many of the participants, this was the first time they had seen most of the marketing materials, therefore the images were new and exciting. The idea of novelty is supported in most literature, which shows that although marketing improves consumption in the short term, at follow-ups FV intake often returns to baseline. Beyond novelty, technology, such as cell-phones, compete with paper marketing<sup>67,82</sup>. 73% of adolescents have cell phones which often distract them from their environment<sup>105</sup>. Changing marketing materials in schools frequently can help reduce the effects of novelty. Another idea would be for schools to implement technology, such as TV screens, with the goal of taking attention away from phones and social media.

The interviews with adolescents as well as the content analysis suggested that the amount of color and imagery in an advertisement influenced the popularity of it. Many students indicated that they chose a specific advertisement due to either the amount of color or the imagery. Additionally, some participants mentioned they ranked specific marketing materials lower if they lacked color or had an unappealing color. The importance of color is further supported by the content analysis, since the majority of the participants chose marketing materials with four or more different colors. Many studies have supported the idea that colorful marketing materials are preferred. Food companies use colorful advertisements to help draw children and their parents to their item and hopefully increase sales<sup>13,74,75</sup>.

The interviews and content analysis also suggested that length and word count didn't have as much of an influence on marketing material chosen. Rather, the information and nutrition facts in the advertisement had a larger influence among the sample. Many participants mentioned that they enjoyed advertisements that had vitamin facts or used "GO, SLOW, WOAHH." Students also preferred advertisements that mentioned health benefits, as many were concerned about their current or future health. Participants often mentioned that even if they currently don't consume a specific fruit or vegetable, the information given in the advertisement influenced them to try. The content analysis also showed that word count didn't have a large impact on what advertisement was chosen. In fact, the second and third most popular advertisement throughout all categories, had over 250 words. One of the reasons adolescents may have preferred longer marketing materials in this study is due to either the color or context. Participants often mentioned they liked the information mentioned in the longer marketing materials

which could have influenced their choice. This preference suggests that marketing in schools should focus more on the color and information being mentioned in their advertisement, instead of the amount of words. Although there is little research done on the length of a marketing material and its influence on child preference, other research supports that the visual aspects are the most important<sup>12,13,102</sup>.

Another major theme that emerged during the interviews was the influence of perceived peer opinion on what marketing materials were chosen. Many participants thought that other students their age wouldn't like marketing materials because they usually don't eat healthy foods. Participants said that even if they liked it, their peers wouldn't. Often, they mentioned that even if students read it, they wouldn't be influenced to eat more fruits and vegetables but would just ignore it. Peer influence on diet is well studied, and there is a link between what students eat when compared to their peers' diet. The current literature suggests that when a person eats healthy, their friends are more likely to make healthy choices as well<sup>49</sup>. This suggests that the development of future marketing materials should be based on peer norm in an age group.

Perceived peer opinion can also have a positive influence a participant's view of marketing materials. The perception that peers would like the fruit or vegetable pictured also greatly influenced what a participant would choose. If a fruit or vegetable the participant thought their peers would like was pictured, they spoke more favorably of it, and used more words such as "cool" or "delicious" to describe the food pictured. Some participants mentioned it even motivated them to consume more of that specific food. The motivational aspect was especially true of fruits. Studies on peer-led nutrition interventions show that when a food becomes a social norm, consumption of that food

increases<sup>38,67,103</sup>. One study found that when students helped run a nutrition education intervention, other children their age were more likely to increase their consumption<sup>103</sup>. More research needs to be done to determine whether or not the perception of peer opinion on FV marketing materials has an impact on consumption. For example, research could be conducted to determine if peer created FV marketing materials had a larger impact than professionally created marketing materials. From this study participant ideas could be used to create future FV marketing materials that could then be implemented in schools.

One aspect of the marketing materials that negatively affected how they were perceived was the participant's comprehension of them. When a participant didn't recognize the fruit or vegetable pictured or hadn't tried it before, they often were less enthusiastic about the marketing material. Throughout the interviews, 40% of participants didn't recognize a FV pictured. Often times the FV not recognized was a leafy green or other vegetable such as eggplant or onion. These foods are often not served during the school day. Developing marketing materials with not only well known FV but also marketing materials that include FV that are being served at school, may effect dietary choices. Research needs to be conducted on whether or not marketing the FV served on specific days, increases selection and consumption.

Similar results were seen when marketing materials contained only vegetables. No image containing only a vegetable, such as broccoli, was popular among participants. The opposite was seen when a common fruit such as a strawberry or watermelon was pictured. These results are supported by the literature which shows fruits are more popular than vegetables among adolescents<sup>60,104</sup>. In many FV marketing interventions,

fruit consumption often increases initially, but research is mixed on whether or not marketing increases vegetable consumption<sup>64,76,85</sup>. Further research needs to be done to determine how to successfully market vegetables to children and adolescents.

Determining what vegetables are popular to adolescents and marketing those, may provide students with more preferable marketing materials. The current study can be used to help schools provided their students with fruits and vegetables participants said they enjoyed. Giving students access to fruits and vegetables they like could help increase their overall consumption.

### **Strengths and Limitations**

This study has several strengths. First, all marketing materials were shown to participants in a random order, minimizing the effect of a specific order on the ranking process. Another strength of this study is the open nature of the questions being asked, allowed participants to give a wide-range of personal responses unique to the individual. A third strength of this study is the wide variety of demographics among the sample. Participants represented a diverse range of ages and ethnicities and balanced across sex.

Limitations in this study should be considered. All interviews include student opinions and perceptions which doesn't explain how adolescents' fruit and vegetable consumption patterns are affected. Another limitation is that participants will be shown a selection of only 35 different marketing materials that may not represent the existing marketing materials in their schools. Although the marketing materials were taken from common resources online, they may not represent all marketing materials. A third limitation of this study is that often only a single marketing material was used from each campaign and therefore results cannot be generalized to a specific campaign. Another

limitation is that the study took place in a single locale, Phoenix, AZ area. Due to this, the study cannot be generalized to the overall adolescent population throughout the United States.

## CHAPTER 6

### CONCLUSION

There are many variables that influence an adolescent's consumption of fruits and vegetables. Although it is well known how fast food marketing and placement affects dietary intake, very little research has been done on child perceptions of school fruit and vegetable marketing. This study is one of the first conducted asking students about their preferences and opinions regarding fruit and vegetable marketing in schools. It is also the first study conduct a content analysis on popular FV school marketing materials. Previous research has been done regarding food marketing in restaurants and supermarkets, although the same themes are rarely implemented in schools to look at their effect on fruit and vegetable intake during lunch.

The evidence in the current study supported the hypothesis that amount of color in a marketing material influenced which materials a participant preferred. Word count surprisingly didn't have a large effect on what marketing materials were ranked highest. Often, other factors such a peer opinion, information mentioned and visual aspects (characters, color, graphic design) were often mentioned by participants as their reason for picking a specific marketing material. Further research needs to be conducted to determine if marketing will have a significant and lasting influence on what foods children and adolescents consume during the school day.

In the future, researchers and school lunch staff can use this information to create fruit and vegetable marketing materials and test them in a school lunch setting to determine whether or not adolescent perception effects consumption. School lunch professionals will be able to look at this data and place advertisements in their cafeteria

that better exemplify adolescents' preferences regarding FV advertisements. Last, agencies and companies that create school lunch marketing materials can use this information to help develop new marketing materials to provide to school staff.

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APPENDIX A

INSTITUTIONAL REVIEW BOARD



APPROVAL: EXPEDITED REVIEW

Meredith Bruening  
 SNHP: Nutrition  
 602/827-2266  
 Meg.Bruening@asu.edu

Dear Meredith Bruening:

On 1/17/2018 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	School fruit and vegetable marketing pretesting
Investigator:	Meredith Bruening
IRB ID:	STUDY00007439
Category of review:	(6) Voice, video, digital, or image recordings, (7)(b) Social science methods, (7)(a) Behavioral research
Funding:	Name: HHS-NIH: National Heart, Lung, & Blood Institute (NHLBI), Grant Office ID: NTS0067, Funding Source ID: 1R01HL139120-01A1
Grant Title:	NTS0067;
Grant ID:	NTS0067;
Documents Reviewed:	<ul style="list-style-type: none"> <li>• SaladBar_Grant_102816-LATEST-SUBMITTED v2.pdf, Category: Sponsor Attachment;</li> <li>• SurveyConsentForm1.18.18_CleanVersion.pdf, Category: Consent Form;</li> <li>• Child Assent_Marketing Interview1.4.18.pdf, Category: Consent Form;</li> <li>• Middle School Interview Agenda, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li> <li>• MarketingIRB_1.18.18AG.docx, Category: IRB Protocol;</li> <li>• IncentiveSurvey1.4.18.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li> <li>• SurveyConsentForm1.18.18_UpdatedVersion.pdf, Category: Consent Form;</li> </ul>

	<ul style="list-style-type: none"> <li>• Elementary School Interview Agenda, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li> <li>• Response to ModReqd7439_AG.pdf, Category: Other (to reflect anything not captured above);</li> <li>• Parental Permission Form_Marketing Interviews1.18.18_UpdatedVersion.pdf, Category: Consent Form;</li> <li>• SchoolRecruitmentScript.pdf, Category: Recruitment Materials;</li> <li>• Recruitment Social Media Poster (Professionals), Category: Recruitment Materials;</li> <li>• High School Interview Agenda, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li> <li>• ProfessionalsInterview_ConsentForm_1.4.18AGUpdate.pdf, Category: Consent Form;</li> <li>• Parental Permission Form_Marketing Interviews1.18.18_CleanVersion.pdf, Category: Consent Form;</li> <li>• ProfessionalsSurvey_1.18.18Updated.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li> <li>• Marketing Interview Poster (in-person), Category: Recruitment Materials;</li> </ul>
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The IRB approved the protocol from 1/17/2018 to 1/16/2019 inclusive. Three weeks before 1/16/2019 you are to submit a completed Continuing Review application and required attachments to request continuing approval or closure.

If continuing review approval is not granted before the expiration date of 1/16/2019 approval of this protocol expires on that date. When consent is appropriate, you must use final, watermarked versions available under the "Documents" tab in ERA-IRB.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Ashley Grabb  
Nikita Bhuyan

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Carrie Standage-Beier  
Raevyn Xavier  
Sydney Pisano  
Danielle Haworth  
Ashley Grabb  
Jessie Henderson  
Colette Gasbarro  
Meredith Bruening  
Rebecca Bender  
Kassandra Koester  
Punam Ohri-Vachaspati  
Hannah Muise  
Marc Adams  
Kathryn Saliski  
Carina Morris

APPENDIX B

PARENTAL CONSENT AND CHILD ASSENT FORMS

**Youth-Driven Fruit & Vegetable Interview  
PARENTAL LETTER OF PERMISSION**

Dear Parent or Guardian:

Together with your child's school, Arizona State University and the National Heart, Lung, and Blood Institute, we want to learn your child's reactions to fruit and vegetable promotions to be used in schools. We want to learn what will help this age group eat more fruits and vegetables.

We invite your child to be in an afterschool interview. The interview will be run by trained ASU staff. The details and goals of the interview include:

- 1 session, 30 minutes.
- Your child will be interviewed about how much she or he like the posters and other messages that include fruits and vegetables.
- Your child's responses will be audio recorded.
- Your child will get \$10 Amazon, Target or Starbucks gift card for completing the interview.

Your child's input in this interview is voluntary. Your child does not have to participate. Your child can withdraw at any time. There will be no penalty by his/her school or Arizona State University. Your child's grades or status at his/her school will not be changed in any way. Your child's answers will be audio recorded. The audio recordings will be stored in a locked cabinet, within a locked office in a secured building. Only the research team has access to them. Once notes are made on the recordings, they will be deleted. Your child's name will never be shared. Your child can decide to stop being recorded at any time.

If you have any questions about the interview or your child's input in this program, please call Dr. Meg Bruening at 602-827-2472 or [asu.saladbar@gmail.com](mailto:asu.saladbar@gmail.com)

Sincerely,

Drs. Meg Bruening & Marc Adams

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ASU IRB IRB # STUDY00007439 | Approval Period 1/17/2018 – 1/16/2019

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By signing below, you are giving permission for your child \_\_\_\_\_ (Child's full name) to take part in the above interview and to be audio recorded.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Date

If you have any questions about you or your child's rights in this program, or if you feel you or your child have been placed at risk, contact the Chair of the Human Subjects Institutional Review Board, through the Office of Research Integrity and Assurance, at (480) 965-6788.

**Youth-Driven Fruit & Vegetable Interview  
CHILD ASSENT**

Meg Bruening and Marc Adams are researchers who work at Arizona State University. They are working on a project funded by the National Heart, Lung, and Blood Institute and they need your help! They want to learn more about the opinion of fruit and vegetable posters, ads, and announcements for kids your age. Your parent(s) have given permission for you to join this interview.

Here's what you would be asked to do:

- Attend one interview session around 30 minutes long. You will help us learn what fruit and vegetable promotions kids your age like.
- You will be asked about how much you liked a variety of images and why you like them. There are no right or wrong answers.
- Your answers will be audio recorded.
- If you decide to complete the interview, you can earn **\$10 Starbucks, Amazon or Target gift card.**

You do not have to be in this interview. No one will be upset at you if you decide not to do this interview. Even if you start the interview, you can stop later if you want. You may ask questions about the interview at any time.

We would like to audio record the interview. Only people on our research team will be able to listen to your interview. If you say yes to be in the interview, we will not tell anyone else your answers. Your name will not be shared with anyone. Even if your parents or teachers ask, we will not tell them about what you say or do in the interview. Let me know if, at any time, you do not want to be recorded and I will stop.

Signing here means that you have read this form or have had it read to you and that you are willing to be in this study, and willing to be audio recorded.

Signature of subject \_\_\_\_\_

Subject's printed name \_\_\_\_\_

Signature of Investigator \_\_\_\_\_

Date \_\_\_\_\_

## APPENDIX C

### DEMOGRAPHIC SURVEY AND INTERVIEW AGENDA

High School Student Interview Agenda	
<u>Items needed:</u> <ul style="list-style-type: none"> <li>Assent forms</li> <li>Nutrition advertisements</li> <li>Audio Recorder</li> </ul>	
<u>Student Arrival</u> <ul style="list-style-type: none"> <li>Student will sit 1:1 with facilitator</li> <li>Facilitator will collect parent permission slip from student</li> </ul>	3 min
<u>Introduction</u> <ul style="list-style-type: none"> <li>Upon beginning facilitator will say the following:               <ul style="list-style-type: none"> <li>Hi there! My name is _____ and this is _____. I am from Arizona State University and we are here today to get your feedback and ideas on different advertisements for food.</li> </ul> </li> <li>***Read assent form to group and have students sign assent form</li> <li>Ask the student "warm-up" questions like; "what is your favorite food" or "what do you like to do on the weekend?"</li> </ul> <p><i>Facilitator to Students</i></p> <ul style="list-style-type: none"> <li>We are going to record our conversation because we want to remember everything you say. But don't worry, only the researchers will listen to it and we're not going to tell your friends, teachers, or parents.</li> </ul>	30 sec
*****BEGIN AUDIO RECORDING!*****	
<u>Overview</u> <ul style="list-style-type: none"> <li>We need your opinions and feedback on fruit and vegetable posters, ads and announcements.</li> <li>We will show you a series of different posters, table tents, and announcements about fruits and vegetables. We will be asking you to help us understand how students your age feel about these food marketing materials.</li> <li>We are going to ask you some questions. Please feel free to be as honest as possible, as there are no right or wrong answers. We want your opinion.</li> <li>Before we begin, we are going to ask you to rank the following pictures so we can find your favorites.</li> </ul>	5 min
<u>Initial Ranking</u> <ul style="list-style-type: none"> <li>Start with large posters showing two at a time</li> <li>Of these pictures which do you like most?</li> </ul>	10 mins

<ul style="list-style-type: none"> <li>● Put the least favorite picture to side and then compare the next picture to the favorite.</li> <li>● <i>Now, of these pictures which do you like most?</i></li> <li>● Repeat this process for the rest of the large posters.</li> <li>● Put the favorite overall to the side.</li> <li>● Repeat these steps for the medium posters, table toppers and announcements.</li> </ul> <p>At the end you should have 4 advertisements. They should be the top rated from each category. This is what you will use for the reviews</p>	
<p><u>Problems</u></p> <ul style="list-style-type: none"> <li>○ As I mentioned before, we are here today to get your feedback and suggestions on different ads. Let me ask you a few questions first.</li> <li>○ What types of ads (posters, signs, table tents, etc.) do you see in your cafeteria about food?</li> <li>○ Now, I'm going to ask you what you think about some ads...</li> </ul>	5 min
<p><u>Advertisement #1:</u></p> <ul style="list-style-type: none"> <li>● <i>Facilitator to students:</i> <ul style="list-style-type: none"> <li>○ Now I'm going to ask you some questions about the ads. Let's talk about this one first.</li> </ul> </li> </ul> <p><u>Acceptance/Attractiveness:</u></p> <p><i>Likes</i></p> <ul style="list-style-type: none"> <li>● What do you like best about the (ad)?</li> <li>● What do you think other high school students would like best about this piece?</li> </ul> <p><i>Dislikes</i></p> <ul style="list-style-type: none"> <li>● What, if anything, do you not like about the (ad)?</li> <li>● What do you think the other high school students would not like about this piece?</li> </ul> <p><u>Comprehension:</u></p> <ul style="list-style-type: none"> <li>● What do you think this ad is about?</li> <li>● What in the picture makes you think that?</li> <li>● What do you think of that message? Does it make you feel any certain way?</li> <li>● Are there any other messages that you get from this ad?</li> <li>● Do you think these messages are important to kids your age? Why?</li> <li>● What age of students do you think would like this ad?</li> </ul> <p><u>Relevance:</u></p> <ul style="list-style-type: none"> <li>● What is the name of the fruit or vegetable in this advertisement?</li> <li>● What kind of foods does this ad show that you like?</li> </ul>	15 min

<ul style="list-style-type: none"> <li>How much do you like [f/v] in this advertisement? <i>maybe ask following question "have you eaten this {f/v} before?"</i></li> <li>Does this ad make you like it any more or less?</li> <li>What do you think your friends would think of this advertisement?</li> </ul> <p><u>Motivation</u></p> <ul style="list-style-type: none"> <li>Does this ad make you want to do anything? If so, what?</li> </ul> <p><u>Uniqueness</u></p> <ul style="list-style-type: none"> <li>How much does this ad remind you of other ads you've seen before?</li> </ul>	
<p><b><u>Advertisement # 2</u></b></p> <ul style="list-style-type: none"> <li><i>Facilitator to students:</i> <ul style="list-style-type: none"> <li>Here is the next advertisement I am going to ask you about.</li> </ul> </li> </ul> <p><u>Acceptance/Attractiveness:</u></p> <p><i>Likes</i></p> <ul style="list-style-type: none"> <li>What do you like best about the (ad)?</li> <li>What do you think other high school students would like best about this piece?</li> </ul> <p><i>Dislikes</i></p> <ul style="list-style-type: none"> <li>What, if anything, do you not like about the (ad)?</li> <li>What do you think the other high school students would not like about this piece?</li> </ul> <p><u>Comprehension:</u></p> <ul style="list-style-type: none"> <li>What do you think this ad is about?</li> <li>What in the picture makes you think that?</li> <li>What do you think of that message? Does it make you feel any certain way?</li> <li>Are there any other messages that you get from this ad?</li> <li>Do you think these messages are important to kids your age? Why?</li> <li>What age of students do you think would like this ad?</li> </ul> <p><u>Relevance:</u></p> <ul style="list-style-type: none"> <li>What is the name of the fruit or vegetable in this advertisement?</li> <li>What kind of foods does this ad show that you like?</li> <li>How much do you like [f/v] in this advertisement? <i>maybe ask following question "have you eaten this {f/v} before?"</i></li> <li>Does this ad make you like it any more or less?</li> <li>What do you think your friends would think of this advertisement?</li> </ul> <p><u>Motivation</u></p> <ul style="list-style-type: none"> <li>Does this ad make you want to do anything? If so, what?</li> </ul> <p><u>Uniqueness</u></p> <ul style="list-style-type: none"> <li>How much does this ad remind you of other ads you've seen before?</li> </ul>	15 min

<p><b>Advertisement # 3</b></p> <ul style="list-style-type: none"> <li>• <i>Facilitator to students:</i> <ul style="list-style-type: none"> <li>◦ Here is the next advertisement I am going to ask you about.</li> </ul> </li> </ul> <p><u>Acceptance/Attractiveness:</u></p> <p><i>Likes</i></p> <ul style="list-style-type: none"> <li>• What do you like best about the {ad}?</li> <li>• What do you think other high school students would like best about this piece?</li> </ul> <p><i>Dislikes</i></p> <ul style="list-style-type: none"> <li>• What, if anything, do you not like about the {ad}?</li> <li>• What do you think the other high school students would not like about this piece?</li> </ul> <p><u>Comprehension:</u></p> <ul style="list-style-type: none"> <li>• What do you think this ad is about?</li> <li>• What in the picture makes you think that?</li> <li>• What do you think of that message? Does it make you feel any certain way?</li> <li>• Are there any other messages that you get from this ad?</li> <li>• Do you think these messages are important to kids your age? Why?</li> <li>• What age of students do you think would like this ad?</li> </ul> <p><u>Relevance:</u></p> <ul style="list-style-type: none"> <li>• What is the name of the fruit or vegetable in this advertisement?</li> <li>• What kind of foods does this ad show that you like?</li> <li>• How much do you like {f/v} in this advertisement? <i>maybe ask following question "have you eaten this {f/v} before?"</i></li> <li>• Does this ad make you like it any more or less?</li> <li>• What do you think your friends would think of this advertisement?</li> </ul> <p><u>Motivation</u></p> <ul style="list-style-type: none"> <li>• Does this ad make you want to do anything? If so, what?</li> </ul> <p><u>Uniqueness</u></p> <ul style="list-style-type: none"> <li>• How much does this ad remind you of other ads you've seen before?</li> </ul>	<p>15 min</p>
<p><b>Advertisement #4:</b></p> <ul style="list-style-type: none"> <li>• <i>Facilitator to students:</i> <ul style="list-style-type: none"> <li>◦ Here is the next advertisement I am going to ask you about.</li> </ul> </li> </ul> <p><u>Acceptance/Attractiveness:</u></p> <p><i>Likes</i></p> <ul style="list-style-type: none"> <li>• What do you like best about the {ad}?</li> <li>• What do you think other high school students would like best about this piece?</li> </ul>	<p>15 min</p>

<p><u>Dislikes</u></p> <ul style="list-style-type: none"> <li>• What, if anything, do you not like about the (ad)?</li> <li>• What do you think the other high school students would not like about this piece?</li> </ul> <p><u>Comprehension:</u></p> <ul style="list-style-type: none"> <li>• What do you think this ad is about?</li> <li>• What in the picture makes you think that?</li> <li>• What do you think of that message? Does it make you feel any certain way?</li> <li>• Are there any other messages that you get from this ad?</li> <li>• Do you think these messages are important to kids your age? Why?</li> <li>• What age of students do you think would like this ad?</li> </ul> <p><u>Relevance:</u></p> <ul style="list-style-type: none"> <li>• What is the name of the fruit or vegetable in this advertisement?</li> <li>• What kind of foods does this ad show that you like?</li> <li>• How much do you like [f/v] in this advertisement? <i>maybe ask following question "have you eaten this {f/v} before?"</i></li> <li>• Does this ad make you like it any more or less?</li> <li>• What do you think your friends would think of this advertisement?</li> </ul> <p><u>Motivation</u></p> <ul style="list-style-type: none"> <li>• Does this ad make you want to do anything? If so, what?</li> </ul> <p><u>Uniqueness</u></p> <ul style="list-style-type: none"> <li>• How much does this ad remind you of other ads you've seen before?</li> </ul>	
<p><u>Ranking</u></p> <ul style="list-style-type: none"> <li>• <i>Facilitator to students:</i> <ul style="list-style-type: none"> <li>○ Thank you for answering all of our questions about the advertisements! Now that you've had a chance to look at all of them, can you show me which one is your favorite?</li> <li>○ Which one do you not like that much <i>remove picture and stack in order.</i></li> <li>○ Okay, out of these two which one do you like the best? <i>arrange pictures for them from least favorite to most favorite.</i></li> <li>○ <i>Show students order.</i> So would you say these pictures are arranged from your favorite to least favorite?</li> </ul> </li> </ul>	3 min
<p><u>Conclusion</u></p> <ul style="list-style-type: none"> <li>• Awesome - we are all done! Thanks for helping us today. <i>Direct child where they need to go next.</i></li> </ul>	15 Sec

Middle School Student Interview Agenda	
<u>Items needed:</u> <ul style="list-style-type: none"> <li>● Assent forms</li> <li>● Nutrition Advertisements</li> <li>● Advertisement Scorecards (smiley rating sheet, if needed)</li> <li>● Audio Recorder</li> </ul>	
<u>Student Arrival-</u> Student will sit at table with facilitator. <ul style="list-style-type: none"> <li>● Hi, I'm ----- with ASU, do you have your permission slip?</li> <li>● Awesome, thank you!</li> <li>● I am from Arizona State University and we are here today to get your feedback and ideas on different advertisements for food. There are no right or wrong answers - we would like your honest opinion.</li> <li>● We're going to go over this (assent form) together really fast, okay? <ul style="list-style-type: none"> <li>○ Read assent form.</li> </ul> </li> </ul>	3 min
<u>Introduction</u> <ul style="list-style-type: none"> <li>● Before we begin let's get to know each other a little better.</li> <li>● What fun things do you like to do after school? <ul style="list-style-type: none"> <li>○ Do you have a favorite TV show? (example)</li> <li>○ In my spare time I like to ____</li> </ul> </li> <li>● We are going to record our conversation because we want to remember everything you say. But don't worry, only the researchers will listen to it and we're not going to tell your friends, teachers, or parents.</li> </ul>	2 min
*****BEGIN AUDIO RECORDING!*****	
<u>Overview</u> <ul style="list-style-type: none"> <li>● We need your opinions and feedback on fruit and vegetable posters, ads and announcements.</li> <li>● We will show you a series of different posters, table tents, and announcements about fruits and vegetables. We will be asking you to help us understand how students your age feel about these food marketing materials.</li> <li>● We are going to ask you some questions please feel free to be as honest as possible, as there are no right or wrong answers. We want your opinion.</li> <li>● Before we begin, we are going to ask you to rank the following pictures so we can find your favorites.</li> </ul>	3 min
<u>Initial Ranking</u> <ul style="list-style-type: none"> <li>● Start with large posters showing two at a time</li> <li>● <i>Of these pictures which do you like most?</i></li> <li>● Put the least favorite picture to side and then compare the next picture to the favorite.</li> </ul>	10min

<ul style="list-style-type: none"> <li>• Now, of these pictures which do you like most?</li> <li>• Repeat this process for the rest of the large posters.</li> <li>• Put the favorite overall to the side.</li> <li>• Repeat these steps for the medium posters, table toppers and announcements.</li> </ul> <p>At the end you should have 4 advertisements. They should be the top rated from each category. This is what you will use for the reviews</p> <ul style="list-style-type: none"> <li>• Now, we will ask you some questions about your favorite advertisements</li> </ul>	
<p><b><u>Advertisement Review #1</u></b></p> <ul style="list-style-type: none"> <li>• <i>Facilitator to students:</i> <ul style="list-style-type: none"> <li>◦ Now I'm going to ask you some questions about the ads. Let's talk about this one first.</li> </ul> </li> </ul> <p><u>Acceptance/Attractiveness:</u></p> <p><i>Likes</i></p> <ul style="list-style-type: none"> <li>• What do you like best about the (ad)?</li> <li>• What do you think other students your age would like best about this piece?</li> </ul> <p><i>Dislikes</i></p> <ul style="list-style-type: none"> <li>• What, if anything, do you not like about the (ad)?</li> <li>• What do you think other students your age would not like about this piece?</li> </ul> <p><u>Comprehension:</u></p> <ul style="list-style-type: none"> <li>◦ What do you think this ad is about?</li> <li>◦ What in the picture makes you think that?</li> <li>◦ What do you think of that message? Does it make you feel any certain way?</li> <li>◦ Are there any other messages that you get from this ad?</li> <li>◦ Do you think these messages are important to kids your age? Why?</li> <li>◦ What age of students do you think would like this ad?</li> </ul> <p><u>Relevance:</u></p> <ul style="list-style-type: none"> <li>◦ What is the name of the fruit or vegetable in this advertisement?</li> <li>◦ What kind of foods does this ad have in it that you like?</li> <li>◦ How much do you like [f/v] in this advertisement? <i>Maybe ask following question "have you eaten this {f/v} before?"</i></li> <li>◦ Does this ad make you like it any more or less?</li> <li>◦ What do you think your friends would think of this advertisement?</li> </ul> <p><u>Motivation</u></p> <ul style="list-style-type: none"> <li>◦ Does this ad motivate you to do anything? If so, what?</li> </ul> <p><u>Uniqueness</u></p> <ul style="list-style-type: none"> <li>◦ How much does this ad remind you of other ads you've seen before?</li> </ul>	15 min
<p><b><u>Advertisement Review #2</u></b></p> <ul style="list-style-type: none"> <li>• <i>Facilitator to students:</i> <ul style="list-style-type: none"> <li>◦ Here is the next advertisement I am going to ask you about.</li> </ul> </li> </ul>	15 min

<p><u>Acceptance/Attractiveness:</u></p> <p><i>Likes</i></p> <ul style="list-style-type: none"> <li>• What do you like best about the (ad)?</li> <li>• What do you think other students would like best about this piece?</li> </ul> <p><i>Dislikes</i></p> <ul style="list-style-type: none"> <li>• What, if anything, do you not like about the (ad)?</li> <li>• What do you think other students your age would not like about this piece?</li> </ul> <p><u>Comprehension:</u></p> <ul style="list-style-type: none"> <li>○ What do you think this ad is about?</li> <li>○ What in the picture makes you think that?</li> <li>○ What do you think of that message? Does it make you feel any certain way?</li> <li>○ Are there any other messages that you get from this ad?</li> <li>○ Do you think these messages are important to kids your age? Why?</li> <li>○ What age of students do you think would like this ad?</li> </ul> <p><u>Relevance:</u></p> <ul style="list-style-type: none"> <li>○ What is the name of the fruit or vegetable in this advertisement?</li> <li>○ What kind of foods does this ad have in it that you like?</li> <li>○ How much do you like [f/v] in this advertisement? <i>Maybe ask following question "have you eaten this {f/v} before?"</i></li> <li>○ Does this ad make you like it any more or less?</li> <li>○ What do you think your friends would think of this advertisement?</li> </ul> <p><u>Motivation</u></p> <ul style="list-style-type: none"> <li>○ Does this ad motivate you to do anything? If so, what?</li> </ul> <p><u>Uniqueness</u></p> <ul style="list-style-type: none"> <li>○ How much does this ad remind you of other ads you've seen before?</li> </ul>	
<p><u>Advertisement Review #3</u></p> <ul style="list-style-type: none"> <li>• <i>Facilitator to students:</i> <ul style="list-style-type: none"> <li>○ Here is the next advertisement I am going to ask you about.</li> </ul> </li> </ul> <p><u>Acceptance/Attractiveness:</u></p> <p><i>Likes</i></p> <ul style="list-style-type: none"> <li>• What do you like best about the (ad)?</li> <li>• What do you think other students your age would like best about this piece?</li> </ul> <p><i>Dislikes</i></p> <ul style="list-style-type: none"> <li>• What, if anything, do you not like about the (ad)?</li> <li>• What do you think other students your age would not like about this piece?</li> </ul> <p><u>Comprehension:</u></p> <ul style="list-style-type: none"> <li>○ What do you think this ad is about?</li> <li>○ What in the picture makes you think that?</li> </ul>	15 min

<ul style="list-style-type: none"> <li>○ What do you think of that message? Does it make you feel any certain way?</li> <li>○ Are there any other messages that you get from this ad?</li> <li>○ Do you think these messages are important to kids your age? Why?</li> <li>○ What age of students do you think would like this ad?</li> </ul> <p><u>Relevance:</u></p> <ul style="list-style-type: none"> <li>○ What is the name of the fruit or vegetable in this advertisement?</li> <li>○ What kind of foods does this ad have in it that you like?</li> <li>○ How much do you like [f/v] in this advertisement? <i>Maybe ask following question "have you eaten this [f/v] before?"</i></li> <li>○ Does this ad make you like it any more or less?</li> <li>○ What do you think your friends would think of this advertisement?</li> </ul> <p><u>Motivation</u></p> <ul style="list-style-type: none"> <li>○ Does this ad motivate you to do anything? If so, what?</li> </ul> <p><u>Uniqueness</u></p> <ul style="list-style-type: none"> <li>○ How much does this ad remind you of other ads you've seen before?</li> </ul>	
<p><b><u>Advertisement Review #4</u></b></p> <ul style="list-style-type: none"> <li>● <i>Facilitator to students:</i> <ul style="list-style-type: none"> <li>○ Here is the next advertisement I am going to ask you about.</li> </ul> </li> </ul> <p><u>Acceptance/Attractiveness:</u></p> <p><i>Likes</i></p> <ul style="list-style-type: none"> <li>● What do you like best about the (ad)?</li> <li>● What do you think other students your age would like best about this piece?</li> </ul> <p><i>Dislikes</i></p> <ul style="list-style-type: none"> <li>● What, if anything, do you not like about the (ad)?</li> <li>● What do you think other students your age would not like about this piece?</li> </ul> <p><u>Comprehension:</u></p> <ul style="list-style-type: none"> <li>○ What do you think this ad is about?</li> <li>○ What in the picture makes you think that?</li> <li>○ What do you think of that message? Does it make you feel any certain way?</li> <li>○ Are there any other messages that you get from this ad?</li> <li>○ Do you think these messages are important to kids your age? Why?</li> <li>○ What age of students do you think would like this ad?</li> </ul> <p><u>Relevance:</u></p> <ul style="list-style-type: none"> <li>○ What is the name of the fruit or vegetable in this advertisement?</li> <li>○ What kind of foods does this ad have in it that you like?</li> <li>○ How much do you like [f/v] in this advertisement? <i>Maybe ask following question "have you eaten this [f/v] before?"</i></li> <li>○ Does this ad make you like it any more or less?</li> <li>○ What do you think your friends would think of this advertisement?</li> </ul>	15 min

<u>Motivation</u> <ul style="list-style-type: none"> <li>Does this ad motivate you to do anything? If so, what?</li> </ul>	
<u>Uniqueness</u> <ul style="list-style-type: none"> <li>How much does this ad remind you of other ads you've seen before?</li> </ul>	
<u>Ranking</u> <ul style="list-style-type: none"> <li>Facilitator to students: <ul style="list-style-type: none"> <li>Thank you for answering all of our questions about the advertisements! Now that you've had a chance to look at all of them, can you show me which one is your favorite?</li> <li>Which one do you not like that much <i>remove picture and stack in order</i>.</li> <li>Okay, out of these two which one do you like the best? <i>arrange pictures for them from least favorite to most favorite</i>.</li> <li>Show students order. So would you say these pictures are arranged from your favorite to least favorite?</li> </ul> </li> </ul>	3 min
<u>Conclusion</u> <ul style="list-style-type: none"> <li>Awesome - we are all done! Thanks for helping us today. <i>Direct child where they need to go next.</i></li> </ul>	15 Sec

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**Date** \_\_\_\_\_ **Location** \_\_\_\_\_ **Participant ID** \_\_\_\_\_

**What grade are you in?**

- ☐ 3rd
- ☐ 4th
- ☐ 5th
- ☐ 6th
- ☐ 7th
- ☐ 8th
- ☐ 9th
- ☐ 10th
- ☐ 11th
- ☐ 12th

**What is your age?** \_\_\_\_\_

**What is your gender?**

- ☐ Female
- ☐ Male
- ☐ Other

**Are you Hispanic or Latino?**

- ☐ Yes
- ☐ No

**What is your race? (Select one or more responses)**

- ☐ American Indian or Alaskan Native
- ☐ Asian
- ☐ Black or African American
- ☐ Native Hawaiian or Other Pacific Islander
- ☐ White
- ☐ Other

## APPENDIX D

### STUDENT INTERVIEW RESPONSES

	<b>Table 4: Perceptions of Marketing Materials</b> Student opinion of favorite marketing material in each of the four categories		
A.	<b>Likes</b> Student preferences among marketing materials		
	<b>Visual Aspects</b> Students describe amount/type of color and imagery preferred in the images	<p>“Mhmm. Uh. I chose this one for kind of the, like the visual aspect of it. And like the graphic design. Because I think it would be also eye catching. I think that’s like a very important part”</p> <p>“I like how aesthetically pleasing it is. Uh, I like the light color palette. It looks really good. And honestly it looks a little bit appetizing. “</p> <p>“It’s just kinda like a colorful thing and it’s got all the kind of foods of the different colors of the like the rainbow and stuff. Interesting.”</p>	70 quotes from 27 interviews
	<b>Cartoons and Media</b> Characters, cartoons, movie or celebrity references that participants liked.	<p>“I like it cause it’s like a monster. And it’s like yeah, creative.”</p> <p>“Um. I think I first of all like the visual. So like, the woman as the spin attendant, the DJ.”</p> <p>“because it’s a popular movie and a lot of people like it and they’re like linking to grapes so they want them to eat them more”</p> <p>“Um, again, I feel it’s about trying to get kids interested in fruits. And its kind of like a play-off of a really good movie haha.”</p>	27 quotes from 16 interviews
	<b>Fruit and/or vegetable</b> Students described fruit or vegetable the liked in the advertisement.	<p>“um, let’s see, if they were served every day at the cafeteria and my breakfast, lunch and dinner then of course I will eat them so they’re pretty good”</p>	136 quotes from 39 interviews

		<p>“Do I like? Um all the, most of the fruits, um, not a lot of the vegetables. I don’t eat a lot of vegetables. But um, they look really, they look really like appetizing in this picture. So, um I think it would make me want to try, try some of them that I haven’t tried, like eggplant. Or um, like really, really good in the pictures.”</p> <p>“I like how it’s about watermelon, that’s my favorite fruit and a lot of them added like sweet, delish vitamin A and C, I think that kinda makes it more centered towards us.”</p>	
	<p><b>Information</b> Mention of FV facts or nutritional information with the goal of educating student’s.</p>	<p>“Um. I think it’s about giving you more information on like a common food or at least one that I choose a common food that you eat maybe every day. Or every once in a while. We don’t know anything about it. This kind of gives you like some, some fun facts about it.”</p> <p>“Um it’s unlike the other ones it has like more information about it then just like what it looks like I guess. Like it talks about how it can like help protect against cancers, the red fruits and vegetables, so it's informative”</p> <p>“because it’s giving off a little facts and it’s saying that fruits and veggies help your body, it’s not just like that, it’s saying nutrients that promote a healthy heart like red apples, cherries and strawberries, like you know, it’s giving off a little more facts”</p>	61 quotes from 29 interviews
	<p><b>Length</b> Student preference of</p>	<p>“Um, I like the colors and like the simplicity of it. It has a message but it’s also short. You just read it and you’re like oh that’s fun. “</p>	21 quotes from 13 interviews

	length, short or long.	“I like that it’s really simple because if it was really long then probably a lot of people wouldn’t listen to it and they would kind of just avoid it, but if it’s just like fruits like oranges they’d be like oh cool”	
B.	<b>Dislikes</b> Student’s dislikes about marketing materials chosen		
	<b>Word Count</b> Length of advertisement or overall word count too high	“This one’s really long too. I don’t know. This one. This other one went straight to the point”  “..it can seem a little too, too much text, maybe? Um. Or, or a little too much yeah too much information. Maybe? Like it’s not as like visually appealing as the other ones that I had chosen.”	18 Quotes from 12 interviews
	<b>Font</b> Hard to read, either from size or type of font.	“um – I think the print is a little too small.”  “I think this fonts kinda hard to read”	7 quotes from 7 interviews
	<b>Fruit and/or vegetable</b> Dislike of a certain FV pictures and/or mentioned in the marketing material	“Um, it’s got pancakes, fruit loops, donuts, muffin, cheese, and milk. Fruit and everything else in this whole ad- except for the vegetable I don’t like.”  “Um, because I feel like people would gravitate towards vegetables that they usually see, like they usually eat. Um, I don’t really see anybody eating like radishes or um bell peppers”  “It makes me like eggplants less.”	28 quotes from 18 interviews
	<b>Color</b> Participant dislikes color or thinks there’s not	“It’s a little boring, if anything. It’s pretty bland, just some words and a actor pointing, but other than that, that’s about it.”	13 quotes from 10 interviews

	<p>enough color in image</p>	<p>“Hmm.. Uh... maybe like the brown color? In the background maybe uh something that’s lighter and more like a brighter color would probably be cooler cause it would catch the eye easier.”</p> <p>“Uh I wish it was a little more appealing to look at.”</p>	
	<p><b>Age appropriate</b> Participant believed advertisement was better suited for children not in their age group</p>	<p>“But maybe it would be kind of childish for like high schoolers. Maybe, I think it would really work in elementary school. Like I know if I was in elementary school I would like this. So kind of having this little like mystery like riddle.”</p> <p>“It’s probably too childish to be shown to high school students.”</p> <p>“Um. Because it says like kids discover or like ABC’s that’s probably because it’s for children”</p>	<p>14 quotes from 9 interviews</p>
C.	<p><b>Comprehension</b> Students’ understanding of advertisement messaging and FV pictured/mentioned</p>		
	<p><b>Confusing message</b> Student didn’t understand message or they got an entirely different message than intended from the marketing material.</p>	<p>“Um, makes it kinda look like French fries and onion rings are healthy. “</p> <p>“Uh talking about the food and your digestive system and what digests like faster and what digests slower.”</p>	<p>8 quotes from 6 interviews</p>
	<p><b>Hasn’t tried FV</b> Student recognizes FV but hasn’t tried it</p>	<p>“Because it’s a lot of um vegetables that like maybe you never tried before or never heard of. And you could be like oh what’s that? And</p>	<p>10 quotes from 6 interviews</p>

		<p>you could search it up and maybe try it. If you like to like um try new things.”</p> <p>“I never had celery or tomatoes”</p>	
	<p><b>Doesn't recognize FV</b> Student either doesn't recognize FV or doesn't know the name of it.</p>	<p>“I can't really tell what that is. There's onions, there's cucumbers, there's peas. There's onions. I can't tell if that's onion or um.. I don't know what it's called.”</p> <p>“...And also I think it's um giving like some like the names of the, the vegetables cause a lot of people probably don't know most vegetables or the vegetables that aren't like bananas and or like cucumbers.”</p>	22 quotes from 16 interviews
D.	<p><b>Social Influences</b> Participant perception of themselves, their peers' diets and FV preferences.</p>		
	<p><b>Peers like FV</b> Student perception that peers would like the FV in the advertisement.</p>	<p>“Umm, one of my friends does like vegetables a lot, and most of my friends they love to like, pancakes and um fruit. Whenever we have salad bar at school, they get salad bar.”</p> <p>“I think they'll also like how it's based around strawberries cause that's like a popular fruit and like how they have a lot of description of it”</p> <p>“I think they'd like most of these cause it's fruits. My friends like fruits.”</p>	10 quotes in 8 interviews
	<p><b>Peers eat unhealthy</b> Perception that peers eat unhealthy and that would</p>	<p>“That it's dumb. That they shouldn't-like that they wouldn't care because they- the kids like don't care what they eat or what anybody tells them to. But, for me, I like it.”</p>	51 quotes from 27 interviews

	influence whether or not they liked the advertisement.	<p>“because now, um, kids are more leaning towards junk foods or foods that are fast food made and they’re not really healthy for you so this message is something that a lot of people need to hear now”</p> <p>“I think it’s really important nowadays. Um. Especially for teens like me. Um. This is like all we eat, for you know, the people I know. Sometimes we just need a reminder like maybe we shouldn’t eat that.”</p>	
	<p><b>Perceives diet as unhealthy</b> Participant perceives their diet to be unhealthy. They either claim to eat a lot of “junk food” or not enough FV</p>	<p>“Yeah, it makes me think about the fact that I don’t eat enough vegetables.”</p> <p>“it makes me wanna like moderate all of these bad foods, cause of man, I don’t have the best diet but it, it reminds that you should, you should be eating more of these daily and like less of the stuff”</p> <p>“Uh probably all the ones on the ‘whoa’ side. Um I don’t like to eat a lot of vegetables but I really like fruits. Um. Probably more the sweet stuff I like on this.”</p>	14 quotes from 10 interviews
E.	<p><b>Health Aspects</b> Participant recognition of health aspects of FV and its implications.</p>		
	<p><b>Vitamins and Minerals</b> Mention of vitamins and/or minerals influence student choice of advertisement</p>	<p>“Um. I like the, the information about vitamins, because I think a lot of people don’t know um like the benefits of eating vegetables or, or healthier foods. Like you just you just eat them because like you know you’ve heard that they’re healthy. But knowing uh like knowing the examples of what what parts of the body it helps and and the like which</p>	49 quotes in 26 interviews

		<p>specific vitamins. So that's why I picked this one over the other ones."</p> <p>"Uh, how it tells you that they're high in vitamin c and that they keep help heal wounds and keep you healthy."</p> <p>"Um I think it's really good to learn um where you could get your vitamins because a lot of people don't know where to find vitamin A or vitamin B."</p>	
	<p><b>Future impact of diet</b> Participant sees future implication of dietary choices, positive and negative</p>	<p>"Because if we don't start eating healthy at a younger age you can grow up to be unhealthy and it will be harder to go back to being healthy."</p> <p>"Um I think that its important but I don't know if like everyone really is really focused on that right now because I don't know, being so young it doesn't really have an effect on us yet, like it will eventually but I don't know. It's important to hear now and I'm sure that maybe this would I don't know help open people's eyes to the fact that like what we're doing now can I don't know determine what happens later."</p> <p>"probably closer to my age because you know, younger kids don't really care about healthy food too much and I guess at my age, these ones are more mature and yeah it's like their deaths matter and that's like forever.."</p>	<p>25 quotes in 18 interviews</p>
	<p><b>Importance of FV</b> FV are important for daily function, such as sports or school</p>	<p>"that one was good, I always like to hear that I'm being helped by what I'm eating and uh that- uh for encouragement for getting people to eat more fruits I like the health benefits that are there"</p>	<p>23 quotes in 16 interviews</p>

		<p>“It’s really good. I think that um most people don’t like fruits ‘cause they say they’re too sweet and that it’s not good for you but really fruits have natural sugars in them so it’s that’s okay for your body but it’s the artificial sugars that aren’t good for you.”</p>	
	<p><b>Certain foods are unhealthy</b> Students state that certain foods are unhealthy and certain foods are healthy.</p>	<p>“I think they pronounced something good because, I mean yeah, could you know that bacon isn’t that great if for your system and sugar cereal and all that isn’t the best for you”</p> <p>“Uh it seems like they’re trying to tell us there are good types of food and wrong types of food to eat.”</p> <p>“It’s telling me that it’s not really a good thing, well, not the best thing of course to eat mostly the things on here, which I like but don’t gobble down like it’s water or something like that. So it’s just a little bit of these things but you know, I kinda should have saw that coming.”</p>	<p>10 Quotes in 5 interviews</p>