The Influence of Cartoon Character Advertising on Fruit and Vegetable Preferences of 9-11 Year-Old Children

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Background: Food Ads for Youngsters

- The annual $1.79 billion* of food advertising targeted to children and adolescents has generally been for non-nutrient dense foods
- Over $89 million using cartoon spokes-characters
- Children/adolescents view about 40,000 ads per year

Background: Nutrition in Marketed Foods

• Modest improvement in nutrients to increase: Fiber, whole grain, calcium and vitamin D

• Calories and fat were higher in foods marketed to children than youth, but lower in sugar
Background: Methods of Promoting Foods & Beverages to Youth

• Cross-promotion across a variety of media
  – Television and movies
  – Product packaging and in-store displays
  – Cartoon characters, toys
  – Video games
  – Theme parks
  – Internet and advergaming
    • 90% of companies do online marketing
Background: Children’s Food and Beverage Advertising Initiative (CFBAI)

- 16 leading consumer packaged food companies and quick serve restaurants
- Voluntary self-regulation
- Limit advertising to children
- If advertise to children, meeting meaningful, science-based nutrition criteria
- Commit to not engage in child-directed advertising
Background: The 16 Signers to CFBAI

- McDonalds USA
- Burger King Corp
- Kraft Foods Group
- Mars, Inc.
- Nestle USA
- ConAgra Foods, Inc.
- Coca-Cola Co
- PepsiCo, Inc.
- Dannon Co.
- Campbell Soup Co.
- General Mills, Inc.
- Hershey Co.
- Kellogg Co.
- Post, LLC
- Hillshire Farms
  - (formerly Sara Lee Corp)
- Unilever US
Walt Disney Company

• Magic of Healthy Living with the Mickey Check - released in June 2012
• “Mickey Check” tool, an icon that calls out nutritious food and menu items sold in stores, online, and at restaurants and food venues at its U.S. Parks and Resorts. By the end of 2012 the “Mickey Check” will appear on licensed foods products.

http://thewaltdisneycompany.com/citizenship/magic-healthy-living
Nickelodeon Ads Shows Improvement

• 2012 in-house review of ads in 31 hours of Nickelodeon programs
• Majority of the CFBAI participant ads were for foods containing fruit, vegetables, whole grains or non/low-fat dairy
• Upward trend from 48% of the foods advertised in the 2010 sample to 72% in the 2012 sample
Not All Is Improved at Nickelodeon

- Food ads were only 23% of all of the ads
- Ads for sedentary entertainment (video games, movies and show promos) more prevalent
Other Factors Influencing Child Preferences

• Availability of the fruits and vegetables
• Modeling of behavior by parents/guardians
• Taste

• Research shows strongest influences are taste and accessibility
Outline

• Child survey
• Parental survey
• Child experimental study
Purpose of Child Survey

• To examine the factors that influence intake of fruit and vegetables from the 9-11 year old child’s perspective
  – Knowledge
  – Advertising
  – Psychological factors
  – Sensory perceptions
Methods

• 4 elementary schools were randomly selected from 8 within a Midwestern school district

• Parent and child surveys were distributed to 475 households that included 3<sup>rd</sup> and 4<sup>th</sup> grade students within the 4 school samples

• 233 surveys were returned for a 49% return rate
The Child Survey

• 10-item survey
• Rank order 8 factors related to preferences for consuming fruit
• Rank order same 8 factors for vegetables
• Availability within the home
• Likelihood of parental purchase of fruit and vegetables
Which (fruit/veg) would you be more likely to eat?

• One that tastes good
• One that has the picture of a cartoon character such as Sponge Bob, Dora the Explorer etc.
• One that is good for me
• One that I have not tasted before
• One that looks good
• One that smells good
### Results: Demographic Characteristics of Students

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Category</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>102 (47%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>116 (53%)</td>
</tr>
<tr>
<td>Grade Level</td>
<td>3rd grade</td>
<td>57 (26%)</td>
</tr>
<tr>
<td></td>
<td>4th Grade</td>
<td>161 (74%)</td>
</tr>
<tr>
<td>Race</td>
<td>White</td>
<td>197 (90%)</td>
</tr>
<tr>
<td></td>
<td>Non-white</td>
<td>21 (10%)</td>
</tr>
</tbody>
</table>
Results: Child Rating of Influences of Selecting Fruits and Vegetable

Rank ordered using Kendall’s W test
Results: Gender and Grade

• No gender differences:
  – Taste #1
  – Nutrition
  – Appearance

• No grade differences for top 3 considerations
  – 3rd graders placed more of a priority for a spokescharacter on label (p<0.05) yet very low on the list of considerations
Results

• Non-significant relationship between requests for F&V and those who eat more F&V with spokes-characters on label.

• Non-significant relationship between availability of F&V in the home and increased intake of F&V with spokes-characters on the label.
Results

• The children who asked the person who was shopping to buy fruit were more likely to report liking fruit than those who didn’t ask (p<0.05).
• Results were similar for vegetables.
Interpretation of Student Survey Results

• Taste is still number 1 consideration for both fruits and vegetables
• Children report that cartoon advertising on labels have little influence on preference for any particular fruit or vegetable
• Nutrition is number 2. Perhaps marketing taste with nutrition will improve consumption
Factors Influencing Parental Purchase of Fruits and Vegetables
Background

- Cost is often cited as the primary reason for food purchase choices.
- Other factors also influence choice of foods, especially fruits and vegetables that are purchased at the grocery store.
- Parents are the primary gatekeeper for foods that enter the home.
Purpose of Parent Survey

- The purpose of this study was to determine the factors that influence fruit and vegetable purchasing decisions of consumers with responsibility for young children.
Methods

• The parents/guardians ranked in order of influence 8 factors they considered when purchasing fruits and vegetables
• Analysis ranked by Kendall’s W test
• ANOVA was used to assess the impact parental/guardian education and marital status on their individual rankings
What determines your purchasing decision when it comes to fruits and vegetables?

• Taste
• Nutrition
• Family likes and dislikes
• Children’s likes and dislikes
• Availability
• Convenience
• Cost
• Others (please specify)
Demographic Characteristics of the Parental Respondents

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Category</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>39 (17)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>193 (83)</td>
</tr>
<tr>
<td>Race</td>
<td>White</td>
<td>209 (90)</td>
</tr>
<tr>
<td></td>
<td>Non-white</td>
<td>23 (10)</td>
</tr>
<tr>
<td>Marital status</td>
<td>Single</td>
<td>17 (7)</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>185 (80)</td>
</tr>
<tr>
<td></td>
<td>Separated</td>
<td>5 (2)</td>
</tr>
<tr>
<td></td>
<td>Divorced</td>
<td>25 (11)</td>
</tr>
<tr>
<td>Education</td>
<td>High school diploma or less</td>
<td>27 (12)</td>
</tr>
<tr>
<td></td>
<td>Some college</td>
<td>58 (25)</td>
</tr>
<tr>
<td></td>
<td>2 year college degree</td>
<td>53 (23)</td>
</tr>
<tr>
<td></td>
<td>4 year college degree or higher</td>
<td>94 (40)</td>
</tr>
</tbody>
</table>
Results: Ranking of Factors Influencing Purchase of Fruits and Vegetables

The lowest number is the most influential.
Composite Variable vs. Cost or Nutrition

- Created a composite variable of family likes/dislikes, taste and child likes/dislikes
  - Composite variable ranked greater than cost: 0.19 (p<0.05)
  - Composite variable ranked greater than nutrition: 0.04 (<0.05)

- Composite variable as a group more important than either cost or nutrition
## Educational Level and Leading Factors Influencing Fruits and Vegetables Purchase

<table>
<thead>
<tr>
<th>Educational level</th>
<th>Leading 3 factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school diploma or less</td>
<td>1. Taste</td>
</tr>
<tr>
<td></td>
<td>2. Child likes/dislikes</td>
</tr>
<tr>
<td></td>
<td>3. Nutrition</td>
</tr>
<tr>
<td>Some college</td>
<td>1. Family likes/dislikes</td>
</tr>
<tr>
<td></td>
<td>2. Taste</td>
</tr>
<tr>
<td></td>
<td>3. Child likes/dislikes</td>
</tr>
<tr>
<td>2-year college degree</td>
<td>1. Family likes/dislikes</td>
</tr>
<tr>
<td></td>
<td>2. Child likes/dislikes</td>
</tr>
<tr>
<td></td>
<td>3. Taste</td>
</tr>
<tr>
<td>4-year college degree or higher</td>
<td>1. Family likes/dislikes</td>
</tr>
<tr>
<td></td>
<td>2. Taste</td>
</tr>
<tr>
<td></td>
<td>3. Nutrition</td>
</tr>
</tbody>
</table>
# Educational Level and Factors Influencing Purchase of Fruits and Vegetables

<table>
<thead>
<tr>
<th>Factors</th>
<th>High school diploma or less Mean SD</th>
<th>Some college Mean SD</th>
<th>2 year college degree Mean SD</th>
<th>4 year college degree or higher Mean SD</th>
<th>F-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family likes</td>
<td>3.70 1.94</td>
<td>2.78 1.67</td>
<td>2.57 1.31</td>
<td>2.57 1.65</td>
<td>3.16</td>
<td><strong>0.03</strong></td>
</tr>
<tr>
<td>Taste</td>
<td>2.61 1.82</td>
<td>2.93 1.65</td>
<td>3.24 1.65</td>
<td>2.83 1.47</td>
<td>1.05</td>
<td>0.37</td>
</tr>
<tr>
<td>Child likes</td>
<td>3.22 1.65</td>
<td>3.16 1.83</td>
<td>3.02 1.63</td>
<td>3.49 1.67</td>
<td>0.95</td>
<td>0.42</td>
</tr>
<tr>
<td>Nutrition</td>
<td>3.48 2.04</td>
<td>3.53 1.70</td>
<td>4.06 1.82</td>
<td>3.38 1.71</td>
<td>1.62</td>
<td>0.19</td>
</tr>
<tr>
<td>Cost</td>
<td>5.00 1.91</td>
<td>4.57 2.13</td>
<td>3.90 2.20</td>
<td>5.03 2.09</td>
<td>3.28</td>
<td><strong>0.02</strong></td>
</tr>
<tr>
<td>Availability</td>
<td>4.52 1.66</td>
<td>5.26 1.36</td>
<td>5.27 1.71</td>
<td>4.85 1.48</td>
<td>2.07</td>
<td>0.11</td>
</tr>
<tr>
<td>Convenience</td>
<td>5.65 1.58</td>
<td>5.62 1.45</td>
<td>5.61 1.58</td>
<td>5.83 1.47</td>
<td>0.33</td>
<td>0.82</td>
</tr>
<tr>
<td>Others</td>
<td>7.83 0.65</td>
<td>7.98 0.13</td>
<td>8.00 0.00</td>
<td>7.89 0.72</td>
<td>1.06</td>
<td>0.37</td>
</tr>
</tbody>
</table>
### Three Leading Factors for Purchase of Fruits and Vegetables by Marital Status

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>Leading 3 Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>1. Taste</td>
</tr>
<tr>
<td></td>
<td>2. Family likes/dislikes</td>
</tr>
<tr>
<td></td>
<td>3. Child likes/dislikes</td>
</tr>
<tr>
<td>Married</td>
<td>1. Family likes/dislikes</td>
</tr>
<tr>
<td></td>
<td>2. Taste</td>
</tr>
<tr>
<td></td>
<td>3. Child likes/dislikes</td>
</tr>
<tr>
<td>Separated / Divorce</td>
<td>1. Family likes/dislikes</td>
</tr>
<tr>
<td></td>
<td>2. Child likes/dislikes</td>
</tr>
<tr>
<td></td>
<td>3. Taste</td>
</tr>
</tbody>
</table>
Conclusions

• Family and child preferences as well as taste appear to be the major factors when selecting fruit and vegetables for the family.
• Overall cost does not appear to be a primary factor.
• Nutrition education should focus on influencing family food preferences to include more fruits and vegetables.
Do Spokes-Characters Improve Consumption of Vegetables among Children?
Spokes-Characters in Ads

- Use of celebrity spokespersons are another marketing tool to increase brand awareness
- Presence of celebrity spokesperson changes the child’s perception of that product
Purpose of Consumption Study:
This study tested the effect of a celebrity spokes-character on consumption of green beans among fourth grade children.
Study Participants

• 4th grade students in 4 randomly selected schools within a Midwestern school district
• 256 eligible students during Time 1
• 237 eligible students during Time 2
• Ethnicity: 90% white
• Income:
  – Free lunch eligibility: 24%
  – Reduced price lunch eligibility: 9%
Experimental Design

- During Time 1 green beans were served without a picture of a spokes-character.
- During Time 2 the same brand and preparation of green beans were served with a picture of a spokes-character.
Poster Used in Experiment

Got Beans?

Green Beans
Outcome Analysis

• Chi-square tests to compare:
  – Difference between the number of students who selected green beans
  – Amount of green beans consumed
Participants Who Selected Green Beans

• Time 1: 73 students (32 boys, 41 girls)
  – 22% of eligible 4th graders
• Time 2: 92 students (44 boys, 48 girls)
  – 28% of eligible 4th graders
• A total of 125 oz. of beans were consumed without the spokes-character
After Adding Spokes-Character

• How many more selected beans?
  – 37% more boys
  – 17% more girls chose green beans ($p<.01$)

• How much was consumed?
  – 125 oz. of beans were consumed without the spokes-character
  – 145 oz. that were consumed with the picture of a spokes-character ($p=.04$)
Results: Consumption of Green Beans with and without Spokes-Character

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number who took green beans</th>
<th>Amount consumed (Total oz)</th>
<th>Average oz consumed per person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1 * Male</td>
<td>32</td>
<td>58</td>
<td>1.81</td>
</tr>
<tr>
<td>Time 1 Female</td>
<td>41</td>
<td>67</td>
<td>1.63</td>
</tr>
<tr>
<td>Time 2** Male</td>
<td>44</td>
<td>64</td>
<td>1.45</td>
</tr>
<tr>
<td>Time 2 Female</td>
<td>48</td>
<td>81</td>
<td>1.69</td>
</tr>
</tbody>
</table>

1 serving of green beans = 2 oz. by weight

*Time 1 no spokes-character
**Time 2 with spokes-character

NDSU NORTH DAKOTA STATE UNIVERSITY
Results: Boys Consumption

![Bar chart showing consumption of green beans by boys with and without cartoon characters.]

- **Without Cartoon Character**
  - 0.3-0.7: 1
  - 0.8-1.2: 2
  - 1.3-1.7: 4
  - 1.8-2.0: 25

- **With Cartoon Character**
  - 0.3-0.7: 11
  - 0.8-1.2: 3
  - 1.3-1.7: 7
  - 1.8-2.0: 23
Results: Girls Consumption

Number of Students

Consumption of Green Beans (oz) for Girls

- Without Cartoon Character
- With Cartoon Character

<table>
<thead>
<tr>
<th>Consumption Range</th>
<th>Without Cartoon Character</th>
<th>With Cartoon Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3-0.07</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>0.8-1.2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>1.3-1.7</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1.8-2.0</td>
<td>29</td>
<td>35</td>
</tr>
</tbody>
</table>
Conclusions

• Nutrition educators should be cognizant that advertising vegetables can increase the number of students selecting vegetables, which could result in increased consumption of that vegetable.

• Health educators can develop messages for nutritious food that are targeted towards children utilizing the persuasive nature of some of the advertisements.
Become a SNEB Member

- **Benefits of membership**
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  - Associate Member - $95 per year
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- Free access to live and recorded webinars
- Deepest discount to attend the SNEB Annual Conference
- Membership in an SNEB specialty division
- Connection to other professionals through SNEB listserv
- [www.sneb.org/join](http://www.sneb.org/join)