

An Examination of Celebrity Endorsement Used to Promote Branded Food and Beverage Products to American Children, Adolescents and Young Adults to Inform Policies to Promote Healthy Food Environments

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Dissertation submitted to the faculty of the Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy
In
Human Nutrition, Foods, and Exercise

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March 28, 2020
Blacksburg, VA

Keywords: celebrity endorsement, branded food and beverages products, obesity, food and nutrition policies, healthy food environments

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Abstract

Celebrity endorsement is a global billion-dollar business used by food, beverage and restaurant companies to influence dietary behaviors that may contribute to overweight and obesity. Evidence suggests that existing government policies and industry self-regulatory programs in the United States (US) do not adequately protect young Americans from celebrity endorsement that promotes energy-dense and nutrient-poor food and beverage products. This PhD dissertation describes four studies that examine the nature, extent, and perceived influence of celebrity endorsement used by business firms and non-profit organizations to promote branded food and beverage products or branded campaigns to American children, adolescents and millennial young adults to inform future research and policies to promote healthy food environments. Study one created a database of US celebrities (n=732) involved with food and beverage group, brand or product endorsements (1990-2017) to examine celebrity profiles and their endorsement relationships, company partnerships, the nutritional profile of products and brands. Evidence was analyzed using Python version 3.5.5 and SPSS version 24. Study two examined celebrities associated with the Partnership for a Healthier America's Fruits & Veggies (FNV) Campaign (2015-2016). Evidence was analyzed using data visualization tools supported by Python and SPSS, and results informed the FNV Campaign. Study three used Q methodology to explore the views of Millennials, born 1981-1994 (n=40) at Virginia Tech about celebrity endorsement of food and beverage products and brands. Participants sorted 48 celebrity images depicting brand and product endorsements on a normal distribution (+4 to -4) based on celebrity trustworthiness and complete a post Q-sort questionnaire. Data analysis used PQMethod 2.35 statistical software program, centroid factor analysis, and qualitative interpretation of unique factor arrays for sorters. Study four identified relevant evidence about US celebrity endorsement of food and beverage products (2000-2019), used an accountability framework to evaluate the adequacy of accountability structures, and suggested future policies and action needed for diverse stakeholders to use celebrity endorsement to promote healthy food environments. Future research should explore the trend of celebrity endorsement used in the US marketplace and examine the influence of this marketing strategy on young people's food preferences and choices based on more representative experimental research.

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General Audience Abstract

Celebrity endorsement is a marketing strategy that represents a person who uses public recognition to promote the sales, use or consumption of a brand, product, or service. Celebrity endorsement has been used by food, beverage and restaurant companies to influence eating behaviors that may contribute to overweight and obesity. Evidence suggests that existing government policies and industry self-regulatory programs in the United States (US) do not adequately protect young Americans from celebrity endorsement that promotes energy-dense and nutrient-poor food and beverage products. This PhD dissertation describes four studies that examined the nature, extent, and perceived influence of celebrity endorsement used by business firms and non-profit organizations to promote branded food and beverage products or branded campaigns to American children, adolescents and millennial adults to promote healthy food environments. Study one created a database of US celebrities (n=732) involved with food and beverage group, brand or product endorsements (1990-2017) to examine celebrity profiles and their endorsement relationships. Evidence was analyzed using Python data visualization tools and SPSS statistical software. Study two examined celebrities associated with the Partnership for a Healthier America's Fruits & Veggies (FNV) Campaign (2015-2016). Evidence was analyzed using baseline celebrity data (n=82) provided by the campaign initiator, and results informed the FNV Campaign. Study three used Q methodology to explore the views of Millennials, born 1981-1994 (n=40) at Virginia Tech about celebrity endorsement of food and beverage products and brands. Participants sorted 48 celebrity images depicting brand and product endorsements based on celebrity trustworthiness and complete a post Q-sort questionnaire. Data analysis used PQMethod 2.35 statistical software to generate shared viewpoints. Study four identified relevant evidence about US celebrity endorsement of food and beverage products (2000-2019), used an accountability framework to evaluate the adequacy of accountability structures, and suggested future policies and action needed for diverse stakeholders to use celebrity endorsement to promote healthy food environments. Future research should explore the trend of celebrity endorsement used in the US marketplace and examine the influence of this marketing strategy on young people's food beverage preferences and choices based on more representative experimental research.

Acknowledgments

This PhD dissertation would not have been possible without the support of my advisor, committee members, other mentors, my friends and family. I would like to express my sincere gratitude to my advisor Dr. Vivica Kraak. Her step-by-step guidance made the completion of this dissertation a challenging but an exciting journey. I have been lucky to work with a supervisor who always responds to her students with patient guidance, consistent encouragement, and constructive advice. The four and half years of working with her have helped me grow more than any other four years of my life, and she has been and will be the role model of a scholar I would like to become.

Besides my advisor, I would like to thank my dissertation committee members for their great support and invaluable advice. I would like to thank Dr. Valisa Hedrick for her help on the statistical analysis involved in this dissertation; Dr. Samantha Harden for her help to organize this dissertation in a logical way; Dr. Mario Pandelaere for his constructive questions and feedback for reshaping the dissertation; and to Dr. Kiyah Duffey for her help with revising the manuscripts for publication. I appreciate the encouragement and support from all my committee members.

I am also grateful to Dr. Kerry Redican, Dr. Kathy Hosig, and Professor Susan Marmagas in the Master's in public health (MPH) program at Virginia Tech. The knowledge that I have gained from their training has helped me to write this PhD dissertation. I am also thankful to Cathy, Amy, and Ana from Hokie Wellness of Virginia Tech for offering me an opportunity to work as a program assistant to promote health information to faculties and staff of the university. The experience of working at Hokie Wellness helped me to understand the meaning of being a public health professional in a real-life context, which has been a motivation to me through the

process of finishing this research. I would also like to thank the research librarian, Ginny Pannabecker, at Virginia Tech Newman Library for her assistance with my literature searches, designing research methods, and identifying resources to help me complete my research. Finally, I would like to express my profound gratitude to my dearest friends and family for their endless love, constant patience, and complete support.

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List of Abbreviations and Acronyms

CBBB	Council of Better Business Bureau
CCFC	Campaign for a Commercial Free Childhood
CDC	Centers for Disease Control and Prevention
CDD	Center for Digital Democracy
CFBAI	Children’s Food and Beverage Advertising Initiative
CSPI	Center for Science in the Public Interest
DGA	Dietary Guidelines for Americans
DHHS	Department of Health and Human Services
EDNP	Energy-dense and nutrient-poor
FDA	Food and Drug Administration
FNV	FNV (Fruit & Veggies) Campaign
FTC	Federal Trade Commission
HER	Healthy Eating Research
HHS	Health and Human Services
IFBA	International Food & Beverage Alliance
IMC	Integrated marketing communications
IWG	Interagency Working Group
LCB	Low-calorie beverages
LEAD	Locate, evaluate, and assemble evidence to inform decisions
IRB	Institutional Review Board
MilkPEP	Milk Processor Education Program

NAM	National Academy of Medicine
NCB	No-calorie beverages
NCD	Non-communicable disease
NHANES	National Health and Examination Survey
NGO	Non-governmental organization
PHA	Partnership for a Healthier America
QSR	Quick-service restaurant
RQ	Research Question
RWJF	Robert Wood Johnson Foundation
SSB	Sugar-sweetened beverages
TCCC	The Coca-Cola Company
TV	Television
UK	United Kingdom
US	United States
USDA	United States Department of Agriculture
WHO	World Health Organization

Chapter 1. Introduction

1.1 Research Background and Rationale

In the United States (US), overweight and obesity are public health threats that affect more than two-thirds (70.2%) of adults, ages 20 years and older, and nearly one-third (32.4%) of children and adolescents, ages 2-19 years.¹⁻³ Since the 1980s, obesity rates have doubled among adults and more than tripled among children and adolescents.⁴

An excessive intake of energy-dense and nutrient-poor (EDNP) food and beverage products such as sugar-sweetened beverages (SSBs), candy, and fast food meals are significant contributors to overweight and obesity.⁵⁻⁷ Individuals' food consumption behaviors are significantly influenced by food environments that include social, physical and macro-level environmental factors such as family and peer influence, school or worksite food options, and food marketing and policies.⁸ As a macro-level environmental factor, food marketing is widely used by companies to promote the sales and consumption of EDNP food and beverage products to young consumers, which create an environment that puts their health at risk.⁸⁻¹⁰

Celebrity endorsement is one of many marketing communication strategies used by food and beverage industries to maximize revenue and profits.¹¹ Celebrity endorsement represents a person who uses public recognition to promote the sales, use or consumption of a brand, product, or service through advertisements or other marketing practices.¹² This marketing strategy influences people's purchase intentions and behaviors through a higher recall of the endorsed brands or products, especially for those endorsed by familiar celebrities.¹³

Celebrity endorsement can be a powerful influence among children, adolescents and young adults (ages 20-35 years).¹⁴⁻¹⁶ Nielsen 2015 marketing research suggested that Generation Z teens (ages 15-20 years in 2015) and Millennials (ages 21-34 years in 2015) trust celebrities

more than other generations.¹⁷ Studies reveal that music and sports celebrities are paid generous amounts of money by food, beverage and restaurant companies to promote EDNP branded food and beverage products targeted to young people in the US, which contribute to higher rates of obesity and diet-related non-communicable diseases (NCDs) among those who seek and emulate celebrities as role models.^{16,18,19} Besides EDNP products, celebrity endorsement has also been used to promote healthy dietary behaviors, such as the Got Milk? Campaign launched by the Milk Processor Education Program (MilkPEP) between 1995 and 2015 to promote fluid milk consumption,²⁰ and the Fruits & Veggies (FNV) Campaign initiated by the Partnership for a Healthier America (PHA) in 2015 to promote fruit and vegetable consumption.²¹ However, the results of these campaigns were not as promising as expected, which was partially due to the marketing competition from EDNP food and beverage products.^{20,21}

The Children's Food and Beverage Advertising Initiative (CFBAI) is an industry self-regulatory program established in 2006 to create more responsible food and beverage marketing practices, including celebrity endorsement to children under 12 years.²² Progress has been made since the initiation of the CFBAI; however, evaluations have revealed several weaknesses, including the failure of this program to extend industry pledges to older children and adolescents ages 12 to 18 years and to all marketing channels.²² In addition, there is a limited number of regulations of EDNP food and beverage marketing, including celebrity endorsement to young adults, who consume more EDNP food and beverage products than any other age groups, but they are often neglected as a target population for obesity prevention.^{23,24}

Establishing healthy food environments is a population health strategy to prevent obesity and diet related NCD.²⁵ Healthy food environments aim to make the access to healthy foods available, affordable and equitable to all people in all food retail and food service settings, and to

minimize the social, physical and other factors that may undermine this goal.^{8,25,26} According to the social-ecological framework to create healthy food environments developed by Story et al. (2008),⁸ policy interventions are effective strategies to improve diet quality of populations. Therefore, descriptive and experimental research is needed to: 1) build empirical evidence to understand how celebrity endorsement is used in the US market to promote branded food and beverage products and branded campaigns; 2) explore how celebrity endorsement may influence young people's food and beverage choices; and 3) determine whether the current food policies are adequate to protect young people from the negative influence of this marketing practice. Research findings can be used to identify and propose policies and actions for diverse stakeholders to ensure that celebrity endorsement is used to promote healthy food environments.

1.2 Research Questions and Approaches

This dissertation research aimed to explore the nature, extent and perceived influence of celebrity endorsement used by business firms and non-profit organizations to promote branded food and beverage products and branded campaigns to children, adolescents and young adults in the United States to inform research and policies to promote healthy food environments.

Four research studies were completed to achieve the research goal:

- **Study 1:** Mapping the Celebrity Endorsement of Branded Food and Beverage Products and Marketing Campaigns in the United States, 1990-2017.
 - Research Question: How have celebrities been involved with the endorsement of branded food and beverage products and branded campaigns in the US?
 - Research approach: Original descriptive research investigation using descriptive and inferential statistics and interactive data visualizations.

- **Study 2:** Demographic Profile of the Partnership for a Healthier America's Fruits & Veggies (FNV) Campaign's pro bono Celebrities and the Food and Beverage Products and Brands They Endorse: A Cross-sectional Study.
 - Research question: What is the demographic profile and food and beverage brand or product endorsements of the celebrities involved in the PHA's FNV Campaign from 2015 to 2016?
 - Research approach: Original descriptive research investigation using descriptive statistics and interactive data visualizations.
- **Study 3:** A Q Methodology Study of Millennials' Views about Celebrity Endorsement of Branded Food and Beverage Products and Branded Marketing Campaigns in the US
 - Research question: What are the views of demographically diverse Millennials (born 1981-1994) regarding their trust and perceived influence of celebrities who endorse branded food and beverage products and branded campaigns in the US?
 - Research approach: Original experimental research investigation using Q methodology
- **Study 4:** An Accountability Evaluation for the Responsible Use of Celebrity Endorsement by The Food and Beverage Industry to Promote Healthy Food Environments for Young Americans: A Narrative Review to Inform Obesity Prevention Policy
 - Research question: Have diverse stakeholders taken adequate accountability actions, and what policies and actions are needed to ensure that diverse stakeholders are held accountable for using celebrity endorsement to promote healthy food environments?

- Research approach: Narrative review of peer-reviewed and gray literature and accountability analysis

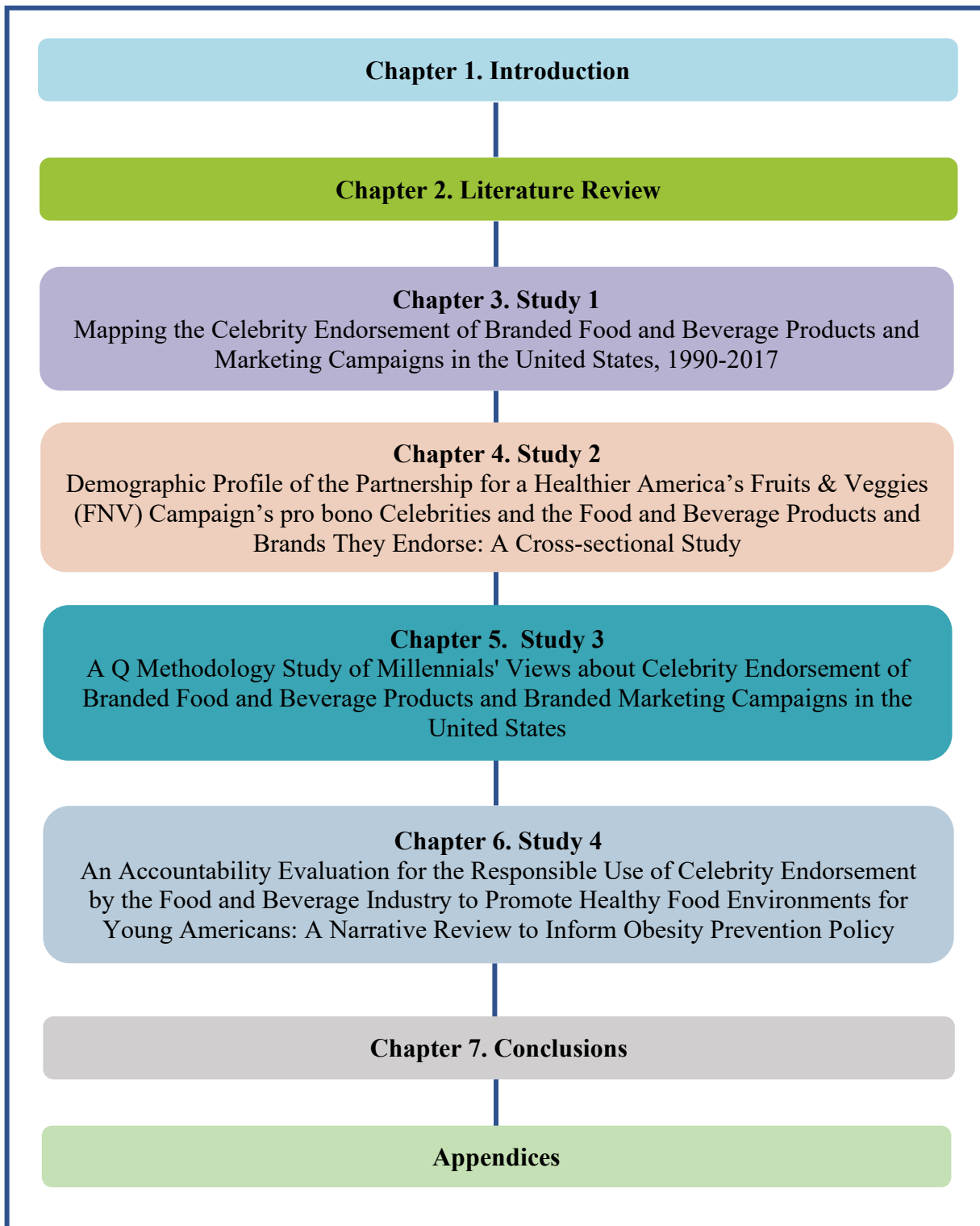
1.3 Research Contribution

By addressing these four research questions, this research built a body of knowledge acquisition, theory application and policy implication. For the knowledge contribution, this research built the evidence base to understand how celebrity endorsement is used to market to consumers in the US, described why celebrity endorsement is effective to build brand awareness and loyalty, and how it may be used to promote healthy food and beverage products in the US marketplace. For the contribution to theory, this research applied marketing theories and conceptual models including the Source Credibility Model and the Product Match-up Hypothesis, to explore how celebrity endorsement may influence Millennials' food and beverage choices.^{27,28} For the policy contribution, this research examined the adequacy of the current accountability structures for the responsible use of celebrity endorsement to promote healthy food environments in the US marketplace. It also identified promising policies and actions that private-sector actors, government, and other stakeholders can take to use celebrity endorsement to market healthy food and beverage products that meet government- and expert-recommended nutrition guidelines that support healthy food environments.

1.4 Dissertation Structure

This PhD dissertation contains seven chapters including an introduction, a literature review, study descriptions, conclusions, references and appendices. Figure 1.1 summarizes the outline of this research.

Figure 1.1 Outline of this PhD dissertation



Chapter 1 offers a brief introduction of the background and purpose of the research. Chapter 2 provides a literature review that discusses current knowledge and research gaps that are used to inform the questions in this dissertation. Chapter 3 presents the description for Study 1, which searched, organized, analyzed and visualized celebrity endorsements in partnership with food, beverage and restaurant companies or nonprofit organizations from 1990 to 2017. Chapter 4 describes the research protocol for Study 2, which analyzed and visualized the demographic profile and brand or product endorsements of the celebrities involved in the FNV Campaign launched in May 2015 in two US cities including Fresno, California and Hampton Roads, Virginia to encourage racially and ethnically diverse Millennial moms (ages 21-34 years in 2015) and Generation Z teens (ages 15-20 years in 2015) to buy and eat fruits and vegetables.

Chapter 5 provides the description for Study 3, which explored the shared attitudes, beliefs, and views of racially diverse Millennials regarding celebrity endorsement of branded food and beverage products and branded campaigns. Chapter 6 provides the description for Study 4, which identified accountability gaps and actions that diverse stakeholders can take to align the widespread marketing practices that use celebrity endorsement to support a healthy food environment and a culture of health for Americans. Chapter 7 concludes this PhD dissertation with an overview of the findings, contributions, strengths and limitations of the four studies, and implications for future research and policy. Additional research and supplementary materials used for this dissertation are outlined in Appendices A through N.

Study 1 to 4 of this dissertation have been published, submitted, or prepared for peer-reviewed publication. Journals, co-authors and author contributions are detailed below.

Study 1. Published (2019) as an original research article in *International Journal of*

Environmental Research and Public Health

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MZ developed the research concept, conducted the literature review, data collection and analysis, prepared drafts of the manuscript, coordinated comments and feedback for subsequent revisions, and oversaw the manuscript submission process. VK established the interdisciplinary research team, assisted with the literature search of the current celebrity endorsement policies. SR, FA and NP assisted with the data cleaning, data analysis and created the interactive dendrograms that mapping the entire celebrity relationships for the database. VH and SRG offered feedback on the statistical analysis and subsequent revisions of the manuscript.

Acknowledgments

Statistical Applications & Innovations Group of Virginia Tech for assistance with statistical analysis for this study.

Study 2. Original research article submitted to *Health Education & Behavior* in March 2020

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Acknowledgments

Juan Quirarte at QDesign for creating the figures.

Study 3. Original research article submitted to *Health Promotion International* in March 2020

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Acknowledgments

Dr. Steven Brown from Kent State University for the intensive training of Q methodology. All the participants in this study, and the staff of Virginia Tech for helping to recruit participants.

Study 4. Original review article submitted to *Obesity Reviews* in March 2020

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Acknowledgments

PhD committee members for giving feedback on the first version of this manuscript during the preliminary exam presentation.

1.5 Research Timeline

This dissertation research was started in January 2016 and the research plan was proposed to my committee in April 2018. The data collection for the four studies were took place between January 2016 and December 2019. The Virginia Tech Institutional Review Board (IRB) approved the study protocol (Project No.17-250) for Study 3 that include human subjects in March 2017. Recruitment and data collection for this study took place between March and May

2017. The entire data for this dissertation were analyzed, interpreted and summarized by February 2019 and the results were presented to my advisory committee on March 19, 2020.

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Chapter 2. Literature Review

This literature review summarizes research that addresses the following topics: (1) obesity and overweight rates among American children, adolescents and young adults; (2) diet quality and snack patterns among Americans children, adolescents and young adults; (3) food and beverage marketing targeted to children, adolescents and young adults; (4) Celebrity or social media influencer endorsement as marketing strategies; (5) models and frameworks to explain the influence of celebrity endorsement; (6) strategies for using celebrity endorsement; (7) application of celebrity endorsement in public health; (8) the influence of celebrity endorsement on the dietary decisions of different age groups; (9) expenditure on celebrity endorsement of food and beverage products marketed to US children, adolescents and young adults; (10) current government and industry food and nutrition guidelines and children-targeted marketing recommendations; (11) experimental and descriptive studies of celebrity and social media influencer endorsement for food and beverage products; and (12) knowledge and research gaps that inform the research questions for this PhD dissertation.

2.1 Obesity and Overweight Rates among American Children, Adolescents and Young Adults

Obesity impairs public health by causing many chronic diseases such as type 2 diabetes, cardiovascular disease and certain types of cancer.¹ According to the 2013-2014 National Health and Examination Survey (NHANES) data, nearly one-third (32.4%) of children and adolescents, ages 2-19 years, and more than two-thirds (70.2%) of adults, ages 20 years and older, were overweight or obese in the US^{2,3} According to the NHANES 2015-2016 data, there was a significant overall increase of obesity rate from 1999–2000 through 2015–2016 for children, adolescents and adults.⁴ Although the data showed that the increase of obesity prevalence from

2013–2014 to 2015–2016 among youth and adults was not statistically significant, the obesity rates for both age groups reached a historical new high in 2015-2016.⁴ As the data indicated, the obesity rate was 35.7% among young adults (ages 20-39 years), 42.8% among middle-aged adults (40-59 years) and 41.0% among older adults (ages 60 years and older).⁴ Early adulthood is associated with the risk of excessive weight gain.⁵ Additionally, the obesity status of young adults affects more than themselves because they are often parents of young children.⁵ The NHANES data also indicated that disparities in obesity rate exist among different race and ethnicity groups, as the obesity rate was higher among non-Hispanic black and Hispanic youth and adults than among non-Hispanic white and Asian youth and adults.⁶

2.2 Diet Quality and Snack Patterns of American Children, Adolescents and Young Adults

Poor dietary intake that is high in sugar, sodium, saturated fats and *trans* fats while low in fruits and vegetables, is related to weight gain and obesity.⁷ Wilson et al. (2016)⁸ analyzed and estimated recent American diet quality trends based on the NHANES 24-hour recall data (1999–2000 and 2011–2012) by checking the adherence of the diet quality to national nutrition guidelines include the Healthy People 2020 objectives and the 2010 Dietary Guidelines for Americans (DGA). Results found that despite an overall increase in American diet quality, among the 12 dietary components measured, only the intake of whole fruits and empty calories meet the Healthy People 2020 objectives and none of the components meet the 2010 DGA.⁸ Banfield et al. (2016)⁹ and Gu et al. (2016)¹⁰ examined the diet quality of American children and adolescents, and Rehm et al. (2016)¹¹ evaluated the diet quality of American adults. These studies concluded that these populations had poor adherence to the US national dietary recommendations.⁸⁻¹¹ Hiza et al. (2013)¹² identified significant differences in the diet quality among Americans of different age, sex, race/ethnicity, income and education levels. Women,

children and older adults had better diet quality compared with men, younger and middle-aged adults, respectively.¹² Despite these differences, this research concluded that the dietary patterns among all socio-demographic groups were problematic.¹²

Dunford and Popkin (2017)¹³ examined the 37-year snacking trends for American children and adolescents and found a significant increase in energy intake from snacks among children and adolescents in all socio-demographic groups between 1977 and 2014. Results showed that the primary source of calorie intake from snacking was from EDNP products considered unhealthy such as SSBs, desserts, sweets and salty snacks.¹³ Results also indicated that non-Hispanic Black youth had the most substantial increase in calorie intake from SSBs even though an overall decrease in SSB consumption was observed among US youth and adults.^{13,14} Furthermore, Kumar et al. (2014) assessed the American adolescents' daily exposure to SSBs and reported that half of the participants reported that they saw or heard SSB advertisements at least once daily.

Zizza et al. (2001)¹⁵ examined the evidence for trends in energy intake from snacks in both per snaking energy and serving frequency per day among young American adults between 1977–1978 and 1994–1996. Results indicated that high-fat desserts, salty snacks, and SSBs remained the most important source of energy intake.¹⁵ Controversy exists about whether or not more frequent snacking contributes to obesity¹⁶ and the association depends on the snack choices.¹⁷ More intake of healthy snacks such as fruits and vegetables is associated with a lower risk of obeisity.^{16,17} However, excessive consumption of EDNP snacks was identified by Dunford¹³ and Zizza et al.¹⁵ as contributory factors to obesity among American youth and young adults. Food marketing of EDNP products influences young people's food consumption patterns that contribute to poor diet quality.^{18,19}

2.3 Food and Beverage Marketing Targeted to Children, Adolescents and Young Adults

Cairns et al. (2012)²⁰ conducted a systematic review to explore the nature and influence of food marketing to children and found that the food marketing impacts children's diet-related health by directly influencing their food choices, nutrition awareness and purchase behaviors. Thai et al. (2017)²¹ reported an association between cumulative exposure to food marketing sources and adolescents' food choices and eating behaviors. This association was also found among young adults.²² Food and beverage industries using various marketing strategies to build awareness and recall between the products, brands and young consumers to promote the sales and consumption of EDNP meals and snacks.²⁰⁻²² Food, beverage and restaurant companies apply integrated marketing communications, which combine diverse marketing activities with communication techniques to build brand awareness and loyalty among young consumers for unhealthy food and beverage meal and snack products.²³

Harris et al. (2015) documented that African-American and Latino children and adolescents were disproportionately targeted by television (TV) advertisements, neighborhoods and social media to consume EDNP food and beverage products.²⁴ This is a concern because Black and Hispanic youth experience higher rates of obesity and other diet-related diseases than their white counterparts.²⁴ This report further indicated that young people of color were exposed to “double dose” of marketing for EDNP foods, as high as 80 to 90 percent more than their white peers.²⁴

2.4 Celebrity or Social Media Influencer Endorsement as Marketing Strategies

A celebrity endorser is a famous person who uses public recognition or the media to promote a brand, product or service in an advertisement or other marketing communication to influence sales, use or consumption.²⁵ Celebrity endorsement is a well-established marketing

strategy used by food and beverage industries to maximize profits and revenue.²⁶ It is estimated that one in four advertisements in recent years includes celebrities promoting brands, products, and services.²⁷ Research has explained the economic benefits of the celebrity marketing. For example, Popescu (2014)²⁸ suggested that using celebrities is beneficial to the partnered companies regarding both sales and stock return compared with noncelebrity endorsers. Celebrity endorsement helps businesses to improve the brand recall, which ensures customers connect the brands with products.^{29,30} It also creates positive brand attitudes, encourages purchase intentions and enhances brand loyalty toward the goods or services among the targeted customers.^{29,31,32} However, the negative publicity of celebrities may also tarnish the brands they represent.²⁷ Similarly, celebrities could earn a considerable amount of income as well as the increased popularity among the targeted population but may also lose their reputation due to the quality, safety and healthfulness of their product or brand endorsements.³³⁻³⁵

In this Internet-driven age, endorsement also includes digital and social media influencers who promote products or brands through social media platforms, such as YouTube, Instagram and Facebook, blogs, or tweets that reaches millions of viewers annually.^{36,37} Social media influencers shape audiences' brand awareness and attitudes by gaining trust and friendships of their followers.³⁸ Social media influencers are especially popular among young people, and 86% young Americans reported they want to become social media influencers in one way or another.³⁹

2.5 Models and Frameworks to Explain the Influence of Celebrity Endorsement

Marketing research describes various theoretical models or conceptual frameworks used to explain the influence of celebrity endorsement on people's purchase decisions and behaviors. Hovland et al. (1953)⁴⁰ proposed the first version of the Source Credibility Model, in which

expertise and *trustworthiness* were believed to be two essential factors leading to credible and effective messages that could influence consumers' beliefs, attitudes and behaviors. In this model, *expertise* was defined as the extent to which a communicator (e.g., a celebrity) can provide a valid message, while the *trustworthiness* referred to the degree to which a communicator is believed to deliver an objective and honest message.⁴⁰

MaGuire (1985)⁴¹ proposed the Source Attractiveness Model and suggested that the communicator's *attractiveness* (including celebrity *familiarity* and *likability*, and the *similarity* between a celebrity and a consumer) also played an essential role for message effectiveness in addition to the *expertise* and *trustworthiness*. Ohanian (1990)⁴² developed a tri-component Source Credibility Model by combining the previous findings into three measurable dimensions include *trustworthiness*, *attractiveness* and *expertise*. Each dimension contains five scales shown in Table 2.1.

Table 2.1 Source Credibility Model

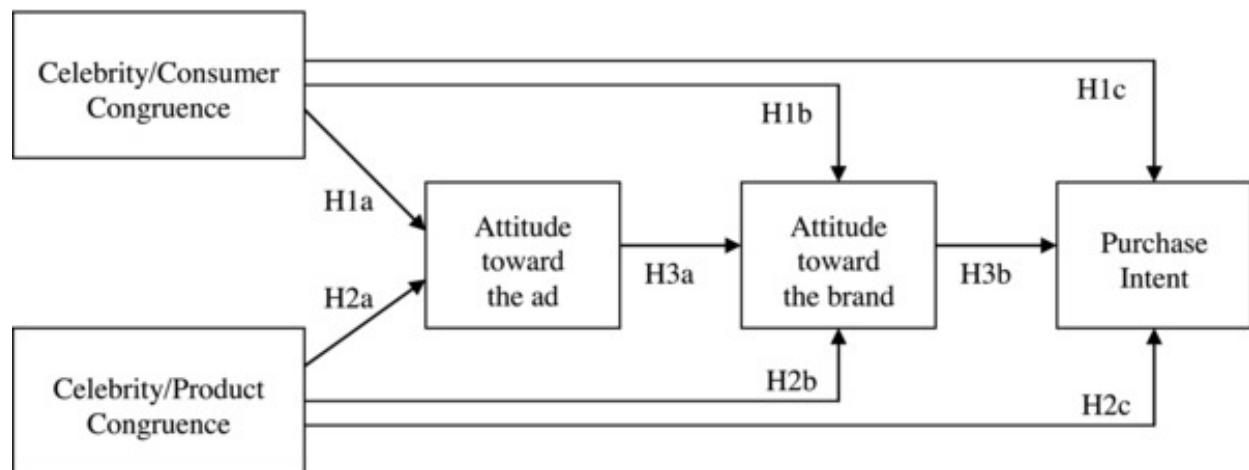
Attractiveness	Trustworthiness	Expertise
Attractive-Unattractive	Dependable-Undependable	Expert-Not an expert
Classy-Not Classy	Honest-Dishonest	Experienced-Inexperienced
Beautiful-Ugly	Reliable-Unreliable	Knowledgeable- Unknowledgeable
Elegant-Plain	Sincere-Insincere	Qualified-Unqualified
Sexy-Not sexy	Trustworthy-Untrustworthy	Skilled-Unskilled

Source: Ohanian R. Construction and validation of a scale to measure celebrity endorsers' perceived expertise, trustworthiness and attractiveness. *J Advertising*. 1990;19(3):39–52.

McCracken (1989)²⁵ asserted that the source credibility is not specific enough to explain the endorsement mechanism and proposed the Meaning Transfer Model instead. According to this model, the cultural meaning represented by the endorsers could be transferred to the products and further transferred to consumers.²⁵ Kahle and Homer (1985)²⁹ and Kamins (1990)⁴³, and Choi and Rifon (2012)⁴⁴ supported the Celebrity Match-up Hypothesis (Figure 2.1). This

theoretically grounded hypothesis suggests that successful partnerships are based on the *congruence* (representing the “fit” between a celebrity and a target group, and between a celebrity and a product or brand) to generate revenue and brand recognition for companies and celebrities through sponsorship deals and partnerships.⁴⁴

Figure 2.1 Celebrity Match-up Hypothesis



Source: Choi SM, Rifon NJ. It is a match: The impact of congruence between celebrity image and consumer ideal self on endorsement effectiveness. *Psychol Market.* 2012;29(9):639-650.

2.6 Strategies for Using Celebrity Endorsement

Some studies focus on understanding strategies applied by companies or organizations to make the celebrity endorsement maximally effective. Common strategies described are to select celebrities based on their *trustworthiness*, *expertise* and *attractiveness*, as well as the *congruence* defined by the Source Credibility Model and the Match-up Hypothesis.^{45,46} Thwaites (2012)²⁷ pointed out that companies should avoid hiring celebrities with negative publicity that may ruin the public’s perception of their businesses. Kamins et al. (1989)⁴⁷ suggested that the celebrities can be used to emphasize the positive aspects of the products while being honest about their potential problems to effectively influence consumers’ purchase intentions. Till (1998)⁴⁸ proposed a framework to understand how celebrity endorsers can be used more effectively and

found that repetition, overshadowing, blocking and belongingness were associated with maximizing the benefits for business using celebrity endorsers.

Furthermore, a single brand may use many celebrity endorsers in advertisements to attract different segments of consumers, and one celebrity may also endorse multiple brands and product categories. For example, celebrities of various race/ethnicity backgrounds are hired by PepsiCo company to promote its signature soda drink Pepsi to reach consumers of different racial/ethnic backgrounds.²⁴ The effectiveness of multiple product endorsements or multiple celebrity endorsements has been controversial. Um (2008)⁴⁹ concluded that when a celebrity endorses multiple brands, consumers' attitudes and purchase intentions could be transferred from one brand to another. However, Pandey (2010)⁵⁰ discussed that the multiple endorsements associated with one celebrity might weaken the association between consumers and the advertisements. Similarly, Um (2008)⁴⁹ described that one celebrity for one product or brand would increase consumers' purchase attitudes and intentions. Hsu (2002)⁵¹ emphasized that one brand endorsed by multiple celebrities may help the brand target different segments of customers to gain more market share.

2.7 Application of Celebrity Endorsement in Public Health

Celebrity endorsement may either promote or undermine social, environmental and public health goals. A positive view of celebrity endorsement suggests that when a famous individual shares private information about his/her personal health crisis, it can raise public awareness, educate, and mobilize resources to influence either public behaviors or public policy.⁵² Many celebrities are actively engaged in causes that increase public awareness about environmental, social and nutrition or health issues through media and marketing campaigns to champion climate change actions,⁵³ encourage people to drink water instead of SSBs such as the

Partner for a Healthier America's (PHA's) Drink Up Campaign,⁵⁴ to buy and eat more fruits and vegetables through the PHA's FNV campaign,⁵⁵ and persuade the public to eat less meat to support dietary health and environmental sustainability goals through the Meatless Monday campaign.⁵⁶ Alternatively, celebrity endorsement has been used by tobacco, alcohol, pharmaceutical, food, beverage and restaurant companies over decades to build brand awareness and brand loyalty among children, adolescents and young adults to increase the purchasing and consumption of products that may harmful for health.⁵⁷⁻⁶⁰

2.8 The Influence of Celebrity Endorsement on the Dietary Decisions of Different Age Groups

Systematic reviews reveal distinct biological, psychological and social mechanisms that explain how celebrity endorsement influences cognitive outcomes (e.g., attitudes and preferences) and behavioral outcomes (e.g., dietary choices and consumption) for health-related decisions.⁶¹ For example, according to the neural mechanism of meaning transfer theory, celebrity endorsement might activate a brain region that plays a role in associating consumers' positive impressions on celebrities with the food and beverage brands or products they endorse.⁶¹ Other neuroscience research suggests that the brain's risk and reward decision-making processes are not fully developed until the age of 25.⁶² Children under 12 years of age have the lowest advertising or media literacy, and thus are more likely to be influenced by food marketing strategies that involve physically attractive celebrities they recognize.^{63,64} Given adolescents' increased spending power and more frequent interactions with celebrities on digital and social media, they may be more vulnerable to celebrity endorsement of food and beverage products that do not support healthy dietary behaviors.⁶⁵⁻⁶⁸ Nielsen marketing research published in 2015 found that Millennial adults (ages 21-34 years in 2015) also trusted celebrities more than older

generations.⁶⁹ Children, adolescents and young adults are the most targeted groups for immersive digital and interactive media created to build brand awareness and brand loyalty.⁷⁰ Therefore, millennial parents/guardians who have young children may represent a household composition most in need of intervention.

2.9 Expenditure on Celebrity Endorsement of Food and Beverage Products Marketed to US Children, Adolescents and Young Adults

Celebrity endorsement started in the US with testimonial advertisements during the 1920s.⁷¹ It became increasingly popular from the 1980s onward due to evolving business norms, a growing celebrity-brokering industry and celebrity culture, and a permissive government deregulatory agenda.⁷¹ It is estimated that one in four US advertisements in recent years includes celebrities promoting brands, products and services.²⁷

The 2012 US Federal Trade Commission (FTC) report on food marketing to children and adolescents documented the expenditures of 48 food, beverage, restaurant and entertainment companies in 2009.⁶⁵ The report showed that, combined, the celebrity endorsement expenditures of child- and adolescent-directed food and beverage marketing increased from \$26.8 million in 2006 to \$99.3 million in 2009.⁶⁵ The report also indicated that celebrity endorsement was targeted more toward older children and adolescents (12-17 years) for food marketing, with an expenditure of \$76.7 million, compared to \$28 million for younger children (2-11 years).⁶⁵ No specific celebrity endorsement expenditure for young adults was indicated in this report, but it did suggest that adolescents and young adults were most targeted by sports, arts and music events sponsored by snack food, fast food, and sugary beverage companies.⁶⁵

2.10 Current Government and Industry Food and Nutrition Guidelines and Children-Targeted Marketing Recommendations

The US Department of Agriculture (USDA) and the Department of Health and Human Services (DHHS) update and publish the DGA every five years to encourage Americans to consume more fruits, vegetables and whole grains and to limit their intake of added sugar, saturated fat and sodium.⁷² The DGA 2015-2020 is intended to help all Americans aged two and up eat a healthy diet, but the guidelines emphasize healthy eating patterns instead of setting specific nutrition standards for the intake of certain foods or nutrients.⁷²

There are also several sets of industry voluntary or government mandatory nutrition guidelines, standards or criteria measured by nutrition components and applied to different age groups. These include, but are not limited to, the following: (1) CFBAI's uniform nutrition criteria, which encourages the food industry to use safe and healthy practices when marketing to children under 12 years;⁷³ (2) the Interagency Working Group's draft set of voluntary nutrition principles used to guide the marketing practices of industry self-regulatory programs, such as CFBAI, which expands the child-directed marketing age audience to adolescents up to 17 but has not been approved by Congress;⁷⁴ (3) Healthy Eating Research's (HER's) healthy beverage recommendations, which guide the CFBAI and other industry voluntary self-regulatory programs to create a more healthful child-marketing landscape and suggest that the CFBAI should raise the coverage to age 14 and younger;⁷⁵ (4) the National Restaurant Association's Kids LiveWell Program, which encourages more than 42,000 US restaurant locations to offer at least one healthy children's meal that aligns with the calorie, fat, saturated fat and sodium recommendations for children 12 years and younger;⁷⁶ (5) the USDA's Smart Snacks in School,

which sets up evidence-based nutrition standards for entrée, sides, snacks, and beverages sold in elementary, middle and high schools via vending machines, school stores and snack carts.⁷⁷

2.11 Experimental and Descriptive Studies of Celebrity or Social Media Influencer

Endorsement of Food and Beverage Products

Two experimental studies conducted in Australia showed that both children and their parents are more likely to consume EDNP food products when advertisements include sports celebrity endorsements than when they do not feature celebrities.^{78,79} One experimental study conducted in the United Kingdom (UK) reported that children who viewed TV advertisements featuring sports celebrities consumed more unhealthy snacks than children in the control group.⁸⁰ Experimental studies were also conducted more recently on evaluating the effectiveness of social media influencers' endorsements for food and beverage products among young people. Coates et al. (2019) documented that popular social media influencers promoting unhealthy food and beverage products increased children's immediate intake of such foods, but those who involved with healthy products promotion had no effects on children's food intake.⁸¹ Another Coates et al. 2019 study showed that children who viewed influencer food marketing consumed 41% more of the marketed snack than the control group.⁸²

Descriptive studies have reported that sports and entertainment celebrities have endorsed EDNP food and beverage products. One 2010 study conducted in the US found that more than three-quarters of 62 branded products endorsed by 100 athletes were EDNP foods, and about 90 % of 46 brands were SSBs.³³ Another US study of 65 popular music entertainers revealed that these celebrities were associated with 57 food and beverage brand endorsements owned by 38 companies.³⁴ Nearly three-quarters (71%; n=49) of the advertising associated with the music celebrities promoted SSB brands, and 81% (n=21) of the advertising was associated with EDNP

food brands.³⁴ A UK study evaluated 904 recipes endorsed by 26 celebrity chefs and found that 87% of the recipes did not promote a healthy diet.⁸³ Another UK study analyzed 380 videos posted by two social media influencers on YouTube found that more than 90% of the videos featured food and beverage products, most of which were for unhealthy products.³⁶

2.12 Knowledge and Research Gaps that Inform the Research Questions for this PhD

Research

Research has been conducted both to describe how certain celebrities are used to promote food and beverage products targeting children and adolescents, and to test how celebrity endorsement influences children's diets and health outcomes.^{33,34,79} However, no study has yet described and visually presented a comprehensive endorsement relationship between celebrities (i.e., entertainers, professional athletes, celebrity chefs, politicians, business entrepreneurs and public figures) and different food, beverage and restaurant product categories and brands of various companies or organizations and using US initiated nutrition standards to analyze the nutrition profile of the endorsed food and beverage products. The primary objective of this research is to fill this knowledge gap by addressing the first research question: *How have celebrities been involved with the endorsement of branded food and beverage products and branded campaigns in the US?*

The current studies regarding celebrity endorsement for food and beverage products all focus on how celebrities are hired to promote products that are not healthy enough for young consumers,^{33,34,79} and no study has yet been conducted to investigate how celebrities are used to promote food and beverage marketing campaigns to promote healthy dietary behaviors. Another objective of this research is to fill this knowledge gap by addressing the second research

question: *What is the demographic profile and food and beverage brand or product endorsements of the celebrities involved in the PHA's FNV Campaign from 2015 to 2016?*

Celebrity endorsements have been shown to influence the consumption behaviors of children, adolescents, and young adults.^{63,64,69} However, the most current research focuses on the health impact of celebrity endorsements on children and adolescents,^{33,34,79} and no published experimental study has attempted to assess the perceptions and attitudes that young adults have toward celebrity endorsements of branded food and beverage products and branded campaigns. In addition, some studies were designed to test certain celebrity endorsement models to investigate which factor(s) of celebrities play the most important role in consumer persuasion.⁸⁴ However, no study has yet tested the celebrity endorsement models in the context of food and beverage promotions. The third objective of this research is to fill this knowledge gap by addressing the third research question: *What are the views of demographically diverse Millennials (born 1981-1994) regarding their trust and perceived influence of celebrities who endorse branded food and beverage products and branded campaigns in the US?*

Public health advocacy groups such as the Center for Science in the Public Interest (CSPI) have criticized celebrities' involvement in promoting SSB products. Recent targets of their criticism include entertainers Selena Gomez (Coca Cola) and Beyoncé (Pepsi).⁸⁵ However, such provocation needs the support of government policies or regulations. The FTC's 2015 endorsement guidelines require celebrities to disclose a truthful, accurate and non-misleading relationship with a company whose product they endorse through various media platforms.⁸⁶ However, this policy is not particularly effective, since evidence suggests that celebrities continue to partner with companies to target children and adolescents with EDNP branded food and beverage products without disclosing the nutritional content of the products.⁸⁷ The FTC's

2019 endorsement guidelines further required social media influencers to disclose the advertising relationships for the products they endorse.⁸⁸ However, no published studies has shown the effectiveness of this policy so far. Moreover, there is a need to analyze the adequacy of the current dietary and nutrition guidelines, regulations and policies regarding celebrity endorsement, as well as to identify effective policies and actions that diverse stakeholders can take to ensure that celebrity marketing is used to promote healthy food environments. The final objective of this research is to fill this knowledge gap by addressing the fourth research question: *Have diverse stakeholders taken adequate accountability actions, and what policies and actions are needed to ensure that diverse stakeholders are held accountable for using celebrity endorsements to promote healthy food environments?*

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**Chapter 3. Study 1. Mapping the Celebrity Endorsement of Branded Food
and Beverage Products and Marketing Campaigns in the United States, 1990–
2017**

Abstract

Celebrity endorsement used to promote energy-dense and nutrient-poor (EDNP) food and beverage products may contribute to poor dietary habits. This study examined celebrity endorsement of branded food and beverage products and marketing campaigns in the United States (US) from 1990 to 2017. Celebrity endorsement data were collected from peer-reviewed and gray literature. Interactive data visualizations were created for the endorsement relationships between celebrities, companies and products whose nutritional profiles were compared with the US Department of Agriculture's (USDA's) Smart Snacks Standards. Logistic regression was used to explore associations between celebrities' demographic profiles and the nutritional profiles of products. Results showed 542 celebrities were associated with 732 endorsements representing 120 brands of 59 companies across 10 food and beverage categories. Two thirds (67.2%; $n = 80$) of the brands represented EDNP products that did not align with the USDA's Smart Snacks Standards. Logistic regression analysis indicated that Millennial ($p = 0.008$) and male celebrities ($p = 0.041$) were more likely to endorse EDNP products than Generation Z teen and female celebrities, respectively. No statistical significance was observed for celebrities of other demographic profiles. This study provides descriptive evidence that may inform future policies and actions of the US government, industry, researchers and consumer advocacy organizations to use celebrity endorsement to promote healthy food environments for Americans.

3.1 Introduction

Overweight and obesity are public health threats in the United States (US) that affect more than two-thirds (70.2%) of adults, aged 20 years and older, and nearly one-third (32.4%) of children and adolescents, aged 2–19 years.^{1,2} The marketing of energy-dense and nutrient-poor (EDNP) food and beverage products by food, beverage and restaurant companies has resulted in excessive intake of EDNP products including sugar-sweetened beverages (SSBs), candy, and quick service restaurant (QSR) meals that have contributed to poor diet quality and rising obesity rates among Americans.^{3–8}

The 2015–2020 Dietary Guidelines for Americans (DGA) encourage individuals to eat a nutrient-dense healthy diet to maintain a healthy weight and reduce the prevalence of obesity and diet-related non-communicable diseases.⁹ Most Americans do not consume a high quality and diverse diet aligned with the DGA measured by the United States Department of Agriculture’s (USDA’s) Healthy Eating Index score, which increased only slightly from 56 in 2005–2006 to 59 out of 100 in 2013–2014.¹⁰

The Healthy Hunger-Free Kids Act of 2010 is a public health law that substantially strengthened the nutrition standards used to guide the meals and snacks served to American children and adolescents in school settings from grades K–12.¹¹ The USDA adopted new nutrition standards for school meals in 2012–2013 and school snacks in 2014 that aligned with the DGA for all foods and beverages served in school settings.^{12,13} The Healthy Hunger-Free Kids Act of 2016 rules require local education agencies to include wellness policies to prohibit the marketing of food and beverage products that are not consistent with the USDA’s Smart Snacks in School nutrition standards on school properties during the school day.^{14,15} The USDA nutrition standards are the best available to assess the types of food and beverage products that

should be marketed to children and adolescents both within and outside school settings, and support the development of life-long healthy eating patterns through adulthood.^{12,13}

Many integrated marketing communications strategies are used to promote EDNP products to children, adolescents and young adults, which increases their risk of obesity.¹⁶ Celebrity endorsement is one of these marketing strategies that represents a person who uses his/her public recognition to promote the sales, use or consumption of a brand, product or service.¹⁷ Marketing research describes various theoretical or conceptual models such as the Source Credibility Model¹⁸ and product Match-up Hypothesis¹⁹ to explain the influence of celebrity endorsement on people's decisions and behaviors. Businesses engage with celebrities through partnerships and sponsorships to establish commercially beneficial relationships. Successful partnerships are based on the celebrities' credibility (measured by trust, attractiveness and expertise) and congruence (represented by the fit between a celebrity and a target group, and between the celebrity and a brand or product line). These partnerships generate brand recognition and revenue for companies and celebrities.^{18,19}

Celebrity endorsement creates positive brand attitudes, encourages purchase intentions and enhances brand loyalty among targeted consumers.²⁰⁻²² Experimental studies conducted in Australia and the United Kingdom (UK) have suggested that both children and their parents are more likely to consume EDNP products after viewing advertisements that feature celebrities.²³⁻²⁵ In the US, celebrity endorsement increased from 15% to 25% of all advertisements between 1979 and 1997.^{26,27} The Federal Trade Commission's (FTC's) 2012 report on food marketing to children and adolescents documented the expenditures of 48 food, beverage, restaurant and entertainment companies. The report stated that the celebrity endorsement expenditures of child- and adolescent-directed food and beverage marketing increased from \$26.8 million in 2006 to

\$99.3 million in 2009 mainly for EDNP products.²⁸ Descriptive studies conducted in the US concluded that most foods and beverages endorsed by sports and music celebrities targeted to children and adolescents are EDNP products,^{29,30} and the positive images of athletes are particularly used by food, beverage and restaurant companies to promote EDNP products to youth.³¹

US marketing research suggests that Generation Z teens (born 1995–2010) and Millennials (born 1981–1994), men or Black or African Americans are more likely to be influenced by celebrities with whom they share similar demographic characteristics.^{19,27,32–36} Companies use targeted marketing as a strategy to align celebrities who share similar demographic profiles, which may raise ethical concerns for racially and ethnically diverse young people.³⁷

Previous studies^{29,30} have not included celebrities other than professional athletes and musicians, or those involved in marketing campaigns that encouraged healthy dietary habits such as eating fruits and vegetables or consuming milk or water. Additionally, the nutrition evaluation of products in previous studies used the UK's nutrient profile model that differs from the DGA and the USDA nutrition standards. Furthermore, no published study has comprehensively explored the relationships among celebrities' demographic profiles (i.e., sex, age, race/ethnicity and profession); their associations with the companies or non-governmental organizations' (NGOs') health-promotion and marketing campaigns; and the nutritional profiles of the endorsed food and beverage products in the US marketplace. This study addresses this research gap.

Study Purpose

This study explored celebrity endorsement used by US food, beverage and restaurant firms and NGOs that promoted branded food and beverage products, and branded health or

marketing campaigns to Americans between 1990 and 2017. We anticipate that the results of this study could inform future policies and actions of the US government, industry and consumer advocacy organizations to use celebrity endorsement to promote healthy food environments for Americans.

3.2 Materials and Methods

Research questions and hypotheses

This study was guided by three research questions (RQs) listed below.

RQ1: What food and beverage products or brands did celebrities endorse in the US between 1990 and 2017?

RQ2: What proportion of products endorsed by US celebrities do not align with government-recommended nutrition guidelines?

RQ3: What are the associations between the US celebrities' demographic profiles (i.e., profession, sex, age, and race/ethnicity) and the nutritional profiles of the endorsed food and beverage products or brands?

The first research question used descriptive statistics, so no hypothesis was established. For RQ2, we hypothesized that celebrities were more likely to endorse EDNP food and beverage products that do not align with the DGA and the USDA's Smart Snacks Standards than products that align with these healthy dietary guidelines. For RQ3, we hypothesized that celebrities are more likely to endorse EDNP food and beverage products if they are Black or African American, male, athletes, Generation Z teens or Millennials, compared to celebrities of other demographic profiles.

First, we created a database that organized, analyzed and visually mapped celebrity endorsements used by US food, beverage, restaurant firms and NGOs between 1990 and 2017.

Second, we analyzed the nutritional profiles of the endorsed food and beverage products and brands based on their alignments with the USDA's Smart Snacks Standards. Third, we used logistic regression to examine the associations between the celebrity demographic profiles and the nutritional profiles of the endorsed food and beverage products or brands.

Search strategy and data collection

A sample was collected of celebrity endorsements for food and beverage products between 1 January 1990 and 31 December 2017 through a comprehensive review of evidence that included: (1) four electronic scientific databases (i.e., PubMed, Business Source Complete, PsycINFO and Google Scholar); (2) gray-literature sources (i.e., books, reports or briefs published by government, academic institutions, private foundations, industries or industry associations); (3) Google search engine of relevant websites (i.e., government agencies, NGOs, food, beverage and restaurant companies, and food retailers); and (4) media sources (i.e., social media, news and press releases). We used 1990 as the start of the search date because the Got Milk? and Milk Mustache Campaigns were initiated during the mid-1990s by the Milk Processor Education Program (MilkPEP) to promote fluid milk and were associated with many US celebrities over the past 20 years.³⁸ The data collection time were between July and December 2017.

The search terms included “celebrity” or “athlete” or “entertain” and “endorsement” or “advertising” or “marketing” and “food” or “beverage” or “drink”. The inclusion criteria were living human celebrities who are currently or have been associated with one or more endorsements of US food, beverage and restaurant brands or products or branded US health promotion or marketing campaigns. The campaigns in this study included: Got Milk? and Milk Mustache Campaigns,³⁸ the Partnership for a Healthier America's (PHA's) Drink Up Campaign

to promote water³⁹ and Fruits and Veggies (FNV) Campaign to promote fruits and vegetables.⁴⁰

The exclusion criteria were: (1) celebrity endorsements not in the US marketplace; (2) non-human celebrities and cartoon characters; (3) celebrity endorsements used to promote tobacco, alcohol, dietary supplements, diet products and medications; and (4) food and beverage or campaign endorsements before 1990. Nutrition information was collected for food and beverage products from the company websites between May and December 2018. If the nutrition information was not available online, product labels were checked in a major retail grocery store located in Blacksburg, Virginia between May and December 2018.

Data coding

Coding celebrity demographic information

Each search result for a celebrity name and his/her demographic and related endorsement information was entered into an Excel database between 1 January 2016 and 31 December 2017. Celebrities were classified into three categories based on their profession including entertainers (i.e., actors, actresses, dancers, film directors, illusionists, models, musicians and television personalities); professional athletes (i.e., ball players, bikers, boxers, car racers, ice sports athletes, wrestlers, muscle artists, track and field athletes, surfers, swimmers and gymnasts); and others (i.e., celebrity chefs, politicians and business entrepreneurs). Celebrities' demographic information was coded based on the Internet search and gray-literature sources for sex (i.e., male/female); marketing age segmentation (i.e., Generation Z teens born 1995–2012, Millennials born 1981–1994, Generation X born 1966–1980, Baby Boomers born 1961–1965, and the Silent Generation born 1950 or earlier);⁴¹ and race/ethnicity (i.e., White, Black, Latino(a), Asian and Multi-racial). Each celebrity entry in the Excel database was associated with a weblink that

verified a visual or descriptive association between the celebrity and the companies, organizations, brands and product endorsements.

Coding food and beverage categories

Table 3.1 summarizes the 10 food and beverage categories used to code the endorsements in the Excel database, which were adapted from several US nutrition standards. The FTC’s 2012 report of food marketing to children and adolescents classified food and beverage products into 10 categories that included: QSR foods, carbonated beverages, breakfast cereals, snack foods, juice and non-carbonated beverages, candy or frozen desserts, dairy products, prepared foods and meals, baked foods, fruits and vegetables.²⁸ The Healthy Eating Research (HER) 2013 recommendations for healthier beverages and the USDA’s Smart Snacks Standards further divided the beverage categories into SSBs (more than 60 calories per 12 fluid ounces), low-calorie beverages (LCBs) (60 or less calories per 12 fluid ounces), no-calorie beverages (NCBs) and water.^{13,42}

Table 3.1 Food and beverage categories in the celebrity database

Food and Beverage Categories	FTC¹	HER² and USDA’s Smart Snacks Standards³
Breakfast cereals	X	
Dairy products	X	
Snacks and candy	X	
Prepared foods and meals	X	
Quick-service restaurant (QSR) foods	X	
Fruits and vegetables	X	
Sugar-sweetened beverages (SSBs)		X
Low-calorie beverages (LCBs)		X
No-calorie beverages (NCBs)		X
Water		X

¹ Federal Trade Commission;²⁸ ² Healthy Eating Research;⁴² ³ US Department of Agriculture’s Smart Snacks Standards 2014–2015.¹³

Coding food and beverage products’ nutritional profiles

The 2015–2020 DGA emphasize healthy eating patterns instead of setting nutrition standards for the intake of specific foods or nutrients.⁹ Therefore, the USDA’s Smart Snacks

Standards were used to evaluate the proportion of products that met the government-recommended nutritional profiles.¹³ The Smart Snacks Standards have encouraged companies to sell products including entrées, side dishes, snacks, and beverages that offer whole grains, fruits, vegetables, low-fat or non-fat dairy or protein as the first ingredient; combine foods that contain at least a quarter cup of fruits and/or vegetables; and meet specific nutrient targets for the amount and percentage of calories, fats (i.e., saturated and *trans* fats), sodium and sugars per serving (Table 3.2).¹³

Table 3.2 USDA’s Smart Snacks Standards 2014–2015¹³

Nutrient	Snack	Entrée
Calories	200 calories or less	350 calories or less
Sodium	200 mg or less	480 mg or less
Total Fat	35% of calories or less	35% of calories or less
Saturated Fat	Less than 10% of calories	Less than 10% of calories
<i>Trans</i> Fat	0 g	0 g
Total Sugar	35% by weight or less	35% by weight or less

The food and beverage endorsements of the celebrities were classified into three groups. Group one included celebrities who endorsed specific food or beverage products (i.e., Coca-Cola, Pepsi, Fruity Fruits) that contained specific nutritional profile information. Group two included celebrities who endorsed a corporate or company brand (e.g., McDonald’s, Kemps or Borden) that contained products of various nutritional profiles. Group three included celebrities who endorsed a social marketing or health-promotion campaign brand.

The nutrition information (i.e., fat, saturated fat, *trans* fat, sugar, sodium, serving size) for each group one and group two product was entered into the Smart Snacks Product Calculator established by the Alliance for a Healthier Generation to assist the US school staff to ensure foods and beverages align with the USDA’s Smart Snacks Standards.⁴³ The standards alignments for group one products were decided based on the results generated by the Smart Snacks Product

Calculator. Group two brands that contained more than 50% of products that met the Smart Snacks Standards were classified as aligning with these standards. For group three, the Drink Up and the FNV Campaigns were classified as aligning with the Smart Snacks Standards because all celebrities involved in these campaigns promoted only the generic products associated with the campaign brands that aligned with the Smart Snacks Standards.^{39,40} However, celebrities associated with the Got Milk? and Milk Mustache Campaigns promoted a range of dairy products, including skim milk and 1% milk that aligned with the Smart Snacks Standards, and whole milk and chocolate milk that did not align with the USDA's Smart Snacks Standards.³⁸ We were unable to differentiate which celebrities were associated with certain dairy products only based on the endorsement photographs. Therefore, we included the celebrity endorsements of the Got Milk? and Milk Mustache Campaigns to answer RQ1 but excluded these data to answer RQ2 and RQ3.

To increase the scientific rigor of the coding process, the data were entered by the primary researcher (MZ) and checked by two data scientists (SR and FA). The data coding process was verified by co-investigators who had expertise in food, nutrition, public health and marketing research (VH, VK, and SRGP). The coding discrepancies were further checked from the original resources and consensus was obtained across all co-investigators.

Data analyses

To answer RQ1, the frequencies of unique celebrities, food and beverage companies, brands, categories, total endorsements and celebrity demographic characteristics were calculated using SPSS statistical software version 24 for Windows (IBM Corp, Armonk, NY, US, 2016).⁴⁴ We also created interactive tree diagrams or dendrograms to illustrate the endorsement relationships between the celebrities, companies or organizations, and the products or brands.

The data for the dendrograms were generated using the Python programming language version 3.5.5 (Python Software Foundation, Wilmington, DE, US, 2018).⁴⁵ The resulting data were visualized using the JavaScript D3 library version 5.7.0 (GitHub Inc, San Francisco, CA, US, 2018).⁴⁶ The dendrograms are compatible with most web browsers, ensuring universal open access.

To answer RQ2, a Chi-squared goodness of fit test was conducted using SPSS to explore whether there was a statistically significant difference ($p < 0.05$) between the proportion of endorsements, products or brands that aligned with the USDA's Smart Snacks Standards and those did not align with these standards.

To answer RQ3, we used a series of Chi-squared of independence tests to check if there were any statistically significant associations between the variables in each demographic category. A conditional logistic regression model was then built to describe, explain and predict the relationships between the dependent binary variables (i.e., align or did not align with the Smart Snacks Standards) and all the independent variables (endorsements associated with the celebrities' demographic profiles). The independent variables stated in the hypothesis were set up as the reference variables. Other independent variables in each demographic group were compared with the reference variables. The odds ratio of each comparison generated by the logistic regression model was used to quantify how likely these endorsements were associated with products or brands that aligned with the Smart Snacks Standards. The validity of this model was evaluated using the Hosmer–Lemeshow goodness of fit test and the model's predicted probability. SPSS was used for the data analyses, and the significance level was set at $p < 0.05$.

3.3 Results

RQ1: Celebrity endorsements of food and beverage products in the us between 1990 and 2017

The data analysis revealed that 542 celebrities were associated with 732 endorsements representing 120 products or brands of 59 companies or organizations across 10 food and beverage categories. Table 3.3 describes the results that entertainment, male, white, and General X celebrities were the most common in their respective demographic categories.

Table 3.3 Demographic profiles of celebrities ($n = 542$) who endorsed food and beverage products or brands in the US between 1990 and 2017

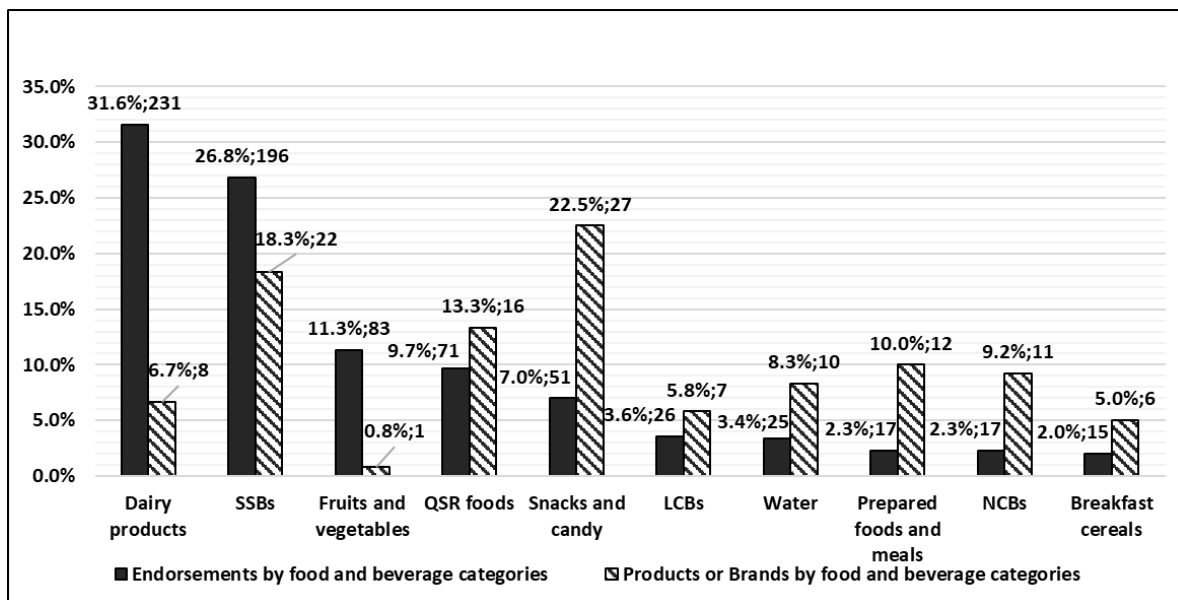
Demographic Profile	Celebrities, n (%)
Profession category	
Sports/athlete	202 (37.3)
Entertainment	320 (59.0)
Other (e.g., chefs, political figures)	20 (3.7)
Age ¹	
Generation Z (17–22 years)	10 (1.8)
Millennials (23–36 years)	211 (38.9)
Generation X (37–51 years)	215 (39.7)
Baby Boomers (52–66 years)	76 (14.0)
Silent Generation (67+ years)	30 (5.5)
Sex	
Male	332 (61.3)
Female	210 (38.7)
Race/ethnicity	
Black	138 (25.5)
White	338 (62.4)
Latino(a)	32 (5.9)
Asian	14 (2.6)
Multi-racial	20 (3.7)

¹ Celebrity age was calculated according to the marketing age segment classification in 2017.⁴¹

Due to the multiple endorsement relationships between celebrities and the food and beverage brands or products, the number of endorsements was greater than either the number of unique celebrities or the number of unique brands or products. Figure 3.1 shows

the comparison between the 732 endorsements and the 120 unique brands or products according to 10 food and beverage categories. According to the analysis based on the 732 endorsements, the top three food and beverage categories were represented by dairy, SSB, and fruit and vegetable brands or products. However, when analyzed by the 120 unique products or brands, the distribution was different and the top three food and beverage categories were associated with snacks and candy, SSB and QSR products or brands. Dairy products or brands ranked first by the number of endorsements but ranked eighth by the number of products and brands. Snacks and candy ranked fifth when calculated by the number of endorsements, but ranked first according to the number of products and brands. SSBs ranked second for endorsements and brands.

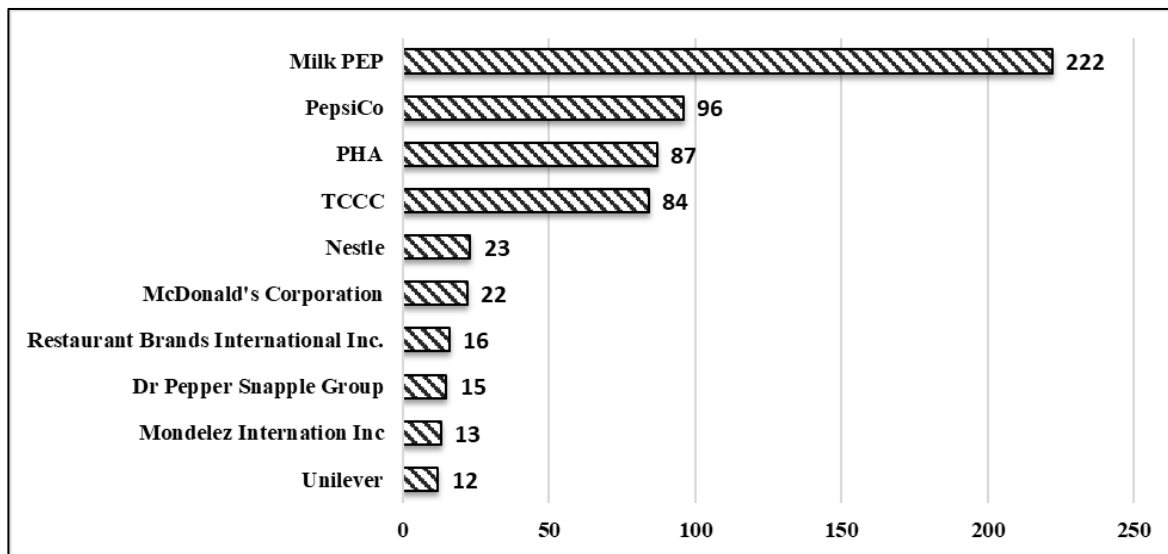
Figure 3.1 Comparison for the percentages and numbers of endorsements (n = 732) and the number of unique brands or products (n = 120) by food and beverage categories (n = 10)



Abbreviations: quick-service restaurant (QSR); sugar-sweetened beverage (SSB); low-calorie beverage (LCB); no-calorie beverage (NCB).

Figure 3.2 summarizes the top 10 companies or NGOs (i.e., MilkPEP or PHA) according to the number of partnered celebrities. Of the 59 companies or organizations, the MilkPEP ranked as the top organization with 222 celebrities involved in the Got Milk? and Milk Mustache Campaigns that ran for 20 years from 1995 to 2015. PepsiCo ranked second with 96 celebrities who endorsed mostly EDNP food and beverage products, especially salty snacks and SSB products and brands. A few other food and beverage firms including The Coca-Cola Company (TCCC), Mondelez International and McDonald's Corporation were highly ranked with celebrity endorsements that featured primarily EDNP products.

Figure 3.2 Top 10 companies or organizations ranked by number of partnered celebrities to promote food and beverage products or brands



Abbreviations: Milk Processor's Education Program (MilkPEP); Partnership for a Healthier America (PHA); The Coca-Cola Company (TCCC).

As a single product or brand could use multiple celebrity endorsers in advertisements to appeal to different types of consumers, and vice versa, one celebrity could endorse multiple brands or products. Our results showed that more than half (53.7%; $n = 65$) of the products or corporate brands hired only one celebrity; more than one third (38.8%; $n = 47$) partnered with

two to nine celebrities; and less than one-tenth (7.4%; $n = 9$) were associated with more than 10 celebrities. Results also demonstrated that of the 542 celebrities, more than three quarters (79.2%; $n = 429$) endorsed only one product or brand; less than a fifth (19.6%; $n = 106$) endorsed two to four products or brands; and only 1.3% ($n = 7$) endorsed five or more products or brands.

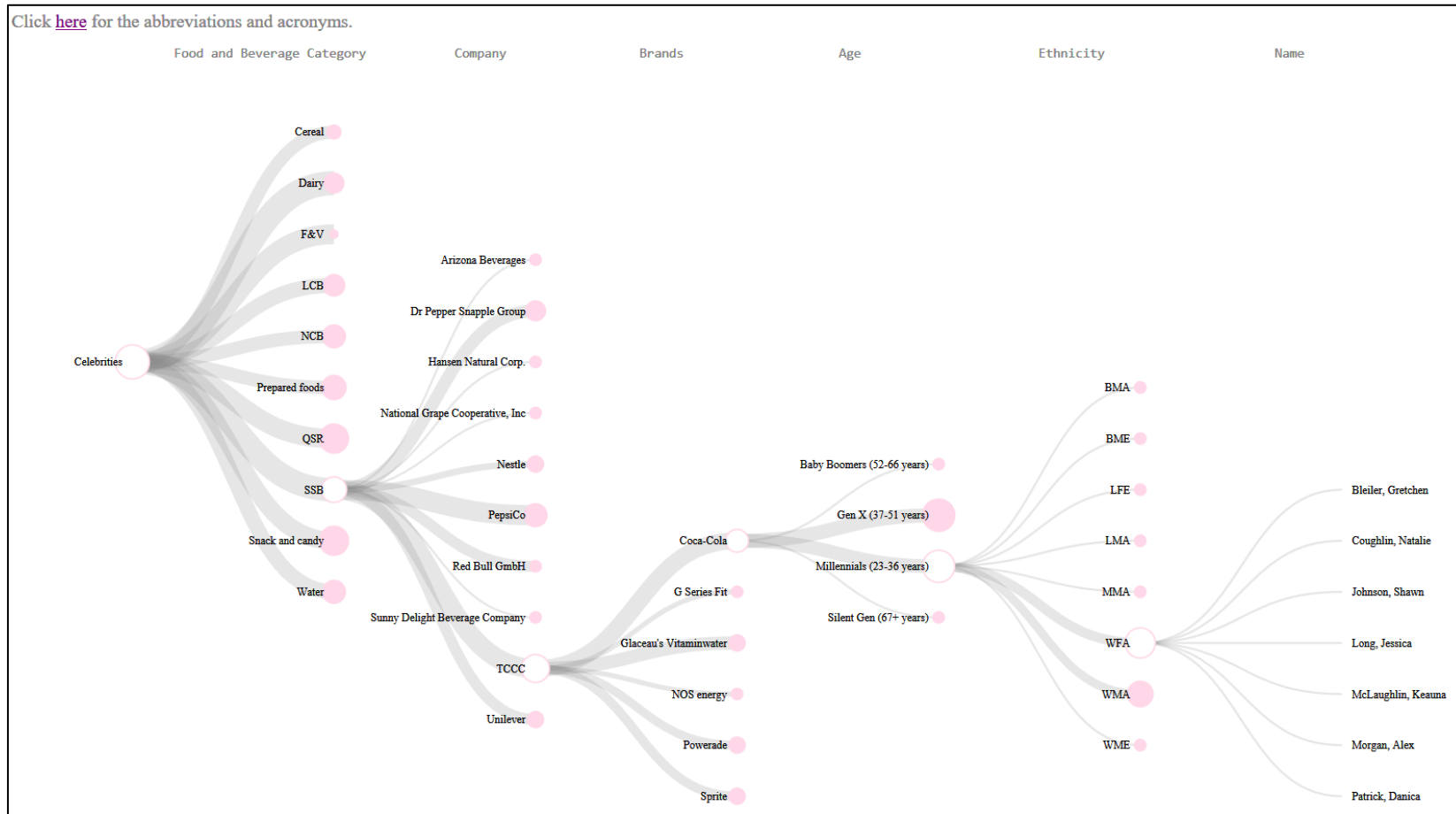
Table 3.4 Associations between celebrity demographic profiles and food and beverage category endorsements ($n = 732$)

Celebrity Demographic Profiles		Food and Beverage Categories, n (%)										Total
		Breakfast Cereal	Dairy Products	Fruits and Vegetables	LCBs	NCBs	Prepared Foods	QSR Foods	Snacks and Candy	SSBs	Water	
Race/ethnicity	Black	6 (2.9)	33 (15.9)	33 (15.9)	4 (1.9)	3 (1.4)	6 (2.9)	26 (12.6)	19 (9.2)	69 (33.3)	8 (3.9)	207 (100)
	White	8 (1.9)	174 (40.9)	38 (8.9)	14 (3.3)	8 (1.9)	8 (1.9)	32 (7.5)	25 (5.9)	105 (24.7)	13 (3.1)	425 (100)
	Latino(a)	0 (0.0)	15 (33.3)	3 (6.7)	3 (6.7)	3 (6.7)	0 (0)	6 (13.3)	2 (4.4)	12 (26.7)	1 (2.2)	45 (100)
	Asian	0 (0.0)	4 (21.1)	1 (5.3)	1 (5.3)	2 (10.5)	2 (10.5)	3 (15.8)	3 (15.8)	3 (15.8)	0 (0)	19 (100)
	Multi-racial	1 (2.8)	5 (13.9)	8 (22.2)	4 (11.1)	1 (2.8)	1 (2.8)	4 (11.1)	2 (5.6)	7 (19.4)	3 (8.3)	36 (100)
Sex	Male	11 (2.4)	120 (26.3)	56 (12.3)	14 (3.1)	8 (1.8)	12 (2.6)	48 (10.5)	30 (6.6)	149 (32.6)	9 (2.0)	457 (100)
	Female	4 (1.5)	111 (40.4)	27 (9.8)	12 (4.4)	9 (3.3)	5 (1.8)	23 (8.4)	21 (7.6)	47 (17.1)	16 (5.8)	275 (100)
Profession category	Athlete	12 (3.9)	59 (19.3)	52 (17.0)	8 (2.6)	6 (2.0)	5 (1.6)	41 (13.4)	22 (7.2)	96 (31.4)	5 (1.6)	306 (100)
	Entertainer	3 (0.7)	169 (41.9)	27 (6.7)	18 (4.5)	10 (2.5)	6 (1.5)	25 (6.2)	28 (6.9)	100 (24.8)	17 (4.2)	403 (100)
	Other	0 (0.0)	3 (13.0)	4 (17.4)	0 (0.0)	1 (4.3)	6 (26.1)	5 (21.7)	1 (4.3)	0 (0.0)	3 (13.0)	23 (100)
Age	Generation Z (17–22 years)	2 (16.7)	2 (16.7)	4 (33.3)	2 (16.7)	0 (0.0)	0 (0.0)	1 (8.3)	0 (0.0)	0 (0.0)	1 (8.3)	12 (100)
	Millennials (23–36 years)	6 (2.0)	58 (18.9)	54 (17.6)	9 (2.9)	10 (3.3)	5 (1.6)	28 (9.1)	31 (10.1)	99 (32.2)	7 (2.3)	307 (100)
	Generation X (37–51 years)	6 (2.0)	91 (30.8)	21 (7.1)	11 (3.7)	4 (1.4)	8 (2.7)	36 (12.2)	17 (5.8)	88 (29.8)	13 (4.4)	295 (100)
	Baby Boomers (52–66 year)	1 (1.2)	55 (67.1)	4 (4.9)	3 (3.7)	3 (3.7)	4 (4.9)	4 (4.9)	1 (1.2)	5 (6.1)	2 (2.4)	82 (100)
	Silent Generation (67+ years)	0 (0.0)	25 (69.4)	0 (0.0)	1 (2.8)	0 (0.0)	0 (0.0)	2 (5.6)	2 (5.6)	4 (11.1)	2 (5.6)	36 (100)

Table 3.4 describes the frequencies and percentages of endorsements ($n = 732$) for each food and beverage category based on the celebrity demographic profiles. The greatest percentage of the endorsements for black, male, sports, and Millennial celebrities represented SSB brands or products. Most endorsements for white, Latino(a), Asian, female, entertainment, Generation X, Baby Boomer and Silent Generation celebrities were dairy brands or products. Multi-racial and Generation Z celebrities were mostly associated with fruit and vegetable brands (i.e., FNV) or products; and celebrities in the other profession category were mostly involved in prepared food and meal endorsements.

Figure 3.3 provides the screenshot of an interactive dendrogram that describes the endorsement relationships between celebrities and food/beverage categories, and between celebrities and food/beverage companies or organizations. Each solid node can be expanded to obtain more detailed information, and the size difference of the nodes represents the different amounts of the expanded items. Abbreviations are explained by clicking the “here” link. The dendrogram can be viewed interactively through an online web browser where readers can select various solid nodes to see the different endorsement relationships for each food and beverage category ($n = 10$), each company ($n = 59$) and each celebrity ($n = 542$).

Figure 3.3 Screenshot of an interactive dendrogram showing the celebrity endorsement relationships by the food and beverage category (n = 10), companies (n = 59) and celebrities (n = 542)



Abbreviations: F&V: fruits and vegetables; LCB: low-calorie beverages; NCB: non-calorie beverages; QSR: quick service restaurants; SSB: sugar-sweetened beverages; TCCC: The Coca Cola Company; BMA: Black male athlete; BME: Black male entertainer; LFE: Latina female entertainer; LMA: Latino male athlete; MMA: multi-racial male athlete; WFA: White female athlete; WMA: White male athlete; WME: White male entertainer.

We created two dendrograms that emphasized the endorsement relationships from different perspectives: dendrogram one emphasizes the food and beverage category endorsements and dendrogram two emphasizes the company endorsements. The two interactive dendrograms can be viewed online⁴⁷ in any web browser by disabling the browser protection to enable the loading of files required for the D3-based visualization.

RQ2: Comparison between EDNP and healthy product endorsements

Table 3.5 summarizes the nutritional profile analyses for the food and beverage product endorsements based on the Smart Snacks Standards Calculator. This table indicates that among the 510 endorsements (excluding Got Milk? and Milk Mustache Campaigns), two-thirds of the represented food and beverage products or brands did not align with the USDA's Smart Snacks Standards. Similarly, among the 119 unique food and beverage products or brands (excluding the Got Milk? and Milk Mustache Campaigns), the brands associated with food and beverage products that did not align with the USDA's standards were two times greater than those aligned with the standards. Furthermore, two-thirds of the 356 celebrities (excluding the celebrities involved in the Got Milk? and Milk Mustache Campaigns) associated with food and beverage products did not align with the Smart Snacks Standards. A total of 7% ($n = 38$) of celebrities endorsed products both aligned and not aligned with the USDA standards.

Table 3.5 Alignments with the USDA's Smart Snacks Standards for the food and beverage endorsements ($n = 510$), brands ($n = 119$) and celebrities ($n = 356$)

Alignments with the Smart Snacks Standards	<i>n</i>	Percentage	<i>p</i>-Value
Endorsements for products or brands aligned	172	33.7	<0.001*
Endorsements for products or brands not aligned	338	66.3	
Endorsed products or brands aligned	39	32.8	<0.001*
Endorsed products or brands not aligned	80	67.2	
Celebrities only associated with endorsements aligned	119	33.4	<0.001*
Celebrities associated with endorsements not aligned	237	66.6	

*Statistically significant.

Table 3.6 Associations between celebrity demographic profiles and the nutritional profiles of food and beverage product or brand endorsements ($n = 510$)

Celebrity Demographic Profiles		Alignments with the USDA's Smart Snacks Standards								
		Aligned			Not aligned			χ^2	Logistic regression	
		Count	Column %	Row %	Count	Column %	Row %	p -Value	Odds Ratio	p -Value
Profession category	Sports/athlete	86	50.0	34.3	165	48.8	65.7	0.774	1.169	0.471
	Entertainer	78	45.3	32.6	161	47.6	67.4			
	Other	8	4.7	40.0	12	3.6	60.0			
Sex	Male	104	60.5	30.3	239	70.7	69.7	0.020 *	1.546	0.041*
	Female	68	39.5	40.7	99	29.3	59.3			
Age	Millennial (23–36 years)	91	52.9	35.5	165	48.8	64.5	0.002 *	7.19	0.015*
	Generation Z (17–22 years)	8	4.7	80.0	2	0.6	20.0			
	Generation X (37–51 years)	56	32.6	27.3	149	44.1	72.7			
	Baby Boomer (52–66 years)	14	8.1	50.0	14	4.1	50.0			
	Silent Generation (67+ years)	3	1.7	27.3	8	2.4	72.7			
Race/ethnicity	Black	56	32.6	32.6	119	35.2	68.0	0.184	1.021	0.924
	White	83	48.3	32.5	172	50.9	67.5			
	Latino(a)	10	5.8	30.3	23	6.8	69.7			
	Asian	6	3.5	40.0	9	2.7	60.0			
	Multi-racial	17	9.9	53.1	15	4.4	46.9			

* Statistically significant. Notes: the column percentages represent the proportions of celebrities of different demographic categories involved with healthy or energy-dense and nutrient-poor (EDNP) product endorsements. The row percentages indicate the proportion of healthy or EDNP product endorsements associated with celebrities of each demographic characteristic. The first variable in each demographic group was set up as the reference variables (i.e., endorsements that were associated with sports, males, Millennials and Black celebrities) in the logistic regression model. The odds ratio quantifies how likely are the celebrity endorsements that are associated with products or brands that have nutritional profiles that are aligned with the Smart Snacks Standards compared with the reference variables.

RQ3: Associations between celebrity demographic profiles and nutritional profiles of endorsed food and beverage products or brands

Table 3.6 shows the results of the Chi-squared and the logistic regression analyses of the variables (excluding the endorsements of the Got Milk? and Milk Mustache Campaigns). The Chi-squared analyses indicated that sex and age of celebrities were significantly associated with the nutritional profiles of their endorsed food and beverage products, while the profession and race/ethnicity of celebrities were not significantly associated with the nutritional profiles of their endorsed food and beverage products. The logistic regression model shows that male celebrities were associated with 1.5 times more endorsements for EDNP products that did not align with the USDA's Smart Snacks Standards compared with female celebrities ($p < 0.05$). Millennial celebrities (aged 23-36 years and born 1981-1994) were seven times more likely to be associated with EDNP products than Generation Z celebrities (aged 17-22 years and born 1995-2010) ($p < 0.05$). This conditional logistic regression model was a good fit for the variables ($p = 0.127$) according to the Hosmer–Lemeshow goodness of fit test, with demographic profiles of celebrities accounting for 68.4% of the variance associated with endorsing EDNP food and beverage products.

3.4 Discussion

Research findings and implications for policies

This is the first US study to offer a comprehensive examination of the relationships among celebrities, food and beverage products or brands, and various companies or NGOs that used celebrity endorsements in health-promotion or marketing campaigns. It is also the first study to use the USDA's Smart Snacks Standards to analyze the nutritional profiles of the food

and beverage products or brands endorsed by celebrities in the US marketplace over more than 20 years.

The great number of celebrities involved in the Got Milk? and Milk Mustache Campaigns and the FNV Campaign elevated the number of endorsements for dairy, fruit and vegetable promotion, which might misrepresent the nature of celebrity endorsement used for food and beverage marketing in the US. However, the number of unique brands or products showed that a great majority of the endorsements were for brands associated with SSB, QSR, snacks and candy products rather than for dairy products, fruits and vegetables.

The two interactive dendrograms provide a panorama view of how celebrity endorsements have been used to promote branded food and beverage products and branded health and marketing campaigns in the US from 1990 to 2017. Researchers, civil society groups and government agency staff could use such comprehensive celebrity endorsement information as a tool to develop policy statements and position papers that call on the industry to use celebrity marketing only to promote healthy food and beverage products.

The nutritional profile evaluation for the food and beverage products and brands supported the hypothesis for RQ2, which found that two-thirds of the brands, endorsements and celebrities were associated with EDNP food and beverage products (e.g., snacks, candy, SSB and QSR foods) that did not align with the USDA's Smart Snacks Standards. This is a concern because overconsumption of these products is a significant contributor to the obesity epidemic.^{3,4,48} We found that celebrities in the US have also been selectively used to endorse healthy food and beverage products such as NCBs and water, or health promotion and marketing campaigns such as the Drink Up Campaign and the FNV Campaign. Some celebrities were associated with both healthy and EDNP product endorsements. When one celebrity is involved in

multiple brand or product endorsements, the promotion effects of one brand may spread to others.⁴⁹ Celebrities who endorse healthy nutritional profile products may serve as indirect endorsers of unhealthy nutritional profile products, and vice versa. The results of this study provide evidence for government agencies or other empowered bodies to develop policies to restrict celebrity endorsements that promote EDNP products while encouraging the use of this marketing strategy to promote healthy dietary behaviors.

Statistical analyses of the associations between celebrity demographic profiles and food and beverage nutritional profiles partially supported the second hypothesis in that male and Millennial celebrities were more likely to endorse EDNP food and beverage products than female and Generation Z celebrities. The logistic regression model indicates that male celebrities were 1.5 times more likely than female celebrities to endorse EDNP products. Previous research found that men tend to trust celebrity endorsements more than women.⁵⁰⁻⁵² Men were also reported to be more susceptible to and targeted by EDNP food marketers compared with women.⁵⁰⁻⁵² This result suggests that celebrity endorsement may contribute to poorer diet quality for men than women.

Age was also a significant indicator suggesting that Millennials were seven times more likely to endorse EDNP food and beverage products than Generation Z celebrities. Previous research showed that US Millennials adults are targeted more by food marketing due to their spending power (\$1.4 trillion annually).⁵³ Millennials also spent the highest budget on EDNP products including prepared foods, sugar, sweets and pasta than older generations.⁵⁴ However, Generation Z celebrities only represented 1.8% in the database, and Millennial celebrities were not more likely to endorse EDNP products than celebrities of other generations. Therefore, the results were not strong enough to establish the association between Millennial celebrities

involved in EDNP products and the dietary or purchase behaviors of the Millennial consumers. Additionally, no statistical significance was observed to support the hypotheses that Black celebrities and sports celebrities were more likely to endorse food and beverage products and brands did not align with the USDA's Smart Snacks Standards.

Therefore, we were not able to conclude that the food and beverage companies have intentionally selected Millennial, Black, and sports celebrities to endorse more EDNP products than healthy counterparts, compared with celebrities of other demographic characteristics. However, results from the descriptive statistical analysis for RQ1 found that most Millennial (32.2%, $n = 99$), Black (33.3%, $n = 69$) and sports (31.4%, $n = 96$) celebrities were associated with endorsements for SSB brands and products, which may contribute to over consumption of SSB products among the targeted populations.

Current governmental policies and industry self-regulatory programs have failed to protect Americans from food and beverage marketing.⁵⁵ The Children's Food and Beverage Advertising Initiative (CFBAI) is an industry self-regulatory program established in 2006 to create more responsible food and beverage marketing practices for children under the age of 12 years. Yet after a decade, the CFBAI has failed to extend its pledges to adolescents, aged 12–18 years, who are targeted by celebrity endorsement of unhealthy food and beverage products.⁵⁵ The federal Interagency Working Group's voluntary nutrition principles were drafted in 2011 to guide the marketing practices of industry self-regulatory programs.⁵⁶ The principles expended the definition of child-directed marketing up to adolescents aged 17 years but were not approved by the US Congress.⁵⁶ The HER's responsible food marketing report published in 2015 can be used to guide the industry self-regulatory programs to create a more healthful child-marketing landscape, which suggests that the CFBAI should raise the coverage of their marketing

regulations to children aged 14 years and younger.⁵⁵ The National Restaurant Association and Healthy Dining's Kids LiveWell Program encourages more than 42,000 US restaurant locations to offer at least one healthy children's meal that aligns with the calorie, fat, saturated fat and sodium recommendations for children aged 12 years and younger.⁵⁷ The USDA's Smart Snacks Standards are beneficial for a life-long healthy dietary behavior, but these standards are designed to apply up to high school students or those 18 years of age.¹³ There are limited US marketing standards established for young adults aged 18–25 years, who are influenced by food marketing but often neglected as a target population for obesity prevention.⁵⁸ There is a need to harmonize several nutrition guidelines to develop a universal set of standards for food and beverage product marketing to children, adolescents and adults, respectively.

Study strength and limitations

The strengths for this study are the large sample size compared to those used in previous US studies.^{29,30} regarding celebrity endorsement of food and beverage products. Another strength is the comprehensive analysis of the celebrity data. There are several limitations to this study. First, the celebrity endorsement data included in this study was collected via a non-randomized, convenience sample strategy which limits the generalization of the research results. Second, we had no access to proprietary data for the time course and contract duration of celebrity endorsements of food and beverage brands or products. Therefore, we were unable to accurately identify trends for using celebrity endorsements in the US food and beverage marketplace. Finally, the nutrition information and product ingredients may change over time due to industry reformulation to reduce or remove calories, trans fats, sugar and sodium. Therefore, the nutrition information for food and beverage products may not accurately reflect the nutrition profiles for these products during the duration of celebrity endorsements.

Implications for future research

First, several conceptual models have been widely applied in marketing to explain the influence of celebrity endorsements on people's decisions and behaviors. However, there is limited research that has applied theoretical or conceptual models to guide the design of studies of celebrity endorsement for food, beverage and restaurant products. For example, it is not known whether celebrities who experience public scandals covered by the media may reduce people's trust, brand loyalty and willingness to purchase branded food and beverage products endorsed. Future research could use marketing theories or conceptual models to understand the relationships between celebrity endorsement for food, beverage and restaurant products and the diet-related behaviors among targeted populations.

Second, experimental research is needed to understand the influence of celebrity endorsement on people's consumption of food and beverage products in the US context. Experimental research could be conducted to explore whether racially, ethnically, culturally diverse, and different sex and age groups in the US respond differently to food and beverage products endorsed by celebrities, and which demographic groups are influenced by this marketing practice. It is also important to understand how people think about celebrities who endorse both healthy and unhealthy food and beverage groups and products.

Third, review studies are needed to evaluate the adequacy of the current policies and actions that diverse stakeholders have taken to ensure celebrity endorsement is used to promote products that support healthy food environments.

Finally, there is a need to compile a database regularly and prospectively with more comprehensive and detailed information to evaluate celebrity endorsements used in the US food and beverage marketplace. The database should include the start and end date of the endorsement

relationships, the media channels that susceptible populations were most exposed to these endorsements, and the expenditure of using celebrities to promote food and beverage products. This database could be used to explore the shifting trends for the use of celebrity endorsement along the time period and if this marketing strategy is taking an increasing share in food and beverage marketing. The database should be continuously updated to reflect the use of celebrity endorsement in promoting food and beverage products in the US marketplace.

3.5 Conclusions

This is the first study to comprehensively examine the nature and extent of celebrity endorsements of branded food and beverage products and branded health promotion and marketing campaigns in the US. We found that celebrity endorsement was associated with a large proportion of EDNP products in the US marketplace. In addition, we identified a small percentage of celebrities who also were involved in promoting healthy food and beverage brands. This evidence can be used by government agencies, industry and consumer advocacy organizations to inform future US policies and actions that limit using celebrity endorsement to promote EDNP food and beverage products while encouraging this marketing practice to be applied to promote healthy nutrient-profile products, as part of a broader effort to engage in responsible food and beverage marketing practices that promote healthy food environments.

Acknowledgments

VK and MZ received partial funding from Virginia Tech's Department of Human Nutrition, Foods, and Exercise and the USDA's National Institute of Food and Agriculture Hatch project VA-160062 to complete this research. No authors received any funding from commercial or private-sector entities to support the research described in this manuscript. We thank the Statistical Applications and Innovations Group of Virginia Tech for assistance with statistical analysis for this study. We are grateful for the financial support awarded by Virginia Tech Library's Open Access Subvention Fund to cover the publication and open access costs for this manuscript.

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Chapter 4. Study 2. Demographic Profile of the Partnership for a Healthier America's Fruits & Veggies (FNV) Campaign's *pro bono* Celebrities and the Food and Beverage Products and Brands They Endorse: A Cross-sectional Study

Abstract

In 2015, the Partnership for a Healthier America (PHA) launched the Fruits & Veggies (FNV) Campaign in Fresno, California and Hampton Roads, Virginia to increase fruit and vegetable purchases and consumption among Millennial moms aged 21-34 years and Generation Z teens aged 15-20 years. This study aims to examine the demographic characteristics of celebrities who provided *pro bono* endorsement for the FNV Campaign and explore the nutritional profiles of the food and beverage products and campaigns they endorsed. FNV Celebrities' demographic characteristics and their other food and beverage brand or product endorsements were collected from peer-reviewed studies, gray literature sources and Internet searches. The nutritional profiles of endorsed products were compared with the US Department of Agriculture's (USDA's) Smart Snacks Standards. Descriptive statistics and data visualization tools were used to analyze and visualize the data. Eighty-two celebrities were associated with 121 endorsements representing 28 products or brands of 20 companies or organizations. Professional sports athletes (63%, n=52), male (68%, n=56), white (46%, n=38), and Millennial (62%, n=51) were the most common celebrities in their respective categories. The FNV brand was endorsed exclusively by 76% (n = 62) of celebrities. There were 15 out of the remaining 20 celebrities endorsed energy-dense and nutrient-poor products that did not comply with USDA's Smart Snacks Standards. As the FNV Campaign expands, the PHA should partner with celebrities who endorse only healthy food and beverage products, ensure that celebrities are demographically representative of targeted populations.

4.1 Introduction

An abundant intake of fruit and vegetable by populations is associated with a lower risk of several diet-related non-communicable diseases (NCDs) including cardiovascular diseases, type 2 diabetes, and certain types of cancers.^{1,2} The World Health Organization has estimated that inadequate fruit and vegetable consumption contributed to an estimated 3.9 million deaths worldwide in 2017.³

To promote optimal health and prevent diet-related NCDs, the Dietary Guidelines for Americans (DGA) 2015-2020 and the Healthy People 2020 recommend that American adults should consume at least 4.5 cup equivalents of cruciferous and dark-green leafy vegetables and citrus and dark-colored fruits/day for a 2,000-calorie diet, and children and teenagers (2-19 years) should consume 1 to 1.5 cup equivalents of fruits and 1.5 to 2.5 cup equivalents of vegetables/day for a 1,200-1,600 calorie diet.^{4,5}

The DGAs are communicated through the United States Department of Agriculture's (USDA's) MyPlate that has encouraged Americans to consume half of their plate as fruits or vegetables since 2011.⁶ More recently, the USDA has provided simplified behavioral messages to Americans to consume more fruits by "focusing on whole fruits" and "varying their veggies" by adding a new vegetable to a different meal each day.⁷ Despite these government recommendations, only 12.2% and 9.3% of American adults and 8.5% and 2.1% American youth met the daily fruit and vegetable intake, respectively, in 2017.^{8,9}

Commercial marketing by food, beverage and restaurant companies influence consumers' brand awareness, brand attitudes, and purchasing decision of a product or service.¹⁰ Marketing practices are used primarily to promote branded energy-dense and nutrient-poor (EDNP) food

and beverage products, which are associated with poor diet quality and increased risk of obesity and NCDs.¹¹

Public health practitioners have used commercial and social marketing principles since the 1990s to design and implement branded campaigns to encourage fruit and vegetable intake among Americans.¹² Examples include the Five a Day for Better Health Campaign initiated by the National Cancer Institute between 1993 to 2007 to encourage Americans to consume at least of five servings of fruits and vegetables daily; and the Fruits & Veggies, More Matters Campaign launched by the Produce for Better Health Foundation as a re-branding of the Five a Day Campaign in 2007.¹³⁻¹⁵

The National Fruit & Vegetable Alliance is comprised of representatives from government agencies, non-profit organizations, and industry that collaborate to increase consumption of fruits and vegetables to improve public health. The Alliance has released two report cards for the nation (2005-2010) and (2010-2015) that gave a failing grade for industry marketing efforts to increase fruit and vegetable purchases by customers and consumption targeting American children, adolescents and adults.^{16,17}

In February 2015, the Partnership for a Healthier America (PHA) launched the branded Fruits & Veggies (FNV) marketing campaign in two pilot cities including Fresno, California and Norfolk/Hampton Roads, Virginia.¹⁸ The goal of the FNV Campaign was to encourage racially and ethnically diverse Millennial moms (aged 21-34 years in 2015) and Generation Z teens (aged 15-20 years in 2015) to purchase and consume fruits and vegetables.¹⁹ The FNV Campaign highlighted all forms of fruits and vegetables (i.e., fresh, frozen, canned, and dried) not containing added sugars or sweeteners, fats, or sodium.¹⁹

The FNV Campaign used integrated marketing communications including the use of clever non-health advertising messages, interactive social media engagement, sponsored community events, in-store, food-retail marketing, and celebrity endorsement, to make fruits and vegetables more attractive among the targeted populations.¹⁹ By June 2016, the FNV Campaign had delivered about one billion impressions through multiple media channels and had recruited more than 80 celebrities had donated their images and time to the FNV Campaign *pro bono* or without charge.^{19,20} By May 2017, the PHA reported over 25 public- and private-sector partners supporting the FNV Campaign, and had expanded this campaign to Colorado, Georgia and Wisconsin and nationwide.¹⁹

Celebrity endorsement refers to a famous person who uses public recognition or the media to promote a brand, product or service in an advertisement or other marketing communication to influence sales, use or consumption.²¹ Neuroscience research suggests that celebrity endorsement may influence people's brand awareness, purchase preferences and dietary choices by associating positive consumer impressions of celebrities with various food and beverage brands or products the celebrities endorse.^{22,23} Public health research has found that celebrity endorsements were more frequently applied to promote EDNP food and beverage products, which is directly correlated to overconsumption of EDNP products among young people.²⁴⁻²⁸

Marketing research suggests that celebrity credibility measured by trustworthiness, attractiveness and expertise influences the effectiveness of endorsements, and that multiple brands endorsed by one celebrity may reduce a consumer's trust in the celebrity and his/her endorsed products or brands.²⁹⁻³¹ Marketing research has also found that the "fit" between celebrity and a target group maximize the endorsement success.^{32,33} Using celebrities who align

with the demographic characteristics of a campaign's target populations can support promotional goals in a large-scale multi-population marketing campaign.^{32,33}

In 2015, the Robert Wood Johnson Foundation (RWJF) funded an independent evaluation of the phase one of the PHA's FNV Campaign launched in California and Virginia conducted between September 2015 and August 2017. This was one of four studies that comprised an independent evaluation of the FNV Campaign evaluation described in detail elsewhere.^{19,34} This study had four objectives: (1) examine the demographic profile of the celebrities who partnered with the FNV Campaign between April 2015 and December 2016; (2) evaluate the nutritional profile of the other food and beverage products and brands endorsed by the FNV celebrities; (3) explore the opportunities and challenges associated with the celebrity endorsement component of the integrated marketing communication strategies used in the FNV Campaign; and (4) suggest future research to understand how celebrity endorsement of the FNV Campaign may promote a healthy diet.

4.2 Materials and Methods

Study design and data collection

In February 2017, the PHA provided a list of celebrities who partnered with the FNV Campaign between April 2015 and December 2016. Endorsements and campaigns between 1990 and 2017 of associated FNV Campaign celebrities were searched and identified via four electronic databases (i.e., PubMed, Business Source Complete, PsycINFO and Google Scholar) and Internet sources (i.e., first 20 pages on Google, Internet Explorer and Firefox search engines using the search terms included "Celebrity *or* athlete *or* entertain *and* endorsement *or* advertising *or* marketing *and* food *or* beverage *or* drink." Celebrities' demographic information was collected via the Internet sources. The year 1990 was used as the start of the search date because

some of the FNV celebrities were involved in the Got Milk? and Milk Mustache Campaign that started in early 1990s initiated by The Milk Processor Education Program to promote the consumption of fluid milk to Americans.³⁵ The Nutrition Facts panel of each food and beverage product endorsed by every FNV celebrity was checked from the company websites or retail grocery stores between February and March 2017.

Data measurement

Eight-two celebrities were classified into three professional categories: entertainers (i.e., actors/actresses, singers/musicians, television personalities and Internet personalities), professional athletes and public figures (i.e., politicians and Miss America). Demographic information collected included sex (i.e., male/female); age (Generation Z born 1995-2012, Millennials born 1981-1994, Generation X born 1966-1980, Baby boomers born 1951-1965, and the Silent Generation born 1950 or earlier);³⁶ and race/ethnicity (white, black, Latino(a), Asian, and multi-racial).

The nutritional profile of each product was compared with the U.S Department of Agriculture's (USDA's) Smart Snacks Standards 2014-2015.³⁷ The Smart Snacks Standards was selected for use in this study to determine healthiness of the endorsed food and beverage products due to its set nutrition standards for: (a) the intake of specific foods or nutrients, and (b) the standards support the development of life-long healthy eating patterns designed for individual under 18 years of age.³⁷ The Smart Snack Standards are the strongest and most comprehensive government-issued nutrition standards so far that used to judge the healthfulness of the food and beverage products for children and adolescents.²⁸ According to the Smart Snacks Standards, the snacks and entrée that are sold in school setting should meet the general nutrition standards including: a) products should have a whole grain as the first ingredient or contain at least 50%

whole grains by weight; (b) use the fruits, vegetables, dairy or protein products as the first ingredients; or c) contain ¼ cups or more fruits and/or vegetables in a combination food. The smart snacks standards also require food and beverage products sold to meet the specific nutrition standards for calories, sodium, sugar and fat.³⁷

In May 2017, nutritional information (i.e., fat, saturated fat, *trans* fat, sugar, sodium and serving size) for each non-FNV product endorsed previously or currently by FNV celebrities was evaluated for compliance with the Smart Snacks Standards using the *Smart Snacks Product Calculator* established by the Alliance for a Healthier Generation.³⁸ Food and beverage products with nutrition profiles meet the Smart Snacks Standards were classified as healthy products and those did not meet the Smart Snacks Standards were considered EDNP products.

Statistical analysis and data visualization

Descriptive statistical analyses including frequencies and percentages were calculated from the demographic data to describe characteristics of FNV Campaign celebrities, and from the food and beverage product nutrition facts data to decide the healthfulness of the products endorsed by the FNV Campaign celebrities. An interactive dendrogram was developed using the JavaScript library D3 visualization technique to represent the FNV celebrities' demographic profiles and their associated endorsements. A pyramid chart was created to visualize celebrity endorsements for FNV brand and non-FNV brands. Non-FNV food and beverage products were then classified into two categories based on whether their nutritional profiles aligned with or did not align with the Smart Snack Standards. A color-coded circle map was also created to present the associations with healthy or EDNP food and beverage product endorsements for each FNV Campaign celebrity. The copyrighted and trademarked images of celebrities and company brands

used in this study were intended for educational purposes only and met the fair use guidelines.³⁹
A fair use evaluation was completed and attached to the manuscript (Appendix A).

4.3 Results

The analysis revealed that 82 celebrities were associated with 121 endorsements representing 28 brands of 20 companies or organizations. Table 4.1 describes the demographic distribution of the FNV celebrities: professional athletes (63%, n=52), male (68%, n=56), white (46%, n=38), or Millennial (62%, n=51) were the most common in their respective categories.

Table 4.1 Demographic profiles of the 82 celebrities involved in the FNV Campaign, 2015-2016

Demographic classification	Celebrities, n (%)
<i>Celebrity categories</i>	
Entertainment	26 (32)
Sports/athlete	52 (63)
Other (e.g., chefs, political figures)	4 (5)
<i>Age</i>	
Generation Z (17-22 years)	5 (6)
Millennials (23-36 years)	51 (62)
Generation X (37-51 years)	22 (27)
Baby Boomers (52-66 years)	4(5)
Silent Generation (67+ years)	0 (0)
<i>Sex</i>	
Male	56 (68)
Female	26 (32)
<i>Race/ethnicity</i>	
White	38 (46)
Black	35 (43)
Latino(a)	4 (5)
Asian	3 (4)
Multi-racial	2 (2)

Figure 4.1 details the range of brands endorsed by all 82 FNV Campaign celebrities. More than three quarters (76%, n=62) of celebrities endorsed only the FNV brand; 12% (n=10) of FNV celebrities endorsed both a FNV brand and a non-FNV brand; and 10% (n=8) endorsed

the FNV brand and two to three non-FNV brands. Two professional sports celebrities (i.e., Serena Williams and Apollo Ohno) were associated with four to seven other brands aside from the FNV brand.

Figure 4.1 Examples of product or brand endorsements of celebrities involved with the FNV Campaign between 2015 and 2016



Among the 20 celebrities who endorsed non-FNV brands (excluding one celebrity who endorsed only the Got Milk? and Milk Mustache Campaigns other than the FNV brand, which the nutrition profile could not be analyzed due to the multiple types of milk promoted by this campaign). More than two thirds (68%, n=13) of celebrities endorsed all types of EDNP non-FNV products including sugar beverages, quick-service restaurant meals, snacks and candy, and other ready-to-eat meals. One fifth (21%, n=4) endorsed brand associated with healthy food and beverage products that aligned with the USDA's Smart Snack Standards (i.e., low-calorie beverages, certain brands of breakfast cereal, and water). A small proportion (11%, n=2) of celebrities endorsed multiple brands with a combination of healthy and EDNP food or beverage products.

Figure 4.2 describes the celebrities' demographic information and the healthiness of the food and beverage products endorsed. Twenty-six celebrities were identified as entertainers, 52 as professional athletes, and four public figures. The scope of celebrity endorsement is measured by circle size. The healthfulness of the food and beverage products endorsed are represented through colors where endorsements associated with healthy food and beverage products are presented in green, and EDNP products are shown in red. The icon below each celebrity's name represents his/her profession. Figure 4.3 provides the screenshot of an interactive dendrogram that describes the endorsement relationships between FNV celebrities, their demographic characteristics and the food and beverage products or campaigns they endorse.

Figure 4.2 FNV Campaign celebrity endorsements by celebrity category and the nutritional profile of food and beverage products or brands



Legend for Figure 11

Number of endorsements for the celebrities associated with the PHA's FNV Campaign

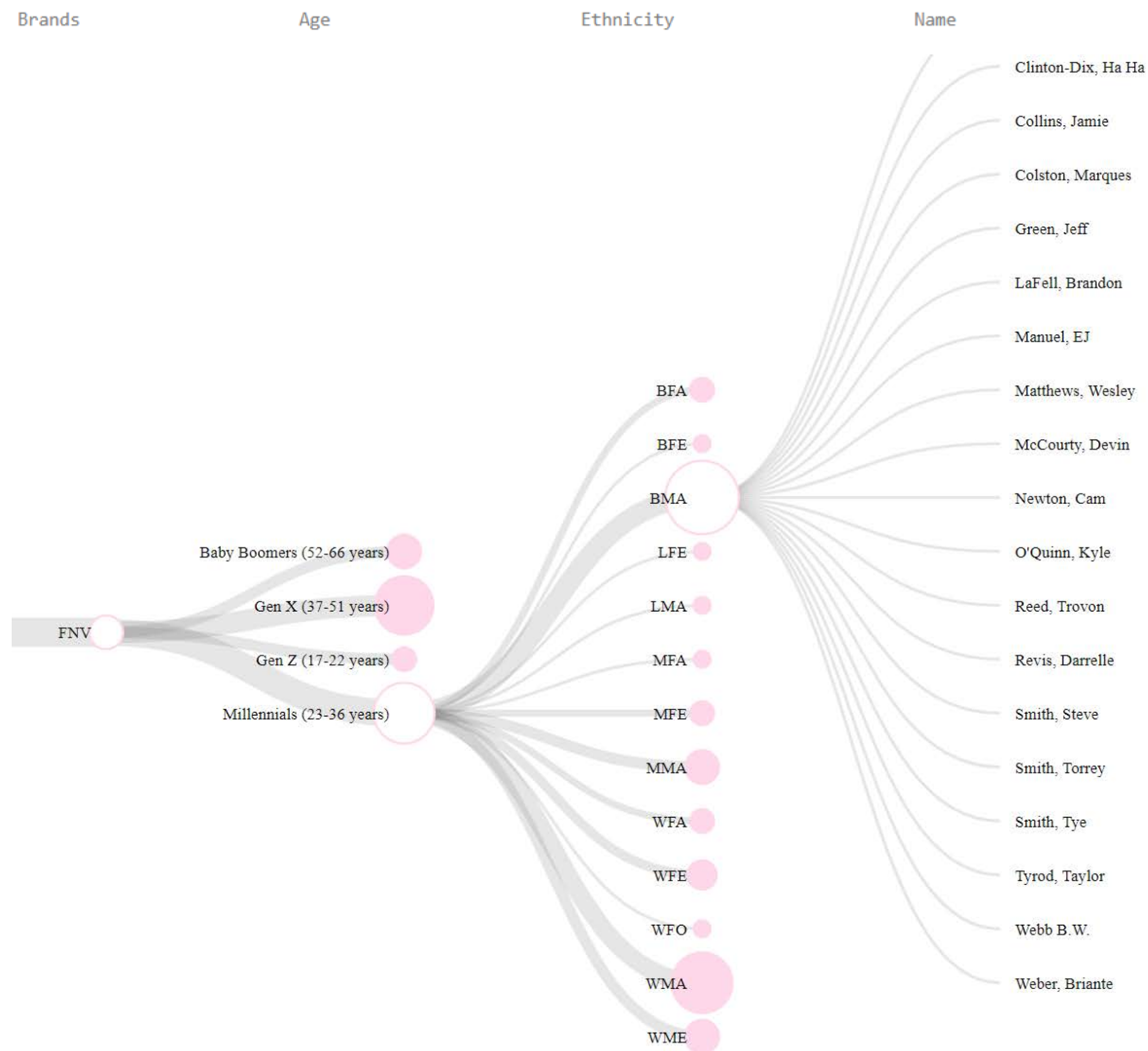
- 1 FNV only endorsement
- 2 FNV and 1 other brand endorsement
- 3-4 FNV and 2 to 3 other brands
- 5-8 FNV and 4 or more other brands

Healthy food and beverage product endorsements are at the green end and unhealthy food and beverage product endorsements are at the red end

Celebrity Categories

- ⚽ Football ⚽ Soccer ⚡ Hockey 🛼 Skating 🤼 Wrestling 🏑 Lacrosse
- 🏀 Basketball ⚾ Baseball 🏊 Swimming 🎾 Tennis 🏃 Running 🎬 Actor
- 🏛️ Politician 👑 Beauty Queen 🎵 Singer/Musician 🖥️ Internet Star

Figure 4.3 Screenshot for the interactive dendrogram emphasizes the endorsement relationships between the FNV celebrities and food or beverage categories or brands



Abbreviations: BFA: Black female athlete; BFE: Black female entertainer; BMA: Black male athlete; LFE: Latina female entertainer; LMA: Latino male athlete; MFA: Multi-racial male athlete; WFA: White female athlete; WFE: White female entertainer; WFO: White female other; WMA: White male athlete; WME: White male entertainer.

Notes: This screenshot is part of the dendrograms we created for Study 1 (US Celebrity Mapping) of this PhD dissertation, which was published in the *International Journal of Environment Research and Public Health*. The full chart and the meanings of the abbreviations can be found from reference No. 28 in this Chapter.

4.4 Discussion

This is the first study to evaluate the use of celebrity endorsement in the FNV Campaign.

The findings from this study identify opportunities that the PHA could pursue to improve the

capacity and effectiveness of the FNV Campaign using celebrity endorsement as part of many integrated marketing communications strategies.

The 82 celebrities who partnered with the FNV Campaign between 2015 and 2016 represented a diverse mix of professions, ages, sex, and races/ethnicities. They potentially playing an important role to raise awareness among targeted groups to purchase and consume fruits and vegetables. Over two thirds of the FNV celebrities were professional athletes, who may be persuasive among young children, adolescents and young parents due to their physical attractiveness and fitness.^{26,27,40} Our study suggested that it could be beneficial if the PHA partnered with more entertainers, because young people also attracted to television and movie actors and musicians.⁴¹ More digital and social media influencers could be involved in the FNV Campaign in the future given emerging evidence that young people may trust social-media influencers than celebrities.⁴²⁻⁴⁴

Nielsen marketing research suggests that Generation Z teens and Millennials trust celebrities more than older generations.³⁶ Results showed that a majority of the FNV celebrities were aged 21 to 34 years in 2015, which suggested that the PHA had considered age matching when choosing celebrities to target Millennial moms. However, only five of the FNV celebrities were aged 15 to 20 years, which underrepresented the targeted Generation Z teens. A 2015 Pew Research Center report found that 92% of American Generation Z teens reported using social media daily including 24% who used social media constantly.⁴⁵ Fitness and nutrition are the top issues that teens research online, and about a third of American teens report that they have changed their eating, activity or lifestyle behaviors as a result of receiving online health information or using digital health tools.⁴⁶ Marketers offer advice to effectively reach Generation Z teens consumers, including use the right combination of social media platforms and find a

good match between a brand and a celebrity or influencer.⁴⁷ Therefore, the PHA may consider partnering with younger celebrities who are popular among teens (e.g., actress Rowan Blanchard, athlete Simone Biles, or YouTube stars Jennifer Ann and Lia Marie Johnson) to promote the FNV brand through diverse social media platforms to encourage buying and eating more fruits and vegetables to improve their diet quality.^{48,49}

This study showed that there were two times more male than female celebrities who partnered with the FNV Campaign. Consumers tend to trust celebrities of their same gender and female consumers are especially loyal to their female role models.⁵⁰⁻⁵² Therefore, the PHA could partner with more female celebrities when expanding the FNV Campaign to other states and nationwide.

Racial and ethnic congruence also play an important mediating role in the potential influence and effectiveness of celebrity endorsement.^{52,53} Our analysis showed that white and black celebrities dominated the FNV celebrity racial categories whereas multi-cultural, Latino and Asian-American celebrities were not well represented by the FNV Campaign. Cultural competence that “speaks the language” or represents the culture of the targeted groups in social marketing campaigns could enhance the effectiveness of dietary behavior changes.⁵⁴ The PHA has opportunities to partner with more Hispanic or Latino and Asian-American celebrities to effectively reach culturally diverse audiences, especially in large urban cities where the FNV Campaign has expanded, such as Los Angeles, San Francisco, Dallas, Chicago, and Miami, which have racially, ethnically, and culturally diverse populations.¹⁸

The study results demonstrated that three-quarters of the FNV celebrities endorsed only the FNV brand, which suggests that the PHA has partnered wisely with celebrities to cultivate a healthy image. Of the remaining 20 celebrities who endorsed both FNV and non-FNV brands,

79% (n=15) endorsed brands associated with one or more EDNP food and beverage products that did not align with the DGA 2015-2020 and USDA's Smart Snacks Standards. Celebrities associated with EDNP food and beverage products and sugary beverage or restaurant brands could send conflicting messages about healthy products and may mislead the target populations about choosing healthy products. In the middle of obesity crisis where more than 30% of children and youth are overweight and obese, and more than 70% of adults are overweight and obese, the previous and current celebrity endorsements for unhealthy food and beverage products has linked to obesity risk.⁵⁵⁻⁵⁷ Therefore, the PHA should establish selection criteria for celebrities who associated with only healthy lifestyle promotion to align with the RWJF's culture of health that aims to "provide everyone in the US a fair and just opportunity for health and well-being."⁵⁸

Future research is needed to Examine how the FNV Campaign target populations (Generation Z teens and Millennials moms) across various US geographic locations view the credibility (i.e., trust, attractiveness and expertise) of celebrities involved in the FNV Campaign, and congruence or "fit" between the celebrity and target groups, as well as between the celebrity and the FNV brand. Future research should also explore how targeted populations think about celebrities who serve as multiple endorsers for brands associated with both healthy and EDNP food and beverage products. Moreover, future research should analyze the existing policy landscape to inform smarter policies and actions that can be taken by different stakeholders (i.e., government, private-sector actors, and non-governmental organizations) to leverage celebrity marketing to promote only brands associated with healthy food and beverage product profiles and that support healthy food environments.

A strength of this study was that the data analyzed were based on current FNV Campaign celebrities. Limitations were that there are no publicly available celebrity endorsement databases to verify endorsement contracts including payment or duration; therefore, this study may have over- or underestimated non-FNV food and beverage products or brands endorsed by the FNV Campaign celebrities.

4.5 Conclusions

As part of a more comprehensive FNV Campaign evaluation, this study provides descriptive evidence of 82 celebrities involved in this campaign. The FNV Campaign celebrities represented a diverse demographic profile and matched with the campaign's Millennial target population. However, the PHA could partner with more entertainment, female, Generation Z, Hispanic and Asian celebrities who represent culturally, ethnically and racially diverse target populations. The PHA should also be more selective in partnering with celebrities who only endorse healthy food and beverage products.

Acknowledgments

We are grateful to Juan Quirarte at QDesign for creating the figures, and we received permission from the person named.

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**Chapter 5. Study 3. A Q Methodology Study of Millennials' Views about
Celebrity Endorsement of Branded Food and Beverage Products and Branded
Marketing Campaigns in the United States**

Abstract

More than one-third of American Millennial adults are obese, and a significant amount of their household budget is spent on purchasing energy-dense and nutrient-poor food and beverage products. Consumers' brand awareness and purchasing behaviors are influenced by celebrity credibility measured by trustworthiness, expertise and attractiveness; and celebrity “fit” between products, brands, and consumers' self-image. This empirical study used Q methodology to explore the shared and distinct viewpoints of demographically diverse Millennial adults about perceived influence of celebrity endorsement of food and beverage products in the United States (US). Millennials (n=40) sorted images (n=48) of US celebrities who associated with food and beverage product and brand endorsements on a 9-point scale from “most trusted” to “most distrusted.” Participants also completed a 9-item questionnaire to interpret their views about celebrity credibility, “fit” and multiple endorsements. Results revealed three distinct viewpoints including: (1) healthy lifestyle champions who trusted celebrities associated with healthy products or campaigns; (2) female role-model admirers who trusted female celebrities associated with positive social impacts; and (3) African-American celebrity fans who trusted African-American celebrities who endorsed any brand or products. Analysis of post Q-sort questionnaires identified the potential influence of celebrity endorsement for unhealthy products on Millennials' dietary behaviors. Businesses and organizations should carefully select credible celebrities trusted by Millennials to encourage healthy food and beverage products associated with a healthy diet. Government policies are needed to restrict celebrities from endorsing food and beverage products that negatively impact young people's health.

5.1 Introduction

The Pew Research Center projected that Millennials (born between 1981 and 1994) was America's largest generation in 2019, representing over one third (35%) of the United States (US) workforce.^{1,2} The National Health and Nutrition Examination Survey 2015-2016 indicated that more than 35.7% Millennials were obese, and the obesity rate for this population increased significantly between 2011-2012 and 2015-2016.³ Millennials represent US\$1.3 trillion dollars of spending influence in the US marketplace.⁴ Compare to other generations, American Millennials spent the highest proportion of their household budget on energy-dense and nutrient-poor (EDNP) food and beverage products such as prepared foods, sugar, sweets and pasta.⁵ Evidence suggests that food and beverage marketing practices influence young people's dietary behaviors, which increases their risks of overweight, obesity and diet-related non-communicable diseases.⁶⁻¹⁰

Celebrity endorsement is a marketing strategy defined as a public figure who uses his/her public recognition to promote a specific brand, product, or service through advertising or marketing communications.¹¹⁻¹³ Marketing research describes various theoretical models or conceptual frameworks to explain the influence of celebrity endorsement on people's purchase decisions and behaviors. Ohanian's (1990)¹⁴ Source Credibility Model suggested that celebrities' *credibility* (represented by *trustworthiness*, *attractiveness* and *expertise*) are important factors that effectively influence consumers' attitudes, preferences and behaviors. Kamins's (1990) Match-up Hypothesis¹⁵ suggested that celebrity endorsements are more effective when there is a good "fit" or congruence between endorsers and products or brands. Choi and Rifon (2012)¹⁶ extended the Match-up Hypothesis and proposed that a good "fit" or congruence between

endorsers and consumers' ideal self-image also influences consumers' brand awareness and consumption behaviors.

Public health experts suggest that celebrity endorsement is a type of integrated marketing communications used by food, beverage, restaurant and entertainment industries, through different media channels, platforms and marketing settings, to influence young people's diet-related cognitive, behavioral and health outcomes.¹⁷⁻¹⁹ Descriptive analysis conducted in the US found that celebrities including professional athletes, entertainers, politicians, chefs, etc. have been primarily associated with EDNP food and beverage product endorsements in the US.^{20,21} Experimental studies conducted in Australia and United Kingdom concluded that both children and their parents were more likely to consume EDNP food and beverage products when advertisements featured celebrities.²²⁻²⁴

Millennials, aged 26-39 in 2020, are young adults who are believed to have their own decision-making mechanisms and who are not quite influenced by celebrity endorsement.²⁵ However, studies showed that the human brain is not fully developed by age 25 years,²⁶ and even adults aged 35-45 years, were more inclined to purchase EDNP food and beverage products that endorsed by celebrities.²⁴ Additionally, Nielsen 2015 marketing research suggested that Millennials trust celebrities more than older generations such as Generations Y and X, and Baby Boomers.²⁷ Furthermore, as main marketing targets of energy drinks (e.g., Red Bull and Monster), US Millennials' energy drink consumption was increased from 55% to 61% between 2014 and 2015.²⁸ Several branded energy drinks in the US have been endorsed by celebrities who are popular among Millennials such as rappers Snoop Dogg and Juicy J.²⁹

Therefore, an integrative understanding of Millennials' viewpoints regarding celebrities and their endorsements for food and beverage products is important to understand a potential

influencer for this population's dietary behaviors. Most of the published research on celebrity endorsement of food and beverage products have focused on the health impacts of children and adolescents under age 18 years.^{20,21,30} No published study has yet assessed Millennials' viewpoints toward celebrity endorsements of food and beverage products, or empirically examined the perceived influence of this marketing strategy on Millennials' brand awareness and purchase intention based on the celebrity endorsement models or frameworks. Besides, many celebrities have endorsed more than one food and beverage products or brands with varied nutrition profiles that may confuse consumers.³¹ No published study has explored Millennials' opinions and beliefs about multiple food and beverage endorsements. Additionally, the effect of celebrity endorsement on healthy foods promotion was less robust than those for EDNP foods.³² No published study has recommended on how to make this marketing strategy more effective in promoting healthy dietary behaviors. This study addressed these research gaps.

This study aims to understand the shared and distinct views of demographically diverse Millennials regarding credibility of celebrities involved in endorsements for food and beverage products and brands, their views about the celebrity "fit" and their opinions about celebrities involved in multiple food and beverage product and brand endorsements. The results of this study can be used to imply effective commercial marketing strategies, social marketing campaigns and public health policies to promote healthy food and beverage consumption in young Americans.

5.2 Materials and Methods

Q methodology was utilized to investigate the following three research questions:

RQ1: What are the shared and distinct views of demographically diverse Millennials regarding credibility of celebrities who have been involved in endorsing branded food and beverage products and branded campaigns based on the Source Credibility Model?

RQ2: How do Millennials evaluate the influential features of celebrities on consumer purchasing behaviors based on the Source Credibility Model and the Match-up Hypothesis in the context of food and beverage endorsements?

RQ3: What do Millennials think about celebrities who have been involved in multiple food and beverage endorsements?

Background on Q methodology

Q methodology was developed by William Stephenson in 1935 as an exploratory research approach using abductive reasoning to systematically examine the shared and distinct views and perspectives that reflect people's beliefs and values about a topic of interest.³³⁻³⁶ R methodology identifies *inter-individual* differences among people based on their characteristics (i.e., sex, ethnicity or health risks). By contrast, Q methodology uses factor analysis to identify *intra-individual* differences based on how people sort statements or images related to a specific topic.^{33,37} The factor analysis for Q methodology focuses on revealing correlations between peoples' subjective opinions instead of the prevalence of features across objective traits.³⁸ This difference in methodological approaches allows for a smaller sample of non-randomized participants to conduct a Q study.³⁹

Participants are asked to sort pre-selected statements or images related to a given topic based on their own perspectives along a normal distribution.³⁷ The Q-sorting is followed by an interview or questionnaire to further understand participants' sorting process and unique viewpoints.³⁷ Q methodology is a mixed-methods research approach that combines a quantitative

(i.e., factor analysis) and qualitative (i.e., inductive interpretation of factors and questionnaires) analyses.^{33-35,37} Q methodology has been evolved for several decades, and has been applied to research topics across diverse disciplines including social science, political science and health science.³⁸ Q methodology has been used to study other public health topics, such as health nutrition intervention,³⁵ childhood obesity prevention,⁴⁰ and healthy food environments promotion.³⁴

Research procedure

This Q methodology study involves eight steps: (1) formulate research questions; (2) construct a concourse; (3) select the Q sample; (4) select the P set (5) identify the theoretical framework or model to guide the activities; (6) Q-sort and post Q-sort activities; (7) analyze the data using factor analysis and inductive interpretation; and (8) summarize the results.^{35,41}

Constructing the concourse

The process of developing a concourse requires researchers to collect all possible statements or images related to the research topic.³³ The concourse of this study was living human celebrities who are currently or have been associated with one or more endorsements of branded food, beverage and restaurant products or branded health promotion and marketing campaigns in the US. The information was collected from a comprehensive review of evidence sources including electronic scientific databases, gray literature, web searches and multimedia that reported elsewhere.²⁹

Selecting the Q sample

Q-sample is a set of statements, images or other information pieces extracted from the concourse that broadly represent the different dimensions of the research, typically with a set number of 18–140.³⁶ The Q-sample of 48 that was applied by a few Q methodology studies is

adequate to represent the concourse of the current study.^{34,42,43} The chosen celebrities represented a rough balance of demographic characteristics (e.g., profession, age, sex, race/ethnicity) and their endorsed food and beverage categories, including sugar-sweetened beverages (more than 60 calories per 12 fluid ounces), low-calorie beverages (60 or less calories per 12 fluid ounces), no-calorie beverages (0 calorie per 12 fluid ounces), water, breakfast cereals, candies/snacks, fruits and vegetables, dairy products and quick-service restaurants (QSR) meals. Pictures that describe the endorsement relationships for the selected celebrities were collected from a Google Image search. A total of 48 color images of celebrities, associated with unique food and beverage products and brand endorsements, were printed on uniform 1.5×1.5 square inch cardstocks, accompanied by a random number on each card (Appendix B). The copyright and trademarked images of celebrities and company brands contained in this study are only for educational purposes. Their use met the U.S “nominative fair use” that protects free speech over trademark infringement.⁴⁴ A fair use evaluation was completed and attached to the manuscript (Appendix C).

Selecting the P-set

The P-set refers to the group of participants who sort cards that have statements or images in a Q methodology study.³⁹ The P-set selection recruits a group of participants who represent different viewpoints relevant to the research question, and focuses on representativeness rather than randomization.³⁹ Brown (1980)³⁷ suggested that a P set of 20–50 is a good number for most studies, and the P-set for this study was 40. This study that involved human subjects was approved by the Virginia Tech Institutional Review Board in March 2017 (IRB No.17-250) (Appendix D). A convenience sample of Millennials comprised of students, staff and faculty at Virginia Tech were recruited based on a balanced sex and race/ethnicity

distribution (Table 5.1) through posted flyers (Appendix E), emails (Appendix F), and word of mouth Virginia Tech Blacksburg campus between March and May 2017. A written consent form (Appendix G) from each participant was obtained, and the study activities were completed by appointments in a pre-reserved meeting rooms between the March and May 2017. Study identification numbers were given to protect participants' confidentiality.

Table 5.1 Participants' demographic information

	White American	African American	Latin American	Asian American
Male	5 (25%)	5 (25%)	5 (25%)	5 (25%)
Female	5 (25%)	5 (25%)	5 (25%)	5 (25%)

Identifying the theoretical framework or model to guide the activities

The Q-sort activity was guided by the Source Credibility Model, and the post Q-sort activities were guided by Source Credibility Model plus the Match-up Hypothesis.¹⁴⁻¹⁶ According to the Source Credibility Model,¹⁴ *credibility* is a three-dimensional measurement that includes celebrities' *trustworthiness*, *expertise* and *attractiveness*. A meta-analysis of experimental studies that tested the theories, models or hypotheses about the influence of celebrity endorsement between 1970 and 2008 found that celebrities' *trustworthiness* is the most positive predictive construct that influences consumers' purchase decisions.⁴⁵ Moreover, the endorsers' *trustworthiness* was even effective to encourage the purchase behaviors of low-involvement consumers.⁴⁶ Therefore, considering the dominating role of *trustworthiness* of the Source Credibility Model, and to avoid the confusion of participants to sort the cards based on three measurements, the researchers of this study decided to only use the celebrities' *trustworthiness* to guide the Q-sort activity. However, the other two constructs of the Source Credibility Model, *expertise* and *attractiveness*, were also explored in the post Q-sort activities from a different perspective.

Conducting Q-sort and post Q-sort activities

Prior to official participation the study was pilot tested. The Q-sort activity and post Q-sort questionnaire were pilot tested with individuals who volunteered to participate (n=7), which allowed the opportunity to clarify and confirm the questions and directions. The data from the pilot testing is not included in the final data analysis.

In the official study, each participant was given a celebrity card-sorting instruction (Appendix H), which first asked to independently sort the celebrity images into three piles: (1) celebrities they trust; (2) celebrities they distrust; and (3) celebrities they do not recognize or have mixed feelings about. The participants then were asked to place the images of celebrities they trust most, starting with the +4 column, until all cards from that pile are placed on the card-sorting sheet (Figure 5.1). They were then do the same with the pile of celebrity cards that they distrust most. The “most to most” arrangement was applied to represent the general distribution of human subjectivities that follows a quasi-normal distribution.⁴⁷ Once the participants were satisfied with their selections, they were asked to record their responses on a card scoresheet. In the post Q-sort activity, participants were asked to complete a 9-item questionnaire (Appendix I). This questionnaire aimed to address participants’ thoughts during the Q-sort activities and their views about the influence of the three constructs of the Source Credibility Model,¹⁴ and the two aspects of the Match-up Hypothesis,^{15,16} on their dietary behaviors, and their opinions about multiple food and beverage endorsements. Upon completing all the activities, each participant was rewarded a \$10 US dollar Amazon gift card to compensate their time for participating this study (Appendix J).

Figure 5.1 Card-sorting score sheet for Q-sort activities

Exploring Your Views about Celebrity Marketing
Activity 2: Card-Sorting Score Sheet

← Most Distrusted Celebrity					Most Trusted Celebrity →			
-4	-3	-2	-1	0	+1	+2	+3	+4
Sort 3 in this column								Sort 3 in this column
	Sort 4 in this column						Sort 4 in this column	
		Sort 6 in this column				Sort 6 in this column		
			Sort 7 in this column		Sort 7 in this column			
				Sort 8 in this column				

Study ID: _____ DATE: _____

Analyzing the data using factor analysis and inductive interpretation

A total of 40 Q-sorts, each containing a sorting pattern of 48 celebrity images, were entered into PQMethod statistical software (version 2.35 for Windows, November 2014, General Public License, Munich, Germany).⁴⁸ A centroid analysis was conducted to identify highly correlated Q-sorts of participants based on the correlation matrix from the factor analysis generated by the software. Seven centroid factors were extracted first, as recommended by Brown (1993)³³ and Watts and Stenner (2012).³⁸ The factor flag function in the software was applied, and several factor solutions were evaluated. A significant factor loading at the $p < 0.01$ level was calculated and flagged by the software. Within the seven extracted factors, factor 7 did not have any significant loading, and both factor 5 and 6 have only one significant loading.

Therefore, factors 5-7 were not considered for further analysis. A varimax rotation was performed on the factors two, three and four to examine the best factor solution, based on the factor loadings and the variance explanation.

After selecting the factor solution, participants' shared viewpoints were interpreted based on factor scores, which are Z scores that standardize the distribution across the 48 celebrity images. The top five most trusted celebrity images (positive Z scores) and most distrusted celebrity images (negative Z scores) were used to explain the shared patterns for participants who loaded on each unique factor or shared viewpoint based on the participants' "collective view" about celebrity *trustworthiness*. The number of factor loadings on each viewpoint was calculated and inductive analysis was used to describe each unique factor. Finally, NVivo software (version 11.0, QSR International, Melbourne, Australia)⁴⁹ was used to analyze the responses of the 40 questionnaires collected during the post Q-sort activity. The emergent themes were coded and categorized under different nodes in the software and were summarized by the investigators.

5.3 Results

Summary of three distinct viewpoints reveled by the Q-sort activity

After reviewing the data for the 2, 3, and 4-rotated factor solutions, the 3-factor solution had the best maximal representation of significant loadings and the variance across all perspectives (35 out of 40 Q-sorts loaded and this factor explained 40% of the variance), which is considered to be an acceptable solution for Q methodology study (Table 5.2).³⁸ The five participants who were not loaded on any factors were excluded from the further analysis. Results produced three distinct viewpoints that emphasized Millennials' different views about the *trustworthiness* of the celebrities who have been involved in food and beverage product or brand

Table 5.2 Rotated factor loadings of the 3-factor solution

Participant profile			Factor loadings		
No.	Sex	Race/ethnicity	Factor 1	Factor 2	Factor 3
1	Male	White	0.6451	0.0625	0.0181
2	Female	Asian	0.5119	-0.1589	0.0728
3	Female	White	0.6828	0.1319	-0.0421
4	Female	Black	-0.4316	-0.1016	0.2590
5	Female	Hispanic	0.4181	0.6062	0.1542
6	Female	White	-0.1882	0.5185	0.3979
7	Female	Asian	0.4150	0.3941	0.3414
8	Female	White	0.3271	0.3541	0.1683
9	male	Asian	-0.2521	0.1215	-0.1941
10	Male	White	0.5742	0.1738	-0.0889
11	Female	White	0.3199	-0.0869	0.3513
12	Male	White	0.6718	-0.1510	-0.0959
13	Female	Black	0.6445	0.0942	0.1988
14	Male	Black	0.2534	0.2129	0.2536
15	Male	Hispanic	0.0439	0.1398	0.4981
16	Male	Asian	0.5131	0.0479	0.0477
17	Male	Black	-0.0280	0.0805	0.6304
18	Female	Black	0.4070	0.5712	0.1087
19	Female	Hispanic	0.4946	0.3252	0.1761
20	Female	Black	0.1006	0.2417	0.7115
21	Male	White	-0.2223	0.6392	-0.1850
22	Male	Hispanic	0.5013	-0.0399	0.3199
23	Female	Asian	0.6063	0.3654	0.2631
24	Male	Hispanic	0.3892	0.3564	-0.0195
25	Male	Hispanic	-0.0320	0.4492	0.0609
26	Female	Black	-0.0213	0.0752	0.7532
27	Female	White	-0.2713	0.5242	-0.2229
28	Female	Asian	0.3634	0.7036	0.0650
29	Male	Asian	-0.0735	0.5295	0.2485
30	Male	Black	0.0446	-0.0235	0.7884
31	Male	Asian	0.0149	0.1247	0.3971
32	Male	White	0.2978	0.2717	0.3355
33	Male	Black	0.7274	0.0384	-0.0012
34	Female	Asian	0.3634	0.5296	0.3534
35	Male	Black	0.3275	0.1936	0.5105
36	Male	Asian	0.7585	-0.1043	0.1543
37	Male	Hispanic	-0.0816	0.4616	0.3226
38	Female	Hispanic	0.5830	0.2087	0.3663
39	Female	Hispanic	0.0581	0.5335	0.2169
40	Female	Hispanic	0.4298	0.6337	0.1209
Number of loaded Q-sorts			15	12	8
% variance explained			17	12	11

In bold, Q-sorts that are significantly loaded on these factors

endorsements in the US. The top five most trusted celebrity images (positive Z scores) and most distrusted celebrity images (negative Z scores) for the three shared patterns were represented as Figures 5.2-5.4.

Figure 5.2 Five most trusted (top) and most untrusted (bottom) celebrity images (with random numbers for the Q-sort activity) according to viewpoint 1 participants



Viewpoint 1: healthy-lifestyle champions (n=15)

For viewpoint 1 participants, three of the five most trusted celebrities were associated with US health promotion and marketing campaigns (Figure 5.2). Former First Lady, author, and advocate Michelle Obama and the Partnership for a Healthier America (PHA) initiated the *Drink Up Campaign* in 2013 to encourage people to replace sugary beverages with water;⁵⁰ the professional football athlete Cam Newton of the North Carolina Panthers National Football League team endorsed the PHA's *Fruits & Veggies (FNV) Campaign* launched in 2016 to encourage Americans to consume more fruits and vegetables;³¹ and the professional football quarterback Peyton Manning was associated with the *Got Milk? Campaign*, which ran from 1995 to 2015, to encourage Americans to drink more fluid milk.⁵¹ The remaining two most trusted

celebrities were the basketball athlete, Stephen Curry who endorsed the non-dairy Muscle Milk beverage, and the tennis athlete Serena Williams who endorsed the sports drink Gatorade. Due to the function of aiding muscle gain or replenishing fluids lost during sports activities, both endorsed products are often perceived to be healthy beverages by young people,⁵² even though others do not consider them to support a healthy diet.²¹

All the five most distrusted celebrities according to viewpoint 1 participants were associated with EDNP food and beverage products (Figure 5.2). Soccer star David Beckham and the music rapper Pitbull (Armando Christian Pérez) endorsed soda products including Pepsi and Dr Pepper; the professional basketball athlete Shanquille O' Neal endorsed Mondelez International's Oreo cookies; and super models Salma Hayek and Heidi Klum endorsed the QSR brands Burger King and Carl's Jr., respectively. All these endorsed products have been associated with EDNP foods or beverages and linked with increased obesity risk.⁵³⁻⁵⁵

Most participants (n=15) loaded on viewpoint 1. Both their most trusted and most distrusted celebrities represented a diverse selection of celebrities of different sex, age, and race/ethnicity categories. Similarly, these participants' sex and race/ethnicity profiles were close to an even distribution (Table 5.2). Four professional athletes and one politician were most trusted by Viewpoint 1, and three athletes and 2 entertainers were most distrusted by these participants. Their responses to the post Q-sort questionnaire revealed that the *healthy-lifestyle champions* admired celebrities who upheld healthy lifestyles (*"They were all athletes and healthy foods and drinks"* [participant 12, male, White]; *"Based out of their healthy lifestyle"* [participant 38, female, Latina]); believed in celebrities who bring positive influence on society (*"I see them as having positive influence on others...their trust on choice of product was higher due to it"* [participant 16, male, Asian]; *"Affiliation with health and/or community involvement"*

[participant 13, female, Black]); and trusted celebrities whose images were a good “fit” for the endorsed products (*“They fit exactly the type of food they are promoting in the picture, the job they do related to what food we as consumers should eat to be them”* [participant 2, female, Asian]; *“The athletes I thought were well suited to endorse sports-related and healthy products because their health is vital to their success in their sports”* [participant 33, male, Black]).

Viewpoint 1 participants distrusted celebrities who endorsed unhealthy food and beverage products (*“I measured by unhealthy food/product for what I distrusted”* [participant 38, female, Latina]; *“Lot of singers because I know a lot of them endorse sugar beverages”* [participant 23, female, Asian]); distrusted celebrities who they believed did not consume the endorsed products but represented them just for the money (*“I just had a hard time seeing those celebrities eating those foods in their own time...if they don’t eat those food why can I trust their judgement on them”* [participant 19, female, Latina]; *“Models don’t eat fast food...it bothered me that they clearly don’t believe in the products...so, I saw it as financial reason for endorsing the product”* [participant 16, male, Asian]); and doubted celebrities who use their attractiveness or sexy appearance to endorse unhealthy food and beverage products (*“I don’t picture those celebrities using/eating those foods very often so I thought they were chose because they are recognizable or good-looking rather than a good promoter of the product”* [participant 33, male, Black]; *“I realize that the idea that sex sells for fast food/quick service that use more sexual female...perhaps that doesn’t draw me to them”* [participant 2, female, Asian]).

Figure 5.3 Five most trusted (top) and most untrusted (bottom) celebrity images (with random numbers for the Q-sort activity) according to viewpoint 2 participants



Viewpoint 2: female role-model admirers (n=12)

All the five most trusted celebrities identified by viewpoint 2 participants were female celebrities, including: Michelle Obama, actor Jennifer Aniston, gymnast Gabrielle Douglas, singer Carrie Underwood, and the Olympic ice skater Michelle Kwan (Figure 5.3). These celebrities were associated with food and beverage products with relatively healthy nutrition profiles, including the *Drink Up* and *Got Milk?* campaigns, no-calorie beverages (i.e., Vitaminwater ZERO and Smart Water); and the juice product, Capri Sun.

All the five most distrusted celebrities according to viewpoint 2 participants were male including the football athlete Cam Newton, Eli Manning and Victor Cruz; the baseball player, Joe Mauer, and basketball athlete LeBron James (Figure 5.3). The nutrition profiles of food and beverage products associated with these celebrities were not consistent because they included both fruits and vegetables and EDNP products (i.e., Duncan Donut, Kemp's ice cream, and Sprite sugary beverage).

12 participants loaded on viewpoint 2 with a female majority (8 out of 12). Viewpoint 2 participants' most trusted and most distrusted celebrities represented a mix of race/ethnicity and

product categories they endorsed. Similarly, the race/ethnicity profiles of these participants were close to an even distribution (Table 5.2). Two professional athletes, two entertainers and one politician were most trusted by Viewpoint 1 participants, and all their distrusted celebrities were athletes. Their responses to the post Q-sort questionnaire displayed that this group of Millennials appeared to trust strong women who were experts or accomplished within their professionals (*“Because each seem to be an expert within their respective fields, especially Michelle Obama”* [participant 21, male, White]; *“Because they are very accomplished in their fields and they are not involved in every project out there”* [participant 37, male, Latino]); believed celebrities who are role models reflected their self-image (*“I love the example set by Michelle Obama... she is a role model for me and I aspire to be like her, and Gabby Douglas is a bright strong young lady”* [participant 18, female, Black], *“I trusted celebrities that I had the most in common with”* [participant 28, female, Asian]); respected celebrities who are educated and honest (*“For this category I chose people who I think are honest, involved in philanthropy, humble and kindhearted”* [participant 25, male, Latino], *“I put Michelle Obama first because she is an educated lady who knows what she’s talking about when she endorses certain foods like veggies and fruits...the other two are celebrities I know and I consider pretty honest based on they appear on television or their social media”* [participant 40, female, Latina]); and also trusted celebrities who prioritized a healthy life style (*“Michelle Obama is really the face of eating healthy”* [participant 6, female, White], *“I trust celebrities who I knew prioritized a healthy life style”* [participant 28, female, Asian]).

Based on the post Q-sort questionnaires, viewpoint 2 participants distrust celebrities who did not have good reputation (*“Eli Manning because I don’t value him as much as his brother Peyton and I think he got in trouble for defecting footballs a few years back”* [participant 18,

female, Black]; *“They create poor images for young girls”* [participant 27, female, White]); disbelieved unfamiliar celebrities (*“I had no idea who most were and what they ever were famous for”* [participant 6, female, White], *“I don’t know them and what profession they might be in and how trustworthy people of that profession have seen”* [participant 34, female, Asian]); and disrespected celebrities involved in too many advertisements (*“I sorted most distrusted because I see Shaq on every commercial nowadays there is no way he truly trusts every brand he endorses...Lebron James is very cocky and he gives me a vibe trust he only markets whomever pays the most”* [participant 18, female, Black], *“They look mean and also I know they are famous athletes, so I know they could be in it for the money”* [Participant 39, female, Latina]).

Figure 5.4 Five most trusted (top) and most untrusted (bottom) celebrity images (with random numbers for the Q-sort activity) according to viewpoint 3 participants



Viewpoint 3: African-American celebrity fans (n=8)

All five most trusted celebrities identified by participants who loaded on viewpoint 3 were African Americans who included: Michelle Obama, professional basketball athletes LeBron James and Shaquille O’Neal, entertainer Beyoncé Knowles, and professional football player,

Colin Kaepernick, who is multi-racial (Figure 5.4). The food and beverage products associated with these celebrities were not consistent regarding their nutrition profiles and included water, milk and EDNP products (i.e., Oreo cookies, Sprite sugary beverage and McDonald's Might Wings).

All the five most distrusted celebrities according to viewpoint 3 participants were White, including actor Dylan Sprouse, basketball player Hunter Pence, tennis athlete Maria Sharapova, and the Olympic speed skating competitor, Apolo Ohno, who is multi-racial of White and Asian (Figure 5.4). The food and beverage products associated with these celebrities did not have consistent nutrition profiles and included fruits and vegetables, milk, and EDNP products (i.e., Subway and Sugarpova candy).

The smallest number of participants (n=8) loaded on viewpoint 3. Both their most trusted and most distrusted celebrities represented a good mix of sex and food and beverage categories. Five out of eight participants were African Americans who loaded on factor 3 and were therefore called the *African-American celebrity fans* (Table 5.2). Three professional athletes, one entertainer and one politician were most trusted by Viewpoint 1 participants, and four athletes and one entertainer were most distrusted by these participants. Factor 3 responses to the post Q-sort questionnaires revealed that this group of Millennials trusted African American celebrities (*"Each of these celebrities are black and I can relate to them more...also, each one of them has stood out from the crowd and made unpopular decisions based on what they believe"* [participant 20, female, Black]; *"Those put under most trusted were Gabrielle Union, Robyn Rihanna Fenty, Michelle Obama...they are all crushes of mine"* [participant 17, male, Black]; and believed celebrities who are active in the public (*"Those celebrities are almost always in the*

public eye and from that a lot is known about their character” [participant 35, male, Black];
“This pile are the celebrities I follow on a weekly basis” [participant 31, male, Asian]).

Viewpoint 3 participants distrusted unfamiliar celebrities (*“Most distrusted pile was celebrities I did not know or who didn’t look familiar”* [participant 26, female, Black]; *“I sorted by their image on television...I don’t particularly know much about them other than when I see them on tv, the pictures have them advertising something”* [participant 31, male, Asian]); disliked certain celebrities because of their personality (*“Sharapova-huge fan of her before, now I dislike because used prohibited substances in tennis”* [participant 15, male, Latino]; *“Just comes off as overly callous to me”* [participant 20, female, Black]); and had strong opinions about those celebrities they don’t trust (*I have never liked two of them under the -4 column”* [participant 17, male, Black]; *“The others two are just less than important and really make me dislike a product if they are connected to it”* [participant 11, female, White]).

Participants’ other viewpoints revealed by the post Q-sort questionnaire

Other During the post Q-sort questionnaires, participants were asked to identify celebrities who they had strong or weak connections with. NVivo 11.0 coding for the post Q-sort questionnaire answers indicated that Michelle Obama was emotionally connected with 19 participants, followed by Beyoncé Knowles (n=6) and Sofia Vergara (n=6). They were described as celebrities who promote healthy lifestyles, who were strong, humble and successful women, and who were well matched with the participants’ ideal self-images. Participants (n=16) expressed that they had weak emotional connections with celebrities who they were not familiar with. There were no apparent associations between participants’ emotional connections with celebrities among the three different viewpoints. However, only factor 1 participants expressed

their positive or negative emotional connections with celebrities due to the healthiness of the endorsed food and beverage products.

Regarding credibility of the selected celebrities based on the Source-Credibility Model, the 35 participants who loaded on the three factors identified celebrity *trustworthiness* as the most important component. *Trustworthiness* was coded 26 out of 44 times, followed by *expertise* (n=14 times), and *attractiveness* (n=4 times). When the responses were stratified by different factors, *expertise* was considered to be the most important component of celebrity credibility among the *healthy-lifestyle champions* (9 times for *expertise*, 8 times for *trustworthiness* and 3 times for *attractiveness*). For the *female role-model admirers*, *trustworthiness* was the most important component of celebrity credibility (11 times for *trustworthiness*, 4 times for *expertise* and 0 time for *attractiveness*). The *African-American celebrity fans* also identified *trustworthiness* as the most important feature of celebrity credibility (7 times for *trustworthiness*, 2 times for *expertise* and 1 time for *attractiveness*).

The post Q-sort questions also revealed that most participants (21 out of 35) considered the “fit” between celebrities and the endorsed food and beverage products was important. However, no obvious differences were observed among the three factors in this regard. Furthermore, no participant mentioned the “fit” between celebrities and participants’ self-images as an influential factor for their purchase decisions

The post Q-sort Questionnaire results also demonstrated that more than a third of participants (14 out of 35) believed that celebrities should not endorse multiple products. Less than a third (10 out of 35) of participants accepted multi-endorsements only if the endorsed products were consistent in nutrition profiles. The remaining 11 participants were not concerned about multiple endorsements. When the responses were stratified by different factors, most

viewpoint 1 participants only supported multiple endorsements with consistent nutrition profiles, most viewpoint 2 participants opposed multiple endorsements, and most viewpoint 3 participants accepted the multiple endorsements unconditionally.

5.4 Discussion

Similarities and differences among the three distinct viewpoints

This identified shared and unique viewpoints of Millennials based on their expressed opinions, beliefs and values.

A few similarities were shared by all three viewpoints. Former First Lady Michelle Obama was perceived as a positive female role model who represented and promoted a healthy lifestyle, and she was most trusted by participants across all three viewpoints. Second, participants of all viewpoints trusted celebrities who were perceived to have a positive social impact.

Viewpoint 1 participants trusted and were influenced by celebrities who were associated with healthy nutrient-profile products and were not concerned about celebrities' demographic characteristics, which suggested that these group of Millennials may think more rationally when making purchase decisions for products endorsed by celebrities. Participants associated with viewpoints 2 and 3 trusted and were influenced by female celebrities or believed in African American celebrities who reflected the participants' own identities, respectively, which is a less rational and more emotional way of thinking.

The variation and consensus regarding the *trustworthiness* of the celebrities during the Q-sort activities demonstrated that some Millennials who participated in this Q methodology study attempted to live positive and healthier lifestyles. But the Millennials who loaded on factors 2 and 3 may be easily persuaded by their trusted celebrities without considering the nutrition

profiles of the endorsed food and beverage products. Moreover, factor 1 Millennials could also mistakenly perceive sports drinks, juice and energy drinks, such as Gatorade, Capri Sun and Muscle Milk, as healthy beverages. Those beverages could be a source of fuel for athletes, but the excessive added sugar and the high amount of calories contained in such products may contribute to unhealthy weight gain for young people.⁵⁶

Marketing research suggests that one celebrity associated with multiple endorsements of competing brands may confuse consumers and reduce their trust in celebrities,^{57,58} which explained why most participants in this study did not support multiple endorsements. Factor 1 participants cared about the healthiness and consistence of nutrition profiles of the endorsed products involved in the multiple endorsements. Factor 2 participants focused on celebrities' honor, and they were very against the multiple endorsements. Factor 3 participants did not care whether their trusted celebrities involved in endorsing unhealthy food and beverage products. This is consistent with the previous studies that African Americans, especially African American Millennials, trust celebrities more than other races/ethnicities, particularly African American celebrities.⁵⁹⁻⁶¹ This is a concern since African Americans are more targeted by the marketing of EDNP products, and they overall have a higher obesity rate compared to other racial/ethnic groups in the US.^{3,62}

Theoretical contribution of this study

This study tested the Source Credibility Model and the Match-up Hypothesis.¹⁴⁻¹⁶ The findings from the post Q-sort questionnaires were consistent with the meta-analysis conducted by Amos et al. (2008)⁴⁵, which concluded that celebrities' *trustworthiness* was the most important component of the Source Credibility Model. The results also showed that the viewpoint 1 participants prioritized *expertise*, whereas viewpoint 2 and 3 participants prioritized

trustworthiness. None of the three unique viewpoints emphasized the *attractiveness* as being an important feature of the celebrities examined. Such results showed that consumers might interpret the three constructs of the Source Credibility Model in very different ways, which could help explain the discrepancies when testing this model in previous studies.

The post Q-sort questionnaire results did not support the “fit” between celebrities and participants’ self-images, which was inconsistent with the Q-sort activity. Such discrepancy might be caused by an unclear question on the post Q-sort questionnaire that was discovered by the researchers after collecting all the data. However, some Millennials’ trust in celebrities of their own sex and race/ethnicity characteristics during the Q-sort activities supported the “fit” between celebrities and participants’ ideal self-images to some extent. This might be considered as an additional contribution to the existing literature that tested this model.^{16,63}

Practice and policy implications

Celebrities in the US have been involved in endorsing EDNP products targeted at young people, including Millennials,^{20,21,64} but have also actively participated in national health promotion campaigns targeted specifically at Millennial moms (the *FNV* Campaign).⁶⁵ However, the celebrities’ involvements in those campaigns are often *pro bono* (donated time that is unpaid). Food and beverage companies, on the other hand, often pay generous amounts of money to secure celebrities as spokespersons for their corporate brands that could diminish the impact of the same celebrity’s involvement in *pro bono* endorsements.⁶⁵ Exploring which celebrities are trusted or distrusted by demographically diverse Millennials and why they do or do not trust these celebrities could help companies or organizations select celebrities who have more resonance with the target populations when commercially marketing healthy food and beverage products or initiating social marketing campaigns to promote healthy lifestyles.

The current governmental and industrial EDNP food and beverage marketing restrictions and regulations are primarily focused on children under 12 years old and adolescents up to 18 years old.^{66,67} Young adults including Millennials are reported to consume more EDNP food and beverage products than other age groups, but are not considered the target of obesity prevention or protected by any regulation for responsible food and beverage marketing.^{9,56} The mistaken beliefs that connect athletes with healthy food and beverage endorsements (viewpoint 1) require celebrities and social media influencers to follow the endorsement policies issued by the Federal Trade Commission to disclose the nutrition content of the food and beverage products and any endorsement relationships with the food and beverage companies, so as to let the audiences know the nature of the products and the endorsements.^{68,69} The blind trust in and influence by celebrities without considering the nutritional profiles of their endorsed food and beverage products (viewpoint 2 and 3 participants) calls for policies and regulations to restrict celebrities from endorsing food and beverage products that negatively impact young people's health.

Study strengths and limitations

A significant strength of this study is the rich data collected to explore Millennials' various viewpoints of celebrity endorsement of food and beverage products, and to understand the perceived influence of such endorsements on their dietary patterns and overall health. This is the first experimental study to use a mixed-methods approach to explain this multilayered, subjective topic by integrating the benefits of both quantitative and qualitative methods, which cannot be obtained by standard surveys. Furthermore, this study recruited an even mix of racial and ethnic male and female participants, which represents the Millennial population to a great extent.

The primary limitations of this study are that broad recruitment was not likely, as the participants were only recruited from one university. This limited the diversity of participants' educational backgrounds, which may influence the shared pattern of viewpoints toward celebrity endorsement. Second, the study results were interpreted based on the picture Q-sorts instead of the statement Q-sorts, which made the explanation of the results more subjective, as different researchers may have different interpretations of the celebrity images. Third, participants' views on the three components of the Source Credibility Model might be biased because the Q-sort activity was solely based on celebrities' *trustworthiness*, which might undermine the importance of the other two constructs of this model. Finally, one of the questions in the post Q-sort questionnaire (the question regarding a good "fit" between celebrities and consumers' self-image) was not defined clearly enough, which might have caused confusion in the participants and thus affect the accurateness of the results.

Future research is needed to recruit participants who represent different age groups and locations, education backgrounds and social-economic status, to further explore the perceived influences of celebrity endorsement of food and beverage products among young people. Future research could also make the Q-sort activities guided by all three constructs of the Source Credibility Model to provide an unbiased test for this model. Future research could also conduct post Q-sort activities through interviewing the participants, which could provide a more interactive and in-depth understanding of their thoughts.

5.5 Conclusions

This is the first study using Q methodology to explore Millennials' views about celebrity endorsement of food and beverage brands and products in the US. Results found that some Millennials made strides toward living healthier lifestyles who trust celebrities who only endorse

healthy food and beverage products, while other Millennials were not very discerning about celebrity endorsement for unhealthy food and beverage products and dietary behaviors. This study revealed three unique viewpoints that could be further explored given the marketplace decision influenced by Millennials. This research contributed to theories by testing celebrity endorsement effectiveness models, including the Source Credibility Model and the Match-up Hypothesis, in the food and beverage endorsement context. It also provided an experimental evidence base to encourage wiser choices when selecting celebrities to endorse healthy food and beverage products, and to guide commercial and social marketing campaigns and policies to prevent celebrities who are trusted by young people from endorsing food and beverage products that do not support healthy food environments.

Acknowledgments

We are grateful to Dr. Steven Brown from Kent State University for the intensive training of Q methodology. We thank all the participants in this study, and the staff of Graduate School and Hokie Wellness of Virginia Tech who help to recruit participants for this study.

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**Chapter 6. Study 4. An Accountability Evaluation for the Responsible Use of
Celebrity Endorsement by the Food and Beverage Industry to Promote
Healthy Food Environments for Young Americans: A Narrative Review to
Inform Obesity Prevention Policy**

Abstract

Research has shown that celebrity endorsement is a marketing strategy primarily used to promote high-fat, sugar and sodium food and beverage products to children and adolescents, which influences their diet quality and increases their risks of obesity. This study conducted an accountability evaluation to examine existing industry policies and practices in the United States (US) that have used celebrity endorsement to support healthy marketing environments for young Americans. This study used the National Academy of Medicine's LEAD (i.e., *locate, evaluate, assemble* evidence to *inform* decisions) principles to identify and synthesize relevant evidence between January 2000 and December 2019. Evidence was categorized in a five-step accountability framework and each step was assigned a progress score (i.e., none, limited, some and extensive). The findings showed no progress was made by the US government to appoint an independent empowered body to evaluate celebrity endorsement practices. Some progress was achieved by stakeholders to take and hold industry and government to the account, and limited progress to share the account and to strengthen accountability structures. We suggest actions for diverse stakeholders to substantially strengthen accountability structures to ensure that celebrity endorsement is used to promote healthy food environments to reduce obesity risks for young Americans.

6.1 Introduction

Obesity is a worldwide pandemic with rates that have nearly tripled since 1975.¹ In 2016, about 41 million children under 5 years of age and over 340 million children and adolescents aged 5-19 years were overweight or obese.¹ The World Obesity Federation has projected that by 2020, 158 million children and adolescents will have obesity that will increase to 254 million by 2030.² In the United States (US), 25.4% of children and 21.0% of adolescents were obese in 2017 and 26.3% and 24.2% children and adolescents may become obese by 2030.² Robust evidence suggests that food and beverage marketing practices influence the dietary behaviors of children (0-11 years), adolescents (12-18 years) and young adults (19-35 years), which increase their risk of obesity and diet-related non-communicable diseases (NCD).³⁻⁷

One such marketing practice is celebrity endorsement, which is defined as using one's public recognition to promote a specific brand, product, or service through marketing and advertising.⁸ Endorsement also includes "influencers" who promote products and brands through social media platforms, such as YouTube, Instagram and Facebook, which reach millions of viewers or followers.⁹ Marketing research has found that celebrity endorsement brings brand awareness and brand loyalty among targeted consumers.¹⁰ Public health experts suggest that celebrity endorsement is a type of integrated marketing communications (IMC) technique used by the food, beverage, restaurant and entertainment industries primarily market energy-dense, nutrient-poor (EDNP) food and beverage products, such as sugary beverages, breakfast cereals, quick-service restaurant (QSR) meals.¹¹ Through different media channels and platforms in diverse settings, celebrity endorsement may influence young people's diet-related cognitive, behavioral and health outcomes.¹⁰⁻¹²

Children under 12 years have the lowest media literacy, and their diet-related outcomes are likely to be influenced by celebrities.¹³⁻¹⁶ Adolescents up to age 18 years have increased independence and spending power with discretionary income, and more frequent exposure to and interaction with celebrities through digital social media platforms, which increases their risk of being targeted by IMC strategies.^{11,17-20} The risk and reward decision-making processes of the human brain are not fully developed until age 25 years.²¹ Therefore, young adults are just as vulnerable as teens to food and beverage marketing, especially digital marketing targeted to them.⁶

Healthy food environments require equitable access by all people to foods and beverages that promote a healthy diet and prevent obesity and diet-related NCDs across all settings and sectors.²² The World Health Organization's (WHO) 2004 Global Strategy on Diet, Physical Activity and Health defined the responsibilities of different stakeholders regarding their roles in using policy tools to promote healthy food environments.^{23,24} Between 2010 and 2012, the WHO specified responsibilities of national governments in Member States to implement the 2010 World Health Assembly's Resolution WHA 63.14 to restrict the marketing of EDNP foods and non-alcoholic beverages to children and adolescents up to age 18 years worldwide.²⁵

However, responsibility emphasizes stakeholders' obligations based on social or moral standards that may vary across stakeholder groups and cultures.^{26,27} Accountability, on the other hand, is a distinct concept that involves a relationship between an actor and a forum.^{28,29} The actor must justify actions taken for an issue, the forum is empowered to pass judgment on the actor's conduct, and the actor may face rewards or consequences for outcomes.^{28,29} Kraak et al. 2019¹¹ evaluated the accountability structures for the International Food & Beverage Alliance's (IFBA) Global Policy on Marketing Communications to Children, compared with the best-

practice recommendations of the WHO and other United Nation system organizations. These authors found that global actors made no progress to hold IFBA accountable for nonadherence to its Global Policy, or to strengthen accountability structures to ensure future compliance.¹¹ Kraak and Story 2015³⁰ also evaluated the accountability structures for the industry's use of brand mascots and licensed media characters in child-targeted food and beverage marketing in the US, and recommended several policy-relevant actions for industry actors to use these marketing techniques to promote healthy food environments.

Addressing the challenges about consequences of celebrity endorsement on young people's health involves many stakeholders including policymakers, government agencies, food, beverage, restaurant and entertainment companies, industry trade associations, civil society groups and celebrities. Therefore, a comprehensive evaluation for different stakeholders' performance for the responsible use of celebrity endorsement in food and beverage marketplace is a critical step toward gaining a deeper understanding about this issue. To our knowledge, no published study has done such an accountability evaluation yet. This study addressed this research gap. The purpose of this study to examine the practices and actions of diverse stakeholders to evaluate whether celebrity endorsement was used to promote healthy food environments for young Americans between January 2000 and December 2019. This review period was selected based on changes in the US marketing landscape after 2000 when companies began to use digital and social media platforms widely in partnership with celebrities and influencers to promote corporate brands and products.^{31,32}

6.2 Materials and Methods

This study was guided by four research questions (RQ) to identify relevant evidence used in the accountability evaluation described below.

RQ1: What were the US expert and industry/government recommendations for food, beverage, restaurant and entertainment industries to use celebrity endorsement to promote food and beverage products to young people between January 1, 2000 and December 31, 2019?

RQ2: What were the celebrity endorsement trends and practices used by US industry actors and non-governmental organizations (NGO) to promote food and beverage products or brands during the review period?

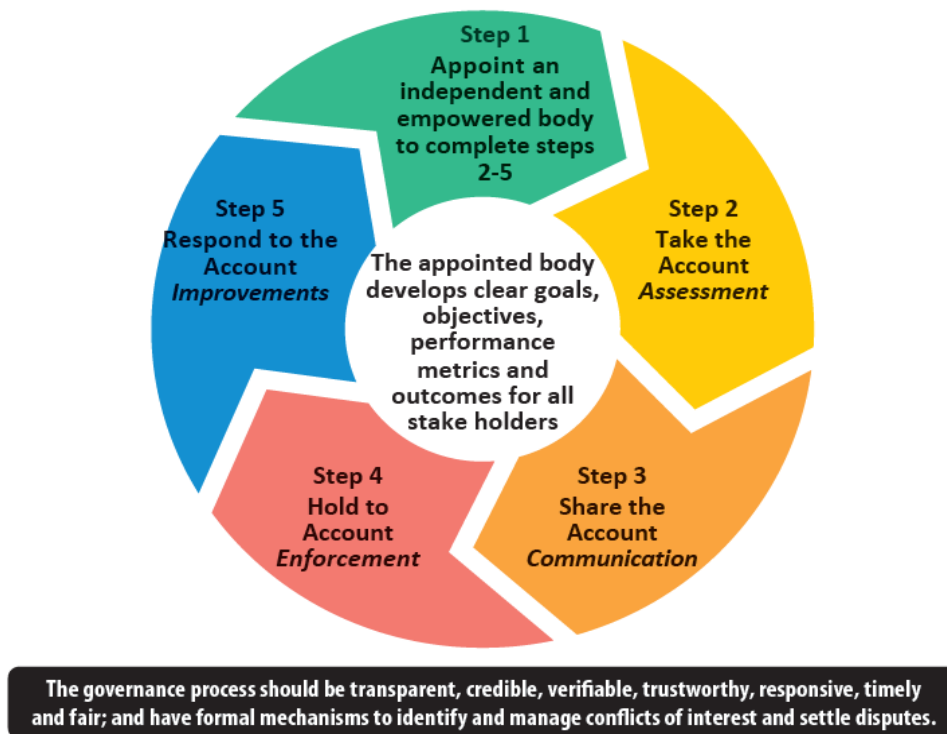
RQ3: What progress have stakeholders made to use celebrity endorsement to promote food and beverage products and brands that align with healthy food environments during the review period?

RQ4: What policies and actions are needed for diverse stakeholders to use celebrity endorsement exclusively to promote healthy food environments to reduce obesity and NCD risks for young Americans?

This narrative review was guided by the National Academy of Medicine's (NAM) LEAD principles (*locate, evaluate and assemble evidence to inform decisions*) that uses a systematic approach to identify and integrate relevant interdisciplinary evidence to address complex policy issues.³³ This evaluation used a five-step accountability framework which was originally developed in 2014²⁴ and refined in 2019¹¹ (Figure 6.1). Step one is for government to appoint an independent and empowered body to complete steps two to five. Step two involves taking the account (assessment) by an empowered independent body to evaluate the performance of industry actors. Step three involves sharing the account (communication) where the empowered body shares the results of step two widely among diverse stakeholders. Step four involves holding to the account (enforcement) where the empowered body uses incentives and disincentives to reward, penalize and motivate actors based on their performance. Step five

involves responding to the account (improvement), whereby all stakeholders work together to strengthen accountability structures to coordinate and improve stakeholders' actions for this issue.¹¹

Figure 6.1 Five-step accountability framework used to evaluate celebrity endorsement to promote healthy food environments



RQ1 and RQ2 provide relevant background information regarding regulations and practices of using celebrity endorsement in the US food and beverage marketplace to inform the accountability evaluation. RQ3 addresses steps 1-4 in the accountability framework (i.e., appointing an empowered and independent body to establish performance metrics and outcomes, assessment, communication and enforcement). RQ4 addresses step 5 of the accountability evaluation (improvements).

We conducted a comprehensive narrative literature review to collect evidence from peer-reviewed and gray literature between January 1, 2000 and December 31, 2019. Grey-literature sources include non-peer-reviewed studies include books and reports produced by academic institutions, government and non-governmental agencies; conference proceedings; and press releases, media stories and websites, which provide important information that is otherwise unavailable to inform an evaluation of this issue if we were to depend exclusively on peer-reviewed published studies.^{34,35}

Table 6.1 describes the detailed methods used to identify, analyze and synthesize evidence related to practices, policies and recommendations regarding the accountability of stakeholders to use celebrity endorsement to promote healthy food environments. Four qualitative research criteria guided the evidence selection that included: data relevance, data credibility, research quality, and professional judgment.^{11,36} Data triangulation was used to confirm evidence from different sources and develop a comprehensive and unbiased understanding of how celebrity endorsement was used in the US to promote food and beverage products and brands to young people during the review period.³⁷ The lead investigator (MZ) compiled the evidence which was reviewed independently by two coinvestigators (VIK and SRGP). A progress score (i.e., *none*, *limited*, *some* and *extensive*) was then assigned for each accountability step based on the comprehensiveness and the timeliness of the documented performance.¹¹

Table 6.1 Methodology used to identify, analyze and synthesize evidence for the US celebrity endorsement accountability evaluation, 2000-2019.

The National Academy of Medicine's LEAD principles (i.e., <i>locate</i> , <i>evaluate</i> , and <i>assemble</i> evidence to <i>inform</i> decisions) was used to identify, analyze and synthesize evidence between January 1, 2000 and December 31, 2019.	
LOCATE evidence	Search strategy • Seven electronic databases (i.e., ABI/Inform, Academic Search Complete, Business Source Complete, CINAHL, Health Source, PsycINFO and PubMed) and Google Scholar • The first 25 pages of results across three web browsers (i.e., Google, Internet Explorer, and Firefox) were searched for the first 25 pages • Reference lists of included articles and expert suggestions for additional evidence sources Search terms • Celebrit* OR athlete* OR entertain* AND endors* OR advertis* OR marketing AND food* OR beverage* OR health OR nutrition AND policy OR policies or guideline* OR standard* OR regulation* Inclusion criteria • Published peer-review studies and grey-literature sources (i.e., academic studies, books, reports, media sources, news releases and public testimonies) that addressed one or more of the research questions • Evidence related to celebrity endorsement used in the US marketplace Exclusion criteria • Non-English evidence sources • Studies about celebrity endorsement used to promote tobacco, alcohol, dietary supplements, diet products and/or medications • Proprietary company documents that were available only for purchase
EVALUATE evidence	The located evidence was categorized into three evidence tables (see Supplemental Tables 1-3 in Appendix L), and each table was arranged by: • Literature sources • Reference number, primary author, and publication year • Type of study or report, and document title • Major findings
ASSEMBLE evidence	Stakeholders accountability evaluation based on the accountability framework: 1. Appoint an empowered and independent body to complete step 2-5 2. Take the account (assessment) 3. Share the account (communication) 4. Hold to account (enforcement) 5. Respond to the account (improvement) Each step was independently assigned a progress score (i.e., <i>none</i>, <i>limited</i>, <i>some</i> and <i>extensive</i>) by three co-investigators
Inform DECISIONS	Proposed policies and actions for stakeholder groups informed by existing US healthy dietary recommendations, US regulatory agencies and marketing policies

6.3 Results

Supplemental Tables 1-3 (Appendix K) provide evidence sources (n=93) from peer-reviewed articles (n=21) and gray literature sources (n=72) for this evaluation. The grey-literature sources were categorized as academic studies, books and reports (n=47); and media sources, news releases and public testimonies (n=25). The selected evidence was summarized as a narrative review according to each research question in the section below.

RQ1: Performance expectations issued by industry, expert and authoritative bodies

Between 2006 and 2019, five US expert panels and industrial/governmental organizations issued 11 recommendations for food, beverage, restaurant or entertainment companies to voluntarily improve their marketing practices directed to children and adolescents with reference to celebrity endorsement (Table 6.2).

In 2006, the NAM published an expert consensus committee report on food marketing to children and youth, which concluded that the intensive marketing for EDNP food and beverage products through various vehicles and settings was linked to childhood obesity.³⁸ The committee's review found that celebrity endorsements were used to appeal to older children and adolescents, and recommended that industry stakeholders use all of their marketing resources and techniques to promote only healthy food and beverage products to young people including adolescents.³⁸

In response to the NAM's report recommendations, the Council of Better Business Bureau (CBBB) launched the Children's Food and Beverage Advertising Initiative (CFBAI) in 2007 to engage in responsible food and beverage marketing practices to children under 12 years.³⁹ At the time of its inception, CFBAI's core principles did not include regulations prohibiting celebrity endorsements in food and beverage marketing.³⁹ The founding CFBAI

members included 10 leading food, beverage and restaurant companies and expanded to 19 companies by 2019.⁴⁹

Table 6.2 Recommendations issued by industry, expert and authoritative bodies to encourage responsible food marketing practices that address celebrity endorsement, 2006-2019

Year	Industry, expert or Authoritative Body	Document
2006	National Academy of Medicine (NAM) Expert Consensus Committee	Food Marketing to Children and Youth: Threat or Opportunity ³⁸
2007	Council of Better Business Bureau (CBBB)	Children's Food and Beverage Advertising Initiative (CFBAI) Program and Core Principles Statement First edition ³⁹
2008	Federal Trade Commission (FTC)	Marketing Food to Children and Adolescents: A Review of Industry Expenditures, Activities, and Self-Regulation ⁴⁰
2009	CBBB	CFBAI Program and Core Principles Statement Third Edition ⁴¹
2013	FTC	Children's Online Privacy Protection Rule ⁴²
2014	CBBB	CFBAI Program and Core Principles Statement Fourth Edition ⁴³
2011	Federal Interagency Working Group (IWG)*	Interagency Working Group on Food Marketed to Children ⁴⁴
2012	FTC	A review of food marketing to children and adolescents: follow-up report ⁴⁵
2015	Robert Wood Johnson Foundation's (RWJF) Healthy Eating Research (HER) Expert Panel	Recommendations for Responsible Food Marketing to Children ⁴⁶
2015	FTC	Guides Concerning the Use of Endorsements and Testimonials in Advertising ⁴⁷
2019	FTC	Disclosures 101 for Social Media Influencers ⁴⁸

*Federal IWG agencies included representatives from Centers for Disease Control and Prevention (CDC), Food and Drug Administration (FDA), FTC and the USDA.

In 2008, the FTC's review of food marketing to children and adolescents indicated that celebrities were almost exclusively employed in marketing practices directed to older children and adolescents.⁴⁰ This report also recommended that all companies involved in marketing food or beverage brands or products to children under 12 years should follow expert-recommended nutrition guidelines when promoting their products for all advertising and marketing techniques including

celebrity endorsement.⁴⁰ Additionally, the FTC explicitly required the CFBAI member companies to add the use of celebrity endorsement to its core principles.⁴⁰

With reference to the FTC's requirements, the CFBAI's 2009 core principles prohibited companies from using celebrity including athletes and movie-tie ins in advertising and marketing practices directed to children, and the CFBAI's 2014 core principles continued with these regulations.^{41,43} However, these principles only applied to children under 12 years and not adolescents aged 12-17 years; entertainment celebrities and other influencer marketers were not explicitly mentioned in the principles; and the voluntary pledges did not cover in-store point-of-sale and packaging promotion techniques.^{41,43}

In 2011, the federal IWG comprised of US government representatives from the Centers for Disease Control and Prevention (CDC), Food and Drug Administration (FDA), FTC and USDA, developed draft nutrition principles to guide the CFBAI and other voluntary industry self-regulatory programs for healthy and responsible marketing to children aged 2 to 17 years.⁴⁴ The IWG specified that celebrities or athletes were particularly popular among children or adolescents, and that companies should restrict the use of celebrity endorsement for food and beverage promotions to target these age groups.⁴⁴

In 2012, the FTC published a follow-up report that compared the child and youth-directed expenditures spent by 48 food, beverage, restaurant and entertainment companies to market food and beverage products and brands to young people between 2009 and 2012.⁴⁵ The report found that the CFBAI had followed the FTC's 2009 recommendations to use celebrity endorsement and movie tie-ins with marketing criteria that each CFBAI member company pledged to commit.⁴⁵ Furthermore, the FTC encouraged more companies to join the CFBAI and other industry self-regulatory programs.⁴⁵ The FTC also recommended that the CFBAI should increase responsible

food and beverage marketing practices aimed at to children and adolescents to reduce childhood obesity risk.⁴⁵

In 2013, the FTC published amendments for the Children's Online Privacy Protection Rule that was originally took into effect in 2000.⁴² The 2013 amendments considered the presence of child celebrities and celebrities who appeal to children on a website or service as child-targeted marketing practices.⁴² Considering children's increasing involvements in online technology, these amendments aimed to better define the scope and strengthen of the protections for children's personal information.⁴²

In January 2015, a 17-member expert panel supported by the RWJF's HER Program issued best-practice recommendations to improve the CFBAI's responsible food and beverage marketing practices to support a healthy marketing landscape for US children to lower obesity risk.⁴⁶ The HER's recommendations for the food and beverage companies increased the age for child-directed marketing from under 12 years to 14 years for all product and brand advertising and marketing practices including mobile, digital and social media, and celebrity endorsement targeted to children and adolescents.⁴⁶

In September 2015, the FTC issued endorsement guidelines that required celebrities to disclose information about a paid endorsement or other types of financial or in-kind compensation they had received from contracted companies in a transparent and non-misleading way.⁴⁷ The guidelines were applicable to different media platforms including television (TV) advertisements and digital and social media platform promotion.⁴⁷ As social media food and beverage marketing brought increasing concerns for young people's dietary health, in November 2019, the FTC issued details that required social media influencers to disclosure any relationships with a brand including financial, employment, personal or family relationships.

This action further ensured that the value of the endorsement was fairly judged by the consumers based on the honest and truthful information.⁴⁸

RQ2: Trends and practices for celebrity endorsement used in the US marketplace

During the review period, celebrity endorsement was used extensively in the US marketplace to promote food and beverage brands and products that increased between 2006 and 2009.⁴⁵ The 2012 FTC report on food and beverage marketing to children and adolescents documented the expenditures of 48 food, beverage, restaurant and entertainment companies in 2009, which found that the celebrity endorsement expenditures of child- and adolescent-directed food and beverage marketing increased from US \$26.8 million dollars in 2006 to US \$99.3 million dollars in 2009.⁴⁵ The report documented that celebrity endorsement was targeted to older children and adolescents (12-17 years) with a 2009 expenditure of US \$76.7 million dollars compared to US \$28 million dollars for younger children (2-11 years).⁴⁵ The leading product categories that companies used celebrity endorsement for in 2009 included sugary beverages, breakfast cereals, snacks, and QSR and prepared meals,⁴⁵ and no expenditure was reported to use celebrity endorsement to market fruits and vegetables to young people.⁴⁵

Between 2000 and 2019, published studies of celebrity endorsement of food and beverage products and brands increased in the published literature, especially for professional athletes, entertainers and musicians targeted to racially and ethnically diverse populations and used in NGO campaigns, as part of diverse IMC channels, platforms and settings as described below.

Marketing practices involving professional athletes or sports figures

The endorsement of food and beverage products and brands by professional athletes or sports celebrities were the category most researched during the review period. In 2010,

companies worldwide spent over US \$46 billion dollars on sports-celebrity endorsements and sponsorships, with US \$17 billion dollars spent in the US market.⁵⁰ Celebrity athletes often rank as the most popular and highly paid endorsers within this marketing practice.⁵¹ When sports celebrities are paid to publicly endorse EDNP food and beverage brands and products, they often bring a “health halo” effect that encourages consumers to perceive the endorsed products as healthier than unendorsed products that may lead to overconsumption of endorsed EDNP products.⁵²

Weber et al. 2006⁵³ examined the food and beverage marketing strategies aimed at children and adolescents on 40 food and beverage brand websites owned by companies that were selected based on the brands’ annual sales data in the US market. The study concluded that more than 90% of the brands were associated with EDNP products including fast foods, snacks, candies, and ready-to-eat cereals, and about half of the child-targeted websites featured celebrity athletes.⁵³ James 2010⁵¹ examined the use of female sports celebrity endorsers in the top-selling teen-targeted magazine SEVENTEEN through five and a half years, and found that every one of two advertisements featured food and beverage products or brands. However, the investigators did not evaluate the healthfulness of the endorsed products.⁵¹

Bragg et al. 2013⁵⁴ found that more than three-quarters of 62 branded products endorsed by the Bloomberg Businessweek’s 2010 top 100 athletes were for EDNP products. Sports beverages, soft drinks, and fast foods were the top three categories that involved in 76 of 122 endorsements.⁵⁴ In a separate study, Bragg et al. 2013⁵⁵ analyzed the sports elements used in child-targeted food and beverage marketing in two US supermarkets and concluded that 102 products (53 foods and 49 beverages) had used sports elements on their packaging, and the

majority (88.7%) of these products did not meet healthy criteria.⁵⁵ Almost a half (42.2%) of these products featured at least one professional athlete and 34% of these products were targeted to children.⁵⁵ Zhou et al. 2019⁵⁶, a comprehensive review of US celebrity endorsements for food and beverage products and brands between 2000 and 2017, found that 542 celebrities were involved in 732 endorsements representing 120 food and beverage brands that owned by 59 companies and NGO. Two thirds (67.2%) of the endorsed brands represented EDNP products that did not align with the USDA's Smart Snacks Standards, and around two thirds (65.7%) of endorsements involved athletes supporting unhealthy foods.⁵⁶

Professional athletes were widely involved in promoting energy and sports drinks to young Americans.⁵⁷ PepsiCo has successfully used celebrity partnerships over two decades to promote sports drinks such as Gatorade as a serious beverage for professional athletes.⁵⁸ The FTC documented that such celebrity endorsements resonated more with children and teens who regarded the athletes as role models.⁴⁵ The consumption of energy drink products by US teens increased significantly between 2011 and 2014.⁵⁷ American Heart Association stating that sports drinks could contain double the amount of added sugars intake (26 grams or 12 teaspoons/day) recommended for children and teens.⁵⁹ Due to the high amount of calories, added sugars and caffeine content, expert groups and professional societies recommended that energy drinks are not appropriate for children and teens but those products are heavily marketed to them.⁵⁹

Marketing practices involving entertainment celebrities

Entertainment celebrities include musicians, singers, actors and social media influencers were involved in food and beverage brand or product promotion during the review period. Bragg et al. 2016⁶⁰ concluded that 65 of the Billboard Hot 100 music celebrities were associated with 57 food and beverage brands owned by 38 food, beverage and restaurant companies in 2013 and

2014. This study identified that 71% of the promoted non-alcoholic beverages were sugary beverages and 80.8% of the endorsed foods were energy dense and nutrient poor.⁶⁰ Zhou et al. 2019⁵⁶ also found that over two thirds (67.4%) entertainers endorsed EDNP food and beverage products.

US food, beverage and restaurant companies often partnered with entertainment companies to use marketing techniques such as movie tie-ins, product placement and sponsorship for entertainment events that involved celebrities who are familiar and appeal to children and adolescents.⁴⁵ These companies embedded their brands or products into movies and TV programs that show celebrities consuming products, using packages or containers of products, or having scenes in restaurants with visible corporate brands.⁴⁵ These marketing techniques were mostly associated with EDNP products including sugary beverages, ready-to-eat sugary cereals, and QSR meals.⁴⁵ Additionally, some food, beverage and restaurant companies partnered with entertainment companies by linking events such as live concerts or music festivals that featured celebrities on their websites, or as sponsors of these events with corporate brands.^{45,60}

Celebrity marketing used to target racially and ethnically diverse populations

The strategic use of celebrity endorsement to target young people of diverse racial/ethnic backgrounds is another food and beverage marketing trend observed during the review period. Black and Latinx populations, who have had higher obesity and NCD rates, were exposed more EDNP food and beverage products compared to their White and Asian counterparts.⁶¹

Henderson and Baldasty 2003⁶² found that TV advertisers used White celebrities to endorse luxury beauty and home products, while African-American celebrities promoted products and brands such as fast food meals, sugary drinks, and athletic/sports equipment. Grier

and Kumanyika 2008⁶³ documented that African Americans were exposed to food and beverage marketing including celebrity endorsements with greater frequency and increased the potential adverse health impacts for this population. Grier 2011⁶⁴ listed specific examples of how African-American youth were targeted by celebrity endorsements for EDNP food and beverage products such as McDonald's "365Black" campaign that partnered with the African-American professional tennis athlete, Venus Williams, to promote this QSR brand to African-American communities.⁶⁴

Thompson 2008⁶⁵ found that US food and beverage companies' partnerships with Latinx celebrities were mainly used to promote EDNP products in after-school Spanish-language television advertising. Harris et al. 2014 and 2015^{57,61} documented that food and beverage companies often used Latinx and/or African-American celebrities in their advertising to appeal to young consumers of the same ethnic and racial groups. These reports specifically stated that beverage companies including The Coca-Cola Company, PepsiCo and Dr Pepper Snapple Group, had partnered with Black and Hispanic or Latinx musicians and professional athletes that targeted teens.⁶¹ The QSR company Burger King partnered with Latinx entertainment celebrities including Sofia Vergara and Salma Hayek to raise brand awareness among young Hispanic consumers for their products.⁶¹

Celebrity marketing practices used by NGO in health-promotion campaigns

During the review period, celebrity endorsements were also used to endorse health promotion or marketing campaigns in the US to encourage healthy lifestyles. Between 1991 and 2007, the National Cancer Institute initiated the Five a Day for Better Health Program to encourage Americans to consume five or more servings of fruits and vegetables per day to reduce obesity rates.^{66,67} The Olympic swimming gold medalist Matt Biondi served as a

spokesperson to promote this campaign.^{66,67} Between 1995 and 2014, the Milk Processor Education Program (MilkPEP) launched the Got Milk? and Milk Mustache Campaigns that used photographs of more than 300 popular entertainment, sports, political and media celebrities in print, online, broadcast and TV commercials to promote the sales and intake of fluid milk to ethnically and racially diverse audiences between 2000 and 2015.^{67,68}

The Partnership for a Healthier America (PHA) initiated the Drink Up Campaign in 2013 to encourage more Americans to drink more water instead of sugary beverages.^{67,69} The PHA's Drink Up Campaign partnered with popular celebrities including former First Lady Michelle Obama and African-American musicians, John Legend and Ashanti, to promote water consumption to Americans, and used engaging marketing strategies to form an emotional connection with the target audiences.^{67,69} In February 2015, the PHA launched another branded marketing campaign called Fruits & Veggies (FNV) in two test cities—Fresno, California and Norfolk, Virginia to encourage Millennial moms aged 21 to 34 years, and Generation Z teens ages 15 to 20 years to consume more fruits and vegetables. The FNV Campaign involved more than 80 professional athletes, entertainers and other celebrities, as part of a broader IMC marketing effort.^{67,70}

Celebrity marketing practices based on IMC channels, platforms and settings

Between 2000 and 2019, some published studies explored how celebrities had endorsed food and beverage brands and products through IMC channels, platforms and settings including TV and print media; company and third-party websites; digital marketing through social media and mobile devices; and supermarkets, grocery stores and retailers that are discussed below.

TV and print media

Gantz et al. 2007⁷¹ analyzed TV food advertising to children in the US and concluded that 10% of advertisements involved celebrities who promoted EDNP food and beverage products. Stitt and Kunkel 2008⁷² recorded food advertising during children's TV programming and found that 9.7% of all food advertisements involved celebrities who promoted primarily EDNP products. Kelly et al. 2010⁷³ examined TV food advertisements to children across 11 countries, and found that celebrities, sports figures and spokespersons were used more frequently in the US compared with other countries, with about 80% of EDNP foods and beverages that did not align with expert-recommended dietary guidelines.

Celebrities also endorsed food and beverage products through print media such as magazines. As discussed previously, James's 2010⁵¹ demonstrated that food and beverage products or brands were the most endorsed product categories by female sports celebrities through the top-selling teen targeted-magazines.⁵¹ Belch et al. 2013⁷⁴ explored the use of celebrity endorsers in magazine advertising and concluded that foods were the fifth most endorsed products. However, the nutrition profiles of the endorsed food and beverage products in these two studies were not assessed.

Company and third-party websites

Food and beverage products and brands were also promoted through the Internet during the review period.⁴⁵ As discussed previously, Weber et al. 2006⁵³ examined the online marketing strategies for 40 US food and beverage brands and concluded that 50% of designated children's websites were associated with EDNP products endorsed by celebrity athletes. Pacella et al. 2010⁷⁵ conducted a content analysis for the Internet marketing techniques used by nine food and beverage companies directed to children. This study found that 12 websites (8%) used celebrity

endorsement, and 39 out of 59 food and beverage products did not meet expert-recommended nutrition criteria.⁷⁵ This study showed that celebrities also promoted products during interviews or other events without disclosing their financial arrangements with the contracted companies as required by the FTC.⁷⁵

Digital, social media and mobile devices

Bragg 2019⁷⁶ concluded that accounts for food, beverage, and snack brands on five social media platforms (i.e., Instagram, Facebook, Twitter, Tumblr and Vine) increased 567% between 2007 to 2016. Nineteen percent of posts featured a celebrity or cross-promotional theme (e.g., Olympics), and more than two thirds (67.9%) promoted unhealthy foods and beverages.⁷⁶ Additionally, Fleming-Milici 2019⁷⁷ examined food and beverage marketing on tablet, smartphone or other digital and mobile devices found that 70% of adolescents engage with food and beverage brands on social media, and 50% engaged with unhealthy food and beverage products. However, no clear evidence was identified during the review period on how celebrity endorsement was used on mobile devices to promote food and beverage products.

Celebrities were paid by food, beverage and restaurant companies to post their endorsed products on their own social media pages. For example, Selena Gomez's (a mid-twenties singer/actress who started on a television show "Barney and Friends" and other Disney programs) published an Instagram post for Coca-Cola, which was paid US \$550,000 dollars and received more than four million "likes" in July 2016,^{78,79} even though this action violated the FTC's endorsement guidelines.⁸⁰ A great majority (90%) of celebrities did not followed the FTC's rules to disclose their financial relationship with partnered companies when posting content on social media platforms and 7.3% of those endorsements were for food and beverage products.⁸⁰

Diverse settings

Bragg et al. 2013⁵⁵ examined the use of sports references for food and beverage products sold in supermarkets concluded that about half of the products with sports references were featured sports celebrities, and two-third of the marketed beverages were sugary drinks. Harris et al. 2015⁶¹ highlighted that some food retailers partnered with celebrities to promote food and beverage products to targeted Hispanic youth. Sports and music settings associated with celebrities' foods and beverages promotion were discussed in the previous sections. No clear published evidence was found during the review period about celebrity endorsement used to promote food and beverage products in school settings, community events, outdoors or through motorized public transportation venues such as buses or metros.

RQ3 to 4: Accountability evaluation and future recommendations

Accountability step 1: Appoint an independent and empowered body (no progress)

In 2006, the National Academy of Medicine recommended that Congress or the US Department of Health and Human Services (HHS) to appoint an independent body to monitor and report trends on food and beverage marketing practices, achievements, shortcomings and actions to improve the food marketing landscape for young people.³⁸ During 2000-2019, we found no progress made toward this step. No independent federal or private bodies, panels or committees had been empowered by US government agencies to monitor and report to Congress about the progress made to encourage companies to engage in responsible food marketing that used celebrity endorsement or other related marketing techniques such as celebrity sponsorships that were targeted to American children and adolescents.

Accountability step 2: Assessment: taking the account (some progress)

This step involves an empowered independent body monitoring and evaluating actors' performance. The FTC is a government regulatory agency that has the authority to review and evaluate the food and beverage marketing expenditures and practices targeted to children and adolescents.^{40,45} The FTC released two reports in 2008 and 2012 that represented taking the account for food, beverage, restaurant and entertainment companies to use celebrity endorsement to promote healthy food environments.^{40,45} As discussed earlier, these reports examined the celebrity marketing expenditures and activities of 44 and 48 companies that targeted children and adolescents between 2006 and 2009.^{40,45} The FTC also evaluated the progress for the CFBAI's industry self-regulatory program to use of celebrity endorsement in targeted marketing practices to young people.^{40,45}

The Rudd Center for Food Policy & Obesity is an NGO that also served the role of taking the account.⁵⁷ It published a series of FACTS research reports that provided a comprehensive review of the trends for the marketing strategies and techniques as well as nutritional quality of food and beverage products targeted to children and teens.^{57,81-84}

The Rudd Center's Cereal Facts reports issues in 2009 and 2012^{81,82} identified that the ready-to-eat cereals advertised to children provided double the amount of recommended added sugars and sodium and contained half the amount of fiber compared with cereals advertised to adults. These reports also indicated that popular celebrities were depicted in child-targeted cereal products through cross-promotion techniques such as connecting Kellogg's and Disney High School Musical with Hannah Montana cereals.^{81,82}

The Rudd Center's 2013 Fast Food Facts report⁸³ documented a positive trend for reducing fast food marketing targeted to children under 12 years, but no such progress was

observed for teen-targeted advertising practices, and the use of celebrity endorsement for fast food was one of the concerns. For example, more than a third of Subway's non-kids-meal products featured celebrity athletes such as the Olympic swimmer Michael Phelps and football player Robert Griffin III.⁸³ McDonald's display advertisements for HappyMeal.com also include celebrity endorsements and movie promotions.⁸³

The Rudd Center's 2014 Sugary Drink Facts report⁵⁷ documented that celebrity endorsement was used as a child- and teen-targeted marketing technique. This report also identified that celebrities were widely involved in promoting sugary beverages.⁵⁷ Examples include the promotion of energy drinks by professional athletes and influencers (e.g., Red Bull's TV advertisements featured the skateboard athlete Ryan Shackler who also appeared in a reality TV series); the use of celebrity endorsement in social media platforms (e.g., Pepsi's Facebook advertising that involved the female music celebrity Ariana Grande); and also targeted African-American youth (e.g., Shaquille O'Neal 'Shaq' cream soda sugary beverage product line with his photo on the can).⁵⁷

The Rudd Center's 2015 Snack Facts⁸⁴ indicated that nearly all sweet and savory snack products and brands advertised on TV failed to meet the IWG's nutrition standards and three-quarters did not meet the USDA's Smart Snacks nutrition standards. This report found that celebrity endorsement was considered as a youth-targeted marketing technique used to promote snack products, such as the promotion of Kellogg's Pop-Tart products by the African-American musical artist, Jessie J, on the company's website.⁸⁴

The Center for Science in the Public Interest (CSPI) reviewed and evaluated food marketing practices (including celebrity endorsement) released in a 2010 Report Card for companies' food marketing policies.⁸⁵ This report documented that about two-thirds (68%) of

128 companies had not developed or adhered to policies or regulations for responsible food and beverage marketing for children.⁸⁵ The remaining 32% of companies still lacked uniform nutrition standards, which enabled them to market EDNP products to young people through marketing techniques that were not strictly regulated.⁸⁵ For example, celebrity endorsement was not prohibited on packages or at point-of-sale, therefore, Kellogg's still advertised its Frosted Flakes cereal that with the image of Olympic swimmer, Michael Phelps, on the package to attract children and teen consumers.⁸⁵

In addition, the IWG agencies and the HER public health experts evaluated and revealed the weaknesses of the CFBAI's industry self-regulation program and recommended strengthening FTC's role to regulate food marketing.^{44,46} Independent academic researchers evaluated and suggested the state attorney generals to play maximal roles to rule food and beverage marketing, to champion nutrition policies and to protect consumers.⁸⁶ Independent academic researchers have also collected, analyzed and assessed the celebrity endorsements used in different channels to promote EDNP food and beverage products.⁸⁷⁻⁹¹ The mainstream news media published news releases that covered related research that addressed celebrities' involvement with promoting EDNP products.⁹²⁻⁹⁵

Accountability Step 3: Communication: sharing the account (limited progress)

This step involves an empowered neutral body communicating the results of step two by encouraging dialogue among stakeholders to foster a better understanding of the accountability expectations, and to establish a timeline to implement the agreed actions. Over the review period, several dialogues were initiated among diverse stakeholders to examine children-directed food and beverage marketing practices. In 2005, the FTC and HHS joint workshop reviewed food and beverage marketing practices and the efforts that food and beverage industries have taken to

promote healthy food environments.⁹⁶ Participants confirmed the progress (e.g., McDonald partnered with professional tennis celebrities Venus and Serena Williams and skateboarder athlete Tony Hawk to promote diet and physical exercise), and criticized that celebrity endorsement was not prohibited for targeting racial/ethnic minorities in the CFBAI's program.⁹⁶ It also suggested that the industries needed to focus more on the products and brands (what to market) instead of when and how to market these products and brands.⁹⁶

The federal IWG agencies (i.e., CDC, FDA, FTC and USDA) held two public meetings in 2009 and 2011 that requested public comments on its proposed nutrition criteria that guide industry self-regulatory efforts, in order to improve the nutritional profile of food and beverage products marketed to children.^{44,97} In 2011, The IWG's draft guidelines received 29,000 comments from different stakeholders, among which were 28,000 favorable opinions from consumers and public health advocates, who supported the guidelines.⁹⁸ Some comments requested that celebrity endorsement should not be used to promote food and beverage products that did not meet the expert- and government-recommended guidelines.⁹⁸ However, the IWG guidelines were not approved by Congress due to the strong opposition by industry actors.⁹⁸

Between 2008 and 2013, several other public meetings, public hearings and roundtables were held to encourage dialogues between different stakeholders to further mutual understandings and build up joint efforts,⁹⁹⁻¹⁰³ but no available published evidence showed that those efforts had emphasized the recommendations on regulating celebrity endorsements in food and beverage brands or products marketing in the US. In addition, no timeline was established to implement the agreed actions regarding the responsible use of celebrity endorsement in the US food and beverage marketing.

Accountability step 4: Enforcement: holding to account (some progress)

This step involves an empowered body using incentives or disincentives to reward or penalize actors based on their performance and to urge underperforming actors to change behaviors. Incentives or disincentives used to hold companies to account could be either financial or reputational.

Financially, in 2017, The California state government fined PepsiCo's Gatorade US \$300,000 dollars for its new video game that emphasized on the benefits of drinking branded sports drink, Gatorade, over the consumption of water.¹⁰⁴ Celebrities including the musician, Justin Bieber, professional boxer, Mike Tyson, and football player, Troy Polamalu, appeared in the game to attract teens and young adults who aged 13 years and older.¹⁰³

In September 2019, Google was fined US \$170 million by the FTC and the New York Attorney General for YouTube's illegally collecting personal information from children in order to customize marketing practices that appealed to them, including food and beverage products promoted by celebrities or social media influencers.^{60,105} Google and YouTube were also required to implement new policies to protect children from being targeted by data-driven marketing and advertising on YouTube.¹⁰⁶ Google also agreed to put a substantial investment to make marketing practices via the YouTube Kids more suitable for children under 12 years.¹⁰⁶

Reputationally, in 2015, The Campaign for a Commercial Free Childhood (CCFC), a nationwide leading non-profit organization that devoted to limit the commercial impact on children, together with the CDD), a consumer and privacy protection organization, after counselling the Institute for Public Representation, a public interest law firm and law school clinic founded by Georgetown University Law Center, found that approximately 600 videos

from Google's YouTube Kids app advertised foods or beverages that do not meet the CFBAI nutrition criteria.¹⁰⁷

Nearly 30% (175 out of 600 videos) fell into the category of product placement and endorsement that included celebrities or influencers.¹⁰⁷ For example, the child actress, Aubrey Frances Anderson-Emmons from the TV show *Modern Family*, promoted Mondelez International's Oreo cookies and Ferrero's Nutella without disclosing the financial relationships with these companies.¹⁰⁷ The CCFC and CDD requested that the FTC investigate these CFBAI member companies for deceptive or unfair marketing practices that violated the FTC Act's Section 5.¹⁰⁷ These NGO also urged 17 companies (e.g., McDonald's USA, Nestlé USA and PepsiCo) to work with Google to remove food and beverage products that did not meet the CFBAI nutrition standards from the YouTube Kids' social media platform.¹⁰⁷ The FTC did not investigate or take any action in response to this request. (Professor Angela Campbell, Georgetown University, Washington, DC, USA, 6 October 2019). However, consumer advocacy pressure and actions taken by US Senator Edward Markey (D-Massachusetts) in December 2019 led to Google agreeing to adhere to the nutrition standards for children aged 14 years and younger on product placement, influencer "unboxing" videos and other practices.¹⁰⁸

In 2017, the FTC sent 90 letters admonishing celebrities and influencers who had not disclosed their relationships with corporate brands or products promoted on their social media websites including Facebook and Instagram.¹⁰⁹

Reputational accountability was also adopted by civil society organizations. Between 2013 and 2016, CSPI published eight news releases that publicly criticized celebrities who had endorsed EDNP products including PepsiCo's partnerships with the female entertainers, Beyoncé Knowles and Katy Perry; and The Coca-Cola Company's partnerships with female

entertainers Selena Gomez and Taylor Swift; Olympic skater, Michelle Kwan; and professional alpine ski racer, Ted Ligety.¹¹⁰⁻¹¹⁷ Therefore, the consumer advocacy NGO CSPI played a central role in holding the celebrities and companies to account for the responsible use of celebrity endorsement during the review period.

Accountability step 5: Improvements: responding to the account (limited progress)

This step involves the engagement of all stakeholders to strengthen accountability structures. During the review period, some stakeholders took positive steps to use celebrity endorsement more responsibly. First, food and beverage companies have provided healthier options such as water or non-calorie drinks endorsed by celebrities.⁴⁵ However, celebrity endorsement was still used to promote more EDNP products that bring more revenue than healthier alternatives.⁵³ CFBAI member companies have been complying their nutrition criteria and have addressed that the use of celebrity endorsement and movie tie-ins must be consistent with their marketing commitments from its third-edition core principles.^{39,41,49,118-126} However, such self-reported compliances were biased because the CFBAI principles only cover the children under 12 years of age, failed to include the broad range of digital and social media, and only applicable to individual products rather than the corporate brands.^{44,46,127} Other industry programs (i.e., American Beverage Association's Balanced Calories Initiative to reduce calories consumed by Americans from beverages by 20% by 2025, and the Children's Confection Advertising Initiative) during the review period had not included celebrity endorsement in their core principles.¹²⁸⁻¹³¹

Celebrities have been increasingly involved in endorsing marketing campaigns that promote healthy dietary behaviors.⁶⁷ However, such involvements were often *pro bono*, while food and beverage companies pay generous amounts of money to secure them for corporate

brands, which might undermine the effectiveness of the promotion for healthy dietary behaviors.⁶⁷ Civil society groups have publicly criticized celebrities' involvements of promoting EDNP products,¹¹⁰⁻¹¹⁷ but have not specified how accountability structures could be improved.

Furthermore, IWG's stricter nutrition criteria have not been approved or adopted, and the HER has no power to implement their recommendations. Finally, there is no food and beverage marketing guidelines to develop one universal set of standards to guide food and beverage marketing to children and adolescents (ages 18 years and younger) that includes all forms of marketing techniques including celebrity endorsement. Diverse stakeholders should create an environment to encourage industries to improve the food and beverage marketing landscape for American young people. Table 6.3 summarizes recommended policies to diverse stakeholders to improve the celebrity marketing and media environments for children and adolescents to promote healthy food environments.

Table 6.3 Recommended policies and actions for diverse stakeholders to use celebrity marketing to promote healthy food environments to children and adolescents.

#	Stakeholder Group	Recommended Actions
1	US Congress	The US Congress should authorize and appropriate adequate funding to support the FTC or another independent body to regularly monitor trends in the food and beverage marketing landscape to American children and adolescents up to age 18 years.
2	Government agencies or other empowered independent body	- Issue penalties to companies and celebrities who engage in marketing practices for unhealthy food and beverage products targeted to children and adolescents. - Foster dialogues among stakeholders who may hold different positions to improve mutual understating. - Issue universal nutrition and marketing standards for children and adolescents up to 18 years.
3	Celebrities	- Celebrities serve as positive role models for children and adolescents, enter contracts with companies to encourage the promotion of food and beverage brands and products that meet recommended nutrition guidelines. - Celebrities should be held accountable to the FTC's endorsement guidelines to disclose the endorsement relationship with food,

		beverage and restaurant companies through print, broadcast and social media platforms.
4	Industry trade associations	Establish healthy promotion and celebrity endorsement guidelines for their company members.
5	Industry self-regulatory programs	- Issue policies and nutrition criteria to cover celebrity endorsement of food and beverage products targeted adolescents ages 12-18 years in all media channels. - Encourage non-participating companies to join and adopt the program's guidelines.
6	Food, beverage, restaurant and entertainment companies	- Shift celebrity marketing resources and endorsement contracts to promote food and beverage products that align with the Dietary Guidelines for Americans (DGA) 2015-2020 and other experts and authoritative bodies' recommended nutrition guidelines. - Join the industry self-regulatory programs and extend their voluntary pledges for responsible food and beverage marketing to cover the practice of celebrity endorsement for children and adolescents.
7	Civil society organizations	- Develop policy statements and position papers that cover all forms of food and beverage marketing to children and adolescents, and call on the industry to use celebrity marketing only to promote healthy food and beverage products. - Use social media (e.g., twitter, online petitions) to praise compliant companies that extend existing self-regulatory program guidelines and policies to cover adolescents up to 18 years, and name or shame non-compliant companies that continue to use celebrity endorsement to promote food and beverage products with unhealthy nutrient profiles that do not support a healthful diet. - Conduct evaluations of company changes in policies and industry self-regulatory programs and share the results extensively with all stakeholder groups.
8	Private foundations	- Fund research and independent evaluations of trends in celebrity marketing for food and beverage brands, products and groups to build a culture of health. - Encourage private-sector businesses to realign celebrity endorsement to promote healthy-profile food and beverage products.
9	Mass media	- Pay close attention to the recent published scientific research regarding celebrity endorsement used to promote food and beverage products to young people. - Interpret the results of scientific research into plain language to inform young people or their parents about the healthiness of the food and beverage products endorsed by popular celebrities.
10	Public citizens	- Use social media and sign online petitions to encourage specific companies and industry self-regulatory programs to use of celebrity endorsement only to promote healthy food and beverage products. - File complaints with the FTC and CFBAI for cases that use celebrity endorsement to promote branded products with unhealthy nutrient profiles and that do not adhere to the FTC endorsement guidelines.

6.4 Discussion

Young people in the US have been immersed in food marketing that used culturally and demographically tailored celebrities to market EDNP food and beverage products.^{57,61} Numerous expert and authoritative bodies have recommended food, beverage, restaurant and entertainment companies and industry sectors to perform more responsible marketing practices to young Americans.^{38,40,44-47} However, industries continuingly and increasingly marketing unhealthy food and beverage products through different channels and settings using multiple techniques.¹³²

The government is accountable to exercise their power of policy making to secure public interests over private interests with the joint efforts of all related stakeholders.¹³² This study identified a few critical accountability gaps. First, government or an empowered independent body should establish clear food and beverage marketing performance expectations for companies to implement best celebrity marketing practices. Industry actors are inclined to establish and follow weaker nutrition guidelines or standards such as the CFBAI self-regulatory programs rather than stricter ones issued by expert or authoritative groups such as the IWG or HER recommendations.²⁴ Therefore, an empowered independent body is critical to monitor the implementation of stronger policies and regulations in this regard. Ever since 2011, the FTC's authority to regulate unhealthy or deceptive food and beverage marketing to children and teens was limited due to commercial and political barriers, but it has been playing an essential role in reviewing the performance of food marketing.^{40,45} Expert groups have called for congressional actions to restore the FTC's original authority of monitoring and enforcing compliance of the food marketing regulations, but no action has been taken by Congress.^{38,89} Recently, the FDA has started to explore the influence of celebrity endorsement disclosure and the digital influencer marketing of dietary supplements on consumers perception.¹³³ The FTC should be empowered to

take the corresponding actions to initiate and support research, practice and policies to promote responsible food and beverage marketing.

By 2018, the evidence showed that stakeholders had made some progress in taking the account by examining and evaluating actors' performance regarding using celebrity endorsement in food and beverage promotion, and in holding to the account to use incentives and disincentives to monitor the actors' performance, but not enough progress had been made in sharing the account to encourage talks between different stakeholders. Finally, limited progress had made in responding to account to strengthen accountability structures to fundamentally regulate celebrity endorsement used in the US food marketplace, which was prohibited in children's food advertising from one or more channels in United Kingdom, Ireland, Spain, Brazil and Chile, but not in the US^{134,135} Food marketing in the US is more based on self-regulation initiated by industry associations compared to other developed countries, pursuing legislation that prohibit the use of celebrity endorsement to market unhealthy food and beverage products to children and adolescents need a permissive political climate.^{30,38}

As identified by expert and authoritative bodies such as the NAM, IWG and HER, celebrity endorsement was a marketing technique more directed to older children and adolescents.^{38,44,46} However, current industry self-regulatory programs focus on children less than 12 years old, and the recommendations issued by expert or authoritative groups covering children and adolescents up to 17 years old have not been implemented.^{44,46,127} Moreover, young adults consume more EDNP food and beverage products than any other age groups, but they are often neglected as a target population for obesity prevention.^{6,136,137} Additionally, celebrity endorsement has disproportionally targeted racial/ethnic minority young people, but no explicit efforts have been made to protect them.⁶²⁻⁶⁴

Study strengths and limitations

This is the first comprehensive review of the peer-reviewed and gray literature about how celebrity endorsement has been involved in food, beverage and restaurant products in the US. This is also the first in-depth evolution of the accountability structures of different stakeholders' roles in using celebrity environment to promote healthy food environments. Guided by the LEAD principle, this study systematically located and synthesized comprehensive evidence source from peer-reviewed studies, gray literatures and Internet documents. Another strength of this study is the data triangulation used the increase credibility to the found results. The study has some limitations. First, the unavailability of proprietary commercial data prevented us from a more accurate analysis of expenditure trends for celebrity endorsement used to market food and beverage products. Second, the lack of experimental peer-reviewed studies made it not feasible to conduct a systematic review, thus limitations also include the potential selection bias and potential missing data in a narrative review.

Future research should examine the recent food marketing expenditure trends for celebrity marketing practice directed to children, adolescents and young adults including other settings where evidence is not available such as in settings of school and childcare, community events, outdoors, and public transportation. Finally, future research should examine facilitators and barriers that influence stakeholders to develop or follow responsible celebrity marketing policies, which could strengthen the accountability structures.

6.5 Conclusions

This narrative review examined the available evidence concerning celebrity endorsement used in promoting food and beverage products or healthy dietary behaviors. We evaluated the progress and limitations of stakeholders' accountability to regulate celebrity endorsement used

for food and beverage promotions between 2000 and 2019. During the review period, progress was made by some companies, industry sectors and NGO toward more responsible marketing practice via industry self-regulatory programs or national marketing campaigns. However, most companies have not yet joined any kind of industry self-regulatory programs or achieved the recommendations issued by public health experts or federal governments to use celebrity endorsement only to promote healthy food and beverage products. Government agencies, industry or industry groups, NGO, civil society groups and other stakeholders should substantially strengthen the accountability structures for the use of celebrity endorsement to ensure healthy food environments for American children and adolescents. The results of this study will assist different stakeholders to develop policies or implement actions to achieve public health goals.

Acknowledgments

I would like to Thank my PhD Committee members for giving feedback on the first version of this manuscript during the preliminary exam presentation.

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Chapter 7. Conclusions

7.1 General Conclusions

Responsible food marketing is an important component of creating healthy food environments.¹ Health promotion in food marketing can positively impact consumer behaviors toward their food choices.¹ However, celebrity endorsement, used as an emerging marketing strategy for food and beverage products or brands, were often associated with negative consumer behaviors among children, adolescents and young adults.²⁻⁴ This PhD research undertook four studies, described in four publications, investigating the nature, extent, and perceived influence of celebrity endorsement used by both business firms and non-profit organizations to promote branded food and beverage products or branded marketing campaigns to young Americans. This research also provides evidence-informed guidance for policies and actions that relative stakeholders can take to promote responsible food marketing and healthy food environments.

Used descriptive and inferential statistics combined with interactive data visualizations, this PhD research first presents an overview of celebrity involvement and endorsements of US food and beverage products, brands, and marketing campaigns between 1990 and 2017 (Study 1). Results found that sports, entertainment and other celebrities (i.e., celebrity chefs, politicians, entrepreneurs) were more frequently involved in endorsing EDNP than healthy food and beverage products. It is interesting to note that while hundreds of celebrities were involved in three specific health promotion and marketing campaigns (i.e., the Got Milk? Campaign, the FNV Campaign and the Drink Up Campaign), the EDNP foods that did not align with the USDA's Smart Snacks Standards nutrition guidelines⁵ still dominated their endorsements. Stratified analyses to identify associations between celebrity demographic profiles and the nutritional profiles of the food and beverage products they endorsed only supported two of the

four hypotheses (Millennial and male celebrities were more likely to endorse EDNP products than Generation Z teen and female celebrities, respectively). No statistical significance was observed for celebrities of other demographic profiles. Ultimately, this research found that celebrity endorsement of foods and beverages in the US did not provide healthy food environments for young people.

This PhD research extended previous published descriptive research that solely focused on celebrity endorsement in the commercial food and beverage marketplace by exploring the use of celebrity endorsement in PHA's 2015 FNV Campaign (Study 2). This cross-sectional study found that celebrities involved in the FNV Campaign between 2015-2016 did not represent the demographic profiles of the Campaign's target populations of culturally diverse Generation Z teens and Millennial moms. Additionally, many celebrities associated with the FNV brand had previously also endorsed EDNP food and beverage products, thus potentially undermining the FNV Campaign's promotion of consistent messaging to increase fruit and vegetable purchases and consumption. This research recommends that PHA should recruit celebrities who better represent the campaigns' target populations; selection criteria for choosing celebrities for the national FNV Campaign should be established to recruit only those associated with healthy lifestyle promotions. By doing so, the FNV Campaign could contribute to a Culture of Health advocated by the RWJF that aims to provide everyone in the US with a fair and just opportunity for health and well-being.

While previous published experimental studies concentrated on exploring the influence of celebrity marketing on children or adolescents, this PhD research further contributed to the literature by seeking to understand the perceived influence of celebrity endorsement of food and beverage products, brands, and campaigns on Millennials, whose age were overlapped with

young adults during this research period,⁶ and who were reported to trust celebrities more than older generations⁷ (Study 3). Used Q methodology,⁸ a mixed-method research methodology, this experimental study identified three distinct viewpoints, including Millennials who only trusted 1) celebrities affiliated with healthy food and beverage promotion; 2) female endorsers who bring positive effect to society; and 3) Black celebrities that represented participants' own racial/ethnic identities. Millennials who did not prioritize the healthiness of the endorsed food and beverage products when making food choices may be influenced by their trusted celebrities for any manner of foods and beverages. This study provided a standard for Millennials' preference for celebrities that may be utilized when initiating health promotion social media campaigns or commercially marketing healthy food and beverage products to this population.

Policy intervention is one of the most effective strategies for enabling population-wide improvements for dietary behaviors.¹ While other published studies only mentioned the importance of using policy tools to address the current food marketing issues, this PhD research did a comprehensive analysis of the existing policy landscape and accountability structures framing the responsible use of celebrity endorsement in the US food and beverage marketplace through an accountability framework (Study 4). Findings showed that although several industrial, expert, and governmental regulations were put in place to curb the promotion of unhealthy food and beverage products, food and beverage companies frequently continued to partner with celebrities to endorse such food and beverage products. Results from this study also identified accountability gaps wherein stakeholders are not held accountable to supporting a food and beverage celebrity marketing environment that promotes healthy dietary behaviors for young people.

7.2 Research Strengths

Strengths of this PhD research as follows. Study 1 used both the governmental and expert (i.e., FTC, USDA, HER)^{5,9,10} nutrition standards for food and beverage category classification and the USDA's standards⁵ for nutrition analysis of the endorsed products to ensure the accuracy of the analyses. Study 1 not only provided celebrity endorsement statistics and distributions, but also visualized all endorsement relationships among celebrities, food and beverage categories, and companies through an interactively dendrogram. Study 2 encouraged audience resonance and interaction by incorporating the use of creative celebrity endorsement images. Study 3 was the first experimental study in the US to examine Millennial' viewpoints regarding celebrity endorsement of foods and beverages based on the celebrity endorsement models and frameworks. Guided by the NAM's LEAD¹¹ principles and the Accountability frameworks,¹² Study 4 conducted a comprehensive review and policy analysis based on peer-reviewed and gray literature, which might not be achieved by a systematic review of peer-reviewed studies only.

7.3 Research Limitations

A few limitations of this research can also be defined. Study 1 and 2 were not able to capture the duration of each endorsement involved in food and beverage products, which may have incorrectly estimated the number of endorsements for EDNP or healthy products. Study 3 only recruited participants from Virginia Tech who had a college minimum education levels; this limited sample size is not representative of the entire Millennial population. Finally, the lack of standards for qualitative evidence selection for Study 4 may have contributed to selection bias by potentially missing data.

7.4 Future Research Implications

Research and knowledge gaps identified but not resolved by this PhD dissertation research can be addressed in future research. Firstly, a comprehensive database with detailed information (i.e., the start and end date of the endorsements, endorsement relationships, media channels and the susceptible populations) can be created from the current data and expanded upon to more accurately and comprehensively evaluate celebrity endorsements used in the US food and beverage marketplace. Secondly, an experimental study can recruit participants representing different age groups and locations, education backgrounds, social-economic status, to further explore the perceived influences of celebrity endorsement of food and beverage products among young people. Thirdly, a more recent celebrity food and beverage marketing expenditure trend should be identified to assess the market share of this integrated marketing strategy and its potential impact on children, adolescents and young adults' dietary behaviors. As the food and beverage marketing has shifted from traditional media channels to digital marketing platforms, social media influencers have outsold regular celebrities in promoting products and brands. Future research should keep up with new marketing trends to explore the impact of social media influencers on promoting food and beverage products in different social media platforms such as Facebook, Instagram, YouTube, etc.

7.5 Policy implications

This research provided empirical evidence from descriptive, experimental, and comprehensive literature review studies that call for policy interventions for celebrity endorsement used in food and beverage product and brand advertising and marketing in the US. A detailed list of policy and action recommendations for 10 relative stakeholders have been illustrated in Study 4. Overall, this body of research provides opportunities for stakeholders (i.e.,

US government, private-sector actors, and non-governmental organizations) to mobilize, develop, and implement policies and actions to ensure that celebrity endorsement is used to promote healthy food and beverage products, healthy dietary behaviors and healthy food environments.

Chapter 7. References

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Appendix A. Study 2: Fair Use Evaluation for FNV Celebrities

Fair Use Evaluation Documentation

Compiled using the Fair Use Evaluator [cc] 2008 Michael Brewer & the Office for Information Technology Policy,
<http://librarycopyright.net/fairuse/>

Name:	Vivica I. Kraak
Job Title:	Assistant Professor of Food and Nutrition Policy
Institution:	Virginia Polytechnic and State University (Virginia Tech)
Title of Work Used:	Images of more than 40 brand mascots and more than 55 media characters used by companies to market foods to children
Copyright Holder:	15 food, beverage or restaurant companies and 5 entertainment and media companies
Publication Status:	Published
Publisher:	
Place of Publication:	
Publication Year:	It varies depending on each brand mascot or character
Description of Work:	Two figures included in a paper reviewed by the UK journal, Obesity Reviews, that provide visual examples of companies' brand mascots or media characters used to influence children's diet-related cognitive, behavioral and health outcomes.
Date of Evaluation:	October 17, 2014
Date of Intended Use:	October 17, 2014

Describe the **Purpose** and Character of Your Intended Use:

The images used in Figure 1 (examples of food, beverage and restaurant companies' brand mascots) and Figure 2 (examples of media characters used by entertainment companies) are intended for nonprofit, educational purposes only. They are incorporated into a manuscript under review for publication by Obesity Reviews. The paper is titled, The Influence of Food Companies' Brand Mascots and Entertainment Companies' Cartoon Media Characters on Children's Diet and Health: A Systematic Review and Research Needs by Vivica I. Kraak, PhD, RD (Virginia Tech) and Mary Story, PhD, RD (Duke University).

This paper represents a "transformative work" that illustrates the difference between a brand mascot and media character. However, the figures are small portion of the paper that reviews the experimental literature using media characters to influence children's food preferences, food choices, diet and health. Additionally, we believe that the social benefit resulting from a review, critique and public discussion about the responsible use of cartoon brand mascots and media characters to promote healthy foods and a healthy diet to children outweighs the exclusive rights of the copyright or trademark holders (20 companies listed in the manuscript and Figures 1 and 2).

Fair



Unfair

Describe the **Nature** of Your Intended Use of the Copyrighted Work:

The images we propose to use in the paper are widely available in food retail settings and on the Internet. The images have been previously published. Additionally, we have organized the images in a new way that has not been done before. The brand mascots are organized by five food categories of nutritional concern (e.g., beverages and dairy, candy, children's meals, ready-to-eat cereals and snack foods) as well as by company and brand name. The media characters are organized by parent company and sub-business, and also by food, beverage or restaurant companies that have licensed the characters to promote food products to children. The proposed work is of factual nature that is based on scientific evidence.

Fair



Unfair

Describe the **Amount** of Your Intended Use in Relation to the Copyrighted Work as a Whole:

Only a few examples of brand mascots and media characters are used in a reasonable and limited way to illustrate examples of cartoon characters and mascots used by 20 different companies. Moreover, Figures 1 and 2 are not the heart of the original paper that provides a systematic evidence review of the use of cartoon brand mascots and media characters to influence children's diet-related outcomes.

Fair



Unfair

Describe the **Effect** of Your Intended Use on the Potential Market or Value of the Copyrighted Work:

This manuscript that contains the images is intended for educational and non-commercial purposes only. Moreover, proper attribution is given to the companies that have been cited appropriately in the reference section of the manuscript.

Fair

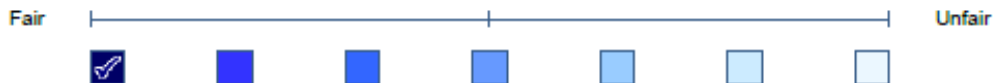


Unfair

The Average **"Fairness Level,"** Based on Your Rating of Each of the 4

Factors, Is:

[\[see tool disclaimer for important clarifying information\]:](#)



Based on the information and justification I have provided above, I, Vivica I. Kraak, am asserting this use is **FAIR** under Section 107 of the U.S. Copyright Code.

Signature:



Date of Signature:

10/17/2014

****Disclaimer:** This document is intended to help you collect, organize & archive the information you might need to support your fair use evaluation. It is not a source of legal advice or assistance. The results are only as good as the input you have provided by are intended to suggest next steps, and not to provide a final judgment. It is recommended that you share this evaluation with a copyright specialist before proceeding with your intended use.*

Appendix B. Study 3: Q-Sort Cards







Appendix C. Study 3: Fair Use Evaluation for Celebrities

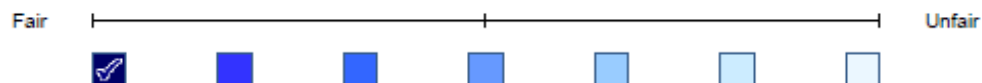
Fair Use Evaluation Documentation

Compiled using the **Fair Use Evaluator** [cc] 2008 Michael Brewer & the Office for Information Technology Policy,
<http://librarycopyright.net/fairuse/>

Name:	Mi Zhou
Job Title:	PhD student and Graduate Teaching Assistant
Institution:	Virginia Polytechnic and State University (Virginia Tech)
Title of Work Used:	Images of 48 entertainment, professional sports, politicians and other types of celebrities who have endorsed branded food, beverage products and branded marketing campaigns
Copyright Holder:	The food, beverage and restaurant companies own the copyrights and/or trademarks for the company brands. Each celebrity owns the trademark/copyright for his/her image used for product or brand endorsements
Publication Status:	Published
Publisher:	The images of the celebrities are available in the public domain through Google Image search, print, broadcast, and social media
Place of Publication:	Food, beverage and restaurant companies' websites, marketing campaigns' websites, television, Internet and social media advertisements
Publication Year:	1990-2017
Description of Work:	An image file containing these examples will be submitted to a peer-reviewed journal that provides visual examples of celebrity endorsement of different food and beverage products. They are intended for educational purposes only.
Date of Evaluation:	February 17, 2018
Date of Intended Use:	February 17, 2019

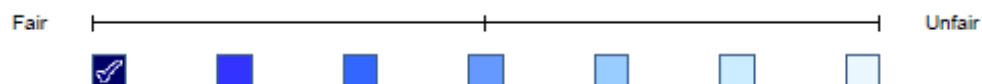
Describe the **Purpose** and Character of Your Intended Use:

The purpose of these images is intended to show a visual example that illustrates the specific food and beverage product endorsements. These images are included in an academic paper that has provided an integrative understanding of Millennials[®] (born 1981 to 1994) trust about celebrity endorsements of food and beverage products in the United States. The intent is for educational, non-commercial purposes only. The title of the paper is: A Q methodology study of Millennials' views about celebrity endorsement of branded food and beverage products and branded health promotion and marketing campaigns in the United States. This manuscript represents a transformative work conducted to understand the perceived influence of celebrity endorsement of food and beverage products on Millennials dietary habit and overall health. This may guide U.S. government and industry initiatives to use celebrity endorsement to promote brands associated with food and beverage products that align with healthy dietary guidelines and encourage healthy lifestyle behaviors. My co-authors and I believe that the social benefit from a review, critique and public discussion about the responsible use of celebrity marketing to promote healthy food and beverage products to support a healthy diet is essential given the extent of the obesity epidemic in the United States. We believe that this use outweighs the exclusive rights of the copyright or trademark holders.



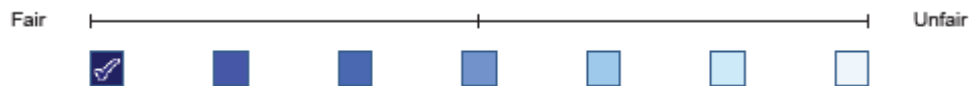
Describe the **Nature** of Your Intended Use of the Copyrighted Work:

The images that we propose to use are available in the public domain through print, broadcast, internet and social media, and can be traced to a unique website. We have organized the images in a novel way that has not been done previously. The celebrity endorsement images are organized into different food and beverage categories. The proposed work is of factual nature that is based on a comprehensive review of the literature on this topic.



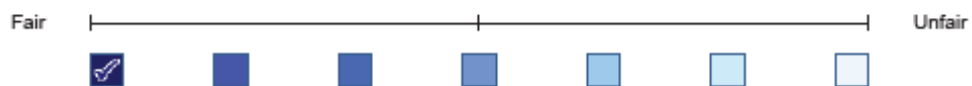
Describe the **Amount** of Your Intended Use in Relation to the Copyrighted Work as a Whole:

A total of 48 celebrity images has been used to illustrate examples of different entertainment and professional sports celebrities (male and female) associated with the endorsements of food and beverage products of different categories. These examples have been taken from a larger Excel database that contains more than 550 celebrities involved in food and beverage marketing endorsements in the United States.



Describe the **Effect** of Your Intended Use on the Potential Market or Value of the Copyrighted Work:

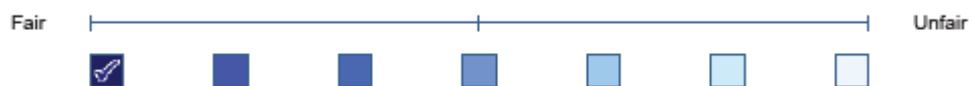
The manuscript includes the use of these images is intended for educational and non-commercial purposes only.



The Average **"Fairness Level,"** Based on Your Rating of Each of the 4

Factors, Is:

[\[see tool disclaimer for important clarifying information\]:](#)

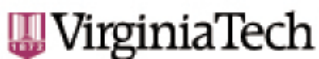


Based on the information and justification I have provided above, I, Mi Zhou, am asserting this use is **FAIR** under Section 107 of the U.S. Copyright Code.

Signature: Mi Zhou

Date of Signature: 2/17/2019

Appendix D. Study 3: IRB Memorandum



Office of Research Compliance
Institutional Review Board
North End Center, Suite 4120, Virginia Tech
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-4606 Fax 540/231-0959
email irb@vt.edu
website <http://www.irb.vt.edu>

MEMORANDUM

DATE: March 21, 2017 

TO: Vivica I Kraak, Mi Zhou

FROM: Virginia Tech Institutional Review Board (FWA00000572, expires January 29, 2021)

PROTOCOL TITLE: A Q Methodology Study of the Views of Millennials in Virginia on Celebrity Endorsement and Food and Beverage Marketing in the United States

IRB NUMBER: 17-250

Effective March 20, 2017, the Virginia Tech Institution Review Board (IRB) Chair, David M Moore, approved the New Application request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

<http://www.irb.vt.edu/pages/responsibilities.htm>

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As: **Expedited, under 45 CFR 46.110 category(ies) 7**
Protocol Approval Date: **March 20, 2017**
Protocol Expiration Date: **March 19, 2018**
Continuing Review Due Date*: **March 5, 2018**

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Invent the Future

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
An equal opportunity, affirmative action institution

MEMORANDUM

DATE: February 23, 2018
TO: Vivica I Kraak, Mi Zhou
FROM: Virginia Tech Institutional Review Board (FWA00000572, expires January 29, 2021)
PROTOCOL TITLE: A Q Methodology Study of the Views of Millennials in Virginia on Celebrity Endorsement and Food and Beverage Marketing in the United States
IRB NUMBER: 17-250

Effective February 23, 2018, the Virginia Tech Institutional Review Board (IRB) approved the Continuing Review request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at: <http://www.irb.vt.edu/pages/responsibilities.htm>

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As: Expedited, under 45 CFR 46.110 category(ies) 7
Protocol Approval Date: March 20, 2018
Protocol Expiration Date: March 19, 2019
Continuing Review Due Date*: March 5, 2019

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Invent the Future



Division of Scholarly Integrity and
Research Compliance
Institutional Review Board
North End Center, Suite 4120 (MC 0497)
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-3732
irb@vt.edu
<http://www.research.vt.edu/siro/hrpp>

MEMORANDUM

DATE: February 24, 2020
TO: Vivica I Kraak, Mi Zhou
FROM: Virginia Tech Institutional Review Board (FWA00000572, expires October 29, 2024)
PROTOCOL TITLE: A Q Methodology Study of the Views of Millennials in Virginia on Celebrity Endorsement and Food and Beverage Marketing in the United States
IRB NUMBER: 17-250

Effective February 24, 2020, the Virginia Tech Institution Review Board (IRB) approved the Continuing Review request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

<https://secure.research.vt.edu/external/irb/responsibilities.htm>

(Please review responsibilities before beginning your research.)

PROTOCOL INFORMATION:

Approved As: Expedited, under 45 CFR 46.110 category(ies) 7
Protocol Approval Date: March 20, 2020
Protocol Expiration Date: March 19, 2021
Continuing Review Due Date*: February 26, 2021

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

ASSOCIATED FUNDING:

The table on the following page indicates whether grant proposals are related to this protocol, and which of the listed proposals, if any, have been compared to this protocol, if required.

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Appendix E. Study 3: Poster Recruitment Flier

A Study that Explores the Views of Millennials on Celebrity Endorsement of Food and Beverage Products in the United States



We want to learn about your views regarding celebrity endorsements that are used to promote food, beverage, and restaurant products. If you are between the ages of 23 and 36 years and live in Virginia, you are eligible to participate in this study, which will be conducted by researchers from Virginia Tech in Blacksburg, Virginia.

The study involves completing three activities: celebrity recognition | survey (include a few questions ask your age, sex and race/ethnicity), picture card sort, and a post card sort questionnaire, which will take no more than 60 minutes to complete. You will receive a \$10.00-dollar gift card after completing all of the study activities.

If you would like to participate in this study, please contact the Research Coordinator, Mi Zhou at:

Email: mil4@vt.edu OR

Phone: (540) 808-6639

We look forward to hearing from you soon!

Appendix F. Study 3: Email Recruitment Flier

A Study that Explores the Views of Millennials on Celebrity Endorsement of Food and Beverage Products in the United States



You are invited to participate in a study about the use of celebrity endorsement of food and beverage groups, products and brands in the United States. The principal investigator for this study is Dr. Vivica Kraak, an assistant professor in the Department of Human Nutrition, Foods, and Exercise at Virginia Tech in Blacksburg, Virginia. This study will explore your knowledge, attitudes, beliefs and views about the credibility and “fit” of celebrities who partner with companies to endorse branded food and beverage products or generic food or beverage groups (e.g., water, milk and fruits or vegetables).

The research findings will help to inform policies to encourage celebrities and companies to promote food and beverage products to teens and young adults that support a healthy diet. The results will also help us understand how to use celebrity endorsement more effectively in future media and marketing campaigns to promote healthy lifestyles.

We are seeking 40 Virginia Tech students, staff and faculty between the ages of 23-36 years) to complete four activities over 60 minutes. The study will be conducted in-person and in English only.

What are you asked to do?

1. Your participation in this study is completely voluntary, confidential and has limited risk. If you agree to participate, you will be asked to review and sign an informed consent form (5 minutes).

2. You will complete a few questions about your demographic profile including your age, sex, and race/ethnicity. You will also be asked to review 100 photo images of people who may or may not be celebrities and select the specific food and beverage groups or products with which they are associated (**10 minutes**).
3. You will be given 48 cards, each one containing a photo and name of a celebrity, to sort by which celebrity who you believe is “most trusted” to “most distrusted” related to each person’s association with a different food or beverage brand or product, and record the results on a score sheet (**30 minutes**).
4. You will be asked to complete a questionnaire with questions asking how you think about the male and female celebrities who partner with food, beverage and restaurant companies to endorse many different types of food and beverage brands, products and groups (**15 minutes**).
5. Each person who completes all of the activities will be compensated with a \$10 gift card.

Should you have any questions about the research, or if you are interested in participating in this study, please contact:

Mi Zhou, Project Manager, Department of Human Nutrition, Foods, and Exercise, 338 Wallace Hall, 295 West Campus Drive, Virginia Tech, Blacksburg, Virginia 24601
Email: mi14@vt.edu; Phone: (540) 808-6639

Should you have any questions or concerns about the study's conduct or your rights as a research subject, or need to report a research-related injury or event, you may contact:

Dr. David M. Moore, Virginia Tech IRB Chair
Email: moored@vt.edu; Phone: (540) 231-4991
IRB#: 17-250

Appendix G. Study 3: Participant Consent Form

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Informed Consent for Participants in Research Projects Involving Human Participants

March 15, 2017

Title of Study: A Q Methodology Study of the Views of Millennials in Virginia on Celebrity Endorsement and Food and Beverage Marketing in the United States

Principal Investigator: **Vivica Kraak, PhD, RD**
Assistant Professor
Department of Human Nutrition, Foods, and Exercise
223 Wallace Hall
295 West Campus Drive
Virginia Tech, Blacksburg, VA 24061
email: vivica51@vt.edu; phone: (540) 231-9638

Co-Investigators: **Mi Zhou, PhD Student, MA, MPH**
Department of Human Nutrition, Foods, and Exercise
338 Wallace Hall
295 West Campus Drive
Virginia Tech, Blacksburg, VA 24061
email: mi14@vt.edu; phone: (540) 808-6639

I. Purpose of this Study

The purpose of this study is to explore your ability to recognize and associate celebrities who may or may not endorse food and beverage groups or products. It is also to explore your views, knowledge, attitudes, beliefs regarding celebrities who engage in multiple endorsements across food and beverage company brands and product categories. (e.g., water, milk and fruits or vegetables). We are seeking Virginia Tech students, faculty or staff who are between 21 and 35 years of age. The research findings will help to inform policies that encourage celebrity marketing to promote only brands associated with healthy food and beverage product profiles and that support healthy food environments. The results of the study may be published or used for presentations, but you will not be identified in any publication or presentation of this study or its results.

II. Procedure

If you agree to participate in this study, you will be asked to:

- (1) Read and sign this form to tell us that you want to participate in this study;
- (2) Answer a few questions about your demographic profile (i.e., age, sex, and race/ethnicity) as well as some questions about which celebrity endorsement you know or recognize. This should take about 10 minutes to complete;

(3) Complete a sort of 48 pictures of celebrity endorsements in order of the celebrities who you “trust the most” to the celebrities you “distrust the most” that will take about 30 minutes to complete.

(4) Consent to answer some questions in a questionnaire about the sort you have just finished. This should take about 15 minutes.

III. Risks

There are minimal risks associated with your participation in this project. The study has been reviewed and approved by the Virginia Tech Institutional Review Board. Your participation in this study is not required, and you may end the interview at any time. You have the right to remain anonymous in the reporting of the results in scholarly publications and conferences.

IV. Benefits and Compensation

There are no direct benefits to participate in this study other than to share your views, knowledge and beliefs regarding celebrity endorsement for food and beverage products. You will be provided with a modest incentive (a \$10 gift card) to compensate you for your time after you have completed the required activities.

V. Extent of Anonymity and Confidentiality

You have the right to remain anonymous for this study and your information will be kept confidential at all times and will be known only to the research team. Your responses to the brief questionnaire will obtain basic information about you including your name, affiliation and contact information will be stored separately from your responses for the activities and will be coded and kept confidential. Only trained researchers involved in this study will have access to identifiable information about you. At no time will the researchers release identifiable results of the study to anyone other than individuals working on the project without your written consent.

VI. Freedom to Withdraw

Your participation in this study is entirely voluntary, and you are free to withdraw from this study at any time without penalty. You are not obligated to answer all of the questions. If you choose not to answer a question, you will not be penalized. Should you choose to withdraw or otherwise discontinue your participation, you will still be compensated for your participation.

VII. Subject's Consent

I have read the consent form and conditions related to this research project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary written consent to participate.

Signature of Participant

Date _____

Printed Name of Participant

Should I have any questions about this study, I understand that I may contact the people below:

Vivica Kraak, PhD, RD

Principal Investigator and Assistant Professor Department of Human Nutrition, Foods, and Exercise 223
Wallace Hall, 295 West Campus Drive
Virginia Tech, Blacksburg, VA 24061
Email: vivica51@vt.edu; Phone: (540) 231-9638

Mi Zhou, MA, MPH

Project Manager and PhD Student
Department of Human Nutrition, Foods, and Exercise 338 Wallace Hall, 295 West Campus Drive
Virginia Tech, Blacksburg, VA 24061
Email: mi14@vt.edu; Phone: (540) 808-6639

Should you have any questions or concerns about the study's conduct or your rights as a research subject, or need to report a research-related injury or event, you may contact:

David M. Moore, PhD

Chair, Virginia Tech Institutional Review Board [For](#) the Protection of Human Subjects
Office of Research Compliance Virginia Tech, Blacksburg, VA 24061
Email: moored@vt.edu; Phone: (540) 231-4991

As required, the IRB for Research Involving Human Subjects at Virginia Tech has approved this research project.

Appendix H. Study 3: Celebrity Card Sort Instruction

A Q Methodology Study of the Views of Millennials in Virginia on Celebrity Endorsement and Food and Beverage Marketing in the United States

Exploring Your Views about Celebrity Marketing

Card-Sorting Instructions

March 15, 2017

A **celebrity** is a famous person recognized in a society who uses public recognition or the media to promote a brand, product or service in an advertisement or other marketing communication to influence sales, use or consumption. A celebrity may be a professional athlete, musician or public figure. This exercise will help us understand how you think about popular celebrities who partner with companies to endorse food and beverage brands, products or groups. There is no one right or wrong answer. We want to learn about your own point of view. The card-sorting activity should take about 30 minutes to complete.

You will be given 48 cards to review with photos of celebrities. Each card has one photo and a name of a celebrity with a specific brand or product. We want you to look over all the cards before sorting the photos of the celebrities according to who you believe is “most trusted” to the celebrities whom you believe are “most distrusted” related to the brand or product he or she is associated with in the photo. You will have a score sheet with a distribution and boxes from -4 to +4. Please place one image in one box to fill all of the 48 boxes. Feel free to ask the researcher any questions if something is not clear to you.

After you finish, a researcher will give you a questionnaire to complete to record your thoughts and views about the card-sort activity. The questions will also explore how you think about male and female celebrities who partner with food, beverage and restaurant companies to endorse many types of food and beverage brands, products and groups. This activity should last about 15 minutes.

Defining terms

- **Celebrity endorsement** is a promotional message made by a celebrity in the form of advertisements, verbal statements or other personal features that are associated with buying or eating a company's food or beverage brands or products.
- **Celebrity trust** involves how sure you are that the celebrity gives you information in an honest way about the food and beverage brand, product or group that he or she represents.
- **Celebrity attractiveness** involves whether you believe the celebrity is attractive or likable.
- **Celebrity expertise** involves whether you believe a celebrity has the knowledge, skills or experience to give you accurate information about a food or beverage brand, product or group that he or she represents.

Card-sorting instructions

1. Take the deck of 48 cards with the pictures of male and female celebrities and sit at a table with the paper copy of a scoring grid. Each card has an image and name of a celebrity who endorses a food or beverage brand, product or group (e.g., milk, water, fruits or vegetables). The numbers on each card is random and does not mean anything special.
2. Flip through the 48 cards and sort them into three different piles:
 - **Pile 1** for celebrities whom you **trust the most** to endorse the food or beverage brand, product or group that he or she represents
 - **Pile 2** for celebrities whom you do not know or you have no views about trusting them to endorse the food or beverage brand, product or group that he or she represents
 - **Pile 3** for celebrities whom you **distrust the most** to endorse the food or beverage brand, product or group that he or she represents
3. Take the pile of cards with your **most trusted celebrities** and select the top three whom you **trust the most** to endorse the food or beverage brand, product or group that he or she represents in the image. Place three cards under the +4 box on the right side of the board.

Continue to sort your **most trusted celebrities** by placing four images under the +3 box, six images under the +2 box, and 7 images under the +1 box until you have placed one card in each box on the right side of the board with the scoring sheet. You do not need to rank the cards in each column.

4. Next, take the pile of cards with the **most distrusted celebrities** and select the top three whom you *distrust the most* to endorse the food or beverage brand, product or group that he or she represents in the image. Place three cards under the -4 box on the left side of the board. Continue to sort your **most distrusted celebrities** by placing four images under the -3 box, six images under the -2 box, and 7 images under the -1 box until you have placed one card in each box on the left side of the board with the scoring sheet. You do not need to rank the cards in each column.
5. Take the cards you have not yet sorted and look over them. These are the celebrities whom you do not know or who you do not have any strong views about whether you trust them or not to endorse a specific food or beverage brand, product or group that they represent. Place eight cards in the 0 pile. Keep working until you have put a statement in each box. You do not need to rank the cards in each column.
6. When you have placed one card with an image into each box on the board, look it over and you can change your mind and switch images until you feel content about how you have sorted the cards.
7. After you finish the card sort, please write down the random numbers of each celebrity image on the score sheet. Afterwards, the researcher will ask you to complete a questionnaire that should take about 15 minutes. When you finish, she will give your parent a \$10.00-dollar Amazon gift card for you being in this study.

Thank you for completing this activity.

Appendix I. Study 3: Post Q-Sort Questionnaire

A Study of Millennials' Views About Celebrity Endorsement of Food and Beverage Products in the United States

Post Q-Sort Questionnaire

Study ID _____

Date _____

Thank you for completing the celebrity recognition survey and card-sort activity. Please answer the questions below. There are no right or wrong answers. We want you learn about your point of view about celebrity endorsement of food and beverage brands and products.

Celebrity Endorsement Questions

1. What did you think as you sorted the celebrity pictures?
2. Explain why you sorted the celebrity photos in the “most trusted” +4 pile.
3. Explain why you sorted the celebrity photos in the “most distrusted” -4 pile.
4. Explain why you sorted the celebrity photos under the 0 column.
5. Describe which celebrities in the photos you have the strongest emotional connection to and why.
6. Describe which celebrities in the photos you have the weakest emotional connection to and why.

7. Explain the most important features of a celebrity (i.e., **credibility** includes trust, attractiveness or expertise) that encourages you to desire, purchase or consume a specific food or beverage brand, product or group.
8. Explain the most important features of a brand that make a good “fit” between the celebrity and product that encourages you to purchase or consume a specific food or beverage product.
9. Describe your views about celebrities who endorse many products at the same time such as fruits or vegetables, milk or dairy, water, sugary soda and fast foods, salty snacks or candy.

Thank you for completing this activity. Please give the questionnaire to the researcher who will provide you with a gift card for completing all study activities.

Appendix J. Study 3: Participant Compensation Form



Department of Human Nutrition, Foods and Exercise

College of Agriculture and Life Sciences
338 Wallace Hall (0430), Blacksburg, VA 24061
540-231-4672 Fax: 540-231-3916
Homepage: <http://www.hnfe.vt.edu>

I have received compensation in the amount of a \$10 Amazon gift card for my participation in celebrity endorsement, which is being conducted by Mi Zhou, a PhD student, in the Department of Human Nutrition, Foods and Exercise.

Printed Name

Signature

Date

Appendix K. Study 4: Supplementary Table 1-3

Supplemental Tables

Evidence used to evaluate accountability for celebrity endorsement policies and practices to promote healthy food environments to American children and adolescents in the United States (US), 1 January 2000–31 December 2019

Note: Evidence sources (n=93) are alphabetized and organized into three supplemental tables by peer-reviewed articles (n=21); grey-literature sources (n=72) that includes academic studies, books and reports (n=47); and media sources, news releases and public testimony (n=25).

Supplemental Table 1: Peer-reviewed articles (n=21)

Primary author, year	Study purpose	Key results
Belch and Belch, 2013 ¹	This study examined the use of celebrity endorsers in magazines that were published in April 2007 for product and brand advertising in the US.	Food products were the fifth most marketed products by celebrities in magazines, but the nutrition profiles of the endorsed products were not determined in this study.
Bragg et al., 2013a ²	This study quantified endorsements of professional athletes for food and beverage products and brands in 2010, evaluated the nutritional quality of endorsed products, and determined the number of television commercial exposures of athlete-endorsement commercials for US children and adolescents.	Of 512 brands endorsed by 100 different athletes, sporting goods/apparel represented the largest category (28.3%), followed by food/beverages (23.8%) and consumer goods (10.9%). Professional athletes were associated with 44 different food or beverage brands in 2010. Nearly three quarters (72%) of the 62 food products endorsed by Bloomberg Businessweek's 2010 top 100 athletes were high-fat, sugar and sodium (HFSS), and 93.4% of the 46 advertised beverages had 100% of calories from added sugars. Sports beverages were the largest category of athlete endorsements (n=39), followed by soft drinks (n=21) and fast food (n=16).
Bragg et al., 2013b ³	This study conducted a content analysis of the type of sports references that appeared on food and beverage products and assessed each product's nutritional and marketing profile in two different supermarket chains in two cities in Connecticut in 2010.	The 102 products (53 foods and 49 beverages) used sports references as part of their packaging: 72.5% featured a character exercising, 42.2% were endorsed by a professional sports entity and 34.0% were child targeted. 88.7% of these products did not meet healthy criteria. The nutrition score for food products examined was far less below the recommended score and more than two-thirds of beverages (69.4%) were 100% sugar-sweetened seen by more children than adults. The investigators suggested policies and regulations to address this challenge including: policy makers could consider prohibiting sports references from unhealthy products that are child-targeted; sports organizations could avoid partnering with companies that market unhealthy products; and pediatricians, parents and public health experts should encourage these policy changes to assist in curbing food marketing to children.

Bragg et al., 2016 ⁴	This study quantified the number and type of food or beverage brands promoted by music celebrities associated with the 2013 and 2014 Billboard Hot 100 Chart, which ranks songs according to sales and radio impressions. Teen Choice Award data to assess the celebrities' popularity among adolescents. Nutritional quality of foods associated with these celebrities was assessed based off the Nutrient Profile Index, and non-alcoholic beverages were evaluated based on calories from added sugar.	Of the 590 endorsements by 163 celebrities in the sample, consumer goods (e.g., fragrances, makeup) represented the largest endorsement category (26%), followed by food and beverage (18%) and retail (11%). A total of 65 celebrities were collectively associated with 57 different food and beverage brands owned by 38 parent companies. Of these 65 celebrities, 53 (81.5%) had ≥ 1 Teen Choice Award nomination. Forty-nine (71%) of the 69 non-alcoholic beverage references promoted sugar-sweetened beverages (e.g., Red Bull, Pepsi Regular and Coca-Cola). More than three quarters (80.8%; n=21 celebrities) endorsed HFSS food products (n=26) (etc. McDonald's, Doritos and Hot Pockets). Baauer, will.i.am, Justin Timberlake, Maroon 5, and Britney Spears had the most food and beverage endorsements.
Bragg et al., 2018 ⁵	This study reviewed the literature about sports-related food marketing, including food and beverage companies' use of sports sponsorships, athlete endorsements, and sports video games.	Sports sponsorships with food and beverage companies often promote HFSS products and while many of these promotions do not explicitly target youth, sports-related marketing affects food perceptions and preferences among youth. When sports celebrities were paid to publicly endorse HFSS food and beverage brands and products, they may bring a "health halo" effect that makes consumers perceive the endorsed products as healthier than their unendorsed counterparts, thus may cause overconsumption of products.
Fleming-Milici. 2019 ⁶	This study used a cross-sectional online survey of US adolescents (ages 13–17, N=1564) to assess restaurant, food, and beverage brands ever liked, shared, or followed of on social media. Multivariate logistic regression models examined associations between brand engagement, sociodemographic variables (race/ethnicity, acculturation, age, gender, and parent education), and screen time (television [TV] and other screens).	Majority of teen's non-TV screen time is spent on their smartphones browsing social media platforms. Teens were reported engaging with HFSS food and beverage brands including fast food, sugary drink, candy and snack brands more than brands of other categories, and some of the HFSS products were supported by celebrities or social media influencers.
Bragg et al., 2019 ⁷	This study identified the prevalence of social media advertising among fast food, beverage, and snack companies and examine advertising techniques they use on Instagram, Facebook, Twitter, Tumblr, and Vine.	Of 2000 posts, 31.5% (n = 630) had interactive features, but just 61 (3.1%) posts featured adolescents. Nineteen percent of posts featured a celebrity or cross-promotional theme (e.g., Olympics), and more than two thirds (67.9%) promoted unhealthy food and beverages. Two-thirds (67.9%; n = 362) of foods shown were unhealthy, and 61.2% (n = 435) of beverages were sugar sweetened. The number of food, beverage and snack brand accounts on five social media platforms have increased by 567% from 2007 (n=1) to 2016 (n=568).

Grier and Johnson, 2011 ⁸	This paper provided a case study of a 12-year-old African American girl's daily exposure to different kinds of food marketing techniques for unhealthy food and beverage products targeted young people of racial/ethnic minority groups.	Example of food and beverage marketing targeted to minority youth were discussed. The McDonald's "365 black" campaign partnered with Venus Williams to embed this quick service restaurant (QSR) brand in integrated marketing communications (IMC) promotions. PepsiCo identified the powerful influence of celebrities among African Americans and used hip-hop celebrity Busta Rhymes to increase relevance and awareness of Mountain Dew and Code Red to African American consumers.
Grier and Kumanyika, 2008 ⁹	This is a systematic review of studies published between June 1992 and 2006 (n=20) that permitted comparison of food and beverage marketing to African Americans versus Whites and others.	African Americans were consistently exposed to food promotion and distribution patterns (including celebrity endorsements) with relatively greater potential adverse health effects than Whites.
Harris et al., 2012 ¹⁰	This study explored incongruities between the legal justifications for the commercial speech doctrine and the psychological research on how food advertising affects young people.	Food companies often claimed that the commercial speech doctrine (First Amendment) allows them to openly and legally target these products to young people using sophisticated psychological techniques (such as cartoon characters, celebrity endorsement and movie-tie-in) that take advantage of their developmental vulnerabilities. In the absence of effective industry self-regulation, it is imperative for the government to step in. Well-tailored government actions to restrict food and beverage marketing specifically targeting children should be able to withstand First Amendment scrutiny.
Harris et al., 2015 ¹¹	This research examined how Children's Food and Beverage Advertising Initiative (CFBAI)-participating and non-participating companies use child-targeted techniques and media placement to advertise candy on US television.	CFBAI-company non-approved brands represented 65% of candy ads viewed by children in 2011, up from 45% in 2008, and 77% of these ads contained child-targeted techniques. Although CFBAI companies only placed ads for approved brands on children's networks, 31% of ads viewed by children for CFBAI non-approved brands appeared on networks with higher-than-average youth audiences. CFBAI non-participating companies placed child-targeted candy ads primarily on children's networks. Despite CFBAI pledges, companies continue to advertise candy during programming with large youth audiences utilizing techniques that appeal to children. Both increased CFBAI participation and a more effective definition of "child-directed advertising" were required to reduce children's exposure to targeted advertising for foods that can harm their health.

Henderson and Baldasty, 2003 ¹²	This study conducted a content analysis that comparing on the position of speaking roles in prime-time TV commercials based on the amount and type of representation between white celebrities and celebrities of color.	A distinct racial segregation existed in prime-time ads, with Whites appearing in ads for upscale products, beauty products, and for home products (cleaners, non-fast food). People of color, in contrast, appeared in ads for low-cost, low-nutrition products (such as fast food and soft drinks) and in athletic and sports equipment ads.
James, 2010 ¹³	This study examined the usage of female sports celebrities as endorsers in magazines targeting female teenagers.	Celebrity athletes often rank highest as the most popular and highly paid endorsers. Female sports figures act as role models for female teenagers and studies have shown they have a positive impact on self-image and self-identification. Female athletes are being used to target female teens and are being portrayed as expert. Food and beverage products were most frequent (22 of the 42 products) marketed through such magazines. However, the evaluation for the healthiness of the endorsed products was not examined in this study.
Kelly et al., 2010 ¹⁴	This study examined TV food advertisement to children from a global perspective.	Promotional characters, including celebrities, sports figures and spokesperson, etc. were most applied by the US, compared with other countries, and about 80% were for noncore foods that discouraged by the dietary guidelines.
Mello, 2010 ¹⁵	This study reviewed comprehensively the obstacles as well as the opportunities that exist at present to expand the Federal Trade Commission's (FTC) oversight of food advertising to children. It also made recommendations for the FTC to play more critical role in regulating the food marketing target children and teens.	Broader rule making under the unfairness authority would require congressional intervention to expand the FTC's scope of authority. The FTC could strengthen its efforts to encourage the food industry to regulate its own advertising practices more stringently and could provide mechanisms for making voluntary initiatives more meaningful.
Pomeranz, 2010 ¹⁶	This review of laws provided a brief overview of the science on the influence of marketing over children. It also described the background of relevant FTC's actions and the commercial speech doctrine.	The Supreme Court confirmed that children's vulnerability and their inability to make informed choices permit the government to regulate speech directed at them. Communications that propose a commercial transaction through misleading or deceptive techniques (e.g., cartoon characters and celebrities popular among with young people) are not protected by the First Amendment. Similarly, conditions that render the consumer vulnerable and subject to overreaching undermine the public and private benefit of protecting commercial speech.
Pomeranz, 2011 ¹⁷	This study documented that attorney generals of the US have a broad range of authority over matters specifically relevant to obesity and nutrition policy	Significant room exists for greater attorney general involvement in formulating and championing solutions to public health problems such as obesity.

Stitt and Kunkel, 2008 ¹⁸	This study identified the nature and extent of food marketing messages presented during children's television programs on broadcast and cable channels run through February to June 2005.	Product-based spokes-characters (e.g., Tony the Tiger, Chester Cheeto) were quite common in food advertising to children, with 42.2% of all food ads including one or more of them. Celebrity endorsers were less common but still had a substantial presence, appearing in 9.7% of all food ads.
Thompson, 2008 ¹⁹	This study recorded and analyzed the after-school advertising on Spanish-language television in the US All advertisements aired during after-school hours (3 to 9 P.M.) on 2 US Spanish-language television stations were sampled over a 1-week period in the spring of 2006.	There were 31% of food/drink commercials advertised fast food, and 27% advertised drinks, most (54%) of which were sugared. About one third (31%) of the food/drink commercials targeted children, 12% featured Latino celebrities, and 19% made reference to Latino culture. Only 16% of the food/drink commercials had health-related content. Recommended some actions to different stakeholders including Spanish-language TV, health care provider, food and beverage industries and government bodies.
Weber et al., 2006 ²⁰	This study conducted a content analysis of food and beverage brand web sites to explore Internet food marketing strategies aimed at children and adolescents. It examined the food and beverage marketing strategies aimed at children and adolescents from 40 food and beverage brand websites that selected based on brands' annual sales data in the US market.	Almost all of the specially designated children's sites featured cartoon characters (96%) or spokes characters (91%) and 50% had athletes or celebrities. More than 90% of the brands were associated with HFSS products such as fast foods, snacks, candies, ready-to-eat cereals. Almost all (83%) offered branded coloring pages and 91% had other branded downloads, such as screensavers, that featured their products.
Zhou et al., 2019 ²¹	This study examined celebrity endorsement of branded food and beverage products and marketing campaigns in the US from 1990 to 2017.	542 celebrities were associated with 732 endorsements representing 120 brands of 59 companies across 10 food and beverage categories. Two thirds (67.2%; n = 80) of the brands represented EDNP products that did not align with the USDA's Smart Snacks Standards. Millennial (p = 0.008) and male celebrities (p = 0.041) were more likely to endorse EDNP products than Generation Z teen and female celebrities, respectively. No statistical significance was observed for celebrities of other demographic profiles.

Supplemental Table 2: Academic studies or reports, books and reports (n=47)

Primary author or organization name, year	Evidence source	Key findings
American Beverage Association, 2017 ²²	Industry report This is a third-party evaluation report on progress toward the national and community calorie goals after the initiation of the Beverage Calories Initiative. The commitment of this program includes two key components: (1) the National Initiative, which aims to reduce liquid refreshment beverage calories consumed per person nationally by 20 percent by 2025; (2) the Communities Initiative, which aims to achieve equivalent reductions over ten years in eight to ten select communities where the challenge is believed to be greatest.	Calories consumed from carbonated soft drinks, 100% juice, and juice drinks – the categories contributing the most beverage calories – decreased, but were offset by increased consumption in other categories, such as sports drinks. Bottled water consumption increased sharply from 2014 to 2016. Most of this growth, however, was incremental and not offset by reductions in the consumption of caloric beverages. Therefore, it did not contribute substantially to per person calorie reductions. No- and low-calorie beverage consumption continued to decline in 2016, representing a key headwind to achieving the national calorie goal. Celebrity endorsement was not mentioned in either the program requirements or achievements.
Campaign for a Commercial Free Childhood (CCFC), 2015 ²³	NGO report This report requested the FTC investigate whether the CFBAI members were violating their public pledges.	Approximately 600 videos from Google's YouTube Kids app advertised foods or beverages that do not meet the CFBAI nutrition criteria. There were 175 out of 600 videos fell into the category of "product placements and endorsement" that included celebrity or influencer endorsements. For example, child actress Aubrey Frances Anderson-Emmons from the TV show Modern Family promoted Mondelez's Oreo cookies and Ferrero's Nutella without disclosing the financial relationships with these companies. CCFC and the Center for Digital Democracy (CDD) thus asked the FTC to investigate CFBAI members for potential deceptive or unfair marketing practices that violate the FTC Act Section 5.105 They also urged 17 companies (e.g., McDonald's US, Nestlé US and PepsiCo) to work with Google to remove food and beverage products that do not meet the CFBAI nutrition standards from the YouTube Kids. However, the FTC did not investigate or take any action in respond to this request.
Center for Science in the Public Interest, 2010 ²⁴	NGO report This report card on food-marketing policies assessed food and beverage companies' policies and evaluating the relative strength of each policy regarding food and beverage marketing to children.	Of the 128 food, beverage and restaurant companies analyzed, two-thirds (68%) didn't have a policy for food marketing to children, those who have policies also lack uniform nutrition standards that create loopholes to market their popular products. Some principles did not have commitments for celebrity endorsement used at point-of-sale or on the packages. For example, Kellogg advertised sugary-coated Frosted Flakes by putting celebrities' images such as Michael Phelps on the package.

Center for Science in the Public Interest, 2012 ²⁵	NGO report This report investigated the types of children's menu items and the nutritional quality of children's meals at the largest restaurant chains in the US.	Of the 3,494 meal combinations, 97% did not meet the expert nutrition standards for children's meals and 91% did not meet the National Restaurant Association's Kids LiveWell standards. Nineteen of the restaurant chains offering children's meals (56%) do not have even one meal that meets the expert nutrition standards and 9 chains (26%) do not have one meal that meets the Kids LiveWell standards.
Children's Food and Beverage Advertising Initiative, 2008 ²⁶	Industry report This report described the progress that is being made during the first six months of the CFBAI in changing the nutritional profile of food and beverage products in child directed advertising; and evaluated the participants' compliance with their CFBAI pledge.	The founding CFBAI members included 10 leading food, beverage and restaurant companies. Under the CFBAI, participants committed to devote at least half of their advertising primarily directed to children under 12 years of age on TV, radio, print and the Internet to better-for-you products and/or to messages that encourage good nutrition or healthy lifestyles. The CFBAI also required participants commit to the use of Third-Party Licensed Character, Product Placement, Interactive Games, Elementary School Advertising, but not include the use of celebrity endorsement. Cadbury reported that during the reporting period it voluntarily reduced its use of LeBron James as the Bubblicious spokesperson in advertising targeting children under 12 years of age even though it was not required.
Children's Food and Beverage Advertising Initiative, 2009 ²⁷	Industry report This report provided an evaluation of the compliance of the CFBAI food marketing standards of the 12 participants during 2008.	Although only third-party licensed characters, not celebrity spokespersons, were covered by the CFBAI, Cadbury reported that during the reporting period it voluntarily did not renew its relationship with LeBron James as a spokesperson for Bubblicious. At the time it implemented its pledge, Cadbury reported that it already had reduced its use of LeBron James as the spokesperson for the brand in child-directed advertising.
Children's Food and Beverage Advertising Initiative, 2010 ²⁸	Industry report This report summarized how the commitments of participants in the CFBAI are changing food marketing to children during 2009.	In addition to the progress made by CFBAI on responsible food marketing, as of 2010, the original level of significant participation had grown to 17 from 10 participants. Member companies had expanded the limitations on the use of licensed characters in covered advertising to include celebrities (including athletes) and movie tie-ins. All such use must be consistent with a participant's advertising commitment.
Children's Food and Beverage Advertising Initiative, 2011 ²⁹	Industry report This report provided an evaluation of the progress of the CFBAI program between 2006 and 2011.	Many, but not all, participants used licensed characters, celebrities or movie tie-ins, but only in conjunction with products that met their nutrition standards. No participant reported actively seeking out or paying for product placement in editorial or entertainment content primarily directed to children under 12 years of age.

Children's Food and Beverage Advertising Initiative, 2012 ³⁰	Industry report This report provided an evaluation of the progress of the CFBAI during 2011.	Member companies had expanded the limitations on the use of licensed characters in covered advertising to include celebrities (including athletes) and movie tie-ins. All such use must be consistent with a participant's advertising commitment.
Children's Food and Beverage Advertising Initiative, 2013 ³¹	Industry report This report provided an evaluation of the progress of the CFBAI during 2012.	Member companies had expanded the limitations on the use of licensed characters in covered advertising to include celebrities (including athletes) and movie tie-ins. All such use must be consistent with a participant's advertising commitment.
Children's Food and Beverage Advertising Initiative, 2014 ³²	Industry report This report provided an evaluation of the progress of the CFBAI during 2013.	Member companies had expanded the limitations on the use of licensed characters in covered advertising to include celebrities (including athletes) and movie tie-ins. All such use must be consistent with a participant's advertising commitment.
Children's Food and Beverage Advertising Initiative, 2015 ³³	Industry report This report provided an evaluation of the progress of the CFBAI participants during 2014.	Member companies had expanded the limitations on the use of licensed characters in covered advertising to include celebrities (including athletes) and movie tie-ins. All such use must be consistent with a participant's advertising commitment.
Children's Food and Beverage Advertising Initiative, 2016 ³⁴	Industry report This report provided an evaluation of the progress of the CFBAI program during 2015.	Member companies had expanded the limitations on the use of licensed characters in covered advertising to include celebrities (including athletes) and movie tie-ins. All such use must be consistent with a participant's advertising commitment.
Children's Food and Beverage Advertising Initiative, 2017 ³⁵	Industry report This report provided an evaluation of the progress of the CFBAI during 2016.	Member companies had expanded the limitations on the use of licensed characters in covered advertising to include celebrities (including athletes) and movie tie-ins. All such use must be consistent with a participant's advertising commitment.
Children's Food and Beverage Advertising Initiative, 2018 ³⁶	Industry report This is a report on the progress of the CFBAI program during 2017.	Member companies had expanded to 18 companies and expended the limitations on the use of licensed characters in covered advertising to include celebrities (including athletes) and movie tie-ins. All such use must be consistent with a participant's advertising commitment.
Children's Food and Beverage Advertising Initiative, 2019 ³⁷	Industry report This is a report on the progress of the CFBAI program during 2018.	Member companies had expanded to 18 companies and expended the limitations on the use of licensed characters in covered advertising to include celebrities (including athletes) and movie tie-ins. All such use must be consistent with a participant's advertising commitment.
Children's Food and Beverage Advertising Initiative, 2014 ³⁸	Industry report This report provided the fourth edition of CFBI's program and core principles statement.	Participants will commit that the use of third-party licensed characters, celebrities (including athletes) and movie tie-ins in advertising primarily directed to children under age 12 will be consistent with their advertising commitments.
Children's Confection Advertising Initiative, 2017 ³⁹	Industry report This is the first compliance report for Children's Confection Advertising Initiative (CCAI). It provided information regarding why and how the program was created, what the participants' commitments are, and an assessment of their compliance in 2016.	It reported an excellent compliance, but celebrity endorsement was not mentioned in both marketing requirements and achievements.

Children's Confection Advertising Initiative, 2017 ⁴⁰	Industry report This is the CCAI's second annual compliance report. It provided information regarding the program and its goals, what the participants' commitments are, and an assessment of their compliance in 2017.	It reported an excellent compliance, but celebrity endorsement was not mentioned in both marketing requirements and achievements.
Federal Trade Commission and US Department of Health and Human Services (HHS), 2006 ⁴¹	Government report This is the report of the FTC and HHS joint workshop, which reviewed current food marketing practices and examined the actions that the food industry and media have taken to promote healthy food environments and to take actions to lower childhood obesity rates.	Workshop participants praised the progress (e.g., McDonald partnered with famous athletes, including Venus and Serena Williams, Tony Hawk, and others, to promote energy balance through diet and exercise), and criticized the insufficiency (e.g., celebrity endorsements were not prohibited from targeting minorities) of existing industry practices and self-regulatory efforts. It also suggested that the industries should focus more on what to market instead of when and how to market.
Federal Trade Commission, 2008 ⁴²	Government report This is a review of food and beverage industries' self-reported expenditures and activities in 2006, the initial evaluation of the industry self-regulatory program CFBAI. It also provided recommendations for food and beverage industries responsible use of food marketing target children and teens.	The food and beverage companies spent more than \$1.6 billion marketing their products to children and adolescents in 2006 and celebrities were almost exclusively employed in marketing practices directed to older children and adolescents. This report recommended all companies that involve marketing food or beverage brands or products to children under 12 years of age should adopt and adhere to meaningful nutrition standards when promoting their products using celebrity endorsement. The CFBAI member companies were explicitly requested to add the use of celebrity endorsement to its core principles.
Federal Trade Commission, 2010 ⁴³	Government report This report described guidance issued by the FTC regarding the use of endorsements and testimonials in advertising.	Celebrities should disclose the endorsement relationship information with a company in a transparent and non-misleading way in different media platforms including television advertisement or social media promotion. Under these guidelines, celebrities need to disclose the information about the payment or other types of compensation they have gained from the contracted companies.
Federal Trade Commission, 2012 ⁴⁴	Government report This is a report compared the youth-directed expenditures spent on marketing food and beverage brands or products between 2009 and 2012.	It encouraged more companies to join self-regulatory programs and suggested that the CFBAI should make further progress to contribute to responsible food and beverage marketing to children and to address childhood obesity. It documented the expenditures of 48 food, beverage, restaurant and entertainment companies in 2009. The report stated that the celebrity endorsement expenditures of child- and adolescent-directed food and beverage marketing increased from \$26.8 million in 2006 to \$99.3 million in 2009. The report also documented that celebrity endorsement was targeted to older children and adolescents (12-17 years) with a 2009 expenditure of US \$76.7 million compared to US \$28 million for younger children (2-11 years). The leading categories of products that

		used celebrity endorsement included sugary beverages, breakfast cereals, snacks, QSR and prepared meals for the 2009 expenditures. No funding was reported to market fruits and vegetables using celebrity endorsement. US food, beverage and restaurant companies often partnered with entertainment companies to share benefits by using techniques such as movie-tie-in, product placement or sponsorships for entertainment events that involved celebrities who were adored by children and adolescents. Celebrity food and beverage marketing was used to deliver marketing messages through Internet social media and mobile devices.
Federal Trade Commission, 2013 ⁴⁵	Government report This document included amendments for the Children's Online Privacy Protection Rule that was took into effect in 2000.	Added the presence of child celebrities, and celebrities who appeal to children as whether a website or service is directed to children under age 13 years.
Federal Trade Commission, 2017 ⁴⁶	Government report This report stated that the FTC staff reminded social media influencers and brands to clearly disclose the endorsement relationship.	After reviewing numerous Instagram posts by celebrities, athletes, and other influencers, FTC staff sent out more than 90 letters reminding influencers and marketers that influencers should clearly and conspicuously disclose their relationships to brands when promoting or endorsing products through social media. Some of the letters addressed particular disclosures that are not sufficiently clear, pointing out that many consumers will not understand a disclosure like "#sp," "Thanks [Brand]," or "#partner" in an Instagram post to mean that the post is sponsored.
Federal Trade Commission, 2019 ⁴⁷	Government report This document aims to stop deceptive ads, and its Endorsement Guides go into detail about how advertisers and endorsers can stay on the right side of the law.	FTC issued details that required social media influencers to disclosure any relationships with a brand including financial, employment, personal or family relationship. This action further ensured that the value of the endorsement was fairly judged by the consumers based on the honest and truthful information.
Gantz et al, 2007 ⁴⁸	Academic report This is a report sent to the Kaiser Family Foundation in 2007 that analyzed the food marketing on TV to children in the US It informed the efforts that policymakers and the food and media industries should take to improve the children targeted food marketing.	10% of all food ads made use of a celebrity and a great majority of the brands analyzed were associated with HFSS foods. Celebrities were more widely used in food ads aimed at children and/or teens. Sixteen percent of the ads for this target contain at least one celebrity. As with all food advertisements, children's program characters were used most often; they were found in 11% of food ads targeting this group.
Healthy Eating Research, 2015 ⁴⁹	Expert panel report A 17-member interdisciplinary panel appointed by the Robert Wood Johnson Foundation's Healthy Eating Research (HER) national program released recommendations for	Recommended that companies should raise the current definition of child-directed marketing from less than 12 years of age to any form of brand advertising and marketing that targets children 14 years of age and younger. Suggested expand industry voluntary pledges to

	responsible food marketing to children.	cover all forms of brand advertising and marketing to children including: use of brand mascots, character licensing and cross-promotions, premiums, celebrity endorsements, product placement, sponsorships, etc. Suggested a broader definition for media including all forms of marketing and advertising for products and brands.
Interagency Working Group, 2009 ⁵⁰	Government report This report documented the tentative proposed nutrition standards by Interagency Working Group (IWG) on 12/15/2009.	Standard I: Foods Exempt from Standards II and III. Standard II: Meaningful Contribution to a Healthful Diet (Include Option A and B). Standard III: Nutrients to Limit.
Interagency Working Group, 2011 ⁵¹	Government report IWG comprised of the FTC, United States Department of Agriculture (USDA), Centers for Disease Control and Prevention (CDC), and the US Food and Drug Administration (FDA), developed draft nutrition principles as a guide for voluntary industry self-regulatory programs.	The use of celebrity endorsement for food and beverage promotions were mainly targeting older children and teens and it recommended to define the child-directed marketing age audience as children ages 2 to 17 years. The guidelines included "Nutrition Principles A and B." "Nutrition Principle A" focuses on including entire foods groups as recommended by the 2010-2020 Dietary Guidelines for Americans (DGA), such as fruits and vegetables, whole grains, lean protein sources, and fat-free or low-fat dairy. "Nutrition Principle B" focuses on reducing nutrients of concern, including saturated fat, trans fat, sodium, and added sugars.
Interfaith Center on Corporate Responsibility, 2013 ⁵²	Other report Round table held by the Interfaith Center on Corporate Responsibility (ICCR) engage investors, businesses, public health researchers, consumer advocates and government officials to encourage responsible food marketing to children.	The round table aimed to answer two questions: What are the opportunities and obstacles companies face in marketing healthier foods to children and families? What are the multiple factors that shape voluntary corporate commitments on marketing to youth and what does the future of self-regulation look like? No evidence about celebrity endorsement was found.
Kraak et al, 2017 ⁵³	Academic report This report provided the summary of the four studies of the evaluation of the FNV (Fruits & Veggies) Campaign initiated by the Partnership of a Healthier America.	Study one described the evidence available for 12 national diet-related marketing and media campaigns launched in the US between 1990 and 2016 to promote the sales and consumption of nutrient-dense food groups (e.g., fruits and vegetables, whole grains, and nuts/legumes) and healthy beverages (e.g., milk and water). Between 1995 and 2014, the Milk Processor Education Program (MilkPEP) launched the Got Milk? and Milk Mustache Campaigns that used photographs of more than 300 popular entertainment, sports, political and media celebrities in print, online, broadcast and TV commercials to promote the sales and intake of fluid milk to ethnically and racially diverse audiences.

National Academy of Medicine, 2016 ⁵⁴	Expert panel report This is a report assessed the nature, extent, and influence of food and beverage marketing practices on the diet and health of American children and adolescents. The report offered 10 comprehensive recommendations to guide diverse private- and public-sector stakeholders to promote a healthy diet to children and adolescents.	Children and adolescents were primary targets of food and beverage marketing initiatives. Celebrity endorsements were used more to appeal to older children and adolescents, and this marketing strategy, along with other marketing practices, should be used to promote only healthy food products to these populations. Recommended Congress or HHS to appoint an independent body to monitor and report food marketing practice and progress to the US Congress.
National Institutes of Health and National Cancer Institute, 2001 ⁵⁵	Government report This article described the elements, theories, components and potential issues of the national 5 A Day Program that encourage Americans to eat five or more servings of fruit and vegetables daily as part of a low-fat, high-fiber diet.	The Olympic swimming gold medalist Matt Biondi was invited as a spokesperson to promote this campaign via a comprehensive media kit.
Pacella, 2010 ⁵⁶	Academic study This study conducted a content analysis about Internet marketing techniques targeting children on food and beverage brand websites.	39 out of 59 food and products did not meet the healthy food criteria and 12 (8%) contained celebrity endorsement. Celebrities also promoted products during interviews or other events without mentioning the financial arrangement he/she has with the product's company.
Ramsey, 2006 ⁵⁷	Academic report This review of law described a brief history, current situation and future recommendations for the regulations of advertising aimed at children.	Due to the past failures of the FTC to regulate advertising aimed at children and the political views of the FTC commissioners, FTC seemed reluctant to completely ban advertising aimed at children, but the FTC and other governmental organizations have regulated ads for tobacco and alcohol. The government should regulate the content instead of the amount of commercial material aimed at children. Cartoon characters and celebrities should not appear in commercials aimed at children.
Rudd Center for Food Policy and Obesity, 2009 ⁵⁸	NGO report This study conducted a nutrient analysis of 277 ready-to-eat (RTE) cereals marketed by 13 companies in the US based on a Nutrition Profiling Index (NPI) score, and a comparison of child, family, and adult cereal brand quality.	During 2007 and 2009, the NPI scores for new cereal introductions and cereal brand extensions introduced showed that major cereal companies (i.e., e.g., Kellogg Disney High School Musical and Hannah Montana cereals) did not substantially improved the nutrition quality of their product portfolios and continue to target children by marketing their least healthful products. Children's RTE cereals contained 85% more sugar, 65% less fiber, and 60% more sodium than adult cereals. Cereal companies spent \$56.3 million, or 24.6% of their youth marketing budgets, on premiums and other traditional types of promotions (e.g., cross-licensing agreements with third parties and celebrity endorsements) that appear prominently on product packaging.

Rudd Center for Food Policy and Obesity, 2011 ³⁹	NGO report This Rudd Center report analyzed the nutrition profiles of nearly 600 products from 14 companies that contain added sugar, full-calorie soda, energy drinks, fruit drinks, flavored water, sports drinks, and iced tea.	The American Heart Association stated that sports drink can contain double amount of recommended sugar for children and teens. In 2010, teens saw 18 percent more TV ads, and heard 46 percent more radio ads, for energy drinks than adults did. Teens also saw 20 percent more TV ads for energy drinks in 2010 than they saw in 2008. Sixty-three percent of all full-calorie soda and energy drink ads on national TV included sponsorship of an athlete, sports league or team, or an event or cause.
Rudd Center for Food Policy and Obesity, 2012 ⁴⁰	NGO report This Rudd Center report is the follow-up study of the nutrition quality and marketing of child- and family-targeted RTE cereals in the US in 2009.	From 2009 to 2012, overall the nutritional quality improved for 13 of 16 child-targeted brands, and the average nutrition score for children's cereals improved from 40 out of 100 in 2009 to 43 in 2012. Improved to some extent, the cereals advertised to children still contain 56% more sugar, 52% less fiber, and 50% more sodium compared with adult-targeted cereals. Popular celebrities showed in cereal products were considered as children-targeted.
Rudd Center for Food Policy and Obesity, 2013 ⁴¹	NGO report This Rudd Center report examined the marketing practices of 18 leading US restaurant chains that ranked among the top-15 fast food restaurant chains in the US who had child-targeted messages on their websites and national TV advertising between 2010 and 2012.	From 2009 to 2012, total fast food TV advertising seen by children ages 6 to 11 declined by 10%. However, several restaurants continued to target teens directly with marketing for unhealthy products. Subway ads featured celebrity athletes and promoted physical activity. E.g., more than a third of Subway's non-kids-meal products featured celebrity athletes that popular among teens (e.g., Michael Phelps) Display ads for Macdonald's HappyMeal ranged from illustrations of the food to celebrity endorsements and movie promotions. As of 2009, black children and teens saw approximately 60% more fast food ads than white youth, due largely to greater TV viewing.
Rudd Center for Food Policy and Obesity, 2015 ⁴²	NGO report This Rudd Center report evaluated the nutrition and marketing of 90 snack food brands that spent at least \$1 million in all types of measured media in 2014. It analyzed 43 different companies in seven snack food categories: yogurt, sweet snacks, savory, nuts, fruit, cheese, and multiple category products, but excluded chocolate and other candy and cereal products as they were reviewed in separate reports.	The great majority of sweet and savory snack brands advertised to children aligned with the criteria established by the industries' self-regulatory programs, but failed to meet the government and expert issued nutrition guidelines such as the IWG nutrition standards, the Smart Snack in School Standards issued by the USDA. Celebrity endorsement was considered as a youth-targeted marketing technique that used to promote some snack products, such as musical artists Jessie J's promotion of Pop-Tarts products on the company website.

Rudd Center for Food Policy and Obesity, 2015⁶³	NGO report This Rudd Center report provided a comprehensive analysis of the sugary drink market in the US Using the data that available in the public domain, this report documented and evaluated the nutritional content of sugary drinks and the marketing practices of 23 different beverage companies between 2011 and 2014.	All forms of marketing commonly used strategies to increase their appeal among young people, including celebrity spokespersons. Much of marketing for energy drinks targeted directly to teens under age 18 with the involvement of professional athletes (e.g., Red Bull's TV advertisements featured celebrity athlete Ryan Shackle). Use of celebrities was identified as an important trend when food and beverage companies marketing their products through social media. Such as: Beyoncé (Pepsi), Nicki Minaj (Pepsi), and Pitbull (Dr Pepper), and Pepsi's Facebook advertising was posted with music celebrity Ariana Grande. The consumption of energy drink products by US teens increased significantly between 2011 and 2014. Pointed out that celebrity endorsement in the US food marketplace target the youth of color, for example, Shaquille O'Neal's "Shaq" soda with his face on the appeal to black youth. Marketing practices that disproportionately appeal to teens, including product placements and youth oriented social media, celebrities, and sponsored events should be discontinued.
Rudd Center for Food Policy and Obesity, 2015⁶⁴	NGO report This Rudd Center report examined 26 food, beverage and restaurant companies that categorized based on their advertising spending or if they have joined CFBAI industry self-regulatory program. It identified statements about companies' targeted marketing practices at Hispanic and African American youth who had higher obesity and non-communicable disease risks, from marketing trade press and reports, companies' annual reports, and press releases from 2012 to 2014.	The three big soda companies including the Coca-Cola Company, PepsiCo and Dr Pepper Snapple Group, had been partnered with Black and Hispanic music and sports celebrities aimed at teens with their signature HFSS products. Fast food company Burger King had promoted its products to Hispanic consumers through partnerships with notable Hispanic celebrities, including Sofia Vergara and Salma Hayek. PepsiCo extended its target population to multicultural using celebrities and sponsorship to reinforce the cultural relevance of its products. Honey Bunches of Oats partnered with Walmart and Univision Radio in New York and Los Angeles to enhance Latinos a shopping experience with music celebrities.
Rudd Center for Food Policy and Obesity, 2017⁶⁵	NGO report This Rudd Center report assessed industry self-regulation on its pledged goal to promote healthier choices in child-directed advertising, as well as the impact of industry voluntary improvements on children's total exposure to food advertising. This report measured improvements and other changes after 10 years of the initiation of the CFBAI in 2007, and quantified progress and identified the limitations.	Despite a 7% increase in total advertising spending by food, beverage, and restaurant companies from 2007 to 2016, children viewed fewer food-related TV ads in 2016 than in 2007, the year the CFBAI was implemented. However, exposure to food-related TV advertising by children (ages 2-14) continued to average 10 to 11 ads per day in 2016, or approximately 4,000 ads for the year. The recommendations for CFBAI include: -Revise CFBAI category-specific uniform nutrition criteria to align with recommendations in the 2015-

		2020 DGA. At a minimum, they should correspond with Smart Snacks nutrition standards. Only advertise brands in child-directed media when all products offered by the brand also meet nutrition standards for advertised products. Implement the HER's recommendations to not market to children up to age 14 and revise definitions of child-directed advertising to incorporate all marketing that appeals to children, including marketing in social media. Establish standards that effectively reduce preschoolers' exposure to food-related advertising, such as not advertising on children's TV programming during school-time hours.
Schulberg, 1998 ⁶⁶	Book Title: A Behind-The-Scenes Look at America's Favorite Advertising Campaign.	Listed the name, photos and behind-the-scene stories of celebrities involved in the Got Milk? Campaign between 1993 and 1998.
Starr, 2013 ⁶⁷	Academic study This PhD dissertation examined individuals' affective responses to six print ads with three different spokesperson conditions using the pleasure, arousal and dominance model. It also explored the effectiveness of each ad by source type on purchase intent.	In 2010, companies in the US spent over \$17 billion on sports-celebrity endorsements and sponsorships, and the expenditures globally for sports-celebrity endorsements and sponsorships was expected to exceed \$46 billion. The sports celebrity was more effective compared to an unknown spokesperson in attracting attention to the ad, a vital concern for practitioners. If the athlete can bring attention to an ad, the reader, listeners or viewer may consider the arguments, resulting in a higher intent to purchase.
White House Task Force on Childhood Obesity, 2010 ⁶⁸	Government report This report provided recommendations to different stakeholders including federal government, private sector, state and local leaders, and parents themselves to help improve the health of our children.	Companies must reduce their use of third-party licensed characters in advertising that does not promote healthy dietary choices or healthy lifestyles. This report did not mention celebrity endorsement.

Supplemental Table 3: Media sources, news releases, public testimony (n=25)

Media source, year	Evidence source	Key findings
Federal Trade Commission, 12 October 2011 ⁶⁹	Public testimony This testimony explained the FTC's activities preceding the formation of the Working Group and discussed how the IWG is shaping its proposal on the nutritional principles for food marketed to children.	The IWG's draft guidelines received 29,000 comments from different stakeholders, among which were 28,000 favorable comments that supported the guidelines from consumers and public health advocates, and some that requested the removal of celebrity endorsement from food products that did not meet the federal nutrition guidelines. However, the guidelines were not approved by Congress due to the strong oppositions from industry actors.
CDC Congressional Testimony, 12 October 2011 ⁷⁰	Public testimony Food marketing: Can "voluntary" government restrictions improve children's health? Testimony before the Subcommittee on Health and Subcommittee on Commerce, Manufacturing, and Trade Committee on Energy & Commerce US House of Representatives.	Dr. Dietz of the CDC described the activities of the federal Interagency Working Group from 2009-2011, led by the Federal Trade Commission, to assess the science, examine the components of voluntary efforts already being employed by various organizations, and work through scenarios to apply different criteria to individual foods and foods marketed as meals to promote a healthy diet. The proposed IWG principles were designed to encourage children, through advertising and marketing, to choose foods that make a meaningful contribution to a healthful diet; and contain limited amounts of nutrients that have a negative impact on health or weight (saturated fat, trans fat, added sugars, and sodium). The IWG proposed principles were released for public comment on April 28, 2011. The public and industry input received during the comment period will inform the IWG's final recommendations. Celebrity endorsement was not mentioned.
Center for Science in the Public Interest, 18 December 2012 ⁷¹	News release Title: Beyoncé Urged to Reconsider Pepsi Deal.	Publicly criticized music celebrity, Beyoncé Knowles's promotion of overweight and obesity by endorsing Pepsi brand.
Partnership for a Healthier America, 2013 ⁷²	Media source Website of Drink Up Campaign that launched by the Partnership for a Healthier America (PHA) in 2013 to encourage more Americans to drink more water more often.	This campaign had partnered with popular celebrities to promote water consumption, including former First Lady Michelle Obama and musicians, John Legend and Ashanti, and used engaging marketing strategies to form an emotional connection with the target audiences.
US Senator Richard Blumenthal, 10 June 2013 ⁷³	Public testimony Blumenthal issued a letter calling on Nickelodeon to prohibit advertisements that market unhealthy food to children.	US Senator Richard Blumenthal joined Senators Jay Rockefeller, Tom Harkin and Dick Durbin in issuing a letter to Nickelodeon and its parent company Viacom requesting that the children's entertainment network prohibit advertisements that market unhealthy food to children. Blumenthal said that Studies clearly indicate that children are influenced by these advertisements and Nickelodeon currently airs a full quarter of all food advertisements viewed by children under age 12 years. Nickelodeon has a responsibility and an opportunity to make a positive difference in the health of children. Celebrity endorsement was not a focus on this public meeting.

Center for Science in the Public Interest, 4 September 2013 ⁷⁴	News release Title: Shaquille O'Neal Not an Appropriate Let's Move Spokesperson, Says CSPI.	Suggested it's not appropriate to include prominent endorsers of sugary drinks and junk food, such as O'Neal, to promote the Let's Move initiated by the former First Lady Michelle Obama since the multiple endorsements of food and beverage products with contradictory nutrition profiles will confuse consumers.
The White House Office of the First Lady, 18 September 2013 ⁷⁵	News release Title: Remarks by the First Lady during White House convening on food marketing to children.	This press release included the comments of First Lady Michelle Obama during the speech she gave for the conference on Food Marketing to Children.
Center for Science in the Public Interest, 1 October 2013 ⁷⁶	News release Title: An Open Letter to Katy Perry re: PepsiCo Endorsement.	Publicly criticized music celebrity, Katy Perry's promotion of overweight and obesity by endorsing Pepsi brand.
Center for Science in the Public Interest, 18 October 2013 ⁷⁷	News release Title: Health Groups to Katy Perry: "Please Stop" Marketing Pepsi.	Publicly criticized music celebrity, Katy Perry's promoting of overweight and obesity by endorsing Pepsi brand.
Center for Science in the Public Interest, 18 February 2014 ⁷⁸	News release Title: Health Group Questions Michelle Kwan's Dual Roles as Both Member of the President's Council on Fitness and Coke Ambassador.	Publicly criticized Olympic sports celebrity, Michelle Kwan's promotion of overweight and obesity by endorsing Coca Cola brand.
Center for Science in the Public Interest, 20 February 2014 ⁷⁹	News release Title: New Coke Ad Links Ted Ligtzy's Success to Soda Consumption.	Publicly criticized Olympic sports celebrity, Ted Ligtzy's promotion of overweight and obesity by endorsing Coca Cola brand.
Center for Science in the Public Interest, 16 January 2015 ⁸⁰	News release Title: Taylor Swift Urged to "Shake Off" Aspartame.	Publicly criticized music celebrity, Taylor Swift's promotion of overweight and obesity by endorsing Coca Cola brand.
Center for Science in the Public Interest, 28 April 2016 ⁸¹	News release Title: Selena Gomez Urged Not to Promote Diabetes, Obesity with #ShareACoke Campaign.	Publicly criticized music celebrity, Selena's promotion of overweight and obesity by endorsing Coca Cola brand.
Partnership for a Healthier America, 6 June 2016 ⁸²	Media source Website of the FNV Campaign that launched by the PHA in 2015 in two test cities - Fresno, California and Norfolk, Virginia to encourage Millennial moms ages 21 to 34 years then, and Generation Z teens that overlap with the youngest Millennials ages 15 to 20 years in 2015.	The involvement of more than 80 professional athletes, entertainers and other celebrities was a major marketing feature of this campaign.
Reuters, 6 June 2016 ⁸³	News release Title: Teen Idols often Endorse Unhealthy Foods and Drinks.	This news release article was published on reuters.com that covered the peer-reviewed article published by Bragg et al. (2016) about music celebrities' endorsements for HFSS food and beverage products target children and adolescents in the US.
Time, 6 June 2016 ⁸⁴	New release Title: Foods Endorsed by Celebrities are Almost All Terrible for You.	This news release article was published on time.com that covered the peer-reviewed article published by Bragg et al. (2013) about athletes' endorsements for HFSS food and beverage products target children and adolescents in the US.

NPR, 7 June 2016 ⁸⁵	News release Title: This is How Much Celebrities Get Paid to Endorse Soda and Unhealthy Food.	This news release described the peer-reviewed article published by Bragg et al. (2016) about music celebrities' endorsements for HFSS food and beverage products target children and adolescents in the US.
The Coca Cola Company, 14 July 2016 ⁸⁶	News release Title: Selena Gomez 'Share a Coke and a Song' Photo is Instagram's Most-Liked Image Ever.	By July 14 2016 when this news release published, Selena Gomez photo taken for the "Share a Coke and a Song" campaign posted on her Instagram account has garnered more than 4 million likes since June 25. Selena Gomez also mentioned her visit to Coca-Cola head quarter and tour of the Coke archives on social media, which has been viewed more than 8.7 million times. The Coca Cola brands were also embedded in the lyrics of her songs.
Adweek, 19 July 2016 ⁸⁷	News release Title: Selena Gomez's Social Media Posts Are Evidently Worth \$550,000 Apiece.	Selena Gomez had taken the number one spot on the company's list of influential media moguls, ahead of Kendall and Kylie Jenner, Rihanna and Beyoncé. According to D's Maire Analytics, Gomez's branded social media posts, such as the photo for the "share a Coke", was worth \$550,000 apiece when they appeared across Twitter, Instagram and Facebook.
Beverage Industry, 10 May 2017 ⁸⁸	Media source Title: Protein drinks benefit from diverse consumer base: Women, seniors growing demographics for sports, protein products.	Senior Editor of the New York-based Beverage Marketing Corporation pointed out that "The company continues its long-successful tack of celebrity endorsements to underscore the message that Gatorade is a serious beverage for serious athletes." The PepsiCo had attempted at a G Natural product to reply public health experts and consumers' criticism about the regular Gatorade.
Mediakix, 6 June 2017 ⁸⁹	Media source Title: Are Celebrities Following FTC Guidelines on Instagram? - Holy Kaw!	90% of brands examined did not comply with FTC requirements in any instance. 7.3% of the celebrities examined involved in food and beverage products endorsements.
CNBC, 22 September 2017 ⁹⁰	News release Title: Gatorade pays California \$300K, settles anti-water complaint.	In 2017, celebrities including Justin Bieber, Mike Tyson and Troy Polamalu "touted" a video game developed by Gatorade on social media and interviews. This game was mainly marketing to young people aged 13 to 24. The California state government fined Gatorade \$300,000 for emphasizing the benefits of its sports drink over water.
CNN, 23 March 2018 ⁹¹	News release Title: Musicians Popular with Teens Endorse Mostly Junk Food, Study Finds.	This news release described the peer-reviewed article published by Bragg et al. (2016) about music celebrities' endorsements for HFSS food and beverage products target children and adolescents in the US.
Jeff Chester, 11 September 2019 ⁹²	News release Title: The FTC's Google/YouTube decision on children's privacy & digital marketing brings new safeguards, opportunities—and questions.	Google and YouTube were required to implement new policies to protect children from being targeted by data-driven marketing and advertising on YouTube, and Google agreed to make a substantial investment for marketing practices via the YouTube Kids more suitable for children under 12 years. Some concerns still must be addressed, including how the company will deal with international children-

		targeted food marketing or whether “family viewing” programs will be exempted from these new commitments.
US Senator Richard Blumenthal, 22 November 2019 ⁹³	Public testimony Blumenthal issued a letter calling Google to adhere to the nutrition standards for children aged 14 years and younger.	YouTube kids prohibit videos on that platform from including product placement, influencer unboxing videos, and other types of commercial content that are inappropriate or harmful to children. In light of the widespread recognition that children are accessing videos on YouTube itself, those rules should apply to all children’s content across YouTube.

Acronyms and abbreviations

Campaign for a Commercial Free Childhood (CCFC), Center for Digital Democracy (CDD), Center for Science in the Public Interest (CSPI), Centers for Disease Control and Prevention (CDC), Children’s Confection Advertising Initiative (CCAI), Children’s Food and Beverage Advertising Initiative (CFBAI), Department of Health and Human Services (HHS), Dietary Guidelines for Americans (DGA), Federal Trade Commission’s (FTC), Food and Drug Administration (FDA), Fruits & Veggies (FNV), Healthy Eating Research (HER), High-fat, sugar and sodium (HFSS), Integrated marketing communications (IMC), Interagency Working Group (IWG), Interfaith Center on Corporate Responsibility (ICCR), Non-governmental organization (NGO), Nutrition Profiling Index (NPI), Partnership for a Healthier America (PHA), Quick service restaurant (QSR), Ready-to-eat (RTE), Television (TV), United States (US), United States Department of Agriculture (USDA)

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Appendix L. Selected Poster Presentation for Study 1



Celebrity Marketing of Branded Food and Beverage Products in the United States: Policy Implications and Research Needs

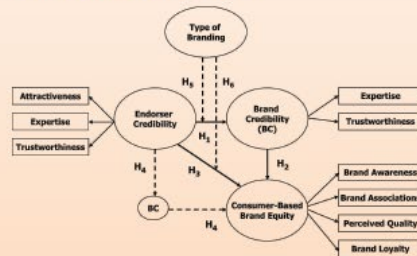
Zhou M¹, Kraak VI², Rajamohan S³, Abidi F⁴, Polys N⁵

^{1,2} Department of Human Nutrition Foods and Exercise; ^{3,4,5} Advance Research Computing, Virginia Tech, Blacksburg, VA



INTRODUCTION

- ❖ Celebrity marketing is a global billion-dollar business used by food, beverage, restaurant and entertainment companies to influence dietary behaviors that contribute to obesity and diet-related non-communicable diseases.



Source: Spry A, Pappu R, Cornwell TB. Celebrity endorsement, brand credibility and brand equity. *European Journal of Marketing* 2011, 45:882-909.

- FTC's 2012 report: Celebrity marketing represented about \$105 million U.S. dollars of which \$28 million was used to target children, ages 2-11 years, and about \$77 million dollars to target children and adolescents, ages 12-17 years

- ❖ The FTC's 2014 report on alcohol marketing documented that of \$3.5 billion U.S. dollars spent on marketing to adolescents under 21 years in 2011.

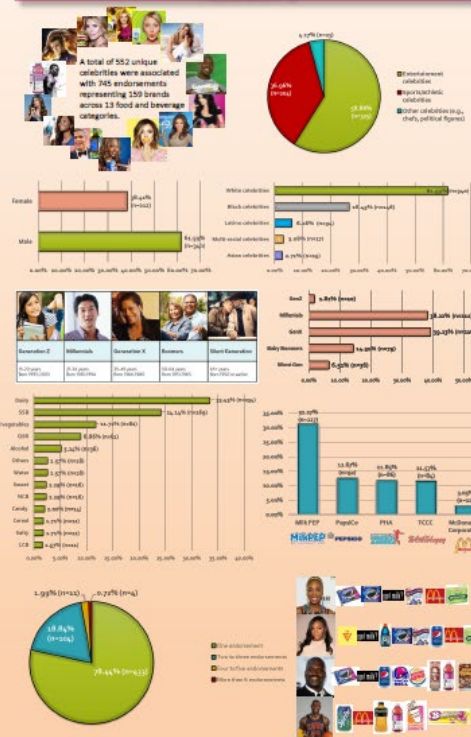
- ❖ The Got Milk? and Milk Mustache campaigns (between 1995 and 2015), Drink Up Campaign (2013), and FNV Campaign (2015)

Source: <http://www.ftc.gov/os/2012/12/121221foodmarketingreport.pdf>
Source: <https://www.ftc.gov/system/files/documents/reports/self-regulation-alcohol-industry-reportfederal-trade-commission/140320alcoholreport.pdf>.

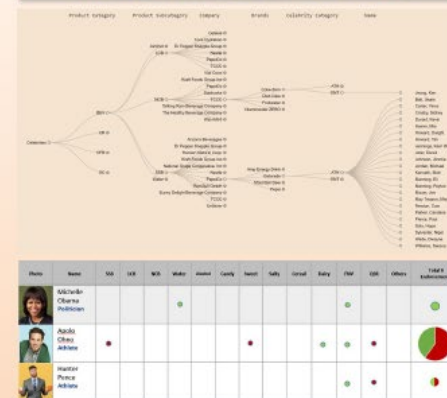
METHODS

❖ We established search criteria to examine celebrity endorsement evidence from peer-reviewed publications, grey-literature and media or Internet sources. An Excel database was constructed and organized by celebrity category (i.e., gender, ethnicity and age); company, product and brand. A Python-based scripting engine and other data visualization tools (i.e., scatterplots and interactive dendrograms) were used to analyze and visually display the celebrity endorsement relationships.

RESULTS



INTERACTIVE VISUALIZATIONS



FUTURE RESEARCH

- ❖ Companies: extend their pledges to cover celebrity marketing aimed at children and teens (ages 12 to 18 years), for food and beverage marketing, and to young adults under 21 years for marketing alcohol brands.

- ❖ **Polymakers:** use incentives and disincentives, accompanied by legislative, regulatory and legal actions to hold companies and industry self-regulatory programs accountable for using celebrity endorsement to promote population health goals.

- ❖ Independent evaluations are needed to build an evidence base to demonstrate whether certain celebrities are recognized and resonate with Generation Z and Millennial audiences, and how young people think about celebrities who engage in multiple endorsements.

DISCLOSURES

❖ Funding: VIK and MZ received partial funding from Virginia Tech's Department of Human Nutrition, Foods, and Exercise to complete this research. VIK received a grant from the Robert Wood Johnson Foundation in 2015 to evaluate the Partnership for a Healthier America's FNV Campaign that includes *pro bono* celebrity endorsement to promote fruits and vegetables to adolescents and adult moms in two U.S. cities. VIK and MZ otherwise have no financial disclosures. MZ, SR, FA and NP have no other financial disclosures. The authors have no conflicts of interest related to the content of this research.

Appendix M. Selected Poster Presentation for Study 2

A Profile of Celebrities Involved in the Partnership for a Healthier America's Fruits & Veggies (FNV) Campaign, 2015-2016



Zhou M¹, Kraak V¹, Duffey K¹, Williams JD²

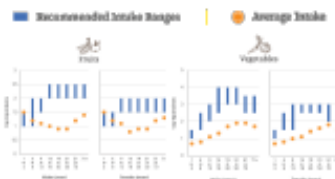
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² Rutgers University Newark Business School, Rutgers, New Jersey, USA



Introduction

Average fruits and vegetables intake by age and sex, compared to ranges of recommended intake, 2007-2010¹



Partnership for a Healthier America (PHA)'s Fruits & Veggies (FNV) Campaign²



PHA launched FNV Campaign in two pilot US locations (2015):

- ◆ Fresno, California
- ◆ Norfolk/Hampton Roads, Virginia

Purpose: promote sales and intake of fruits and vegetables to:

- ◆ Generation Z teens (15-20 years)
- ◆ Millennial moms (21-35 years)

Pro bono celebrity endorsement is a main feature of the FNV Campaign

Robert Wood Johnson Foundation

Methods

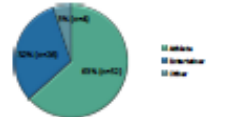
- ◆ FNV Campaign celebrity names (n=82) obtained from the FNV website and entered into an Excel database of celebrities (n=552) associated with food and beverage group, brand or product endorsements in U.S. (1990-2016).
- ◆ Python-based scripting engine and data visualization tools were used to analyze and display relationships among each FNV celebrity; company, organization; and brand or product category endorsement.
- ◆ Two interactive dendrograms were created to illustrate FNV celebrity endorsement relationships among products, brands and companies.
- ◆ A scatterplot was created to show each celebrity's food and beverage category or product endorsements and the compliance with the Dietary Guidelines for Americans (DGA) 2015-2020¹ and U.S. Smart Snacks in School standards.³
- ◆ Other visualization tools (i.e. celebrity circle map and endorsement pyramid) were also applied to visually display the endorsement relationships.

Results

82 celebrities associated with 745 endorsements representing 169 brands of 94 companies for 13 food and beverage categories



FNV Celebrity endorsement by demographic profile



FNV celebrities by number of brand endorsement



FNV celebrities who endorse brands other than FNV



FNV Campaign celebrities and the feature of their food and beverage endorsements



Results (continued)

Screenshot of an interactive dendrogram emphasizes the endorsement relationships between the FNV celebrities and food or beverage categories or brands.



Conclusions

- ◆ 82 celebrities who partnered with FNV Campaign (2015-2016) could play important role to raise awareness among target groups to buy and consume fruits and vegetables.
- ◆ Empirical evidence is needed to explore whether celebrities have measurable influence on awareness, buying and eating behaviors over time.

Future Research

- ◆ Examine how Americans exposed to the FNV Campaign across various U.S. geographic locations view the credibility (i.e., trust, attractiveness and expertise) of celebrities involved in the FNV Campaign, and congruence or "fit" between the celebrity and target groups, as well as the celebrity and the FNV brand.
- ◆ Explore how targeted populations think about celebrities who serve as multiple endorsers for brands associated with healthy food and beverage groups versus energy-dense and nutrient-poor food and beverage categories.
- ◆ Compare the effectiveness of celebrity endorsement associated with the FNV Campaign across different age and ethnic/racial groups, as well as different marketing and media channels (i.e., print and broadcast media; social and digital interactive media; sponsored community events; and in-store food-retail marketing).
- ◆ Analyze the existing policy landscape to inform smarter policies and actions that can be taken by government, private-sector actors, and non-governmental organizations to leverage celebrity marketing to promote only brands associated with healthy food and beverage product profiles and that support healthy food environments.

Appendix N. Selected Poster Presentation for Study 3

