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Influence of product placement in children's movies on children's snack choices

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ABSTRACT

Background: Media exposure affects health, including obesity risk. Children's movies often contain food placements—frequently unhealthy foods. However, it is not known if these cues influence children's food choices or consumption after viewing. We explored whether children's snack choices or consumption differs based on: 1) recent exposure to movies with high versus low product placement of unhealthy foods; and 2) children's weight status.

Methods: Children ages 9–11 were assigned to watch a high ("Alvin and the Chipmunks," n = 54) or low ("Stuart Little," n = 60) product-placement movie. After viewing, participants selected a snack choice from each of five categories, several of which were specifically featured in "Alvin." Uneaten snacks from each participant were weighed upon completion. Snack choice and amount consumed by movie were compared by t-tests, and differences in snack choices by movie were tested with logistic regression.

Results: Participants consumed an average of 800.8 kcal; mean kcal eaten did not vary by movie watched. Participants who watched the high product-placement movie had 3.1 times the odds (95% CI 1.3–7.2) of choosing cheese balls (most featured snack) compared to participants who watched the low product-placement movie. Children who were overweight or obese consumed a mean of 857 kcal (95% CI: 789–925) compared to 783 kcal (95% CI: 742–823, p = 0.09) for children who were underweight or healthy weight. Children's weight status did not significantly affect their choice of snack.

Conclusions: Branding and obesogenic messaging in children's movies influenced some choices that children made about snack foods immediately following viewing, especially food with greatest exposure time in the film, but did not affect total calories consumed. Future studies should examine how the accumulation of these messages affects children's long-term food choices.

Abbreviations: SL, Stuart Little; ACM, Alvin and the Chipmunks; BMI, body mass index; BMIz, body mass index z-score.

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1. Introduction

Children's health beliefs and behaviors are associated with their media exposure, and this has been empirically demonstrated for alcohol use (Anderson, De Bruijn, Angus, Gordon, & Hastings, 2009; Hanewinkel et al., 2012, 2014; Waylen, Leary, Ness, & Sargent, 2015), smoking (Heatherton & Sargent, 2009; Morgenstern et al., 2013), and violence (Anderson et al., 2003; Brown & Bobkowski, 2011). Although the sedentary nature of media consumption is likely one reason for the relationship between media and obesity, another possible mechanism is media-based exposure to food and beverage content that promotes high-calorie, low-nutrient foods and beverages (Boyland & Halford, 2013; Kraak & Story, 2015). The past several decades have witnessed an increase in such messages specifically targeting children and adolescents (Harris et al., 2013), with studies showing a direct correlation between the frequency of food-based television advertisements within a given culture and the prevalence of pediatric overweight (Lobstein & Dibb, 2005; Zimmerman & Bell, 2010). Television advertisements are associated with increased preference for (Boyland et al., 2011; Ferguson, Muñoz, & Medrano, 2012) and consumption of (Halford, Gillespie, Brown, Pontin, & Dovey, 2004, 2008) high-calorie, low-nutrient foods and beverages.

Product placement, an indirect form of advertising that involves the placement of or reference to a branded product, is common in media directed at children (Skatrud-Mickelson, Adachi-Mejia, MacKenzie, & Sutherland, 2012). Although the impact of within-program food exposure and branding on children's food preferences and eating behaviors remains relatively understudied, research to date suggests that beverage brand placement affects later beverage choice (Auty & Lewis, 2004). Similarly, online games advertising energy-dense snacks promote consumption of these types of foods (Folkvord, Anschütz, Buijzen, & Valkenburg, 2013, 2014; Harris, Speers, Schwartz, & Brownell, 2012), indicating that the effects of food placement on children's intake may be consistent across media domains.

Although food advertisements and product placement affect all children, data suggest that these relationships may be most pronounced among overweight youth. In a sample of 5th graders, an association between TV fast food advertisement exposure and body weight was evident among children who were overweight and obese, but not among children at healthy weight (Andreyeva, Kelly, & Harris, 2011). Youth who are overweight or obese consume significantly greater quantities of food following food-based advertising compared with those at healthy weight, particularly of snack and dessert-type foods (Halford, Boyland, Hughes, Oliveira, & Dovey, 2007). In a separate study, youth who were overweight consumed more calories when presented with branded versus non-branded foods at a meal. However, this relationship was not evident among non-overweight youth (Forman, Halford, Summe, MacDougall, & Keller, 2009). Altogether, these data suggest that youth at the highest end of the weight spectrum may be most affected by food-related advertisements (Andreyeva et al., 2011).

Today's youth are exposed to more entertainment media than ever before (Roberts & Foehr, 2008); however, few studies have investigated the extent to which media content influences children's food preferences. Therefore, the goals of this study were to: 1) examine children's snack choices and overall food consumption following exposure to a movie with either a high or low amount of unhealthy food placement and visible food brand placement; and 2) evaluate whether children's snack choices and overall caloric consumption after viewing varies with the child's weight status. We hypothesized that children who viewed a movie with more food messaging would more often choose and consume snacks that were featured in the movie than children who viewed a movie with less such messaging and without the featured snacks. We also hypothesized that of all the children who watched a movie and ate snacks immediately following, children who were overweight or obese would consume more calories than those who were not overweight.

2. Methods

2.1. Study overview

The Movies and Health Culture study team is a transdisciplinary team of experts in pediatrics, sociology, psychiatry, clinical psychology, quantitative psychology, contemporary art history, public health, and media and mass communication studying children's reception of health- and stigma-related messages in children's movies. Children were recruited from the local North Carolina (United States of America) school district parent e-mail listserv, the university employee listserv, and the university-affiliated children's primary care clinic. Participating children were 9, 10, or 11 years old at the time of recruitment, were able to watch and discuss a movie in English, and did not have food allergies or feeding problems. This age group was chosen as they were old enough to participate in a discussion about movies and capable of sitting still through a movie, survey, and focus group, and also because they were felt to be still young enough to enjoy watching a PG-rated (Parental Guidance Suggested) movie. Children were assigned to view a specific film based on their availability and convenience, but were not aware of the films they would be watching and what would be shown on which day. After providing online consent and assent, each parent and child independently completed an online questionnaire at home. The at-home online questionnaire completed by all children included age, race, and self-reported height and weight. The at-home online questionnaire completed by parents assessed average household income and the child's age, race/ethnicity, and parent-reported height and weight.

Children first completed a brief questionnaire via tablet at the time of arrival for the in-person session. This questionnaire asked children when they last ate, and children reported their current hunger level on a 1 to 10 scale (1 not hungry at all; 10 as hungry as I've ever felt). They then viewed either “Alvin and the Chipmunks” [“ACM”] (n = 54) or “Stuart Little” [“SL”] (n = 60). These movies were selected for the following reasons: 1) both were live-action/computer-animated films, 2) both had rodent(s) as the core character, 3) both included a plotline and “end message” centered on the importance of family (neither storyline centered on food or health), 4) both were similar in length (92 min (“ACM”) vs 84 min (“SL”), 5) both had scenes referring to food or depicting food, but in different quantities/qualities.

Movies were categorized a priori as “high dose” (“ACM”) or “low dose” (“SL”) by the study team due to the frequency of unhealthy and branded food messages found in the movie (Throop et al., 2014). “ACM” included 36 distinct types of packaged and non-packaged food items, 34 of which were for humans; acorns (depicted as being collected for eating purposes) and pet food were the two non-human foods shown. The majority of human foods that appeared on-screen were calorie-dense and low in nutrients. Examples of non-packaged items shown include carrots, cakes, and waffles with whipped cream, and loose potato chips. Of the 34 items for humans, 17 were packaged and branded items that exist on the market for purchase in “real life”, such as Chex™ Mix, Blue Diamond® nuts, Van's® gourmet waffles, packaged Utz® potato chips, and Lucky Charms™ Cereal. The design of these items' packaging mimicked the packaging and branding of their purchasable counterparts. One additional item was packaged and branded, but does not exist for purchase; Good-able energy bars