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Research report

Food-related advertisements and food intake among adult men and women ☆

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ABSTRACT

Television viewing may contribute to obesity via promotion of sedentary behavior and exposure to food-related commercials. However, the mechanisms by which food-related commercials promote food intake are not well understood. Therefore, the purpose of the present study was to examine the impact of television advertisements on food intake according to sex and transportability, or the tendency to become engrossed in what one is viewing. Eighty-three undergraduate students, free of disordered eating symptoms, were stratified by sex and randomly assigned to one of three conditions (food-related advertisements, neutral advertisements, or no advertisements). They were then identified as high or low in transportability according to a median split. A significant interaction was found between advertisement condition and transportability such that those high in transportability ate more in the food than other advertisement conditions. A second interaction was found between sex and transportability with women high in transportability eating more food than women low in transportability irrespective of advertisement condition. No significant main effects of advertisement condition, sex, or transportability were found. Results suggest the importance of studying the impact of individual difference variables on the relationship between food-related advertising and food intake.

Introduction

Given the high prevalence rates of obesity, coupled with its associated adverse medical consequences, better attention, understanding, and action toward etiological and correlational factors of obesity are needed to establish and improve prevention and intervention efforts (Allison, Fontaine, Manson, Stevens, & Van Itallie, 1999; Flegal, Carroll, Kit, & Ogden, 2012).

Media and obesity

One area of importance that has been linked to obesity among men and women is television viewing (Blass et al., 2006; Bowman, 2006; Hu, Li, Colditz, Willett, & Manson, 2003; Hu et al., 2001; Johnson, Nelson, & Bradley, 2006). Aside from work and sleep, television viewing is the third most time consuming activity in which Americans engage (Dietz, 1990). Not only is television viewing associated with greater BMI and obesity prevalence cross-sectionally, but greater television viewing itself has been associated with increased caloric intake and poorer nutritional content of food consumed at a 5-year follow up (Barr-Anderson, Larson, Nelson, Neumark-Sztainer, & Story, 2009). A recent meta-analysis examining television viewing and eating suggests that adults eat more while watching television ($d = .2$, $p < .05$), and concluded that television watching is not merely correlated with obesity but likely contributes to it by encouraging excessive eating (Chapman, Benedict, Brooks, & Schiöth, 2012). Given these relationships, it is important to understand how and why television viewing contributes to the risk of obesity.

One explanation of the relationship between television viewing and increased food consumption highlights the role of television advertisements. In the United States, food-related products account for 26% of advertisements viewed by adolescents, with the most common food advertisement (23%) being fast food (Powell, Szczypka, & Chaloupka, 2007). Despite the high percentage of food advertisements that may serve as a cue to eat, there is a dearth of research examining the relationship between food advertisement exposure and food intake among adults. Among children, research on the effects of food-related advertisements has received considerable attention, and suggests that exposure to food-related advertisements is associated with greater food intake compared to exposure to non-food-related advertisements (Buijzen, Schuurman, & Bomhof, 2008; Coon & Tucker, 2002; Halford, Boyland, Hughes, Oliveira, & Dovey, 2007; Halford, Gillespie, Brown, Pontin, & Dovey, 2004; Harris, Bargh, & Brownell, 2009). Recommendations

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from the World Health Organization and reports by the Institute of Medicine (Institute of Medicine, 2006; WHO, 2010) have been published in response to these findings.

Among available research on adults, similar findings have been reported (Anschutz, Engels, van der Zwaluw, & Van Strien, 2011; Falciglia & Gussow, 1980; Harris et al., 2009). In a preliminary study by Falciglia and Gussow (1980), exposure to food advertisements was associated with greater intake than non-food advertisements, and obese women consumed almost twice as much as normal weight women in the food advertisement condition, but only slightly more in the non-food advertisement condition. Harris et al. (2009) examined the effects of food-related advertisements on eating behavior among children and college-aged adults. Results revealed that across age groups, individuals in the food advertisement condition consumed significantly more food than those in the non-food advertisement condition. A potential variable not yet considered in this relationship is the way in which individuals experience the advertisement. One mechanism by which advertisements may influence food intake is transportability.

Transportability

Many researchers have examined the process of persuasion, and, more specifically, the effects of narrative persuasion on individuals (e.g., Green & Brock, 2002). One facet of narrative persuasion is transportation, a mechanism by which narratives influence individuals' beliefs and behaviors through their thoughts, emotional responses, and imagery of the events during the story (Gerrig, 1993; Green & Brock, 2002). Simply put, transportation occurs when individuals become absorbed in a narrative and temporarily lose touch with reality.

The Transportation-Imagery Model, developed by Green and Brock (2002) identifies attributes related to the individual, the narrative, and the context/medium which contribute to transportation. Dal Cin, Zanna, and Fong (2004) examined people high and low on transportation and developed the Transportability Scale to predict participants' degree of transportation into specific narratives. They found that the propensity to be transported into narratives in general was an individual difference variable such that certain individuals were more or less susceptible to transportation into a given narrative. This propensity is called transportability. For the present study, we also focused on individual differences, examining how transportability could contribute to differences in eating behaviors among television viewers. Specifically, participants high on transportability may have a greater propensity to become engrossed while watching food-related television advertisements, causing them to eat more food, whereas individuals low on transportability may not be as affected by the food advertisements, resulting in stable food intake. It is also reasonable to predict that individuals high on transportability may have a tendency to consume more food across all conditions. It may be that once one becomes engrossed in a narrative, attention to monitoring food intake or satiety cues is decreased.

Given the association between television viewing, advertisements, and food intake, the purpose of the present study was to replicate previous research (e.g., Falciglia & Gussow, 1980; Harris et al., 2009) by examining whether young adult men and women consume more food when watching food advertisements, neutral advertisements, or no advertisements embedded into a television sitcom. Further, this is the first study to extend this research question by incorporating the effect of transportability on food intake, as well as its interactions across advertisement type and sex. Finally, the present sample was restricted to normal weight individuals absent of eating pathology in order to eliminate the possible confounds of weight status and eating pathology.

In accordance with previous findings (Falciglia & Gussow, 1980; Halford et al., 2004, 2007; Harris et al., 2009), a main effect of advertisement type was hypothesized in that men and women in the food-related advertisement condition were expected to consume more food than those in the neutral and no advertisement conditions. Second, other studies with similar experimental paradigms have found that men eat more than women in response to food advertisements (e.g., Harris et al., 2009); therefore a main effect of sex on food consumption was hypothesized. Third, a main effect of transportability was hypothesized with individuals high in transportability consuming more food than those low in transportability. No significant interaction between advertisement type and sex was expected, nor was an interaction between transportability and sex expected as no sex differences in transportability have been found (Mazzocco, Green, Sasota, & Jones, 2010). However, a potential interaction between advertisement type and transportability was hypothesized, as individuals high on transportability would likely consume more food if they were in the food advertisement condition versus the neutral or no advertisement conditions.

Methods

Participants

Eighty-seven participants were recruited from a population of undergraduate students attending a private mid-size Midwestern university through undergraduate psychology classes. Participants received class credit for their participation in the study. Exclusionary criteria included scoring above a 20 on the EAT-26 (a measure of eating pathology), having a BMI < 17.5, and food allergies or medical conditions that resulted in food restrictions. The study was approved by the university Institutional Review Board.

Measures

Demographic Questionnaire

Participants completed a demographic questionnaire regarding their sex, age, race, and ethnicity. They also indicated the time of their last meal or snack. Participants rated their level of hunger (*not hungry* to *very hungry*), familiarity with the television sitcom (*not familiar* to *very familiar*), and their liking of cookies (*did not like* to *liked very much*) on 7-point Likert scales to include as potential covariates.

The Eating Attitudes Test (EAT-26; Garner, Olmsted, Polivy, & Garfinkel, 1982) is a 26-item scale used to measure attitudes regarding adult weight and dieting behaviors. Responses are provided on a 6-point Likert scale ranging from *always* to *never* with higher scores indicative of greater eating pathology. Scores of 20 or greater indicate the likely presence of an eating disorder. The EAT-26 has good internal consistency ($\alpha = .90$; Garner et al., 1982) and 4-week test–retest reliability ($r = .89$; Banasiak, Wertheim, Koerner, & Voudouris, 2000). The EAT-26 was used as a screening tool and individuals receiving a score of 20 or higher were excluded to ensure a non-clinical sample.

The Transportability Scale (Dal Cin et al., 2004) is a 20-item self-report instrument that measures the degree to which individuals are transported by narratives across time and contexts. Items are rated on a 9-point Likert scale ranging from *strongly disagree* to *strongly agree* and are summed to produce a total score, with higher scores indicative of greater transportability. The Transportability Scale has strong internal consistency with alpha coefficients ranging from .87 to .88 and 10-week test retest reliability ranging from .62 to .64 (Dal Cin et al., 2004). Within the current sample,