

The Effect of Watching Food-Related Television on Eating Behaviors and Cravings

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Abstract

This study proposes to examine whether eating behaviors and food cravings are altered while watching food-related television programs. More specifically, we examined whether educational food-related television (didactic, realistic portrayal of food) or entertainment food-related television (flashy, enticing portrayal of food) had any effect on the eating behaviors and food cravings of participants. 239 participants completed a 30-minute survey assessing their food-related television viewing habits and demographic information. We measured disordered eating behaviors by administering the Yale Food Addiction Scale (YFAS; Gearhardt, Corbin, & Brownell, 2009). Our findings indicated that watching any genre of food-related television is correlated with eating food, the belief that food tastes better, and craving food. YFAS symptom count was correlated with watching educational food-related television but not entertainment food-related television. BMI was not correlated with watching either genre of food-related, and YFAS symptom count was only correlated with the belief that food tasted better while watching any genre of food-related television. It appears that food-related television has the potential to influence people's eating behaviors and food cravings. This study is significant because it offers more insight about the stronghold that media sources, such as television shows, have on our eating habits, which is a main contributor to our nation's obesity epidemic.

Keywords: food-related television, craving, eating behavior, obesity

The Effect of Watching Food-Related Television on Eating Behaviors and Cravings

The obesity epidemic continues to be one of the most prominent issues in the United States. Researchers have investigated how to halt this crisis through analyzing eating behaviors. While fighting the obesity epidemic has been a focal point in current research, obesity rates are still climbing and we have yet to find a concrete solution to fighting obesity on a national scale. This may be because we do not have a complete understanding of what is contributing to overeating. One possibility is that media, such as food-related television shows that focus on eating and cooking, affect people's eating behaviors. There are very few studies that explore the impact of food-related television shows on body mass index (BMI) and eating behavior, but research on food-related commercials may provide insight about how food cue exposure during television viewing may be problematic.

A study conducted by Zimmerman and Bell (2009) looked at whether obesity was caused by the physical inactivity caused by watching television or the type of commercials people saw while watching television. They concluded the viewing of programs with food-related commercials was positively associated with increased BMI, and that physical inactivity was not a significant predictor of increased BMI (Zimmerman & Bell, 2009). Thus, it appears likely that food cues, such as food-related advertisements on television, may have the ability to compel people to eat more.

Another study determined whether people are more likely to eat while watching general television programs. Levels of television use were split into two categories: heavy viewers and light viewers. The researchers found that heavy viewers had a higher tendency to eat advertised foods on television compared to the light viewers (Banth & Nanglu, 2011). Another finding was that for foods requested by the viewers during the study, heavy viewers had a higher amount of

requests to eat foods advertised on television compared to light viewers. The heavy viewers also ate food based on its sensory appeal and were influenced by social motivation much more compared to light viewers (Banth & Nanglu, 2011). These results show that watching television may drive adolescents to not only eat more, but specifically to eat more of the food that is advertised to them. This indicates that television may prime people to eat unhealthy foods more often and in higher quantities.

Similar studies have also shown that people eat more while watching television because watching television seems to inhibit the ability to know how much food has been eaten (Moray, Fu, Brill, & Mayoral, 2007). Based on these results, people who watch television more frequently than others may be at higher risk of being obese since they seem to be eating more without knowing (Moray et al., 2007).

Harris, Bargh, and Brownell (2009) went further and sought to determine what factors related to television made people consume more food. The researchers ran two experiments, one involving children and the other involving adults. They assigned participants to either watch a show with food-related commercials or a show that did not air food-related commercials. The first experiment found that children consumed 45% more food when exposed to food-specific advertisements (Harris et al., 2009). The second experiment found that adults also ate more food when exposed to food-related advertisements and disordered eaters were also more likely to consume more food when exposed to these advertisements (Harris et al., 2009). Overall these results continue to explain how food advertising may prime automatic eating behaviors.

Although there is limited literature on food-related television programs, there are some studies that suggest a link between these types of shows and eating behavior. A study conducted by Bodenlos and Wormuth (2013) aimed to determine whether a food-related television program

versus a nature television program affected the type and amounts of food that individuals consumed. Like Harris and colleagues (2009), the researchers presented participants with three types of food to eat when watching each television program: healthy, somewhat unhealthy, and unhealthy. Their study ultimately found that while there was no difference in healthy and somewhat unhealthy food consumption, subjects watching the food-related television program ate significantly more unhealthy foods compared to those watching the nature program (Bodenlos & Wormuth, 2013). These findings suggest that watching food-related television could increase the likelihood that people will choose unhealthier foods and eat more of those foods.

Mitsuru and Wansink (2011) also conducted a study analyzing whether people specifically with disordered eating habits were more likely to eat when watching television. Participants watched a show that either did or did not reference food. Mitsuru and Wansink (2011) discovered that restrained eaters ate more calories while watching food-related television than when watching non food-related television programs. This suggests that individuals with disordered eating habits could be at higher risk of consuming more food when exposed to food-related content, such as food-related television shows.

Other studies have examined how food-related television has an impact on those with disordered eating, but no prior work has examined how individuals with more addictive-like eating behavior are affected by food-related television programming. Individuals who report more addictive-like eating may be particularly prone to the impact of exposure to food cues, possibly even while watching television. A study conducted by Gearhardt, Yokum, Orr, Stice, Corbin, and Brownell, (2011) found that those with higher food addiction scores had greater brain activity in the reward circuit of the brain when expecting to receive palatable food, in this

case, a chocolate milkshake (Gearhardt et al., 2011). To measure food addiction scores the researchers used the Yale Food Addiction Scale (YFAS), which has been validated and shown to be a reliable measure (Gearhardt, Corbin, & Brownell, 2009). This study shows that those with higher food addiction scores have greater activity in regions of the brain that are associated with the motivation to abuse substances, and are less able to inhibit the intake of that substance (Gearhardt et al., 2011). Since food commercials have been shown to likely lead to increased intake of food, this might imply that food-related commercials could be very problematic for those with higher food addiction scores.

The existing literature offers a perspective on food-related television and its effect on obesity. While food-related commercials seem to be a major influence on obesity, there is limited knowledge on whether shows focused solely on food may affect eating behavior. Since food-related commercials seem to alter people's eating behavior, it is also likely that popular food shows could heavily contribute to people's increased food intake. This project will contribute to a greater understanding of a potential explanation for the increase of obesity rates and serve to better inform future intervention techniques. While there is some research that analyzes food commercials and its effect on eating behaviors, this study will contribute to the limited research that pertains specifically to food-related television. Moreover, to the best of our knowledge, this is the first study that distinguishes between types of food-related television: entertainment and educational. Educational food-related television shows typically focus on how to make certain meals, tend to be instructional, and the food is displayed in smaller quantities. Entertainment food-related television shows, however, tend to focus on food eating competitions, the large quantities of energy dense foods, and display multiple types of food throughout the show. We aimed to determine whether watching food-related television shows, specifically whether

entertainment food-related television shows were associated with people's eating behaviors and cravings (i.e., eating while watching the food show, craving food while watching the food show, etc.). We expected people with disordered eating habits (high YFAS symptom counts) and elevated BMI would watch more food-related television, specifically entertainment food-related television, and would also be at risk of experiencing cravings and eating more while watching these programs.

Method

Participants

A total of 239 participants partook in the study involving 90 males (35.3%) and 149 females (58.4%). There were 140 eighteen year-olds (54.9%), 63 nineteen year-olds (24.7%), 19 twenty year-olds (7.5%), 13 twenty-one year-olds (5.1%), 2 twenty-two year-olds (.8%), and 1 twenty-five year-old (.4%) (M age = 18.61 years, SD = 1.175, age range: 18-25 years). Age was not available for one participant. There were 5 Middle Eastern (2.0%), 45 Asian/Pacific Islander (17.6%), 6 Black (2.4%), 164 Caucasian/White (64.3%), 5 Hispanic (2.0%), 2 Indigenous/Aboriginal (0.8%), 10 multiracial participants (3.9%), 1 that would rather not say (0.4%), and 1 that indicated "other" (0.4%). They were recruited online through the Psych Subject Pool at the University of Michigan, which consists of students enrolled in the Introductory Psychology course at the University of Michigan. Each participant was required to be 18 years of age or older. Participants were granted 0.5 hours of credit whether they consented to take the survey or not, and whether they completed the entire survey or not.

Procedure

Participants gave informed consent prior to taking the survey. Participants completed a battery of online questionnaires assessing food-related television viewing habits, eating habits

related to these food shows, beliefs about food, addictive-like eating behaviors, and demographic information. Food-related television shows were separated into two distinct categories: entertainment food-related television and educational food-related television, to examine differences between the different types of shows.

Measures

Entertainment/Educational Food Show. This survey, created by the PI, asked the participant to rate their frequency of watching 10 educational food-related television shows, as well as 10 entertainment food-related television shows. The food shows were determined based on a pre-test survey ($n = 19$) and the most popular 10 shows for each genre (entertainment and educational) were put into the final survey.

Eating Behaviors During Food Show. This survey, created by the PI, asked participants whether they tended to eat during food-related television shows and whether watching food-related television triggered food cravings or made food taste better.

Yale Food Addiction Scale (YFAS). We administered the YFAS to measure whether participants expressed any addictive-like eating behaviors. The scale consists of 25 questions designed to assess addictive responses to food that participants reported having experienced in the past 12 months. The YFAS has a Cronbach's alpha of .86, and has been found to be a reliable and valid scale (Gearhardt et al., 2009).

Body Mass Index (BMI). We used the participant's self-reported height and weight to calculate BMI scores.

Demographics. Participants were asked to fill out demographic information including age, gender identification, and racial identity.

Data Analysis

We used statistical software called IBM SPSS 21 (Statistical Package for the Social Sciences). A correlational analysis was utilized to examine relationships between food-related television viewing behaviors, eating behaviors, cravings, BMI, and demographic variables. In addition, we conducted an ANOVA to analyze any mean differences between frequency of watching food-related television shows and race/ethnicity, as well as an independent samples t-test to analyze any mean differences between watching food-related television shows and gender.

Results

Demographics

There was not a significant mean difference by gender or race/ethnicity in the frequency of watching any type of food-related television ($p > .169$).

Total Food-Related Television Viewing and Eating Behaviors

More frequent watching of any genre of food-related television was significantly correlated with all variables of interest except for BMI. Watching any kind of food-related television was correlated with eating while watching food-related television ($r = .40, p < .01$), craving food when watching food-related television ($r = .33, p < .01$), and the belief that food tastes better ($r = .36, p < .01$; see Table 1).

Educational Food-Related Television Viewing and Eating Behaviors

Watching educational food-related television shows was also significantly correlated with all variables of interest except for BMI. Watching educational food-related television was correlated with YFAS symptom count ($r = .185, p < .01$), eating while watching food-related television ($r = .26, p < .01$), craving food when watching food-related television ($r = .24, p < .01$), and the belief that food tastes better ($r = .30, p < .01$; see Table 1).

Entertainment Food-Related Television Viewing and Eating Behaviors

Watching entertainment food-related television shows was also significantly correlated with most variables except for YFAS symptom count and BMI. Watching entertainment food-related television was correlated with eating while watching food-related television ($r = .41, p < .01$), craving food while when watching food-related television ($r = .32, p < .01$), and the belief that food tastes better ($r = .33, p < .01$; see Table 1).

BMI

Our results revealed that BMI only had a negative significant correlation with eating while watching educational food-related television ($r = -.138, p < .05$; see Table 1).

YFAS Symptom Count and Food-Related Television

There were no significant correlations between YFAS symptoms and eating while watching food-related television or craving food when watching food-related television. However, other than being correlated to watching educational food-related television, YFAS symptom count was significantly correlated with the belief that food tastes better while watching food-related television ($r = .19, p < .01$; see Table 1).

Discussion

The aim of this study was to learn more about the causes of obesity by examining whether the viewing of food-related television had any effect on people's eating behaviors and food cravings. We expected food-related television, particularly entertainment food-related television, to influence people's eating behaviors and food cravings, especially people with higher BMI and YFAS symptom counts. Our results indicated that watching any genre of food-related television (both entertainment and educational) was significantly correlated with eating while watching food-related television, craving food while watching food-related television, and reporting that food tastes better while watching food-related television. This finding was

consistent with what we expected to see and what the literature says about the influence of food cues (Harris, Bargh, & Brownell, 2009; Banth & Nanglu, 2011; Bodenlos & Wormuth, 2013).

While we expected mainly the viewing of entertainment food-related television shows to influence participants' eating behaviors and cravings, the viewing of educational food-related television shows was correlated with participants' eating behaviors and cravings on quite similar levels. This implies that normal viewers (without disordered eating behaviors) found both genres of food-related television to be just as enticing. This result was unexpected because entertainment food-related television shows are characterized for their 'food porn-like' characteristics (large quantities of food, calorically dense foods, exquisite foods), hypothetically creating more of a rush of enjoyment toward food, whereas educational food-related television shows take on more of a didactic, relaxed theme. It is possible that educational food-related television shows seem more realistic to viewers, making the shows more relatable to viewers compared to entertainment food-related television shows, which exude a more outlandish, unrealistic theme. This might explain why watching educational food-related television shows was correlated with participants' eating behaviors and cravings more highly than expected. It could also be that the instructional nature of the educational food-related television shows have a greater influence on viewers, as viewers could potentially feel able to make the foods they are seeing on the show, which reinforces the ability to relate to the show.

Another surprising finding was that YFAS symptom count was only correlated with watching educational food-related television and not entertainment food-related television, which contradicted our original expectation. It was interesting to find that the calmer, less flashy genre of educational food-related television had a higher association with participants who had a higher YFAS symptom count because these participants would logically be more swayed by the

addictive qualities of entertainment food-related television. More specifically, higher YFAS symptom counts indicate higher levels of disordered eating, or addictive-like eating behavior. Therefore, it would make sense for participants with higher YFAS symptom counts to have a greater response to larger quantities of more energy dense food cues, which are the types of cues typically present in entertainment food-related television shows, not educational food-related television shows. This result could have potentially been due to the same phenomenon as noted earlier: that educational food-related television shows might be more relatable to the viewer due to their realistic nature. It is possible that those with higher YFAS symptom counts are actually more drawn to realistic food cues despite their calmer image because they represent foods that are more feasible to make. This increased relatable feeling toward the realistic food cues seen on educational food-related television could possibly provide a greater rush of enjoyment than the flashy, excessive food cues of entertainment food-related television shows.

We also found that YFAS symptom count was correlated with the belief that food tasted better while watching food-related television, but not with eating or craving food while watching food-related television. While we did not measure caloric intake, reward response, or binge eating, it appeared that disordered eaters (classified by the YFAS) did not tend to eat or have food cravings while watching food-related television, indicating that these results are not entirely consistent with previous findings involving disordered eaters (i.e., restrained eaters) (Mitsuru & Wansink, 2011; Gearhardt et al., 2011). This discrepancy could potentially be due to the type of food cue presented to disordered eaters. Perhaps food-related television shows do not induce the same kind of urge to binge eat as would a touchable, edible food cue (such as a palatable food) that is presented in front of the disordered eater. This inconsistency could also be caused by the

different responses to food cues from the differing classifications of disordered eaters (YFAS disordered eaters compared to restrained eaters).

While we expected participants with higher BMI levels to report altered eating behaviors and cravings, especially when exposed to entertainment food-related television, we found that it was actually negatively correlated with eating while watching educational food-related television. This finding was not consistent with previous, limited research that indicates that watching food-related commercials was associated with higher BMI (Zimmerman & Bell, 2009). People may have higher BMI levels due to overeating, which could be caused by enticing food cues from sources such as food-related television. This is why we expected participants with higher BMI levels to experience altered eating behaviors and cravings when exposed to food-related television. However, the lack of research done on the relation between BMI and food-related television makes it difficult to know how to interpret this finding. BMI is a broad measure of eating behavior and it is important to assess eating behaviors specifically, such as with the YFAS. This notion is supported by our results since we had a significant correlation with YFAS but none with BMI. It would be useful for future research to determine BMI's importance in relation to food-related television, or whether it is wiser to stick with more specific measures of eating behaviors, as these may be more indicative of eating-related issues.

Limitations

While our results yielded interesting findings, it is vital to address the possible limitations of this study. The sample that we utilized was specifically college students at the University of Michigan, which limits the ability to generalize these findings. The influence of food-related television on this sample could be very different to its influence on another sample of a different age range. Moreover, our sample predominantly consisted of females, which could have

influenced the data outcomes on gender. In addition, there was limited literature that allowed us to determine the most popular food-related television shows to implement into our surveys. Because of this, we relied on a pre-test survey to determine which shows seemed most popular among our friends and family, which is less reliable than a published source. This could have also influenced the results for which genre of food-related television was watched more. Along with this, any television show could have the ability to influence food consumption and food cravings, which is something future analysis should account for. With limited resources, we only utilized online surveys to collect our data. Because of this, we relied on self-report responses, which has limited reliability. Moreover, our data was cross-sectional, meaning that one variable did not necessarily cause the other variable. There could have been other reasons why watching food-related television shows was significantly correlated with eating while watching these shows, increased craving for food, and reporting the belief that food tastes better while watching food-related television. Lastly, the fact that our survey was distributed during the regular school semester to University of Michigan students means that their responses regarding frequency of television viewing could have been slightly skewed. Even though we asked participants to answer questions regarding television viewing habits based on the past twelve months, it is likely that students' responses were distorted based on their current television viewing habits, which is probably not as frequent during the school year as it is during the summer.

Future Research

To confirm the validity of our findings, it is important for future research to expand on the hypothesis that food-related television shows could have an effect on food consumption and cravings. Future analyses should examine different age cohorts, as well as other economic variables such as socioeconomic status or the existing obesity rates in the area being tested. It

would also be useful to use different methods of data collection, preferably those that do not rely solely on self-report responses. Since it appears that watching both educational and entertainment food-related television shows could potentially alter eating behaviors and food cravings, future studies should aim to determine what shared trait(s) about the shows triggers food consumption and food cravings while watching these shows. It would also be beneficial to determine what specific aspects made educational food-related television more enticing to disordered eaters than entertainment food-related television shows. Discovering these things would enable us to possibly make future policy changes on how we are allowed to advertise foods to people, particularly in a less addictive-inducing way. Further research on this topic could reveal the largely unknown potential contribution that food-related television has on climbing obesity rates. Uncovering this would provide us with more insight behind what makes food cues (specifically food-related television) such a powerful influence on overconsumption, and ultimately enable us to continue fighting the obesity epidemic.

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Table 1

Frequency of TV Viewing and Food-Related Behaviors

Variable	BMI	Symptom Count	Total TV	Educational Viewing	Entertainment Viewing	TV Eat	TV Crave	TV Taste
BMI	1							
Symptom Count	.065	1						
Total TV	-.100	.159*	1					
Educational Viewing	-.102	.185**	.919**	1				
Entertainment Viewing	-.036	.090	.917**	.685**	1			
TV Eat	-.039	.040	.398**	.262**	.407**	1		
TV Crave	-.092	.085	.330**	.236**	.323**	.493**	1	
TV Taste	-.092	.187**	.360**	.298**	.326**	.450**	.638**	1

Note: BMI, Body Mass Index; Symptom Count, number of YFAS symptoms; Total TV, frequency of watching both entertainment and educational food-related television; Educational Viewing, frequency of watching educational food-related television; Entertainment Viewing, frequency of watching entertainment food-related television; TV Eat, frequency of eating while watching any type of food-related television; TV Crave, frequency of any type of food-related television triggering food cravings; TV Taste, frequency of the belief that watching food-related television makes food taste better.

*Correlation is significant at $p < .05$ (2-tailed)

** Correlation is significant at $p < .01$ (2-tailed)