

Understanding the Relationship Between Television Use and Unhealthy Eating: The Mediating Role of Fatalistic Views of Eating Well and Nutritional Knowledge

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Abstract

Obesity is a serious problem, both in the United States and around the world. Although there are many factors that lead to becoming overweight, it is important to study what role the media may play. The purpose of this research is to examine how television use impacts nutritional views and knowledge, which in turn predict unhealthy food consumption. To do this, a survey was conducted that included measures related to television use, fatalistic views toward eating healthy, nutritional knowledge, and unhealthy food consumption. Based on mediation analysis, fatalistic views and nutritional knowledge partially mediate the relationship between television use and unhealthy food consumption. This implies that by inundating consumers of television with advertisements for unhealthy foods, entertainment programs with poor nutritional messages, and news programming with conflicting accounts of proper nutrition, the media are helping to create individuals who have a poor understanding of nutrition and adopt fatalistic views of eating healthy, which together relate to having a poor diet.

Key words: nutritional knowledge; media effects; television use; nutrition fatalism

Introduction

In the United States, the number of overweight and obese individuals has skyrocketed with nearly one-third of the population now obese (Centers for Disease Control and Prevention [CDC], 2012; Ogden, Carroll, Curtin, Lamb, & Flegal, 2010; Ogden, Carroll, & Flegal, 2008). This increase is not just a problem within the United States, though, as the rate of obesity has doubled worldwide over the past three decades (World Health Organization, 2013). This change is perhaps most troubling and noticeable among children: for kids between the ages of 6 and 11, obesity has increased in the U.S. from 6.5% of the population in 1998 to 19.6% in 2008. For children who are obese, they are more likely to have high blood pressure, high cholesterol, and develop Type 2 diabetes (Freedman, Mei, Srinivasan, Berenson, & Dietz, 2007), problems they are unlikely to rid themselves of as adults (Whitaker, Wright, Pepe, Seidel, & Dietz, 1997). This is not just a personal issue, either, as medical costs associated with obesity in 2008 were an estimated \$147 billion (CDC).

One contributing factor to obesity is the consumption of unhealthy foods (CDC, 2012). Previous researchers have linked media use with unhealthy eating and increased BMI (Brown, Nicholson, Broom, & Bittman, 2011; Fulton et al., 2009; Yen et al., 2010), but beyond an assumption that media use is by definition sedentary and encourages snacking, little research has been conducted to understand other reasons for that

association. This is surprising as the media can play a role in at least two important ways: a) the media may discuss the problem of obesity and nutrition (both in the news and entertainment programming) and provide potential solutions (e.g., how to eat better); and b) the media, through advertising, may attempt to persuade the public to consume certain foods, often at the expense of others. Through this exposure, individuals may develop attitudes and knowledge about food and nutrition—knowledge that could then be used when deciding what to eat.

Indeed, it is recognized in many theories related to human behavior (e.g., Theory of Planned Behavior, Ajzen, 1985) that one's perceived or actual ability to perform a behavior is central to actually carrying out that behavior. In the context of eating healthy, if individuals do not understand what is nutritious, it is more likely they will consume unhealthy foods. It is important, then, to understand how people develop knowledge about nutrition, including examining nutritional messages found within the media as they can be an important source of information.

Researchers who examine nutritional messages within the media have increased over the past few decades (e.g., Signorielli, 1998; Strasburger, 2001). From the earliest content analyses, it was clear that non-nutritious foods were frequently found on television, with those early researchers concluding that those messages could inhibit viewers' understanding of proper nutrition (Gerbner, Gross, Morgan, & Signorielli, 1981; Kaufman, 1980). This pattern wherein food presentations on television did not reflect proper nutrition has been consistently replicated across time and program type (Byrd-Bredbenner & Grasso, 2000; Henderson & Kelly, 2005; Kotz & Story, 1994; Powell,

Schermbeck, Szczypka, Chaloupka, & Braunschweig, 2011; Pratt & Pratt, 1995; Roseman, Poor, & Stephenson, 2014; Signorielli & Lears, 1992; Story & Faulkner, 1990; Taras & Gage, 1995). Because of this, a few researchers have begun to examine the effects related to this exposure and have found an association between television use and misinformation about what is healthy to eat (Boulos, Vikre, Oppenheimer, Chang, & Kanarek, 2012; Dennison & Edmunds, 2008; Harris & Bargh, 2009; Harrison, 2005; Nagler, 2014).

The news media offer another source of nutritional information. Although not as extensive as advertising and entertainment research, those who have conducted the extant research suggest the coverage of food and nutrition may be confusing for those who watch it (Kim & Willis, 2007; Lawrence, 2004). One specific outcome associated with confusion about the cause of negative health outcomes (like obesity) is the development of fatalistic beliefs about the issue. Fatalistic views relate to feelings of helplessness and inability to prevent or understand the cause(s) of something. Although no research has been conducted to determine an association between media use and fatalistic views about eating healthy, a link between news use and fatalistic views about cancer has been found (Lee & Niederdeppe, 2011). In Lee and Niederdeppe's research, holding fatalistic views about cancer caused people to have lower self-efficacy regarding cancer risk-reducing behaviors. Extending their results to nutrition, it could be possible that those who develop fatalistic views toward nutrition, based in part on confusing media coverage, may have lower self-efficacy regarding eating healthy, causing them to adopt an unhealthy diet. Importantly, Lee and Niederdeppe's results were specific to news use, meaning it is important to look not just at overall television use, but news use as well.

The purpose of this study is to: a) replicate previous research wherein there was an association between media use and unhealthy eating, b) extend previous research by determining if there is a link between media use and the development of fatalistic views toward eating healthy, as well as a link between media use and poor nutritional knowledge, and c) to see the extent to which fatalistic views and poor nutritional knowledge mediate the relationship between media use and unhealthy food consumption. Therefore, the following hypotheses are proposed:

H1: Increased television use, as well as news media use, will be associated with increased consumption of foods with little nutritional value.

H2: Increased television use, as well as news media use, will be associated with increased fatalistic views toward eating healthy.

H3: Increased television use, as well as news media use, will be associated with decreased levels of nutritional knowledge.

H4: Fatalistic views toward eating healthy and nutritional reasoning knowledge will mediate

the relationship between television and news media use and unhealthy eating.

Method

In order to test these hypotheses, a cross-sectional survey was conducted. A priori power analysis was conducted using the software package G*Power (Faul, Erdfelder, Buchner, & Lang, 2009). Using Cohen's (1998) small effect size ($f^2 = .02$) with an alpha of .05 and a power of .8, based on the number of predictors used in this analysis, a sample of 550 was required. Accordingly, a total of 591 individuals were recruited. All came from a large, public university located in the Southwestern U.S. Their average age was 22.09 ($SD=4.75$). Although the majority were female (68.2%), there was racial diversity with 29.8% reporting to be Caucasian, 26.1% Hispanic, 19.3% African American, 19.1% Asian, and the rest selecting "other."

Measured Variables

Overall Television and News Media Use

Similar to previous research (Northup, 2013), to calculate overall television and news media use, variables were constructed by summing up then weighing the responses to the following questions: "During a typical weekend, about how many hours do you watch television (news) during the following time periods?" and "During a typical weekday, about how many hours do you watch television (news) during the following time periods?" Participants had to rate how many hours per weekday or weekend day they watched television (or television news) from: 12AM-6AM, 6AM-12PM, 12PM-6PM, and 6PM-12AM. The responses were summed to represent a typical "weekday" and "weekend" day, then weighted to create average weekly television and news consumption variables. These were then averaged to create an overall measure of how much television each participant watched per day, $M=4.15$, $SD=2.92$, as well as how much television news each participant watched per day, $M=.91$, $SD=.95$. These variables were weakly correlated, $r = .17$, $p < .001$.

Fatalistic Views Toward Eating Healthy

Adopting questions from Lee and Niederdeppe (2011), fatalistic views toward eating healthy were measured by asking participants to strongly agree or strongly disagree with 5 statements (e.g., "There are so many recommendations about eating a healthy diet, it's hard to know which ones to follow") on a 5-point Likert scale. These 5 items had good reliability ($\alpha = .81$) and so were summed and averaged to create an overall variable, $M=2.82$, $SD=.82$, with higher scores representing a more fatalistic orientation.

Nutritional Knowledge

Nutritional knowledge was measured by using items previously developed by Harrison (2005). Participants answered three sets of questions. The first set were multiple choice related to general healthy eating (e.g., "A nutritious breakfast is: a) A healthy meal to start your day, b) Always a very big meal, c) A meal that only tastes good"); the second set had each participant choose which food item (of two) was more nutritious (e.g., "Spinach or Lettuce"); the final set had participants answer whether it

was recommended that certain foods (e.g., “saturated fats”) be eaten more, the same, or less often. The number of correct responses were summed, with possible scores ranging from 0 to 23, $M=17.22$, $SD=3.19$.

Nutritional Intake

Using questions developed by Signorielli and Lears (1992), the overall quality of nutritional intake was measured using a series of questions asking participants to indicate how frequently they consumed different non-nutritious items (e.g., “how likely are you to drink soda when thirsty?”), with responses ranging from 0 (=Never) to 4 (=Always). These items were summed to create a measure related to how frequently each participant consumed something with little or no nutritional value, $M=7.97$, $SD=3.37$ (possible range = 0 to 20). Higher values equate to less healthy nutritional intake.

Control Variables

In addition to age, race, and gender, three control variables were used in this analysis: participant’s BMI, reported interest in healthy eating, and food preferences. In order to calculate each participant’s Body Mass Index (BMI), participants reported their approximate heights and weights. BMI was then calculated using the standard equation, $M=24.09$, $SD=5.00$. Participants were also asked to indicate, overall, how important it was to them to “eat well.” Responses ranged from 1 (=not at all important) to 5(=extremely important), $M=3.80$, $SD=.79$. Finally, participants were presented with a list of 10 food items similar to the one used to determine nutritional understanding, only now presented with the instructions to choose which food item they preferred

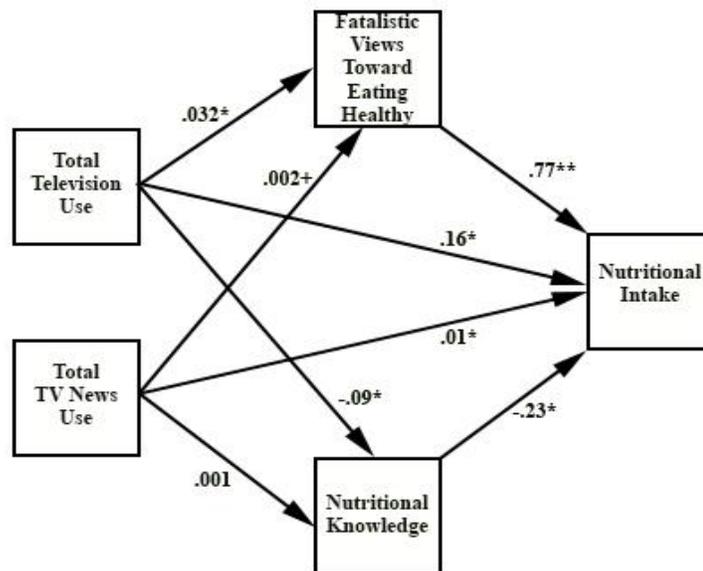
to eat. Less nutritious items were given a 0 while the more nutritious items were given a 1. Responses were then summed to give an overall variable related to general food preference for healthy or unhealthy foods, $M=6.25$, $SD=1.61$.

Results

The macro MEDIANTE was used to analyze the data (Preacher & Hayes, *in press*). The advantage to this approach is that it allowed all independent variables and mediators to be simultaneously entered, thereby enabling all hypotheses to be tested together while accounting for the variances from all variables. Figure 1 illustrates the overall model, which was significant, adjusted $R^2=.17$, $F(6, 570) = 15.54$, $p < .001$. Importantly, no multicollinearity issues were detected (all tolerance $> .8$; all variance inflation factors < 1.3).

In support of H1, the paths between television use and nutritional intake ($B = .16$, $p < .05$) and television news use and nutritional intake ($B = .01$, $p < .05$) were significant, meaning that increases in either media type were associated with the increased consumption of unhealthy foods. In partial support of H2, the path between overall television use and fatalistic views toward eating healthy was significant ($B = .032$, $p < .05$), while the path only approached significance between news and fatalism ($B = .002$, $p = .07$). Therefore, increased television consumption (but not news use) was associated with increased fatalistic views toward eating healthy. Similarly, in partial support of H3, the path between overall television use and nutritional knowledge was significant ($B = -.09$, $p < .05$), whereas there was no significance for television news use ($B = .001$, $p = .70$). This means that for consumers of television in general, there is less nutritional knowledge, whereas there are no differences based on TV news viewing.

Figure 1 Overall model with regression coefficients



Note: $*p < .05$, $**p < .001$, $+p < .1$

Finally, regarding H4, Monte Carlo estimations using a 95% confidence interval and 10,000 bootstrap samples indicate an indirect effect on unhealthy eating through fatalistic views for both television use (point estimate = .03, CI range .007 - .46) and television news use (point estimate = .002, CI range .0002 - .0036). By contrast, there was only an indirect effect on unhealthy eating through nutritional knowledge for overall television use (point estimate = .02, CI range .005 - .04). This lends partial support to H4 as both fatalistic views and nutritional knowledge mediate the relationship between television use and unhealthy food consumption.

Discussion

The purpose of this research was to assess the extent to which watching television and television news can contribute to individuals developing both fatalistic views toward eating healthy and poor nutritional knowledge, which in turn would mediate the relationship between media use and an unhealthy diet. It should first be noted, though, that consistent with previous research, there was a relationship between both media measures and unhealthy food consumption, even with all other variables accounted for. This further demonstrates that those who watch a lot of television tend to have a more unhealthy diet than those who watch less.

Although there are many explanations for the relationship between media use and unhealthy eating, two specific ones—developing fatalistic views of eating healthy and poor nutritional knowledge—were examined here. General television use was associated with both the development of fatalistic views toward eating healthy and poor nutritional knowledge, whereas television news use was only associated with fatalistic views. Considering first fatalistic views, given the conflicting messages about food presented within entertainment, advertising, and the news media, it is not surprising that heavy users develop these attitudes. After all, on the one hand, heavy users are told to eat a lot of sugary drinks and snacks, while on the other, they are told to avoid those snacks in favor of a variety of other foods. If all messages being presented conflict, it becomes hard to decipher exactly what should be followed. This could lead to the belief that it is just not possible to fully understand nutrition.

Those who consume more television also performed worse on the measure of nutritional knowledge. This, too, is easy to understand as the nutritional messages found on television tend to be poor. Within advertising, most foods are nutritionally deficient while entertainment programming depicts characters frequently snacking on unhealthy foods and rarely eating a balanced meal. If these are the messages, those who watch a lot of them may become less able to determine what is healthy. It is interesting that for those who watch a lot of television news, no relationship was found. This could be because news messages are more often discussing the latest in what is healthy, whereas the messages

found within television more broadly are about showcasing the unhealthy.

Finally, mediation analysis was used to illustrate an indirect route between general television use and unhealthy eating via fatalistic views and poor nutritional knowledge. A similar pattern was observed with television news use except the indirect effect was limited to fatalistic views. This begins to illuminate reasons beyond the sedentary nature of television consumption as to why the relationship exists between television use and unhealthy eating. Specifically, increased television use decreases one's self-efficacy when it comes to eating healthy as well as one's ability to do so, both important factors when predicting behavior (Ajzen, 1985).

Self-efficacy refers to the belief that one is capable of behaving in a certain manner. Heavy viewers of television and television news develop a more fatalistic view of healthy eating meaning they find it difficult to understand nutrition. Given this confusion, those people may simply give up trying to eat healthy, which would support these results. Similarly, one needs to be able to perform a behavior in order to succeed at the behavior. If individuals do not have a fundamental understanding of what is nutritious, it is impossible to eat well. Therefore, television consumption appears to operate in part through these two paths—lowering self-efficacy by increasing fatalistic views of eating healthy and decreasing one's ability to choose nutritionally balanced food by lowering nutritional understanding—to indirectly influence food consumption.

Limitations and Future Research

This research has a number of limitations. First, the sample was drawn entirely from college undergraduates. Although it was racially diverse and there is no obvious reason why the results obtained would be sample-specific, it nevertheless requires caution when trying to extrapolate results to the general population. Second, all of the participants came from the same university in the United States. It is unclear whether this pattern would hold up in different countries or cultures, especially as advertising regulations related to food vary considerably by nation. Finally, all relationships were correlational in nature. Throughout the discussion, causation was implied between television consumption and the dependent variables. This implication was based on prior research and logic, but it still cannot be shown with certainty with this type of design.

In fact, follow-up research to further explicate the paths from television to self-efficacy and knowledge is needed. Future research could experimentally manipulate program content to see what differences may emerge, which would help to illuminate what specific types of content may lead to the negative effects seen within this research. Further content analyses can also be done to continually monitor food messages being presented within the media. Additionally, future research would do well to explore this issue in other countries. It is possible that differences based on region could emerge—perhaps those countries with more strict advertising regulations would not show these effects.

It is clear that obesity is a serious problem that

needs to be addressed not only in the United States but globally. Although there are many different contributing factors, it is important to acknowledge the role the media may play. Based on these results, the media may be one piece of the obesity problem by sending messages to consumers that create fatalistic

attitudes toward eating healthy as well as lowering overall nutritional knowledge. These two variables in turn contribute to poor nutritional eating—a well-established cause of obesity.

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