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The role of television viewing and direct experience in predicting adolescents' beliefs about the health risks of fast-food consumption

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Abstract

Background—Fast-food advertising abounds on television (TV), and programs targeting youth often display fast-food consumption but rarely with any negative consequences. Cultivation research maintains that cumulative exposure to TV influences audiences' views of and beliefs about the real world. Thus, the amount of TV adolescents watch is likely to bias their views of the consequences of eating fast food. This research posits that this relationship varies as a function of adolescents' actual experience with fast food.

Method—Two cross-sectional surveys conducted in the cultivation research tradition assess the relationship between the amount of adolescents' regular exposure to TV and their beliefs about the risks and benefits of eating fast food. Teenage children of members of online panels reported hours of TV viewing, beliefs about the consequences of eating fast food, and their frequency of fast-food consumption.

Results—In both studies, beliefs about health risks of fast-food consumption vary as a function of the amount of TV watched. Heavy TV viewers have less negative and more positive beliefs about the consequences of fast-food consumption than light viewers. As direct experience with fast food increases, the relationship between TV viewing and risk perceptions weakens, but the relationship between TV viewing and positive perceptions strengthens. These moderated relationships remain when we control for physical activity (Study 1) and the density of fast-food restaurants in respondents' geographical area (Study 2).

Conclusion—Given the role of TV viewing in biasing perceptions of the consequences of eating fast food, public health researchers and practitioners should carefully monitor and perhaps regulate the amount of fast-food advertising on TV and the content of TV programs.

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Keywords

Fast food; Media influence; TV viewing; Cultivation theory; Health beliefs

Given fast food's positive association with obesity and type-2 diabetes, public health officials worry about U.S. consumers' fast-food consumption, especially among youth (Centers for Disease Control and Prevention, 2014; Pereira et al., 2005). Because beliefs about the consequences, including health risks, of eating fast food develop even before direct personal experience of negative health outcomes, identifying the factors that shape these beliefs among youth is important (Grier, Mensinger, Huang, Kumanyika, & Stettler, 2007). A major socialization force for American youth is television (TV), which, at an average of more than 18 hours per week, remains their primary source of entertainment (Nielsen Media, 2014; Rideout, Foehr, & Roberts, 2010). TV is one of the most influential media sources through which youth acquire beliefs about consumption behaviors, such as drinking and smoking (Russell, Russell, Boland, & Grube, 2013; Russell, Russell, & Grube, 2015; Strasburger, 2011).

One way TV viewing affects audiences' beliefs is through cumulative exposure to content. According to cultivation theory (Gerbner, Gross, Signorielli, & Morgan, 1980; Morgan & Shanahan, 2010; Morgan, Shanahan, & Signorielli, 2012), heavy TV viewing leads to internalization and development of values and beliefs that are consistent with those portrayed on TV. The theoretical explanation for the cultivation effect is that TV viewing makes relevant information more accessible in memory for heavy viewers than for light viewers. This accessibility prompts a reliance on heuristic processing in how heavy viewers construct their judgments about the real world, thus explaining the positive relationship between TV viewing and estimates of the frequency and probability of certain behaviors in society (Shrum, Wyer, & O'Guinn, 1998). Heavy TV viewers are more likely to believe that behaviors that are widespread on TV, such as crime and alcohol consumption, are representative of the real world (O'Guinn & Shrum, 1997; Russell et al., 2013). In this research, we examine whether and to what degree TV exposure influences adolescents' fast-food beliefs, particularly with regard to perceived health risks of fast-food consumption.

Spending on fast-food commercials on TV (network and cable) continues to reach new levels, having increased 12.18% in the five years prior to reach approximately \$2.85 billion in 2013 (Kantar Media, 2014). Fast-food commercials are prevalent during youth-oriented programs (Bernhardt et al., 2013; Powell, Schermbeck, & Chaloupka, 2013). In addition, 89% of TV food ads seen by adolescents are for products high in fat, sugar, and/or sodium, and approximately 23% of all food-product and total restaurant ads seen by adolescents are for fast-food restaurants (Powell, Szczypka, Chaloupka, & Braunschweig, 2007). In a classic study of images and references to food during prime-time TV hours, fast-food commercials were 20 times more likely to appear than family-style meals during commercials (Story & Faulkner, 1990). More recently, Kelly et al. (2010) found that fast-food restaurants were the most prevalent product advertised during TV programming for children across 12 countries, representing 12% of all commercials. Fast-food commercials tend to feature likable characters and associate fast food with positive outcomes, such as enjoyment, feeling good,

winning a race or prize, or helping others (Kelly et al., 2010; Scully, Macken, Leddin, Cullen, Dunne, & Gorman, 2014).

Fast food is also portrayed frequently in the content of TV programs (Harrison & Marske, 2005; McClure et al., 2013). The contexts are usually happy, and the characters therein are aspirational but often unrealistically thin, in contradiction with the foods that surround them (Harrison, 2008). Although content analyses of TV series specific to fast-food content are surprisingly scant, the few existing studies reveal that unhealthful foods are overwhelmingly displayed. Foods with low nutrients, such as pizza, cookies, and other sweets, or snack foods high in sugar, fat, or sodium content are disproportionately present in TV series (Story & Faulkner, 1990) and are especially likely to appear around children characters (Avery, Mathios, Shanahan, & Bisogni, 1997). So-called problematic foods, defined as oils, solid fats, and foods with added sugars, are more prevalent in youth-oriented programs than in adult-oriented programs (Greenberg, Rosaen, Worrell, Salmon & Volkman, 2009).

Given the high number of positive fast-food representations on TV, cultivation theory predicts that heavy TV viewing leads to biased views of the health consequences of fast-food consumption (i.e., more positive consequences and fewer negative ones). Furthermore, research has shown that more systematic processing weakens this relationship, as cultivation is based on both the gradual process of television's influence on beliefs over time and on heuristic processing during viewing itself (Shrum & Lee, 2013). Therefore, the relationship between TV exposure and fast-food beliefs may depend on consumers' ability to integrate information gained from TV exposure with that from other sources. Specifically, direct experience may affect the extent to which people rely on TV's depiction of fast food. In this research, we explore the moderating role of direct experience on the relationship between TV exposure and fast-food beliefs.

The role of direct experience in shaping beliefs is well established. For example, social learning theory suggests that past experience leads to the development of situation-specific beliefs and expectations (e.g., Rotter, 1975). Research using the Health Belief Model has shown that past experience with a health behavior (e.g., getting a flu shot, performing breast self-examinations) shapes beliefs about perceived susceptibility and perceived efficacy (e.g., Cummings, Jette, Brock, & Haefner, 1979; Norman & Brain, 2005). Thus, direct experience decreases people's tendency to passively accept information, leading to more systematic processing and scrutiny of information. As a result, the more direct experience a person has, the more he or she is able to understand the real consequences (i.e., health risks) of a given behavior (i.e., eating fast food). Direct experience with fast food increases during teenage years, when adolescents become more independent consumers (Powell, Nguyen, & Han, 2012). Fast food consumption is related to greater intake of energy, fat, saturated fat and sodium and lower intake of vitamins, milk, fruits, and vegetables, hence overall leading to less healthy dietary outcomes and increased risk of obesity (Bowman, Gortmaker, Ebbeling, Pereira, & Ludwig, 2004). In the U.S., analyses of nationally representative data demonstrate that 16.9% of children and adolescents between the ages of 2 and 19 are obese (Ogden, Carroll, Kit, & Flegal, 2012). While direct experience of fast food would lead one to more directly witness and believe the outcomes associated with its consumption, those with less direct experience may rely more on indirect experiences, such as what they see on

television, when forming their beliefs. Given that cultivation via television is based on increased reliance on information provided by the media, people with less direct experience should be more susceptible to the cumulative influence of TV than people with more direct experience. Furthermore, the strength of the relationship between TV exposure and risk perceptions should decrease as actual experience with fast food increases.

Materials and method

Respondent recruitment and samples

We conducted two online surveys of teenagers to test the hypotheses. The surveys were conducted a year apart, and embedded into two larger online studies. In both studies, teenage respondents were recruited through their parents to guarantee parental consent. The parents are members of a national panel operated by a commercial organization. Panel members receive incentives for participation in studies in the form of points redeemable for goods purchases at online retailers. The commercial research organization contacted adult panel members with teenagers 12–17 years of age and briefed them about the purpose and details of the study.

Study 1—Six hundred eighty-seven parents provided consent and contact information for their teenagers, with 445 of the teenagers agreeing to participate (response rate of 64.77%). Of the respondents, 52% were male. Regarding age distribution, 38.7% were age 14, 34.6% were age 15, and 24% were age 16. Only 12 respondents were age 17, but their inclusion did not affect the findings, so we retained their responses. Ethnicity was self-reported as White/Caucasian (78.4%), African American (9.9%), Hispanic (5.8%), Native American (0.4%), Asian (2.7%), and other (2.7%). The majority (96.2%) were enrolled in school full-time, with the bulk in 9th grade (31.9%) or 10th grade (32.6%). Subjective socio-economic that their family is compared with other families (Goodman et al., 2001), was normally distributed, offering a range of socio-economic backgrounds in the sample ($\bar{x}=5.36$; $\sigma=1.89$).

Study 2—The response rate for Study 2 was 88.72%, with 1,188 parents providing consent and completing a brief parent survey, and 1,048 teenagers participating in the teen survey. Demographics were similar to those in Study 1: 50.3% were male across the ages (age 12: .6% age 13: 1.3%; age 14: 26.9%; age 15: 35%; age 16: 32.2%; age 17: White/Caucasians, 11.6% were African Americans, 10% were Hispanics, 5.1% were Asians, 2.1% were Native Americans, and .7% was Pacific-Islander. The majority (96.5%) were enrolled in school full-time, mostly in 9th grade (32.0%) or 10th grade (36.1%). The mean and variance of subjective SES were also in line with those in Study 1 ($\bar{x}=5.42$; $\sigma=2.04$).

Procedures—On obtaining parental consent, the teenage respondents received an e-mail invitation to participate in the survey. On the survey site, respondents were also presented with an informed consent form of their own that outlined the nature of the survey. If the respondents elected to complete the survey (all did), they were automatically taken to a secure website to complete a short personality and lifestyles survey.

Outcome measures

Survey—The survey included the following measures in rotated order to avoid order effects: TV viewing embedded in other questions about hobbies, a section containing all the fast-food measures, and an unrelated section about alcohol consumption for a study on youth and alcohol funded by the National Institute on Alcohol and Alcohol Abuse. Demographics were collected last. On concluding the survey, respondents were able to pose questions and concerns directly to the researchers through an anonymous online secure message board or could address any concerns about their privacy by e-mail to a research coordinator.

TV viewing—Respondents indicated the number of hours per week they watch each of eight categories of programs on any device (e.g., TV, computer, mobile phone): sports, comedy, documentaries, dramas, cartoons, sitcoms, soap operas, reality shows, and movies. This is a commonly used measure in cultivation research and we used it here to compute an overall weekly TV-viewing measure which ranges from 0 to 80 and which captures the total number of TV hours viewed per week across genres and media devices (O’Guinn & Shrum, 1997). Prior research has documented the psychometric properties of this commonly used indicator (O’Guinn & Shrum, 1997; Potter, 1986). In both studies, we winsorized the distribution of this measure to account for the large standard deviations that result from this summative measure (Reifman & Keyton, 2010). TV viewing in both studies was in line with national statistics on the average U.S. consumer’s viewing (Nielsen Media, 2014).

Perception of fast-food consequences and direct experience with fast food—Respondents indicated how likely (1=very unlikely, 5=very likely) they would be to experience each of four negative (e.g., “harm your health”; Study 1: $\alpha=.86$; Study 2: $\alpha=.87$) and three positive (e.g., “feel good”; Study 1: $\alpha=.79$; Study 2: $\alpha=.81$) outcomes “if [they] ate at fast-food restaurants every day.” We modeled this measure of fast-food perceptions after smoking and alcohol expectancies used in public health research (Dalton, Sargent, Beach, Bernhardt, & Stevens, 1999; Grube & Agostinelli, 1999). These items loaded on two factors, explaining 71% of the variance in Study 1 and 73% in Study 2, with all positive perception items loading on one dimension and all negative perception items loading on the other and with a negative correlation between them (Study 1: $r=-.42$; Study 2: $r=-.35$). This suggests that these can be treated as independent dimensions. We measured direct fast-food experience by asking respondents to report how many days in the past 30 days they had eaten at a fast-food restaurant (Jeffery, Baxter, McGuire, & Linde, 2006).

Demographics and controls—We measured gender, ethnicity, age and SES, with a subjective measure commonly used for teenage respondents as indicated earlier (Goodman et al., 2001). In Study 1, using a scale from 0 to 40, respondents also indicated the number of hours per week they play team sports. We included this measure to test for the unique relationship between TV viewing and fast food beliefs independent of physical activity.

Study 2 automatically recorded geospatial data in the form of five-digit Federal Information Processing Standard (FIPS) codes. These data were available for 1,011 of the survey respondents. We used the FIPS codes to attach to each respondent’s survey responses data from the U.S. Census Bureau (2010) about the urban nature of their zip code location

(computed as % of urban population/total population) and the density of fast-food restaurants in the zip code (# fast-food restaurants/1,000) and fast-food spending (expenditures per capita on fast food) obtained from the U.S. Department of Agriculture (2015). Including these data in the analyses controls for important environmental-level factors that may be related to fast-food beliefs and thus allows for a stronger, more isolated test of the cultivation hypothesis (Potter, 1986).

Results

Perceived fast-food consequences

We used the same analytical strategy in both studies. Continuous dependent variables (perceived positive and negative consequences) were regressed on TV viewing, direct fast-food experience, and the TV viewing $\times$ experience interaction, as well as the control variables (gender, age, subjective SES, and ethnicity—the latter was recoded as a series of dichotomous variables). All variables were entered simultaneously. Study 1 also included physical activity as a control, and Study 2 included the zip-code-level variables to control for the area's urban nature, density of fast-food restaurants, and level of fast-food spending per capita (even though, as seen in Table 2, living in an urban area was not linked to greater television viewing). We mean-centered the independent variables used in the interaction terms (Aiken & West, 1991; Jaccard & Turrissi, 1990). Tables 1 and 2 provide the means, standard deviations, and correlations for Studies 1 and 2, respectively. Despite some differences in means between the studies, possibly due to the larger sample and age range in Study 2, the pattern of results is similar.

As Tables 3 and 4 show, the results replicate across Studies 1 and 2, respectively. The amount of TV watched by adolescents has a significant, positive relationship to their perceptions of positive consequences of eating fast food and, in Study 1, an inverse relationship to their perceptions of negative consequences. This finding is consistent with cultivation theory; among the adolescents surveyed, heavy TV exposure is related to more positive perceptions of the consequences of eating fast food every day. Direct experience and TV viewing have an additive relationship to the perceived positive consequences; the cultivation of perceptions of positive consequences remains even as direct experience with fast food increases. However, for perceived negative consequences, the relationship between TV viewing and perceptions of health risks is qualified by adolescents' direct experience with fast food, as discussed next.

TV viewing $\times$ experience interaction

As predicted, adolescents' level of direct experience with fast food moderates the relationship between TV viewing and perceptions of the health risks of eating fast food (perceived negative consequences). Spotlight analyses illustrate these interactions by plotting means of the dependent variable at ± 1 standard deviation from the mean for each independent variable (Aiken & West, 1991). As Figs. 1 and 2 depict, adolescents' perceptions of health risks are a function of TV viewing only if they have little direct experience with fast food. Among adolescents with more direct fast-food experience, there are no differences in perceptions of health risks as a function of the amount of TV they

watch. Therefore, while higher TV exposure is associated with lower perceptions of the risks of fast-food consumption (consistent with cultivation theory), this relationship is strongest among adolescents with limited direct experience with fast food (interaction).

The findings of Study 1 are also independent of adolescents' weekly amount of physical activity. That is, TV viewing is not associated with reduced physical activity; in fact, there was a significant, positive correlation between these two variables ($r = .40, p < .01$). Consistent with prior research (Halford, Gillespie, Brown, Pontin, & Dovey, 2004; Hedley et al., 2004; Marshall, Biddle, Gorely, Cameron, & Murde, 2004), our results suggest that TV viewing does not make children less active because they spend more time sitting in front of the TV, but that TV viewing exposes adolescents to programming content that influences their fast-food perceptions and this relationship is independent of physical activity.

Study 2, which accounts for the availability of fast-food restaurants, reveals no relationship between the number of fast-food restaurants in the adolescents' area and their perceived outcomes of consuming fast food. As we would expect, the reported frequency of eating at fast-food restaurants among the teenagers surveyed is related to fast-food expenditures per capita in their zip code ($r = .11, p < .01$) but not to their ubiquity. The absence of a relationship could be interpreted as additional evidence that the cultivation of adolescents' perceptions of fast-food consequences through exposure to fast-food images on TV is shaped independently of the actual physical access to fast-food restaurants in the real world.

Discussion

This research yields important insights. The data provide support for the cultivation hypothesis of a relationship between cumulative TV exposure and fast-food beliefs, a previously undocumented relationship in this context. Heavy TV viewing is related to both greater perceived positive consequences of eating fast food and less perceived health risks of eating fast food. In particular, heavy TV viewers who have little direct experience with fast food seem to be especially desensitized to the risk consequences of fast-food consumption. Perceptions based mostly on TV exposure thus appear to be skewed with mostly positive associations but little understanding of the possible health risks associated with eating fast food, consistent with the images prevalent on TV.

As direct experience with fast food increases, however, heavy TV viewers' perceptions of the health risks associated with consuming it become less biased. This interaction is consistent with the proposed underlying explanation that the availability-based cultivation effect of TV viewing dissipates as direct, personal experience increases the perceived health risks (Keller, Siegrist, & Gutscher, 2006). This finding thus adds to the body of empirical evidence of the interplay of direct experience and the impact of cumulative TV viewing on audiences' beliefs in prior cultivation research focused on perceptions of crime or affluence (Gross & Aday, 2003). The findings that perceived health risks, which are rarely portrayed on TV, increase as direct experience with fast food increases and that direct experience moderates the relationship between TV exposure and risk perceptions are akin to the resonance pattern documented in cultivation research. Indeed, resonance posits that cultivation is stronger for viewers whose life experiences are similar to what is displayed on

TV because real life and TV-based messages resonate with each other (Hawkins & Pingree, 1982; Shrum & Bischak, 2001). Echoing this notion of resonance, we find that cultivation is weaker when real-life experiences differ from the prevalently positive messages communicated in the TV world.

The results lend support to the claim that fast-food images on TV contribute to youth's perceptions of the health risks of fast food (Harris, Heard, & Schwartz, 2014; Harris, Sarda, Schwartz, & Brownell, 2013). Given the established linkages between perceived risks (or expectancies) and behaviors in other domains (drinking, Grube & Agostinelli, 1999; smoking, Wahl, Turner, Mermelstein, & Flay, 2005), these biased perceptions of the health risks of eating fast food may result in increased fast-food consumption and thus indirectly contribute to the growing obesity crisis (McClure et al., 2013).

Limitations and future research

Notwithstanding the consistent support found across two studies for an interactive relationship between direct experience and TV viewing on youth's perceptions of fast-food research. First, the cross-sectional nature of the data limits our ability to establish causality. Longitudinal approaches would be helpful to supplement the initial empirical evidence. With its focus on cumulative exposure to TV images, the cultivation hypothesis is difficult to test experimentally; however, future research could test the impact of a single exposure to fast-food-related content on beliefs, especially fast-food images in the content of TV programming (as compared with fast-food advertising).

Research documenting the nature of food messages on television has focused on documenting the content of advertising messages (e.g., Harrison & Marske, 2005; Pettigrew et al., 2012) with little documentation of the images of and messages about food in the actual content of the programs. An exception is Anderson and Anderson's content analysis of food and eating in preschool TV shows (2010). The surprisingly scant data on the evolving nature and prevalence of fast-food images in entertainment programs since Story and Faulkner's (1990) analysis signals the need for future research to content analyze a sample of TV programs popular with youth, as research has done for substance messages (Russell & Russell, 2009). Some of these programs, or edited versions thereof, could then be used in controlled experiments that vary the actual content of the program and measure beliefs both before and after exposure. Process variables such as the ease of accessibility in memory (Shrum & Lee, 2013) would provide insights into the mechanism underlying cultivation effects from an information-processing standpoint (Harris, Bargh, & Brownell, 2009; Kelly et al., 2010; Zimmerman & Bell, 2010).

Given the strong association between TV viewing and unhealthy eating habits among youth (for an overview, see Strasburger, 2011), as an extension of the fast-food perceptions measured herein, future research could examine other types of unhealthy foods prominently displayed on TV (Andreyeva, Kelly, & Harris, 2011; Coon, Goldberg, Rogers, & Tucker, 2001; Signorielli & Lears, 1992; Signorielli & Staples, 1997). Extending beyond perceptions of health consequences to examine actual health consequences by collecting additional variables, such body mass index, which was not measured in this research, would

also shed light on how TV viewing affects obesity among children and youth (Lipsky & Iannotti, 2012).

Recommendations and implications

Heavy exposure to TV changes youth's perceptions of the health risks of consuming fast food, and therefore public health researchers and practitioners should more carefully monitor and perhaps regulate the amount of fast-food advertising on TV and the content of TV programs, in the same way as they monitor alcohol (Jernigan, Ostroff, & Ross, 2005). Accurate portrayals of food consumption and its consequences are necessary to correct misperceptions among heavy TV viewers. Portrayals of positive food habits, such as the consumption of fruits and vegetables, in youth-oriented programming should be encouraged, as previous experimental research has shown that such product placements can influence viewers' attitudes toward healthful foods (Charry, 2014). Therefore, more dialogue is necessary between public health officials and the creative community of TV writers, directors, and producers about the way food is portrayed on entertainment TV to increase the collective consciousness of how televised images shape youth's perceptions, in the same way as awareness of images of tobacco and responsible drinking has increased (Breed & De Foe, 1982; Sharma, Teret, & Brownell, 2010; Winsten, 1994).

From a prevention and public policy standpoint, researchers could investigate which portrayals of risk behaviors in TV series or which types of Public Service Announcements might be effective in correcting the otherwise detrimental role of TV viewing (Pechmann & Wang, 2010). Examination of the role of parental mediation in moderating the influence of TV viewing on adolescent behaviors and beliefs would also be worthwhile, particularly parental views of and behaviors toward both the media their children are exposed to and their own fast-food consumption (Barradas, Fulton, Blanck, & Huhman, 2007).

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Highlights

- We surveyed American teenagers about their TV viewing and beliefs about fast food.
- Heavy TV viewing is related to less negative perceptions of the health consequences of fast-food.
- The relationship is strongest among those with limited fast-food experience.

Fig. 1.
TV viewing $\times$ direct experience interaction on fast food perceived consequences in Study 1.

Fig. 2. TV viewing $\times$ direct experience interaction on fast food perceived consequences in Study 2.

Table 1

Means, standard deviations, and correlations in Study 1

	$\bar{X}(s)$	Range of scale	Total TV viewing hrs/ week	Perceived positive conseq.	Perceived negative conseq.	Physical activity hrs/week
Direct experience of fast food	3.32 (1.17)	1–7	.28**	.20**	–.01	.24**
Total TV viewing hours/week	29.36 (23.70)	0–80		.25**	–.14**	.40**
Perceived positive consequences of fast food	2.66 (1.05)	1–5			–.42**	.07
Perceived negative consequences of fast food	3.41 (1.15)	1–5				–.01
Physical activity hours/week	7.09(9.22)	0–40				

** $p < .01$.

Table 2

Means, Standard Deviations, and Correlations in Study 2

	$\bar{X}(\sigma)$	Range of scale	Total TV viewing hrs/week	Perceived positive conseq	Perceived negative conseq.	Urbanization	# fast-food restaurants	Expenditure/capita
Direct experience of fast food	3.42 (1.24)	1–7	.25**	.35**	-.03	-.03	.04	.11**
Total TV viewing hours/week	42.15 (27.92)	0–80		.34**	-.06 ^a	.01	.04	.04
Perceived positive consequences of fast food	2.80 (1.09)	1–5			-.35**	.03	.01	.03
Perceived negative consequences of fast food	3.51 (1.18)	1–5				-.04	.04	.01
Urbanization (in zip code)	.01 (.02)	0–31					.09**	-.02
# fast-food Restaurants/1,000 (in zip code)	.67 (.17)	0–1.38						.07*
Fast-food expenditures/capita (in zip code)	646.13 (112.49)	402.10–1,043.86						

** $p < .01$,* $p < .05$,^a $p < .07$.

Table 3

Study 1: Regression results for perceived consequences of fast food

	Unstandardized Regression Coefficients (Standard Errors)	
	Positive perceptions	Negative perceptions
(Constant)	1.920 (.445) **	4.09 (.501) **
Fast-food experience	.118 (.044) **	.052 (.050)
TV viewing ^a	.010 (.023) **	-.081 (.026) **
Fast-food experience × TV viewing	-.004 (.004)	.037 (.020) ^b
Physical Activity	-.010 (.006)	.005 (.007)
Gender (1 = Male / 0)	.190 (.096) *	-.247 (.108) *
Year of birth	-.008 (.055)	-.032 (.062)
Ethnicity (1 = White / 0)	.408 (.274)	-.090 (.309)
Ethnicity (1 = Black / 0)	.734 (.310) *	-.482 (.350)
Ethnicity (1 = Hispanic / 0)	.489 (.341)	-.652 (.385)
Ethnicity (1 = Asian American / 0)	.957 (.393) *	.302 (.443)
Subjective SES	.058 (.026) *	-.052 (.029)
Adjusted <i>R</i> ²	.101	.045

**
 $p < .01$,

*
 $p < .05$.

^aTV viewing, which had a larger variance than the other variables, was divided by 10 before being mean-centered. Results did not change if analyses were conducted with the weekly viewing amount of TV series (sitcoms, soap operas, dramas, reality TV) instead of overall TV viewing or with an alternate self-report measure computed as the sum of weekday and weekend viewing. Because cultivation research uses overall TV viewing, this measure was preferred and therefore is reported in the table.

^b $p = .06$, but all relevant contrasts are significant.

Table 4

Study 2: Regression results for perceived consequences of fast food

	Unstandardized Regression Coefficients (Standard Errors)	
	Positive perceptions	Negative perceptions
(Constant)	2.799 (.241) **	2.925 (.285) **
Fast-food experience	.229 (.028) **	-.018 (.033)
TV viewing ^a	.101 (.012) **	-.016 (.014)
Fast-food experience × TV viewing	-.002 (.009)	.020 (.011) *
Gender (1 = Male/0)	-.008 (.065)	.266 (.076) **
Year of birth	.015 (.035)	.021 (.042)
Ethnicity (1 = White/0)	-.169 (.128)	.178 (.151)
Ethnicity (1 = Black/0)	.101 (.143)	-.094 (.168)
Ethnicity (1 = Hispanic/0)	-.059 (.128)	.129 (.151)
Ethnicity (1 = Asian/0)	-.093 (.167)	.159 (.197)
Ethnicity (1 = Native American/0)	.155 (.229)	-.234 (.270)
Ethnicity (1 = Pacific-Islander/0)	-.439 (.426)	.633 (.502)
Ethnicity (1 = Other/0)	-.184 (.300)	.187 (.354)
Subjective SES	.012 (.016)	-.009 (.019)
# Fast-food restaurants/1,000	-.072 (.195)	.321 (.223)
Fast-food expenditures per capita	.000 (.000)	.000 (.000)
Urbanization index	2.655 (2.147)	-3.055 (2.533)
Adjusted R^2	.176	.015

**
 $p < .01$.

*
 $p < .05$.