HUMAN COMMUNICATION RESEARCH

Human Communication Research ISSN 0360-3989

ORIGINAL ARTICLE

An Online Process Model of Second-Order Cultivation Effects: How Television Cultivates Materialism and Its Consequences for Life Satisfaction

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Two studies investigated the interrelations among television viewing, materialism, and life satisfaction, and their underlying processes. Study 1 tested an online process model for television's cultivation of materialism by manipulating level of materialistic content. Viewing level influenced materialism, but only among participants who reported being transported by the narrative, supporting a process model in which cultivation effects for value judgments occur online during viewing. Study 2 further investigated television's cultivation of materialism and its consequences for life satisfaction. A survey of U.S. respondents found cultivation effects for materialism and life satisfaction, and materialism mediated the cultivation effect for life satisfaction, suggesting that television's specific cultivation of materialism (proximal effect) mediates a more general cultivation effect for life satisfaction (distal effect).

doi:10.1111/j.1468-2958.2010.01392.x

Research on the effects of television viewing on social reality judgments (the cultivation effect) now spans well over 30 years. This literature provides voluminous empirical evidence attesting to the influence of television viewing on many types of viewer judgments. In general, the relation between viewing and various types of judgments is modest but reliable (for a review and meta-analysis, see Morgan & Shanahan, 1996). Despite this robust generalization, a number of important questions remain. One question is to what extent television viewing affects stable beliefs such as personal values. Although numerous studies have investigated television's effect on various types of beliefs and perceptions (e.g., perceptions of crime and violence, occupational prevalence, affluence; for a review, see Shanahan & Morgan, 1999), fewer studies have investigated cultivation effects for values.

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A second question is how this process occurs. Some studies have demonstrated a relation between television viewing and values (Gerbner, Gross, Morgan, & Signorielli, 1982; Morgan, Leggett, & Shanahan, 1999), but few have investigated underlying mechanisms. Although recent progress in understanding cultivation's underlying processes has been made (for a review, see Shrum, 2007), prior process-oriented research has focused almost exclusively on one type of cultivation judgment (first-order), leaving unaddressed how television influences judgments such as attitudes and values (second-order).[1]

A third question that is also related to the previous two is the causal direction of cultivation effects, particularly second-order ones. Although few scholars dispute the positive relation between viewing and judgments, the causal variable has been the focus of considerable debate (cf. Gerbner, Gross, Morgan, & Signorielli, 1981; Hirsch, 1980). Because an overwhelming number of cultivation studies have been correlational, causal evidence has been elusive.

In this article, we present the results of two studies that address the questions of cultivation of personal values, underlying processes, and causal order. Both studies focus on the personal value of materialism (Richins & Dawson, 1992). In the first study, we test the online process model of second-order cultivation effects (Shrum, 2004, 2009) by experimentally manipulating the viewing of materialistic content to demonstrate a causal relation between viewing and material values. The experiment tests the proposition that this relation is moderated by how people process television information while viewing. In particular, we look at the moderating role of narrative engagement during viewing. This approach allows us to not only assess the online process model, but also test one of the cultivation's original tenets that asserts that culture is reproduced through narrative (Gerbner & Gross, 1976; see also Busselle, Ryabovolova, & Wilson, 2004).

In the second study, we investigate a more generalized relation between television viewing and materialism. Using a random sample general population survey, we investigate both the predicted cultivation effect of a positive relation between amount of television viewing and level of materialism, and the consequences of this relation for another variable important to cultivation research, life satisfaction. Television is often implicated as a contributor to diminished life satisfaction (e.g., Kubey & Csikszentmihalyi, 1990), but research to date offers limited guidance on how they are connected. We specifically tested the proposition that materialism at least in part mediates the negative relation between television viewing and life satisfaction (cf. Morgan, 1984), suggesting that the specific, proximal cultivation effect (materialism) mediates a more general, distal cultivation effect (life satisfaction).

Together, these two studies provide several contributions. First, they allow a precise test of the online processing model, a model that has been frequently articulated but relatively untested (Shrum, 2007, 2009). A second contribution is an investigation of television's role in the cultivation of material values, a personal value construct that has received little attention in cultivation research. A third contribution is a specific look at the role of fictional narratives and their potential power to shape

viewer values. A fourth contribution pertains to causal order. We experimentally demonstrate that fictional narrative programming can influence material values, even with short viewing exposures. Likewise, by establishing the mediating role of material values, our survey supports the notion that television viewing leads to lower life satisfaction (rather than the reverse). This contribution is particularly important because it not only supports assertions about causal direction, but also demonstrates that programming content, rather than some by-product of the viewing activity (e.g., obesity, attention deficit, sleep disorders), is the likely causal agent. In other words, our research suggests that contrary to what some researchers argue (cf. Sigman, 2007), it is in fact the message, and not merely the medium, that reduces life satisfaction.

Processes underlying cultivation effects

Previous process research has largely focused on first-order cultivation judgments. One process model that has been extensively tested is commonly referred to as the accessibility model (Shrum, 2007), and is based on assumptions regarding how first-order judgments are constructed. However, because the processes by which first- and second-order cultivation judgments are constructed are fundamentally different, it is likely that the processes by which television influences the two judgments also differ. Consequently, the accessibility model cannot address second-order cultivation judgments. To remedy this, a separate online model has recently been proposed for second-order cultivation judgments (Shrum, 2007, 2009). Although our focus in this article centers on the online processing model, we contrast the accessibility model with the online processing model to show how these two models differ.

Accessibility model

Recent research on the cultivation effect has investigated the processes underlying this effect (for a review, see Shrum, 2009). The bulk of this research has focused on the accessibility of television information from memory, the accessibility bias that results from frequent television viewing (e.g., Bradley, 2007; Busselle, 2001; Busselle & Shrum, 2003; Shrum, 1996; Shrum & O'Guinn, 1993), and the use of meta-cognitive experiences such as accessibility in judgment construction (Schwarz, 2004; Shrum, 2009). The accessibility model of cultivation effects posits that because television portrays certain constructs more often than they occur in real life (e.g., crime, occupational prevalence, and affluence), frequent television viewing increases the accessibility of these constructs in memory. Then, when judgments typically used to test for a cultivation effect are elicited (e.g., percentage of Americans involved in a violent crime; who work as lawyers, doctors, or police officers; who are millionaires or have maids or servants), respondents use the ease with which they can recall instances of these exemplars to construct their judgments. More specifically, they apply the availability heuristic and surmise that the easier an exemplar is to recall, the more frequently it must occur (Tversky & Kahneman, 1973). Thus, because these

exemplars are more accessible for heavier than for lighter viewers, heavier viewers make higher judgments of frequency of occurrence, consistent with a cultivation effect (for a review of the model and supportive evidence, see Shrum, 2007). Note that this process suggests that although the accessibility of information is influenced during the viewing process (e.g., by frequency of viewing and the vividness of portrayals), the actual *application* of television-related information to judgments occurs at the time the judgment is elicited.

Although the accessibility model has proved to be robust, it only applies to memory-based judgments (Shrum, 2004, 2009). Memory-based judgments are ones that are based on specific information retrieved from memory and constructed at the time the judgments are elicited (Hastie & Park, 1986), and are particularly susceptible to judgmental heuristic effects such as availability (Manis, Shedler, Jonides, & Nelson, 1993). Within the domain of cultivation research, what are often referred to as first-order judgments (e.g., probability of being involved in a violent crime, percentage of workforce that is doctors; Hawkins & Pingree, 1982) are memory based. Hence, the accessibility model only pertains to the processes underlying one type of cultivation effect, first-order effects. This is unfortunate for at least two reasons. First, the issue of how television information is processed and integrated into general value systems (second-order measures) seems to better capture the original notion of cultivation than does the influence of television on estimates of societal affluence or workforce prevalence (first-order measures; Gerbner & Gross, 1976; Hawkins & Pingree, 1990). Second, memory-based judgments in real life are actually quite rare. Not only are they infrequently made, but they are difficult to produce, even in the lab (with the exceptions being judgments such as frequency and probability; Hastie & Park, 1986). Memory-based judgments generally require some specific evaluative goal (e.g., in the course of a purchase). Spontaneous online judgments, in contrast, are far more common and occur repeatedly as information is encountered in everyday situations. Thus, what are arguably the most important and most ubiquitous types of cultivation judgments (second-order judgments such as attitudes and values) have received little attention.

Online process model

In contrast to memory-based judgments, most judgments are made as information is encountered (Hastie & Park, 1986). Examples of these types of judgments, termed online or stimulus-based judgments, are impression formation, stereotyping, attitudes, and value judgments. Within cultivation research, these judgments are often referred to as second-order judgments (Hawkins & Pingree, 1982). Online judgments are considered to be less effortful and more reliable than memory-based judgments. Although online judgments may be elicited from external demands (What do you think of this dress? Do you like this advertisement?), most online judgments are made internally and spontaneously generated in an effort to comprehend everyday situations (Is this situation safe? Is that person friendly? Does this restaurant look authentic?). Research suggests that trait judgments in particular are ones that tend

to be made spontaneously (Winter & Uleman, 1984). Research has also shown that certain factors tend to elicit spontaneous online judgments (Hastie & Park, 1986). These include properties of objects or people that are distinctively associated with particular concepts, such as the association of muscularity with athletic prowess, expensive cars with affluence, and so forth. Thus, when those distinct concepts are noticed, people make spontaneous online judgments of the extent to which a target possesses the associated traits.

Another factor associated with online processing is goal orientation. Examples range from simply trying to comprehend a situation to forming impressions of others. Note that although all of these situations and factors apply to real-world situations, they apply equally to situations that might be portrayed in television programs. Viewers make trait, impression, and liking judgments in order to comprehend a plot's development, understand underlying character motivations, and predict program outcomes. Thus, we posit that just as in real life, these spontaneous judgments may subtly influence specific attitudes and global values through a spontaneous, online process during viewing.

Because the processes involved in the construction of first-order (memory-based) cultivation judgments are fundamentally different from the processes involved in the construction of second-order (online) cultivation judgments, it is likely that the way in which television information influences first- and second-order judgments is also different (Hawkins & Pingree, 1990). Specifically, if second-order cultivation judgments such as attitudes and values are constructed in an online fashion, then the use of television information in forming judgments should occur during viewing, rather than at the time the judgment is elicited. Moreover, this process should occur spontaneously. This process is for the most part opposite of that by which television influences first-order judgments, in which television information influences judgments through its recall at the time the judgment is elicited, and not during the viewing process (Shrum, 2009).

These divergent processes also hold important implications for the factors that may enhance or inhibit first- and second-order effects. On the one hand, because first-order cultivation judgments are constructed at the time of judgment elicitation through heuristic processing strategies (Shrum, 2001), and because heuristic processing is enhanced when motivation and ability to process information is low (Chaiken, Liberman, & Eagly, 1989), factors that increase motivation and ability to process information at the time judgments are elicited should inhibit the cultivation effect. However, factors affecting motivation to process information during viewing should have little effect on first-order judgments. Consistent with this reasoning, increasing involvement with the judgment task has been shown to eliminate first-order effects (Shrum, 2001), and decreasing processing ability via time pressure to construct judgments has been shown to enhance cultivation effects (Shrum, 2007). In contrast, variables related to motivation and ability to process information during viewing (e.g., attention while viewing, need for cognition) appear to have little impact on first-order judgments (Shrum, 2001; Shrum, Wyer, & O'Guinn, 1998).

On the other hand, for judgments such as attitudes and values, the opposite pattern of enhancing and inhibiting effects should be expected. Models of attitude formation such as the elaboration likelihood model (Petty & Cacioppo, 1986) posit that increased motivation and ability to process information enhances persuasion. If so, then factors that increase motivation and ability to process information while viewing television should enhance the cultivation effect. Consistent with this proposition, need for cognition and attention while viewing have been shown to enhance the cultivation effect for second-order measures (Shrum, Burroughs, & Rindfleisch, 2005). It is notable that these are precisely the variables that have been shown to have little effect on first-order cultivation measures.

To summarize, the online process model suggests that factors that influence information processing during the viewing experience will influence the cultivation process for second-order judgments. Of course, there are quite a number of factors that could potentially influence processing during viewing; viewer involvement, attention while viewing, cognitive sophistication, and comprehension are just a few examples. Another potential candidate, and one that has recently received attention from communication scholars (Bilandzic & Busselle, 2008; Busselle & Bilandzic, 2008, 2009), is narrative transportation, or the extent to which viewers become absorbed or "transported" into the narrative (Green & Brock, 2000).

Narrative transportation

Narrative transportation refers to a process by which audience members (readers, listeners, and in our case, viewers) are absorbed into the world of the narrative. In such a state, viewers become engrossed in the story and are highly involved and cognitively engaged, react emotionally, and have vivid thoughts (Green & Brock, 2000). To achieve and maintain this transported state, viewers may suspend disbelief and actively avoid counterarguing, thereby setting aside real-world facts that may contradict the narrative's message (Green, Garst, & Brock, 2004; but see Busselle & Bilandzic, 2008 for an alternative view on suspension of disbelief). If so, this process may increase a narrative's persuasive impact. Consistent with this reasoning, transported individuals have been shown to hold more narrative-consistent beliefs, have more positive attitudes toward sympathetic characters, and think fewer negative thoughts about the story than do nontransported individuals (Green & Brock, 2000). Also, research in consumer contexts has shown that narrative transportation is associated with more positive brand attitudes and less reliance on argument strength in forming those attitudes (Escalas, 2004). Collectively, this research provides a theoretical basis for the original claims of cultivation theorists that one of the more powerful aspects of television is its presentation of a consistent, persuasive narrative about salient aspects of life (Gerbner & Gross, 1976).

Narrative processing is also necessarily an online process, as it refers to how audience members interact with the narrative as it unfolds on the screen. In many ways, narrative transportation could be viewed as a measure of the extent of online processing. For example, highly transported viewers of a television narrative such as a soap

opera, in an effort to become transported into the narrative's world, would make very frequent judgments such as trait judgments, forming impressions and attitudes about characters (perhaps based in part on the extent to which characters share the same values as the viewer), anticipating outcomes, and making instant reevaluations when surprises occur. In contrast, those who are not as transported by the narrative would likely make fewer of these types of judgments and process them more superficially.

For these reasons, the individual difference variable of narrative transportation (Green & Brock, 2000) provides an ideal context for testing the online process model of second-order cultivation judgments. If the processes underlying the effects of television viewing on attitudes and values occur through an online process during viewing, and narrative transportation increases the persuasive impact of television narratives, then transported viewers should show greater cultivation effects than less transported viewers. Study 1 tested these propositions in an experiment that manipulated the materialistic content of a television narrative to determine its effect on participants' materialistic values, and whether this effect differed as a function of narrative transportation during viewing.

Television viewing, materialism, and life satisfaction

Materialism

To date, extant research on cultivation effects has focused largely on issues related to crime and violence (Morgan & Shanahan, 1996). However, researchers have also begun to examine how television may cultivate consumption-related beliefs. Content analyses have shown that, like crime and violence, television also overportrays affluence relative to its real-world incidence (Lichter, Lichter, & Rothman, 1994; O'Guinn & Shrum, 1997). Thus, cultivation theory predicts that heavier viewers should hold beliefs that are more consistent with the material world portrayed on television than should lighter viewers. In support of this premise, research has shown that relative to lighter viewers, heavier viewers perceive a greater prevalence of luxury product ownership such as hot tubs and diamond necklaces, a higher incidence of high-income occupations such as doctors and lawyers, more widespread use of expensive services such as country clubs and maids (Shrum, 2001; Shrum et al., 1998), and higher levels of societal affluence in general (Potter, 1991). Heavier viewers also express a greater desire to own luxury products (Shrum, 1999).

Some research has examined the relation between television viewing and materialism (the importance an individual places on the acquisition and possession of material objects), but the findings are inconsistent. In one of the earliest studies, Churchill and Moschis (1979) found a small but significantly positive association between adolescents' television viewing levels and their level of materialism. A survey of adult respondents found a weak but positive relation between weekly hours of television viewing and personal materialism (a belief that having more material possessions would increase personal happiness). However, this effect held

only for individuals who believed that television advertising realistically portrayed consumers, and not for material values in general (Richins, 1987). A large cross-national study also produced mixed results (Sirgy et al., 1998). That study found that television viewing was positively related to materialism in China, Australia, and adults in the United States, unrelated to materialism in Turkey and in college students in the United States, and negatively related to materialism in Canada. O'Guinn and Shrum (1997) found no relation between television viewing and materialism in a general population adult sample (Study 1) or in a college student sample (Study 2), whereas Shrum et al. (2005, Study 1) reported a strong relation between television viewing and materialism.[2] In sum, the general conclusion is that television does influence materialism in some instances, but this linkage is far from consistent.

Life satisfaction

One of the more robust findings in the television effects literature is the negative correlation between amount of television viewing and life satisfaction, happiness, and other forms of subjective well-being, and this finding has been remarkably stable over time. For example, heavy television viewers report a higher incidence of feelings of alienation than do light viewers (Kubey & Csikszentmihalyi, 1990), and are more likely to describe their lives as lousy and less likely to describe their lives as great than are light viewers (Morgan, 1984). In one of the most recent studies in this domain, data from the General Social Survey reveal that television viewing is negatively correlated with happiness (Robinson & Martin, 2008).

Whereas communication scholars have focused on the association between television viewing and well-being, researchers in consumer behavior and psychology have examined the linkage between materialism and well-being. In general, these studies have found that materialism is negatively associated with well-being. For example, materialism is negatively correlated with satisfaction with one's standard of living, satisfaction with family life, and satisfaction with life as a whole (Belk, 1985; Burroughs & Rindfleisch, 2002; Richins & Dawson, 1992). Materialism is also associated with other negative indicants of well-being, including higher incidences of depression (Kasser & Ryan, 1993), neuroticism (Mick, 1996), and self-criticism (Wachtel & Blatt, 1990).

Given the interrelations that have been observed between television viewing, materialism, and life satisfaction, it seems plausible that the oft-observed relation between television viewing and life satisfaction might be explained at least in part by the mediating role of materialism. That is, television viewing may result in less satisfaction with life because television viewing may foster a more extrinsic focus on material values at the expense of intrinsic values such as intimacy and friendship, spirituality, and societal contribution. This differential focus on extrinsic over intrinsic values may in turn lead to reduced life satisfaction (Kasser, 2002; Kasser & Ryan, 1996). Study 2 investigated this possibility in a general population survey of U.S. respondents.

Study 1

Method

Participants and procedure

One hundred and forty-two university undergraduates in the United States (76 women, 65 men, 1 with missing data) participated in the study in return for partial course credit. The study was conducted in a lab equipped with personal computers and headphones. In what was billed as a study about the relation between television program content and the advertisements in the programs, participants were randomly assigned to view either a segment of *Wall Street* (high materialism) or *Gorillas in the Mist* (low materialism). *Wall Street* is a movie starring Michael Douglas that portrays the excesses of greed on Wall Street (i.e., the United States' most important financial business district) in the 1980s. Douglas's character, Gordon Gekko, is purportedly modeled on a number of prominent Wall Street traders, including Ivan Boesky and Michael Milken. The movie focuses on materialistic themes that clearly associate wealth with success and happiness. In contrast, *Gorillas in the Mist*, starring Sigourney Weaver, is based on the life of naturalist Dian Fossey. Fossey was noted for her work in Rwanda to stop the poaching of endangered gorillas, and the movie portrays an altruistic theme in a spartan setting with minimal accoutrements. Pretests confirmed that *Wall Street* was perceived as more materialistic than *Gorillas in the Mist* ($M = 5.11$ vs. 1.62, $t(61) = 12.45$, $p < .001$), but the programs did not differ on interest, excitement, intelligence, or persuasiveness (all ps $> .20$).

Each segment was 19 minutes long, followed by 2 minutes of ads (4 ads of 30 seconds each). The ads were identical for both conditions and were unrelated to the concepts portrayed in either of the programs. The ads were for windshield washer fluid, refrigerators, adhesive bandages, and breakfast cereal. The movies were edited so that each unambiguously portrayed the intended theme (e.g., materialistic self-interest vs. altruistic global interest) and avoided conflicting messages that were present in the full movies. Thus, for example, the *Wall Street* clip showed only instances in which luxury and wealth were linked to happiness, and portions of the movie depicting the inevitable downfalls and betrayals resulting from greed were not included in the stimuli.

Participants watched the segments on computers and listened via headphones. After viewing the segments, participants answered a variety of questions about both the movie and the ads. Some of the questions were in the form of a quiz to ensure participants attended to the movie (e.g., what was the profession of the main character), some served as a cover for the stated purpose of the study (e.g., attitudes toward program and ads), and some measured narrative transportation. Finally, as ostensibly part of a second study on student beliefs and perspectives, participants completed measures that assessed their level of materialism, various demographic measures, and a variety of personality and individual differences measures. The personality and individual differences measures served as distracters to minimize demand effects that

might arise from participants' knowledge of the study's purpose. All participants provided informed consent and were debriefed after the experiment.

Measures

The primary dependent measure was level of materialism, which was assessed using the 18-item material values scale (Richins & Dawson, 1992). Scores on the scale were averaged to form a composite measure ($\alpha = .87$). In addition, a 12-item narrative transportation scale (7-point, Strongly Agree/Strongly Disagree) was developed based on the Green and Brock (2000) Transportation Scale. The items were adapted to apply to television narrative situations (e.g., "While watching the television program, I pictured myself in the middle of the scene of events taking place"; see Appendix A for the full scale). The items were averaged to form a composite score ($\alpha = .87$). Finally, participants provided information on their grade point average, gender, ethnicity, and family income, and were asked if they could guess the purpose of the study. None of the control variables were correlated with materialism, and thus are not discussed further. No participants correctly guessed the study's purpose.

Results and discussion

We expected that viewing condition (high vs. low materialism) would influence the importance that participants placed on material values, but that this effect should occur primarily for participants who were highly transported during viewing. To test this possibility, we conducted multiple regression analyses in which the composite materialism score was regressed on viewing condition (dichotomous, mean-centered), level of transportation (continuous, mean-centered), and their interaction term. In addition, to control for prior viewing experience, whether participants had seen the movie before (dichotomous) and their scores on the program quiz (continuous) were also entered as predictor variables.

The results of this analysis confirmed our expectations. The interaction between viewing condition and transportation was significant ($\beta = .20$, $t(91) = 1.99$, $p < .05$). Neither the main effect of viewing condition nor transportation was significant (both ts < 1). To decompose the interaction, we conducted simple slope analyses (Aiken & West, 1991) by creating conditional values for transportation that were one standard deviation above and below its mean and then examining the slope coefficients of the viewing condition-materialism relationship at these different levels. The results of this analysis are displayed in Figure 1. Consistent with our expectations, the effects of viewing condition on materialism were stronger for those who exhibited higher levels of narrative transportation during viewing ($\beta = .33$, $t(91) = 1.99$, $p < .05$) than for those who exhibited lower levels ($\beta = -.08$, $t < 1$), and in fact the latter group showed no relation.

This pattern of results is consistent not only with the notion that television viewing affects viewer values, but that this process occurs during the viewing process. Moreover, in contrast to the correlational nature of many cultivation studies, this study provides a controlled experiment, which enhances confidence in causal

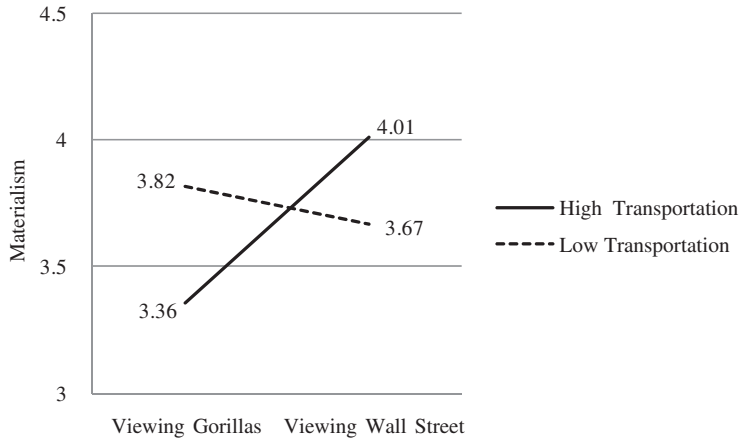

Figure 1 Simple slope analysis of interaction between viewing condition and level of transportation for materialism (Study 1).

assertions. This experimental process, albeit very short term and somewhat artificial in nature, is consistent with the more general longer-term cultivation process in which dominant television narratives may exert a subtle but persistent persuasive impact on viewers over time (Gerbner & Gross, 1976). However, although Study 1 shows that the viewing of fictional television narratives *can* influence stable beliefs such as personal values in a manner consistent with cultivation effects, it does not address whether such associations between viewing habits and materialism actually exist for typical viewers. In Study 2, we further investigated the relation between television viewing, material values, and life satisfaction in a survey of a representative sample of U.S. respondents.

Study 2

Method

Participants and procedures

To empirically investigate the hypothesized relations between television viewing and materialism, we conducted a nationwide survey of U.S. respondents. (This survey was part of a larger project on media and consumer behavior, and a portion of these data have been reported elsewhere; cf. Shrum et al., 2005.) Prior to mailing, we pretested the survey instrument on 70 university undergraduates. A refined survey was then mailed to 1,500 individuals across the United States, using a list purchased from a well-known survey-sampling firm. The sample frame was constructed to mirror the U.S. population on major demographic indicants such as age, gender, income, and place of residence.

The mail packet included a cover letter, an eight-page survey instrument, and a postage-paid reply envelope. As an incentive to participate, individuals were also

mailed a separate sweepstakes entry form (to preserve anonymity) in which they could enter to win a new Sony DVD player. Approximately three weeks after the initial packet was mailed, a reminder postcard was sent out to individuals who had not yet responded encouraging them to return their surveys. The postcard also included information on how to get a new survey in the event that the original had been lost. Potential nonresponse bias was estimated via an extrapolation method comparing early versus late respondents (Armstrong & Overton, 1977). There were no significant differences between early and late respondents in terms of means and variances on any of the key variables.

Sixty-nine surveys were returned as undeliverable, reducing the effective sampling frame to 1,431. Of these, 321 were returned, resulting in a 22% response rate. Seven surveys were eliminated because of failure to follow directions or substantial missing data, leaving a final sample size of 314 respondents. Fifty-seven percent of the respondents were women, the respondents' mean age was 51 (range 18–88), 61% had less than a college education, 20% were minorities, and the median household income was $52,000. Other than age and household income (both of which were slightly higher than the national average), the sample composition roughly mirrors the composition of the U.S. population (U.S. Census Bureau, 2000).

Measures

Unless indicated otherwise, all constructs were measured on a 7-point Likert scale with anchors of Strongly Agree and Strongly Disagree.

Materialism. We assessed materialism using Richins's (2004) shortened version (15 items) of the material values scale. The overall scale displayed good internal consistency ($\alpha = .84$). Thus, a composite score was computed by averaging the scores on the scale items.

Life satisfaction. We measured life satisfaction using Diener, Emmons, Larsen, and Griffin's (1985) Satisfaction With Life Scale. This 5-item scale assesses overall life satisfaction (e.g., "I am satisfied with my life") and is regarded as providing a cognitive assessment of the conditions of one's life (see Robinson, Shaver, & Wrightsman, 1991). The scale displayed a high level of internal consistency ($\alpha = .88$) and the items were thus averaged to form a composite score.

Level of television viewing. Level of television viewing was measured with a new 6-item scale containing such items as "I have to admit, I watch a lot of television," and "I spend time watching television almost every day" (see Appendix B for the complete scale). The scale demonstrated good psychometric properties: high internal consistency ($\alpha = .87$) and unidimensionality (principal components analysis yielding a single factor with an eigenvalue of 3.70 and an average loading of .78), and has been used successfully in other studies (Good, 2007). A composite score was computed by averaging the scale items.

In order to assess the convergent validity of this measure, we included a second indicant of television viewing that asked respondents to indicate, on average, the

number of hours of television they watch each day. The mean daily viewing by our sample was 3.8 hours, which is slightly less than the national average of 4.5 hours (The Nielsen Company, 2007). The correlation between this single-item measure and the 6-item scale we developed was high ($r = .60$, $p < .01$). Given the relative superiority of multi-item over single-item measures (Churchill, 1979) and the fact that hourly estimates of daily viewing may be less reliable, the 6-item scale was used for all subsequent analysis.[3]

Control variables. The survey also included a number of variables that have known relations with the key constructs and have been shown to be of importance in studies of both television effects (Hirsch, 1980; McGuire, 1986) and materialism (Belk, 1985; Richins & Dawson, 1992). These variables include age, gender, education, and income. In addition, previous research has found that materialism is related to socially desirable responding bias (Mick, 1996). We measured socially desirable responding using an updated 15-item short form (Ballard, 1992) of the Marlowe–Crowne Social Desirability Scale (Crowne & Marlowe, 1960). The scale items were measured on a dichotomous (True of me/Not true of me) scale. The scale's internal consistency was acceptable (KR-20 = .76) and a composite variable was computed. Finally, in order to control for the potential effects of other media, participants were asked in an open-ended format to indicate how many hours per day (radio) or week (newspapers, magazines, Internet) they typically spend using each medium. All media usage variables were converted to hours per day.

Results and discussion

Based on our conceptualization, we expected that television viewing would influence both materialism and life satisfaction, with materialism mediating the relation between television and life satisfaction. To test this proposition, we used a series of regression analyses recommended by Baron and Kenny (1986). We specified three separate regressions: (a) regressing materialism on television viewing, (b) regressing life satisfaction on television viewing, and (c) regressing life satisfaction on both materialism and television viewing. Other media usage (radio, newspapers, magazines, Internet), demographics (age, gender, education, income), and socially desirable responding were included as control variables.

The results of this analysis can be seen in Figure 2. Consistent with our expectations, the relation between television viewing and materialism was significant in the first equation ($\beta = .36$, $t(265) = 6.70$, $p < .001$), the relation between television viewing and life satisfaction was significant in the second equation ($\beta = -.19$, $t(271) = -3.12$, $p < .002$), and when life satisfaction was regressed on both television viewing and materialism in the third equation, materialism was significant ($\beta = -.28$, $t(261) = -4.19$, $p < .001$) but television viewing was not ($\beta = -.09$, $t(259) = -1.38$, $p > .16$). A Sobel (1982) test indicated that the degree of mediation was significant ($z = -3.53$, $p < .001$). This pattern of results indicates that materialism fully mediates the effect of television viewing on life satisfaction (Baron & Kenny, 1986).

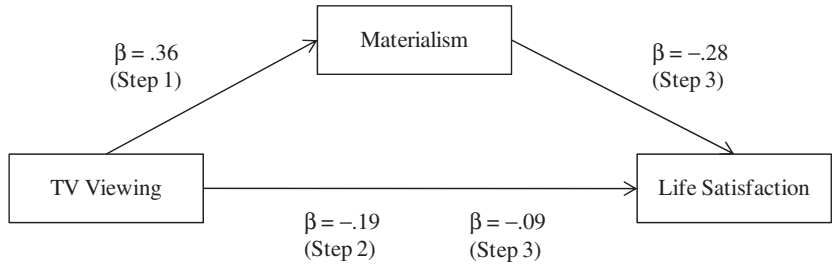

Figure 2 Mediation analysis indicating relations between television viewing, materialism, and life satisfaction (Study 2).

To test the alternative possibility of a different causal path in which television viewing mediates the relation between materialism and life satisfaction, we reran the analysis specifying these paths. The results do not support this position. Although materialism is significantly related to life satisfaction ($\beta = -.30$, $t(265) = -4.91$, $p < .001$), the strength of this relation does not substantially change when television viewing is introduced as a mediator ($\beta = -.28$, $t(259) = -4.19$, $p < .001$, Sobel test $p > .15$). Taken together, these results suggest that the relationship flows primarily from television viewing to materialism, and not the other way around.

In sum, the results of Study 2 support the hypothesis that television viewing cultivates an emphasis on material values, which in turn reduces life satisfaction. This pattern of effects provides a coherent explanation for a well-established cultivation effect, as well as indirect support for television viewing as the causal variable in the television-life satisfaction relation.

General discussion

The cultivation effect is a well-established phenomenon that has been demonstrated in a variety of domains. However, despite its ubiquity, one issue that has received little attention is the potential effect of television viewing on material values. This is somewhat surprising given the central roles that consumerism and materialism have played in American society throughout its existence (de Tocqueville, 1835/1954). Given cultivation's main premise that television serves to enhance and maintain the dominant cultural paradigms of society (Gerbner, Gross, Morgan, & Signorielli, 1994; Morgan & Shanahan, 1996), viewing of messages that reinforce these cultural values should strengthen the importance that heavier viewers place on material possessions. Yet, the few studies that have investigated the relation between television viewing and materialism have yielded relatively inconsistent findings.

In the two studies reported here, we provide evidence that television viewing is indeed related to material values, and in fact show that the relation is robust (Study 2; $r = .37$), particularly compared to most cultivation effects (Morgan & Shanahan,

1996). Perhaps more important, our research implicates television as the causal variable with greater confidence than is usually afforded by simple correlations. In Study 1 we provide relatively rare experimental evidence for the cultivation effect. We show that the importance with which particular material values are endorsed can be influenced by viewing fictional narrative program content, but this occurs only for those who are engaged with the narrative and report being transported into it. In Study 2, we show that frequency of television viewing is a positive predictor of materialism, and materialism mediates a well-established (but not uncontested) relation between frequency of viewing and life satisfaction.

Contributions

Testing underlying processes

One contribution of our research is the evidence it provides regarding the process by which television influences second-order cultivation judgments such as attitudes and values. As noted earlier, this second-order process is not only distinct from process models for first-order judgments such as frequency and probability of occurrence, but is in many ways the opposite of these models. In what we term an online (as opposed to memory-based) model, television influences attitude and value judgments *directly* as program information is processed during viewing. In contrast, for first-order judgments, which are made in a memory-based fashion, television influences frequency and probability judgments *indirectly* by increasing the accessibility of relevant information in memory, which is then later used to form judgments. Study 1 provides support for the online process model by showing that factors that affect the viewing experience (narrative transportation) moderate the cultivation effect for a personal value such as materialism. In fact, in the experiment we reported, the cultivation effect was observed only for those who reported greater narrative transportation.

Addressing causality

Experiments are generally considered to be much better designs for establishing causal relations than are correlational ones (Holland, 1986). Study 1 addresses this issue by providing experimental evidence that the narrative content of television programs can influence even stable constructs such as personal values. This effect occurs despite the fact that the programs are clearly fictional, and thus do not reflect actual instances in which people are judged on their degree of success by their material possessions, or instances in which people are really happier because they own more expensive products.

Study 2, although correlational in design, provides additional insights by establishing that materialism mediates the relation between television viewing and life satisfaction. Specifically, these results suggest that television influences materialism, which in turn influences life satisfaction. Hence, this study provides indirect support for the causal effect of television viewing on both materialism and life satisfaction, two simple relations that are vulnerable to alternative explanations. For example, highly

materialistic people may be drawn to programming that portrays values consistent with their materialistic outlook (reverse causality explanation). Alternatively, people who have few options for entertainment may be less happy than those with more options, and also more likely to watch television because it is easily available (third variable explanation). Still another possibility is that television viewing reduces life satisfaction, but as a consequence of reduced physical activity and increased physiological arousal (Sigman, 2007) rather than the content of the programs. However, these alternative explanations for each simple relation have a more difficult time accounting for our pattern of mediated effects. Thus, the parsimonious explanation implicates television viewing as the most likely causal variable. These more complex models that posit and test underlying mediating or moderating processes present stronger arguments for the validity of cultivation effects than do simple relations (Shrum, 2007).

The mediation findings also contribute to our understanding of the cultivation process by showing that certain cultivation effects may actually foster other types of cultivation effects. Thus, what we have termed a specific, proximal cultivation effect for materialism mediates a more general, distal cultivation effect for life satisfaction.[4]

Limitations

Although our results provide insights into the processes underlying the cultivation of second-order judgments, there are some limitations to their generalizability. First, even though Study 1 revealed a cultivation effect only among participants who reported being highly transported, these results do not imply that narrative transportation is a necessary condition for cultivation. Instead, these results merely suggest that the cultivation effect should be greater for viewers who are highly transported. Although the nature of our results provides only general insights about the impact of narrative transportation upon cultivation, it seems likely that the impact of narrative transportation may be closely linked to the types of second-order judgments. For example, Study 1 focuses on determining whether a short narrative message might influence participants' personal values. Personal values are by definition relatively stable and enduring beliefs, and thus are not easily manipulated (Rokeach, 1973; Shrum & McCarty, 1997). In such cases, higher levels of narrative transportation (or involvement, engagement, interest, etc.) may be required for the message contained in the narrative to have a discernable effect on personal values. In contrast, researchers interested in determining the extent to which less stable and more transient beliefs (e.g., product attitudes) may find that even low levels of narrative transportation may be sufficient for cultivation to occur.

A second issue is that although we are arguing that the online process model for second-order cultivation judgments is fundamentally different from the accessibility model for first-order judgments, we are not suggesting that concepts such as accessibility do not play a role in second-order judgments. To the contrary, the accessibility of second-order judgments for materialism-related constructs has been shown to be greater for heavier viewers than for lighter viewers (Shrum, 1999).

Instead, we suggest that the means by which accessibility is related to *most* second-order judgments is different from how it is related to *most* first-order judgments. To the extent that many of the beliefs, attitudes, or values that are typically of interest to cultivation researchers are generally important ones that are likely already well-formed, messages from television may serve to increase their general strength, rather than just their valence or extremity. Indicators of such attitude strength might include the confidence and certainty with which the attitudes are held, as well as their accessibility from memory (Petty & Krosnick, 1995). Having said that, we also acknowledge that not all beliefs, attitudes, or even values are always well formed, or even formed at all, at the time these judgments are elicited. In such cases, these second-order cultivation judgments may indeed be formed via a memory-based process in which relevant information is retrieved from memory and the judgment computed in real time. To the extent that the content of what individuals have viewed and their frequency of viewing may influence their second-order judgments in a message content-consistent manner, a cultivation effect should occur via a memory-based rather than online process.

A third caveat pertains to the more general processes we documented in Study 2. We showed that a well-known cultivation effect of television's negative relation with life satisfaction and its close correlates is mediated by the positive effect of television viewing on materialism, and materialism's consequent negative effect on life satisfaction. Our analysis, following the procedures recommended by Baron and Kenny (1986), provides support for full mediation. However, we acknowledge that this full mediation applies only in a statistical sense. We make no claims that the television viewing–life satisfaction relation is completely mediated by materialism. It is likely that other variables and mechanisms, including some of those that have been proposed as alternative explanations for the relation, may have some effect. Our results simply suggest that materialism plays a significant role (in both a statistical and practical sense) in how television viewing may decrease life satisfaction.

A final limitation concerns our arguments that experimental designs are superior to cross-sectional surveys in demonstrating causality (Rindfleisch, Malter, Ganesan, & Moorman, 2008). Although this proposition is held by many methodologists, experiments have their own validity threats. In particular, certain designs may be vulnerable to demand effects, and this may be particularly true of experiments testing cultivation theory (as in Study 1), in which participants view a program focused on a particular construct (e.g., violence, marital infidelity, materialism) and then provide their attitudes about this construct. In response to this threat to validity, we took careful steps to disguise the true research question and to separate the experimental manipulation from the collection of the dependent variables. We did this not just by presenting the manipulation and dependent variable collection as separate studies, but also by collecting irrelevant, distractor data as part of both studies to further disguise the focal variables.

A second validity threat concerns our program manipulations. Although this type of approach provides considerable value in assessing causality, our short (19-minute)

viewing segment may not fully capture the nature of cultivation effects, which are considered to accumulate across years of viewing. We acknowledge that a simple manipulation of viewing content does not represent cultivation per se (Morgan & Shanahan, 2010), but believe that it captures at least a portion of the process that occurs while viewing a narrative television program. Thus, although the effects of this short viewing period are likely to be fairly temporary (cf. Bryant, Carveth, & Brown, 1981), it is through repeated viewing of a consistent message that attitudes and values are continually activated and updated, and a long-term cultivation effect is produced.

Theoretical implications and future directions

Having spent considerable time focusing on the processes underlying various cultivation effects and models to explain these processes, it seems fair to pose the question as to why these issues are important in the first place. We propose at least three reasons process issues matter. First, as a number of researchers have argued, process models provide important steps toward establishing the validity of the cultivation effect (e.g., Hawkins, Pingree, & Adler, 1987; Potter, 1991). In fact, some have argued that such process models are necessary for establishing the theory at all (Hawkins & Pingree, 1990). Although we would perhaps not go that far (acknowledging that establishing the breadth and ubiquity of the effect also bolsters validity), the depth provided by process models makes an important contribution to establishing the validity of the cultivation effect.

A second contribution of process models, and in particular the notion that separate models are needed for different types of cultivation judgments, is that they may explain a number of inconsistent and seemingly counterintuitive findings. For example, it seems intuitive that viewer involvement should enhance the cultivation effect, yet few studies have found support for this effect (e.g., Carveth & Alexander, 1985; Rouner, 1984; Shrum, 1996, 2001). Collectively, the online and accessibility models suggest that viewer involvement should affect only second-order effects. The results of Study 1 support this proposition. Because much of the early cultivation research found robust cultivation effects only for first-order measures (Hawkins & Pingree, 1982), the potential effect of viewer involvement on second-order effects may have escaped detection.

A third reason process models are important is their potential for inhibiting or facilitating cultivation effects. Process models should establish conditions under which the effect should or should not hold. Once these boundary conditions are established, intervention methods may be employed to reduce or eliminate the effect under naturally occurring conditions. In terms of the cultivation effect, which has traditionally been viewed in pejorative terms (e.g., increasing insecurity, distrust, anomie, materialism), process models could inform media literacy programs that teach viewers how to reduce unwanted effects of television viewing. However, cultivation effects are not solely negative. Although relatively unstudied, television programs might be used for prosocial purposes, such as reducing smoking and

other vices, promoting racial equality, or increasing proenvironmental behavior, by inducing cultivation-type effects. Process models could also inform these types of efforts by suggesting conditions that would facilitate the effect (e.g., via narratives rather than rhetoric, increasing narrative engagement).

Viewed in this way, understanding that different types of cultivation-related judgments have different underlying mechanisms becomes particularly important. For example, for memory-based (first-order) judgments, individuals need to understand that these types of judgments are influenced by the accessibility of information when they attempt to construct their judgments, and this accessibility may have an unwanted influence from television viewing. If so, then individuals need to consider (and thus retrieve) information other than that which is most accessible when attempting to formulate a judgment. In contrast, for online (second-order) judgments that are influenced by program content during viewing, people may need to either reassess their attitudes and values after viewing and attempt to adjust for unwanted influence, or actively counterargue and resist particular messages that they may be unconsciously adopting during viewing but are antithetical to their personal values and beliefs (e.g., the attractiveness of torture or revenge in the pursuit of a just end), although admittedly the latter is likely to produce an unsatisfying viewing experience. Thus, process models suggest particular avenues for managing the influence of television messages on social judgments.

Although our research advances understanding of how second-order cultivation judgments are influenced by television viewing, it represents only a first step in the process of better understanding how cultivation of second-order judgments works. If, as our model suggests, factors that influence the processing of information during viewing moderate the cultivation effect for second-order judgments, then there are likely quite a number of additional factors that could be investigated. Further investigations into these process variables should contribute to a much richer and more advanced process model for second-order cultivation judgments.

Notes

1 First-order cultivation judgments refer to ones such as probability and frequency of occurrence, whereas second-order cultivation judgments refer to ones such as values, attitudes, and beliefs (Hawkins & Pingree, 1982).

2 It is worth noting that part of the explanation for such disparate findings may be that the studies measured different types of materialism (cf. O'Guinn & Shrum, 1997; Shrum et al., 2005), which may represent fundamentally different constructs (Ahuvia & Wong, 2002).

3 In all analyses that are reported in the Results section, the same general pattern of results held when the single-item measure of television viewing was used instead of the multi-item measure, although the effects were somewhat weaker.

4 We thank one of the reviewers for this helpful suggestion.

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Appendix A: Narrative Transportation Scale for Television Viewing (Study 1)

1. While watching the program, I found myself imagining what I would do if I were the main character in the story.
2. While watching the program, I tried to sit back and just enjoy it, and not think too much about what I was watching.*
3. While watching the television program, I wondered what brought the main character to this point.
4. While watching the television program, I kept thinking what it would be like to live the life of the main character.
5. I found my mind wandering while watching the television program.*
6. While I was watching the television program I tried to imagine what it would be like to really be in this situation.
7. While watching the program, I kept trying to anticipate where the plot was going.
8. I found myself thinking of ways the story could have turned out differently.
9. I wanted to learn how the story ended.
10. After I finished watching the television program, I found it easy to put it out of my mind.*
11. I was mentally involved in the storyline while watching the program.
12. While watching the television program, I pictured myself in the middle of the scene of events taking place.

* Item is reverse scored.

Appendix B: Television Viewing Scale (Study 2)

1. I watch less television than most people I know.*
2. I often watch television on weekends.
3. I spend time watching television almost every day.
4. One of the first things I do in the evening is turn on the television.
5. I hardly ever watch television.*
6. I have to admit, I watch a lot of television.

* Item is reverse scored.