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Assessing the Social Influence of Television:

A Social Cognition Perspective on Cultivation Effects[1]

Cultivation effects are discussed and assessed within the context of mental processing strategies. Specifically, an information-processing perspective is taken to illustrate how television viewing may affect social judgments. Heuristic processing is posited as a mechanism that can explain why heavier television viewing results in higher first-order cultivation judgments (i.e., those requiring estimates of set size, such as the incidence of violent crime or percentage of doctors in the workforce). Past cultivation findings are integrated into this framework, and new directions for research are proposed.

Does television viewing truly influence perceptions of social reality? And if so, how? Communication researchers have attempted to answer the first question by establishing the existence of a relation between television viewing and social perceptions. This attempt has resulted in a body of work commonly known in the field as cultivation research.[2] However, for the most part, researchers have given relatively little attention to the second question. With only a few exceptions (e.g., Hawkins & Pingree, 1980; Hawkins, Pingree, & Adler, 1987; Potter, 1991a; Shrum & O'Guinn, 1993; Shrum, O'Guinn, Semenik, & Faber, 1991), researchers have not addressed the processes that underlie the presumed effect (for similar views see Hawkins & Pingree, 1990; Potter, 1993).

This situation is unfortunate for at least two reasons. The primary reason is that the understanding of an effect is not complete unless one can articulate the process(es) by which the effect occurs. In virtually every discipline, it is incumbent upon researchers to explain the "whys" and "hows" of an effect, not just to establish its existence. It is not enough to know that heat causes

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water to evaporate, that individuals may say they hold a particular attitude but may often behave inconsistently with it, or that intravenous drug use correlates with infection with the AIDS virus. Understanding the process allows us not only to explain why an effect occurs, but also to explain why it *does not*, under certain conditions. In this way, the absence of an effect can be considered confirming evidence of a general model, rather than disconfirming evidence of the particular effect.

The second reason that issues of process are important in cultivation research derives from the first. That is, articulating a process by which an effect occurs provides more avenues for theory testing. To date, cultivation research has been primarily concerned with two important issues: (a) establishing the generalizability of cultivation effects across content domains (e.g., crime, violence, prevalence of occupations, affluence), and (b) understanding the mediating or moderating effects of other variables (e.g., demographics, personality, direct experience) on cultivation effects. Although important and necessary, these two lines of inquiry do not encompass all research possibilities; in fact, they are limited in their explanatory power. If models of psychological processes can be articulated and empirically tested, then more may be learned about the cultivation effect itself, about how mediating variables affect the cultivation process, and about how moderating variables cause some people to be affected by television while others are unaffected.

In this article I am concerned with addressing *how* television viewing may exert an influence on social reality construction. My goal is to address what we know from cultivation research in terms of what we know about psychological processes and their effects on, or implications for, social judgments. The route I have taken to achieve this goal, however, departs from that of most communication studies. Rather than focusing on the communication (in this case television) and how it affects judgments, I have chosen to focus on how judgments typically used in cultivation research are made, and then to reason backward, in light of research findings to date, to how these judgments might plausibly be affected by television viewing. Such post hoc theorizing thereby allows for a fitting of past data within a particular model or framework. However, my goal is not to simply explain a phenomenon, but also to generate new research questions, hypotheses, and directions, as any good framework, model, or even mere explanation would do.

I begin with a discussion of the particular types of judgments that are typically used in cultivation research and then draw on social cognition research in an effort to explicate how these judgments are likely made. I then provide a discussion of the implications of these processes for cultivation research, including an integration of past cultivation findings.

Cultivation Judgments

The types of judgments that cultivation research elicits can be usefully broken down into two categories: (a) those that indicate a person's perceptions of the prevalence of things, and (b) those that indicate a person's attitudes and beliefs. These judgments are often referred to in the communication literature as first-order and second-order judgments, respectively (cf. Gerbner, Gross, Morgan, & Signorielli, 1986; Hawkins & Pingree, 1990; Potter, 1993).[3]

In the interest of clarity, as well as brevity, the remainder of this article will focus only on first-order judgments. First-order judgments were chosen because cultivation effects have for the most part been shown to hold for these judgments in the presence of multiple control variables; this has been decidedly less the case for second-order judgments (Hawkins & Pingree, 1982). It therefore seems most practical to attempt to provide process explanations for effects that have been shown to be stable.

First-Order Cultivation Judgments

First-order judgments require people to provide some sort of quantitative estimate regarding the prevalence of particular objects, people, or behaviors. Most often, these judgments require percentage estimates, such as the prevalence of particular occupations (e.g., percentage of the workforce employed as lawyers or police officers), the prevalence of crime (e.g., percentage of the population that will be involved in a violent crime), or the assessment of personal risk (e.g., percentage estimate of one's own chances of being involved in a violent crime). Other prevalence judgments may ask people to provide absolute numbers rather than percentages (e.g., number of people murdered in New York City each year).

These types of prevalence estimates may be considered a subset of a larger class of judgments known as *set-size judgments*. More generally, set-size judgments involve determining the number of instances or percentage of instances of a particular category that occurs within a larger, superordinate category (Manis, Shedler, Jonides, & Nelson, 1993). Thus, asking someone to estimate the percentage of all workers (superordinate category) who are police officers (particular category) is an example of a set-size judgment.

A relatively large body of work exists in the social psychological literature that addresses how set-size judgments are made. The main issue of this article is that an understanding of these processes should be instructive in inferring the role that television viewing may conceivably play in construct-

ing these judgments. In that regard, I discuss below some of the research findings on these judgments, and relate these findings to past and current cultivation research.

Set-Size Judgments

Suppose people are asked to estimate the percentage of lawyers who are dishonest. One possible way to approach the task is to exhaustively search memory for as many examples of lawyers as possible, make a judgment as to each example's level of honesty, and then perform some sort of algebraic computation to arrive at a preliminary judgment. This judgment may then be considered in light of other information obtained in a memory search that pertains to prior knowledge about the level of honesty of lawyers, and a summary judgment rendered.

Alternatively, people may try to simplify the task and use a cognitive shortcut, or heuristic, to make the judgment. For example, rather than make an exhaustive, or even extensive search of memory for relevant examples, they may simply base their judgment on the qualities of the first, or first few, lawyers who come to mind. This example might be their mother, who they consider very honest, and thus they may judge the percentage of dishonest lawyers to be small. On the other hand, their first example might be their own personal lawyer, who has just ripped them off, or the dishonest prosecutor on the television program *L. A. Law*, which they watched the previous evening. In this case, their judgment may be that a large proportion of lawyers are dishonest.

Finally, they may attempt to generate a list of dishonest lawyers. Unlike the first example, this list may not be exhaustive but simply contain a subset of all dishonest lawyers. This subset would likely consist of examples that are relatively easy to recall. They could then take a shortcut and simply infer that if a large number of dishonest lawyers come to mind, then there must be many dishonest lawyers, producing a judgment accordingly. On the other hand, they could take even more of a shortcut, and in the process of generating a list, base the percentage estimate of dishonest lawyers on the *ease* with which examples of dishonest lawyers come to mind (independent of the number of dishonest lawyers recalled), with ease corresponding positively with the estimate.

As the above examples indicate, a number of processing strategies may be undertaken for a particular judgment. In fact, there is evidence supporting each of the strategies, and the probability of the employment of a particular strategy is a function of the conditions under which the judgment is elicited.

In the first example, all (or as much as possible) of the information available to the person is considered and an algebraic weighing and balancing of the information is performed to reach a judgment. Such a strategy is an example of "information integration" or "cognitive algebra" (Anderson, 1970, 1974). Although algebraic computations on available information may occur under a variety of conditions, an exhaustive, or even extensive, search of memory occurs less often (Sherman & Corty, 1984; Wyer & Srull, 1989). Such a process requires a large amount of cognitive energy, cognitive capacity, and time. Consequently, the conditions under which such a decision-making process will be undertaken are when motivation to make the correct or best decision is high (i.e., high involvement) and time is available (Chaiken, 1980; Gabrenya & Arkin, 1979; Sherman & Corty, 1984). Examples might include deciding whether it is safe to go to the grocery store after dark, whether to send one's child to a particular school, or which automobile to buy.

The second example, basing the judgment on the first piece or pieces of information that come to mind, is an example of what has been termed an accessibility bias (Iyengar, 1992; see also Wyer & Srull, 1986). Accessibility refers to the ease or readiness with which information is retrieved from memory (Higgins & King, 1981). An accessibility bias occurs when information that is more accessible in memory is used disproportionately as a basis of judgment. For example, research in person perception has shown that priming (i.e., making more accessible) particular trait concepts increases the likelihood that a judgment of another person will be made on the basis of that trait concept (Higgins, Rholes, & Jones, 1977; Srull & Wyer, 1979, 1980). However, for the most part, virtually all of the evidence for such an effect has occurred within the domain of attitude or belief judgments, but not for judgments of set size. Moreover, although a cognitive shortcut is employed to some degree in that only the most easily recalled exemplars are used as a basis for judgment, those exemplars that are recalled may be considered extensively in terms of their qualities (i.e., how dishonest, how typical) in the process of constructing the judgment.

The third and fourth examples (basing estimates on the absolute number of examples recalled and basing estimates on the ease with which examples are recalled) are classic instances of heuristic processing strategies.[4] Basing estimates simply on the number of examples recalled is also an example of an accessibility bias. In this instance, the content of what is recalled (i.e., number of examples) is used as a basis for judgment. This is similar to the above example of an accessibility bias, where the judgment was also based on the content of what was recalled, but in that case the recalled information was a particular trait concept. Basing estimates on the ease with which examples are recalled is an example of the use of the availability heuristic,

which states that accessibility will be used as a cue in evaluating "frequency of classes or probability of events" (Tversky & Kahneman, 1973, p. 207).[5]

These four processing strategies provide examples of how people may form a particular set-size judgment. The strategies differ primarily in terms of the cognitive effort required in constructing the judgment, and their prior presentation has been in descending order of effort. That is, information integration, which draws on as much information as possible, clearly requires the most effort. The second example, an accessibility bias that considers only the most accessible information from memory, still may entail some sort of information integration, but the amount of information considered is less than the first example. The third example, using the number of examples generated as a basis for judgment, is clearly a cognitive shortcut that employs a "rule of thumb": The number of examples that can be generated will be directly proportional to their real-world prevalence. The fourth example, inferring set size from the ease with which examples can be generated, uses an even less strenuous heuristic than the third example. The judgment is based on the ease with which the first few examples can be generated, a task that is quicker and easier than generating a list and counting the number of examples.

Given that the judgment strategies differ in terms of effort required, it stands to reason that certain conditions will lead to the choice of particular strategies. This notion is confirmed by extensive evidence showing that the judgment effort expended is a function of at least two things: involvement with the judgment and time pressure to make the judgment. The more strenuous judgment processes, typically referred to as systematic (Chaiken, 1980) or central (Petty & Cacioppo, 1986) processing occur when involvement is high or time pressure is low. Conversely, less strenuous processing, termed heuristic (Chaiken, 1980) or peripheral (Petty & Cacioppo, 1986) processing is more likely to occur when there is high time pressure or the decision task is unimportant or uninvolving (for reviews see Eagly & Chaiken, 1993; Sherman & Corty, 1984).

Implications for Cultivation Research

Heuristic Processing

That heuristic processing strategies are likely to be employed when involvement with the judgment task is low or when there is pressure to make the judgment quickly has important implications for understanding cultivation effects. In many respects, these two conditions apply to typical survey

research. For example, involvement with the survey may be low because there is virtually no risk involved in giving an "incorrect" answer and the judgment has virtually no implications for the respondent. Time pressure may result from simply wanting to get the survey completed quickly, either because of general lack of interest or because the person has other things to do. These examples are applicable to mail surveys, phone surveys, and student subject pool surveys.

Because a large portion of published cultivation research has employed such surveys, it follows that the set-size judgments often used in cultivation research may be made using heuristic processing strategies. However, this does not suggest that cultivation effects are simply a measurement artifact. In fact, people make "snap" judgments under low involvement and/or high time pressure conditions every day, and these judgments are likely made via heuristic processing. Moreover, although not necessarily important to the individual, these decisions may have important implications and ramifications for others. Examples of these decisions might include voting for political candidates, signing a petition or donating money for a particular cause, providing answers to a public opinion poll, or purchasing a particular product.

In terms of cultivation theory, the key question is how such judgments may be plausibly related to differences in level of television viewing. Recall that in heuristic processing, judgments are a function of the accessibility of information in memory. Accessibility is influenced by a number of factors, including: (a) frequency and recency of activation of the construct (for reviews see Higgins & King, 1981; Wyer & Srull, 1989), (b) vividness (Gregory, Cialdini, & Carpenter, 1982; Reyes, Thompson, & Bower, 1980; Sherman, Cialdini, Schwartzman, & Reynolds, 1985), (c) distinctiveness, and (d) relation to accessible constructs (Higgins & King, 1981). Frequency of activation refers to how often a construct is activated within a period of time, and recency of activation refers to the length of time since the last activation. Vividness refers to the prominence of particular attributes of a construct (e.g., intense color), whereas distinctiveness refers to the extent to which a construct differs from surrounding constructs (e.g., lone woman in a group of men). Relation to accessible constructs refers to the extent to which one construct (e.g., tree) is related to another construct (leaves).

Four of these factors—frequency, recency, vividness, and distinctiveness—have particular relevance to television viewing and its possible relation to cultivation judgments. First, most cultivation questions are specifically constructed to address constructs that are portrayed more often on television than in real life (e.g., lawyers, police officers, violent crime, affluence). Thus, by definition, all other things being equal, heavy television viewers should have more exemplars pertaining to these constructs stored in memory than

light viewers. Also, as a function of frequency, the probability that such exemplars have been stored recently in memory should be greater for heavy viewers than for light viewers. Finally, due to the nature of television portrayals and their emphasis on the dramatic, the exciting, and the unique, it is likely that the frequently and recently stored exemplars of heavy viewers are vivid and distinctive as well.

Given the above conditions, it is thus plausible that (a) individuals make cultivation judgments by employing heuristic judgment strategies, and (b) such judgment strategies should result in higher estimates by heavy viewers than light viewers because relevant information is more accessible from memory for the heavy viewers. In fact, this notion has been used by other researchers to explain the effects of media exposure on cultivation estimates.[6] For example, Ogles and Hoffner (1987) suggested that their results (showing that males' exposure to media violence was positively related to personal estimates of victimization) may have been due to the increased accessibility of violence-related information in memory, which in turn resulted in higher percentage estimates. Similarly, Tamborini, Zillmann, and Bryant (1984) explained their results (indicating an effect of exposure to an injustice-depicting crime program on estimates of fear and victimization) in terms of information accessibility and the availability heuristic. Finally, Lichtenstein, Slovic, Fischhoff, Layman, and Combs (1978) suggested that their findings (showing people infer that death by accident is much more likely to occur than death by stroke, when the opposite is actually the case) were due to the greater accessibility of exemplars of death by accident. They speculated that this enhanced accessibility was a result of more frequent and vivid accounts in newspapers and television, and this speculation was supported by results of a content analysis of newspaper articles (Combs & Slovic, 1979).

A few studies have attempted to determine more directly whether processes similar or identical to the availability heuristic are at work in cultivation-type judgments. Tyler (1980, 1984; Tyler & Rasinski, 1984) attempted to ascertain the role of accessibility in judgments about crime (personal vulnerability, rate of crime in the neighborhood, and crime prevention behavior). Tyler (1980) operationalized accessibility as the self-reported ease with which people could generate pertinent examples (Tyler termed this *memorability*), finding that memorability mediated judgments of crime rate in the neighborhood and crime prevention behavior when the source of relevant information came from the mass media. On the other hand, a series of three studies by Tyler and Rasinski (1984) found memorability to have no relation to fear of crime or crime prevention behavior. However, the operationalization of accessibility for the Tyler and Rasinski studies was the speed

with which respondents could answer specific questions about their experience with a particular crime (i.e., how long ago did it happen, where did it happen, what part of the day did it happen), rather than the general ease with which the experience as a whole could be generated. In other words, accessibility was not measured as the ease with which the memory itself came to mind, but the ease with which particular attributes of the memory (where, when) could be determined. Clearly, these are two different things, and latencies for determination of the attributes of the memory should be longer than latencies for the memory itself. It is thus possible that the operationalization of accessibility may have contributed to the null findings.

A series of recent studies have attempted to provide a more direct test of the possible mediating role of accessibility in the television viewing-cultivation judgment relation. Shrum and O'Guinn (1993; see also Shrum et al., 1991) operationalized accessibility as the time needed to respond when making various cultivation-type judgments (e.g., estimates of the prevalence of violent crime, prostitution, drug use). They found that heavier viewers not only gave higher prevalence estimates, but they also tended to make the judgments faster than lighter viewers, consistent with the hypothesis that relevant information should be more accessible for heavier viewers than for lighter viewers. Further, in testing the actual mediating role of accessibility, they found that controlling for speed of response reduced the cultivation effect to nonsignificance. Additional studies have since replicated this finding. Shrum (1994), looking at differences between very frequent soap opera viewers and non-soap opera viewers, found that heavy viewers gave higher estimates and responded faster than non-soap opera viewers when constructing estimates of crime, marital discord, and the prevalence of doctors and lawyers in the workforce. Moreover, controlling for speed of response was shown to mediate the television viewing-judgment relation. O'Guinn and Shrum (1994) obtained similar results when the judgments concerned the percentage of people owning expensive products such as swimming pools, hot tubs, and Rolex watches.

Perceived Reality and Source Discounting Issues

The studies by Shrum and his colleagues provide consistent results suggesting that processes similar to the availability heuristic (judging set size by the accessibility from memory of relevant information) can explain general cultivation effects for first-order measures. However, one clear assumption in their reasoning is that information received from television viewing would indeed be considered relevant, and thus would not be discounted. For example, when in the process of estimating the percentage of doctors in the

workforce and generating examples, what happens if fictional television characters come to mind? In order for these examples to positively affect the percentage estimate (i.e., increase as opposed to decrease the estimate), either one of two conditions must be met: (a) the person must consider television information useful in making the judgment, or (b) the person must not consider source characteristics when making the judgment.[7]

The first condition may occur if the person perceives television information to reflect reality. In other words, the person would score high on a measure of perceived reality. However, findings regarding the role of perceived reality in the cultivation process have been mixed. Hawkins and Pingree (1980) partitioned people based on their scores on different dimensions of perceived reality. In some cases, they found those with higher levels of perceived reality to evidence a stronger cultivation effect, but it was as often or more the case that those with lower perceived reality scores showed a stronger cultivation effect. Similarly, Rubin, Perse, and Taylor (1988) found mixed results in their study, which used positive statements of social perceptions as dependent variables (i.e., assessing faith in others vs. mistrust of others). Potter (1986), like Hawkins and Pingree (1980), found that different dimensions and levels of perceived reality were associated with different magnitudes of cultivation effects. However, in several cases, the effects found in Potter were opposite of those found by Hawkins and Pingree. Finally, Shrum, Wyer, and O'Guinn (1994) found no relation between perceived reality and cultivation effects.

It is thus difficult to interpret the effect of perceived reality, given the inconsistent findings of previous research.[8] It should be noted, however, that for the most part, people *do not* consider television to reflect reality. For example, in Potter (1986), the means for the various dimensions of perceived reality ranged from 3.63 to 3.93 on a 5-point scale, with higher scores indicating less perceived reality. Rubin et al. (1988) found very similar results, as did Shrum et al. (1994). In fact, in the latter study, which used a college student sample, only 6 of 49 people exhibited a perceived reality score to the positive (more perceived reality) side of the midpoint. Thus, these results suggest that failure to discount does not result because people believe that television information is useful in constructing their judgments.

If television information is indeed used in constructing cultivation-type judgments, yet people for the most part do not consider such information to be veridical, then it seems likely that people simply do not make the effort to determine the source of the information they use. Such a process would be consistent with heuristic processing under conditions of low involvement or high time pressure. Also, even when people do make some effort to consider source characteristics in an effort to judge the veridicality of examples

generated from memory, they may be unable to determine the source of the information at the time of judgment and thus use information from inappropriate sources. Johnson and her colleagues (Johnson, 1988; Johnson, Hashtroudi, & Lindsay, 1993) refer to this process as errors in source monitoring, whereas Wilson and Brekke (1994) refer to it as mental contamination. The process of using information from nonveridical sources due to inability to determine the source of the information is also very similar to the sleeper effect as conceptualized by Pratkanis, Greenwald, Leippe, and Baumgardner (1988). They attribute the effect to a differential decay of message and source in which, over time, memory for the message itself remains more accessible than memory for the validity of the message.

Results from previous cultivation-related research provide some support for the notion that cultivation effects may be due to the inability to adequately discriminate source characteristics of a message. Shrum et al. (1994) conducted an experiment in which some people were primed with the possibility that the information they might potentially use in constructing their cultivation-type estimates was television-related (relation prime). Other people were not given such instructions; instead, television was primed by having them provide television-viewing information (i.e., hours watched, perceived reality questions) prior to making the cultivation-type estimates (source prime). A third group completed the cultivation-type questions first, and the only instructions were to read carefully (no prime). Results indicated that the no-prime condition exhibited a cultivation effect, as expected. The cultivation effect was reduced to nonsignificance in the source-prime condition, although the effect was still in the positive direction. The relation-prime condition also reduced the cultivation effect to nonsignificance, and the direction was actually negative. These results suggest that when people are primed to consider the source of the information they recall, they may in fact discount television information, resulting in a nonsignificant television viewing-judgment relation. However, under normal data collection procedures for cultivation studies (i.e., no priming), people do not discount source and do indeed exhibit a cultivation effect.

INVOLVEMENT AT THE TIME OF ENCODING

To this point, I have argued that involvement at the time of judgment will influence information-processing strategies, with those lower in involvement with the judgment task more likely to process heuristically. Another involvement issue that may affect judgments, but through a different mechanism,

is involvement at the time of encoding. In other words, some individuals may watch television relatively passively,[9] with little attention to or elaboration of the television message (low involvement), whereas others are active, elaborate processors of the television message (high involvement). Evidence of differences in level of involvement with and attention to television viewing has been found in a number of studies (e.g., Rubin & Perse, 1987; Rubin et al., 1988; see Rubin, 1986, for a review).

Although level of involvement at the time of encoding should have no relation to the use of heuristic or systematic strategies at the time of judgment, it may relate to the issue of source discounting. For example, those having little involvement with the television program and who thus do not perform any extensive elaboration on the television information may not strongly encode source characteristics. Consequently, these people should be least likely to discount television information on the basis of source at the time of judgment. Conversely, as a result of more extensive elaboration, those who are highly involved with television in general, or with particular programs, may have a strong link between they received from television and the source of that information. If that is so, then such people should be more likely to discount television information when constructing a judgment (assuming they consider television information an unreliable source).

If involvement at the time of encoding is related to the propensity to discount television information, predictions within the cultivation paradigm are still not all that clear or straightforward. One might hypothesize that less involved viewers should evidence a stronger cultivation effect than more involved viewers, assuming involvement at the time of judgment is low for all viewers. There is some evidence for this notion. Rouner (1984) found that level of active viewing of prime-time programming was inversely related to perceptions of a mean world. Pingree, Starrett, and Hawkins (1977) found that fans of soap operas (who would presumably be more involved viewers) tended to be less affected by program content. Similarly, Carveth and Alexander (1985) presented evidence that instrumental (i.e., more active) viewers tended to display less of a cultivation effect than ritualistic (i.e., more passive) viewers (see Perse, 1986, for opposing results).

It is important to note, however, that my argument is not that highly involved viewers will not be affected at all, but that less involved viewers may be more affected than highly involved viewers. Clearly, even the judgments of highly involved viewers may be influenced by television through lack of source discrimination. The extent of this influence will likely be a function of the length of time between encoding and judgment. As the length of time increases, highly involved viewers should experience a reduction in

their ability to accurately determine the source of the information they recall (Johnson et al., 1993). Again, this is also consistent with Pratkanis et al.'s (1988) findings that memory for source-related message validity appears to decay faster than memory for the message itself, and the difference is a function of the length of time between message reception and judgment.

ENCODING AND THE NATURE OF THE TELEVISION MESSAGE

Apart from the issue of involvement at the time of encoding, ability to discount on the basis of source may be a function of how all viewers encode television information, and this relation may itself be a function of the storytelling nature of television programs. Schul and Burnstein (1985) presented evidence that people were much more efficient at discounting discredited information when the information was discretely encoded (i.e., no relation among the different bits of information presented) than when the information was integratively encoded (i.e., the pieces of information were interrelated). The integrative condition is very similar to what occurs when people watch television: Interrelated pieces of information (some factual, some fictional) are presumably encoded in an integrative fashion. If attempts are later made to discount information based on the lack of source veridicality, it may be difficult to separate the veridical information from the nonveridical.

One final point regarding the implications of heuristic processing strategies relates to the nature of the television message. Earlier I alluded to a number of variables that may enhance accessibility, such as frequency, recency, vividness, and distinctiveness. In terms of these variables, cultivation research has primarily focused on frequency. That is, the nature of the television message has been linked to differences in frequency of occurrence between the television world and the real world with respect to constructs such as violence and occupational prevalence. Hence, Gerbner and colleagues perform content analyses of television programs and count the frequency of violent acts, number of police officers or lawyers, and so forth. However, because other factors may influence accessibility, it may not be necessary to show differences in frequency between the real and television worlds in order to postulate cultivation effects. One might in fact perform a content analysis that looks at constructs that are most salient, with salience being a function of vividness and distinctiveness. Although difficult to do outside of the laboratory, it would be interesting to vary the different factors (i.e., frequency, vividness, distinctiveness) independently to see which have an effect.

Psychological Processes and Cultivation Criticisms

The type and nature of the processes in which individuals engage when constructing cultivation judgments have a number of implications for cultivation theory in general and for the interpretation of cultivation findings in particular. These implications are in some ways supportive and in some ways detrimental to cultivation theory.

An information-processing perspective may help researchers address the issue of causality. Several researchers have questioned whether heavier television viewing does indeed cause the higher judgments of such things as crime and occupational prevalence, or whether this relation is due to third variables (Doob & Macdonald, 1979; Hirsch, 1980; Hughes, 1980) or a reversed causal relation (Zillmann, 1980). In terms of third variable effects, the studies mentioned earlier, which have shown that relevant information appears to be more accessible in memory for heavy viewers than for light viewers, suggest that television information may indeed influence judgments. It could very well be, however, that the possible third variables contributing to a spurious cultivation effect may themselves make relevant information more accessible from memory. For example, many of the demographic variables (e.g., education, income, neighborhood) that may also influence cultivation effects do so through their relation to direct experience: Those with less income or education may live in higher crime areas and may also watch more television. Although plausible, such explanations cannot easily account for much of the data on perceptions of occupational prevalence. In these studies, respondents are typically asked to estimate the percentage of police officers, doctors, and lawyers in the workforce. If, for example, all three of these measures show a cultivation effect, it is difficult to reason that those in poor neighborhoods would have more direct experience with *all three* occupations than those in more affluent neighborhoods.

Shrum et al. (1994) took an information-processing perspective in attempting to address the issue of causality in cultivation-type effects. As described earlier, the authors primed television as a source characteristic, with one experimental condition explicitly referring to television as a possible source of information in making the judgments and another condition more subtly priming television by simply asking for television-viewing information prior to the cultivation-type judgments. The authors reasoned that if a particular construct (in this case, television information) was not exerting a causal influence on judgments, making the construct more accessible in memory should have no effect on the judgments. Their results in fact indicated that the priming conditions *did* have an effect: They reduced the

cultivation effect to nonsignificance, suggesting that television does have some causal influence on the judgments. It is important to note, however, that these results do not suggest that television is the *only* causal influence on social perceptions. Just as studies show that the application of multiple statistical controls reduces (but does not always eliminate) the cultivation effect, there are clearly variables other than television that influence the magnitude of cultivation-type judgments. Also, it is still possible that part of the effect can be explained in terms of reverse causality, where some viewers who are more fearful seek out particular types of programs, as Zillmann (1980) suggests. Thus, it is possible that any simple television viewing-judgment relation may be partially explained in terms of all three possibilities: (a) television viewing influences the judgments, (b) third variables influence the judgments, and (c) judgments influence television viewing.

Heuristic processing strategies may also be able to provide an explanation for research findings that appear to be damaging to cultivation theory. For example, Rubin et al. (1988; see also Hawkins & Pingree, 1980) suggest that typical cultivation methodology contains a response bias. Their results show that when the cultivation-type judgments were worded in terms of positive social perceptions (e.g., perceptions of safety vs. perceptions of crime, faith in others vs. mistrust of others), total television did not show any significant *negative* relationship with the judgments (although negative relations did appear for specific program categories). However, if individuals process heuristically, they may not take the time to weigh and balance each instance or exemplar related to crime/safety or faith/mistrust. Instead, they may simply search for confirming evidence of the particular construct or proposition in question at the expense of disconfirming information (termed *confirmatory hypothesis testing*; see Snyder & Cantor, 1979; Snyder & Swann, 1978; Wyer & Srull, 1989). Or, in a related process, they may exhibit what is known as a *feature positive effect* (Fazio, Sherman, & Herr, 1982; Newman, Wolff, & Hearst, 1980), in which they search for exemplars relating to positive instances of the construct (e.g., mistrust of others) but ignore negative instances (e.g., faith in others). Referring to an example used earlier where people attempt to determine the percentage of lawyers that are dishonest, a feature positive effect occurs when estimates are based on a memory-generated list of lawyers that only contains examples of dishonest lawyers and ignores honest ones.

If only positive instances of a construct are considered, then one could reasonably expect a cultivation effect when mistrust is the category but no effect when faith in others is the category, as Rubin et al. (1988) found. In fact, if television also portrays numerous instances of faith in others (e.g., in situation comedies or in dramas in which the actions of the hero are especially

vivid), one might reasonably expect both a positive correlation between television viewing and faith in others *and* a positive correlation between television viewing and mistrust of others. This possibility suggests that it indeed may be important to consider the types of programs particular viewers watch rather than only considering total television viewing hours (Hawkins & Pingree, 1981; Pfau, Mullen, Diedrich, & Garrow, 1995; Shrum & O'Guinn, 1993; Shrum, O'Guinn, & Faber, 1990).

Another study that is seemingly damaging to cultivation theory is Gunter and Wober (1983). In their study of British viewers, they found that heavy viewers gave higher risk estimates than light viewers to such things as a terrorist bomb attack, lightning, and floods. However, the results were essentially just the opposite for amount of news viewing. Gunter and Wober reasoned that because such events occur relatively infrequently on non-news programs, but are often reported on the news, cultivation theory should predict results that are just the opposite of what they found.

An information-processing perspective, in particular one that assumes heuristic processing, can possibly account for these data. Recall that two of the variables that may enhance the accessibility of a particular construct are vividness and relation to accessible constructs. For the first, it is reasonable to assume that portrayals of terrorist bomb attacks and earthquakes on fictional television dramas are quite vivid, whereas they are for the most part necessarily less vivid for news programs (i.e., news programs are generally constrained to aftereffects of disasters or attacks). Thus, even though portrayals occur infrequently on fictional television dramas, their vivid nature may enhance the accessibility of the information from memory, resulting in higher estimates for those who watch more fictional television dramas.

In terms of the second variable, relation to accessible constructs, prior research has demonstrated that the accessibility of a particular construct is enhanced if a similar construct has been activated recently. For example, the reaction time to name an instance of a category is faster if a similar instance of a category has been encountered on a previous trial (cf. Collins & Quillian, 1970; Loftus, 1973). This finding bolsters a spreading-activation theory of memory, which suggests that when an item in memory is activated, other items closely related to that item will be automatically activated as well (Collins & Loftus, 1975). Similarly, it is possible that activation of constructs encountered via television programs (e.g., earthquakes, terrorist attacks) may also make related constructs (e.g., lightning) more accessible, resulting in higher estimates of all three constructs by heavy viewers.

A different process, but one also related to construct accessibility, may produce a positive correlation between estimates of death by lightning and television viewing, even though such an event occurs infrequently on televi-

sion. When encountering instances of such things as earthquakes and terrorist attacks on television, it is possible that viewers encode such events as instances of a broader or superordinate category such as "catastrophes" or "disasters." When later asked to estimate the incidence of another catastrophe or disaster (death by lightning), they may rely on the general accessibility of the broader construct rather than the accessibility of specific instances (cf. Rosch & Mervis, 1975).

Still another process that may result in higher estimates of disasters by heavy viewers compared to light viewers, regardless of how often such disasters are portrayed on television, is through affect. In a study by Johnson and Tversky (1983, Experiment 1), participants read paragraphs resembling news reports that dealt with tragic events (e.g., fire, homicide, leukemia). The participants later gave probability estimates of 18 different risks, including lightning, terrorism, and floods (type of tragedy was a between-subjects factor; risks were a within-subjects factor; the control group did not read the tragic paragraphs). The results indicated a "global" effect of the experimental manipulations. That is, an increase in the estimates for *all* risks resulted, but degree of similarity between the topic risk and other risks did not affect the ratings. In Experiments 2 to 4, Johnson and Tversky (1983) demonstrated that the results were due to the negative affect induced by the experimental manipulations. Their results showed that when the paragraphs that people read induced negative affect but did not pertain to tragedies, they still gave higher estimates, ones similar to those provided by people who read about tragedies. In contrast, those put in a positive mood gave lower risk estimates.

The results discussed by Gunter and Wober (1983) are strikingly similar to those of Johnson and Tversky (1983). In both cases, people tended to give higher estimates of tragedies unrelated to the stimulus material. In the former case,the stimulus material was presumably television viewing; in the latter case, it was the experimental paragraphs that people read. If, in fact, affect is an explanation for the results of both studies, it is consistent with Gerbner and colleagues' contentions that television induces various types of negative affect, including anomie (Gerbner, Gross, Jackson-Beeck, Jeffries-Fox, & Signorielli, 1978), fearfulness (Gerbner et al., 1978; Gerbner, Gross, Signorielli, Morgan, & Jackson-Beeck, 1979), and a negative perception of the quality of life (Morgan, 1984).

The previous discussion provides examples of how viewing cultivation in terms of memory and decision-making processes may be useful in making sense out of seemingly conflicting research findings. To this point, however, the discussion has focused on whether and how television viewing may plausibly influence judgments of set size. What has not yet been addressed is the appropriateness of set-size judgments as measures of cultivation.

The Meaning of First-Order Measures

One of the most important implications of the use of heuristics in formulating cultivation-type judgments concerns the issue of precisely what is meant by the fact that heavy viewers give higher estimates than light viewers. Gerbner and his colleagues contend that ritualized use of television as a medium results in exposure to the messages provided by typical television program fare (Gerbner & Gross, 1976; Gerbner, Gross, Morgan, & Signorielli, 1994), and these messages in turn influence social perceptions, attitudes, and beliefs. Although Gerbner and his colleagues do not lay out an explicit explanation or model of the processes through which cultivation effects occur, the process has often been lumped under a very general "learning" category (cf. Hawkins & Pingree, 1980, 1982; Hawkins et al., 1987; Pingree, 1983; Potter, 1991a).

A learning model tends to imply a process whereby information from television is integrated into perceptions of the real world, resulting in a television bias. This assertion may very well be true, but it is unclear how asking someone to estimate the percentage of lawyers in the workforce taps into such an integration. These types of questions are ones that individuals seldom, if ever, encounter, unless of course they have been a participant in a cultivation-type study. In fact, it may be the case that such integration of television information does not occur *until such a question is asked by the experimenter*.

If indeed information integration occurs at the time of judgment, and heuristics are used to construct the judgment, it is likely that the judgments will be relatively unstable. Research shows that judgments tend to be less stable under heuristic processing than systematic processing conditions (Chaiken, Liberman, & Eagly, 1989; Petty & Cacioppo, 1986). In fact, lack of stability, in the sense that cultivation effects are not consistent across samples and also that effects are drastically reduced after statistical controls are applied, has been a criticism of cultivation research.

Lack of stability or persistence of judgments made using heuristics stems from the lack of importance of the judgments to the individual (i.e., low involvement). Consequently, we might expect these judgments to be susceptible to situational influences. One example, which has implications for null cultivation findings, is the study by Shrum et al. (1994) mentioned earlier. In that study, typical data collection procedures (i.e., collecting cultivation judgments, then collecting viewing information) resulted in a sizable cultivation effect for violence and occupational prevalence measures. However, merely reversing the order and collecting television viewing information

prior to the cultivation-type judgments reduced the cultivation effect to nonsignificance. This result is important in that it may explain lack of cultivation effects in some studies that collect television data prior to the judgment data (e.g., Shapiro, 1991).[10]

The use of heuristics in cultivation judgments suggests that there may not be any type of active learning occurring in which individuals update attitudes and beliefs as viewing occurs. If this is the case, then there may be little or no relation between television exposure and beliefs about the television world, and there also may be little or no relation between beliefs about the television world and beliefs about the real world. In fact, there is evidence to support this notion. Hawkins et al. (1987) and Potter (1991a) both found little relation between television exposure and beliefs about the television world (e.g., chances of violence for television characters, percentage of television characters in law enforcement), and the few significant relations that were found were predominantly negative. On the other hand, some evidence was found in both studies for a relation between beliefs about the television world and beliefs about the real world. However, for the most part, these relations were not large. Moreover, the relatively close proximity of the two types of questions may have resulted in people inferring one answer from the other.

Another research result that calls into question the meaning of first-order judgments is the relative lack of correspondence between first-order and second-order judgments. At least two studies have assessed this relation. Hawkins et al. (1987) found little or no relation between first-order and second-order measures. Potter (1991b) did find significant relations, but all correlation coefficients were less than .16. These results suggest that (a) first-order beliefs are probably not used to construct second-order beliefs, and (b) first-order and second-order beliefs are clearly not measuring the same constructs (low intercorrelations among items). Thus, if the first-order estimates are relatively unstable and are also not related to other variables, it is unclear whether such measures are useful for demonstrating television effects.

Summary

The previous discussion has attempted to present evidence, conceptually and empirically, that a particular judgment mechanism (heuristic processing) can account for cultivation effects when measured via first-order judgments. Such a process assumes, but is not confined to, a perspective of the viewer as a passive receiver of television information. This notion is, in fact, consistent with the stance of Gerbner and his colleagues that television viewing is a

habitual, ritualistic activity where viewers watch by the clock rather than by the program.

A "uses and gratifications" perspective, which sees the viewer as active in the viewing process, would of course take issue with the position that all individuals view in a passive manner. The mechanism proposed here does not suggest that all viewers are passive. Rather, it suggests that those who do view passively are more likely to show a cultivation effect as a result of heuristic processing, and evidence was discussed earlier that supports this view. Thus viewer involvement may be viewed as a moderator variable in the television viewing-judgment relation.[11] Although other studies have introduced viewer involvement in cultivation analysis, these studies generally have not tested for a moderating effect (see Baron & Kenny, 1986, for a discussion of appropriate tests). Future research may usefully address this issue. However, it is also important to note that although viewer involvement may moderate the cultivation effect, if involvement at the time of judgment is sufficiently low, viewer involvement may not have a strong impact.

One final point regarding first-order judgments concerns the finding that virtually all respondents overestimate the incidence of such things as violent crime and occupational prevalence. Some communication researchers have suggested that because both heavy and light viewers overestimate, they must all be "cultivated" to some extent (cf. Perse, 1986; Potter, 1986), and this assertion would be consistent with Gerbner et al.'s (1986) position that even light viewers cannot escape television effects. However, a number of studies have shown that people generally tend to overestimate small risks and underestimate large risks (Johnson & Tversky, 1983; Lichtenstein et al., 1978). Thus, a general overestimation by all viewers of risks with low base rates is not surprising, and it may have nothing in particular to do with television viewing. Rather, it is the differences between the estimates of heavy and light viewers that are critical.

Conclusion

I have attempted to provide an explanation of cultivation effects by applying social cognition theory to cultivation research. One of the continuing debates in communication research concerns the effect of television viewing on the individual. Many have claimed that this effect is minimal and have criticized cultivation theory, methodology, and interpretation. My goal has not been to "prove" that cultivation theory is valid. Rather, I have attempted to show that the results from cultivation studies, *given a particular operationalization*, make very good sense in terms of what we know from social cognition theory and research.

I have suggested that effects obtained by operationalizing the dependent variables as set-size judgments can be explained by the availability heuristic. That is, television viewing increases the accessibility of information in memory, and set-size judgments are inferred from the degree of this accessibility. I have also noted, however, that there may be problems with the validity of such an operationalization (although not with the validity of the results themselves). First, set-size judgments have no obvious relation to attitudes, and it is thus unclear what influence greater set-size judgments have on behavior. It is possible that, for example, those who perceive a greater incidence of crime may consider crime to be an important societal problem to be addressed by public policy, which in turn may influence voting behavior, charitable contributions, and so forth. Yet this link has not been established from previous research, at least not in a direct manner. Second, even if set-size judgments do relate to other variables, if the judgments are made using heuristic processing strategies, they may not be particularly stable. Thus, whatever influence they might have on attitudes and behaviors may be extremely transitory and particularly vulnerable to situational influences.

This article has only addressed first-order cultivation judgments. One clear avenue for future research would be to consider the influence of television viewing on second-order judgments (attitudes and beliefs) in terms of research on information processing. For example, in their review of cultivation research, Hawkins and Pingree (1982) suggest that for second-order measures, cultivation effects tend to disappear when relevant third variables such as age, income, and education are controlled simultaneously. However, in previous cultivation research, attitudes and beliefs have been measured only in terms of their valence or extremity (i.e., how positive or negative the beliefs are). It may be that other qualities of attitudes, such as accessibility, strength, importance, and confidence are influenced by television viewing independent of valence (see Fazio, 1989, in press, for a discussion of attitude accessibility and its correlates). Here again, social cognition theory and research may not only help account for past cultivation research but may also indicate areas of future investigation.

It is hoped that the suggestions made and the conclusions drawn in this article will help motivate researchers to take up the question of cultivation effects. This line of research has languished somewhat, it seems, in the last few years, perhaps because of the difficulty in addressing the very fundamental criticisms that have plagued it. The research perspectives and directions proposed here provide a few examples of ways in which cultivation research might be extended, with the hope that we may gain a more complete understanding of the effects of television viewing at the individual level.

Notes

1. Development of the ideas presented in this article benefited from discussions with Tom O'Guinn and Bob Wyer (University of Illinois), Tina Lowrey (Rider University), Bob Kubey (Rutgers University), and the University of Illinois Social Cognition Group. The writing of this article was supported by a Rutgers Research Council Grant to L. J. Shrum. Correspondence should be sent to L. J. Shrum, Rutgers University, Department of Marketing, Levin Building, Livingston Campus, New Brunswick, NJ 08903. E-mail may be sent to shrum@everest.rutgers.edu.

2. I use the term *cultivation research* to describe any research that looks at the effects of the media on beliefs and perceptions of social reality. Although both the term and the research were originally formulated by Gerbner and his colleagues, complete with a very circumscribed set of assumptions and methodologies, cultivation *theory* essentially holds that long-term exposure to media and the information provided there has an effect on social perceptions and beliefs. Thus, I describe any research that addresses cultivation theory as cultivation research, even though the methodology may not conform to that of Gerbner and his colleagues.

3. It is worth noting that the distinction between *first-order* and *second-order* judgments is often more conceptual than methodological. Some studies have investigated cultivation effects separately for the two types of judgments (see Hawkins, Pingree & Adler 1987; Potter, 1991a, 1991b; Shrum, 1992), and at least one study has included both judgments in the construction of one index measure (e.g., Shapiro, 1991).

4. *Heuristic processing* refers to a type of information processing that requires fewer cognitive resources and less effort than *systematic processing*. Under such processing, rather than making an exhaustive search of memory, people use only a portion of available information to make decisions (Chaiken, 1980, 1987; Eagly & Chaiken, 1993).

5. Making estimates based on the *number* of recalled instances and making estimates based on the *ease* with which instances are recalled are often confounded. That is, the number of instances recalled is often used to infer ease of recall (cf. Manis et al., 1993; Tversky & Kahneman, 1973, Experiments 1-3). Although frequency of occurrence of a particular construct is related to ease of recall, other factors may influence ease of recall as well, independent of frequency (e.g., recency of activation, vividness). Schwarz, Bless, Strack, Klumpp, Rittenauer-Schatka, and Simons (1991) manipulated ease of retrieval independently of number of examples recalled, concluding that ease of retrieval was indeed used as a basis for judgment, consistent with the availability heuristic. This finding is important in that it suggests that simply finding little or no relation between absolute number of examples recalled and judgments of probability or frequency of classes is not sufficient to refute an availability heuristic explanation. It could be that the first few instances are easily recalled for some individuals (e.g., due to vividness or recency), but recalling examples other than those very easily accessible ones may be difficult.

6. Communication researchers have also used the concepts of accessibility and heuristic processing to explain media effects other than cultivation effects (for a review, see Reeves, Chaffee, & Tims, 1982).

7. *Source characteristics* refer to where the information comes from. Thus, in the case of television doctors, source pertains to television, and more specifically, fictional television drama. Presumably, people would not judge such a source as veridical. However, it is important to note that simply because the source is television does not necessarily indicate lack of veridicality: Information regarding doctors obtained from news, *60 Minutes*, or documentaries, for example, may be considered veridical.

8. It is only fair to note that the perceived reality studies mentioned here did not all use the same operationalization of perceived reality. Using different scale items, Hawkins and Pingree (1980) obtained two factors or dimensions for their perceived reality measure, Potter (1986) obtained three factors, and Rubin et al. (1988) obtained only one factor (Shrum et al., 1994, used the Rubin et al. scale). Thus, the differences in results across the studies may be attributed to the differences in operationalization rather than general inconsistency.

9. Much controversy exists regarding the issue of passive versus active viewing. As Kubey (in press; Kubey & Csikszentmihalyi, 1990) noted, part of the problem may be definitional. In the present context, I am considering active versus passive viewing only in terms of attention paid to a particular television program and general level of involvement with the program. As Biocca (1988; see also Rubin & Perse, 1987) pointed out, however, the concept of audience activity has dimensions other than involvement and attention.

10. The number of studies to which this situation applies is difficult to determine because of the difficulty in publishing studies that result in null findings.

11. In fact, such a moderating effect would reduce cultivation effects across an entire sample, which may contribute to the relatively small effect sizes noted in most cultivation-type studies.

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