

## ORIGINAL ARTICLE

## The Implications of Survey Method for Measuring Cultivation Effects

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*The magnitude of the cultivation effect for perceptual estimates of social reality has been shown to be affected by a number of contextual factors such as source priming and motivation to process information during judgment construction, and these contextual factors have been linked to the use of heuristic processing strategies when constructing judgments of frequency and probability (L. J. Shrum, in press). An experiment that manipulated data collection method explored the implications of these findings. A random sample of general population respondents were randomly assigned to either telephone or mail survey conditions. Because telephone surveys generally result in greater heuristic processing than mail surveys, telephone surveys were expected to produce larger cultivation effects than mail surveys. Results showed that not only were the magnitude of the estimates of affluence, crime, vice, marital discord, and occupations generally greater in the telephone than in the mail survey but the correlation of the estimates with amount of viewing was also greater in the telephone than in the mail survey. The implications for measuring the cultivation effect are discussed.*

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Beginning with the seminal article by Gerbner and Gross (1976), research on the cultivation effect is now approaching 30 years. The cultivation effect refers to the influence of television viewing on people's attitudes, beliefs, and perceptions. The topic generated a noteworthy amount of controversy in its early years, mostly as a function of whether the cultivation effect was real or spurious (for a review, see Shanahan & Morgan, 1999). Although some may still dispute its validity, meta-analyses suggest that the result is a reliable but small one (Morgan & Shanahan, 1996).

Since its inception, a number of advancements have been made in terms of better understanding the intricacies of the cultivation effect. For example, research has shown that the size and reliability of the effect may differ as a function of the type of dependent variable. Based on observations of early studies, the cultivation effect appears to be more reliable for first-order measures, such as percent estimates, than for second-order measures, such as attitudes, values, and beliefs (Hawkins & Pingree,

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1982; but see Shrum, in press). The size of the cultivation effect may also depend on variables such as direct experience. Those with direct experience with crime have been shown to exhibit larger cultivation effects than those without it (Gerbner, Gross, Morgan, & Signorielli, 1980; Shrum & Bischak, 2001). Finally, the size of the cultivation effect may depend on characteristics of the person. Cultivation effects regarding fear of crime tend to be greater for those with higher incomes than for those with lower incomes and greater for White than for non-White viewers (Gerbner et al., 1980).

More recently, research has begun to investigate the psychological processes that may underlie cultivation effects (for a review, see Shrum, in press). This research has shown that, at least for first-order measures, the cultivation effect results from the use of heuristic processing strategies (e.g., the availability heuristic; Tversky & Kahneman, 1973) when people construct their judgments of frequency or probability. Television viewing increases the accessibility of relevant information from memory, and respondents use the ease of recall as a basis for their judgment (Busselle & Shrum, 2003; Shrum, 1996). Research has also shown that various personal and contextual factors can influence these underlying processes, and as a result, influence the size and reliability of the cultivation effect. For example, when television is made salient as a possible source of the information that people use in constructing their judgments, the cultivation effect is significantly reduced (Shrum, Wyer, & O'Guinn, 1998). In a similar manner, when people are highly motivated to process information—and thus avoid the use of heuristic processing strategies—the cultivation effect can be reduced and even eliminated (Shrum, 2001).

The purpose of this article is to extend this research by exploring the implications of another contextual factor—survey method—that may influence the extent to which heuristic processing strategies are used and consequently, influence the size of the cultivation effect. Given the frequent use of these two data collection methods in cultivation research, the research has potentially important implications for evaluating cultivation research and its effect size. In addition, the research extends the implications of the heuristic processing model for understanding cultivation effects.

### **Heuristic processing and cultivation effects**

Heuristic processing refers to the tendency of people to use heuristics when they construct their judgments. Heuristics are task simplification strategies—cognitive shortcuts—that people use to reduce the difficulty of judgment construction. Recent research suggests that these cognitive shortcuts can at least partially explain certain aspects of the cultivation effect. Specifically, when the items used to measure the cultivation effect entail prevalence and probability judgments (e.g., prevalence of violence, affluence, marital discord), people tend to use the availability heuristic (Tversky & Kahneman, 1973). In employing this heuristic, people base their judgments of prevalence and probability on the subjective ease with which relevant examples can be recalled (for a review, see Schwarz, 2004). Thus, when estimating how often violence

occurs or how many millionaires are in the United States, people may try to generate examples of violence or millionaires and use the ease of recall as a cue to prevalence: the easier the recall experience, the higher the estimate. Because television viewing provides many more examples of these constructs than does real-world experience, television viewing tends to increase the accessibility of the constructs (Shrum, 1996; Shrum & O'Guinn, 1993). Thus, heavy viewers can more easily recall television examples than can lighter viewers (Busselle & Shrum, 2003), and this accessibility bias leads to higher judgments for those who watch relatively more television (Shrum).

Research has also shown that the conditions under which people construct their cultivation judgments affect the extent to which they are prone to use cognitive heuristics and thus in turn affect the magnitude of the cultivation effect. Heuristic processing tends to occur when people have low motivation (e.g., they are not worried about providing an accurate answer) or low ability (e.g., under time pressure) to process information (for a review, see Chaiken & Eagly, 1993). Under such conditions, the cultivation effect should be enhanced. Conversely, when both motivation and ability to process information is high, the cultivation effect should be reduced. Shrum (2001) provided evidence consistent with these propositions. Participants provided their judgments under one of three conditions: a heuristic condition in which participants were asked to answer quickly, "off the top of their head"; a systematic condition in which they were induced to think carefully and provide an accurate answer; and a control condition in which they were instructed to simply provide their judgments (i.e., the typical method in cultivation studies). Cultivation effects were noted in the heuristic and control condition, and these effects did not differ from each other, suggesting that heuristic processing is the default mode for most cultivation judgments of these types. However, the cultivation effect in the systematic condition was eliminated.

#### **Heuristic processing, survey method, and cultivation effect size**

Over the years, cultivation research has employed a number of methods of data collection, including face-to-face interviews, telephone interviews, and self-administered surveys. The survey method that is chosen depends on a number of factors. Although face-to-face interviews are considered by many to yield the best data, they are extremely costly and tend to be used most often in large-scale projects for governmental agencies (e.g., the General Social Survey; Groves et al., 2004). Academic primary research tends mostly toward self-administration (mass administration for students, mail surveys for general population) and to a lesser extent telephone surveys. However, because of newer technologies such as computer-assisted interviewing and random digit dialing that reduce cost and increase efficiency, "telephone interviewing [has become] the dominant mode of survey data collection in the United States" (Holbrook, Green, & Krosnick, 2003).

However, it seems likely that the conditions under which respondents provide their judgments may vary dramatically between these two data collection methods. For example, one of the primary benefits of a mail survey is that respondents can complete the instrument at their leisure (Churchill & Iacobucci, 2002). Conversely,

telephone surveys require respondents to answer at the pace of the interviewer. For this reason, telephone respondents often report being under more time pressure and being more annoyed with the length of the survey compared to other methods. For example, telephone respondents tend to express more dissatisfaction with interview length than do face-to-face respondents, even when the face-to-face interviews actually take longer to conduct than telephone interviews (Holbrook et al., 2003), suggesting that regardless of objective length of a survey, telephone respondents perceive greater time pressure than do face-to-face respondents.

If survey methods do in fact result in different levels of time pressure, then they may also result in different levels of heuristic processing, which in turn may result in different effect sizes for the cultivation effect. There is some evidence that these differences in processing due to survey method may affect the extent to which respondents process heuristically. A number of studies have found that telephone interview respondents are more prone to “satisfice” than mail or face-to-face respondents (for reviews, see Groves et al., 2004; Holbrook et al., 2003). Satisficing is a type of heuristic process in which people put out just enough effort to meet their own level of satisfaction with the judgment and still provide a sufficient response. Satisficing is generally measured as the extent to which respondents give no-opinion responses, show less differentiation in their use of response scales, and acquiesce (the tendency to answer affirmatively regardless of the question). Studies have found that telephone surveys result in greater satisficing than do mail surveys (Tarnai & Dillman, 1992) and face-to-face surveys (Groves, 1979; Holbrook et al.; Jordan, Marcus, & Reeder, 1980). Holbrook et al. also provided support for their hypothesis that the satisficing differences are due to lack of ability to process information. They found that the effect of survey administration on satisficing was greater for low-education than for high-education respondents. Still other studies have found that other contextual factors often associated with heuristic processing through lack of ability to process information differ as a function of mode of data collection. Bishop, Hippler, Schwarz, and Strack (1988) found that question-order effects and response-order effects were greater in telephone than in self-administered surveys.

These results suggest that the method of survey administration may be related to the ability to process information when responding, which in turn may be related to the application of cognitive shortcuts or heuristics. If so, then it has clear implications for the cultivation effect. Because the cultivation effect has been shown to be greater under heuristic processing conditions than under systematic processing conditions, modes of administration that tend to result in greater heuristic processing should produce larger cultivation effects than modes of survey administration that tend to result in relatively less heuristic processing.

These possibilities were tested by manipulating whether respondents provided their responses via telephone or mail survey. Time pressure, and hence, heuristic processing, was expected to be greater in the telephone than in the mail survey condition. Thus, two particular outcomes were expected: higher estimates for the telephone than for the mail survey condition (because all of the constructs measured

are common and therefore relatively easy to recall) and a stronger cultivation effect in the telephone than in the mail survey condition. However, this pattern was not expected to hold for all estimates. Some judgments—in particular, judgments of personal risk in one's own neighborhood—have been shown to be unaffected by television viewing frequency (Shrum & Bischak, 2001; Tyler, 1980; Tyler & Cook, 1984). Thus, significant cultivation effects and differences between survey methods were not expected for these judgments.

## Experiment

### Method

#### *Sample and procedure*

The sampling frame consisted of the telephone directories (on CD-ROM) of New Brunswick, Piscataway, and Highland Park, NJ. In order to restrict the sample as much as possible to full-time residents, all campus addresses were removed from the sample. One thousand two hundred names were then randomly selected to be included in the study. Those 1,200 names were then randomly assigned to receive either a mail or telephone survey.

The 600 people who were assigned to the mail survey condition were sent a survey, along with a cover letter stating the purpose of the study (part of a student honors project) and ensuring confidentiality. A self-addressed, postage-paid envelope was included. Three weeks after the first mailing, a second survey was sent to those who had not returned the survey from the first mailing.

The 600 names assigned to the telephone survey condition were telephoned during a 1-week period starting 1 week after the mail survey was sent out. Interviewers were participants in an undergraduate (senior) research seminar and an honors seminar at Rutgers University; the seminar provided in-depth coverage of both telephone and mail survey procedures. Telephone interviewers were also trained through extensive practice. Pretests indicated that the telephone and mail surveys took approximately equal time to complete (around 15 minutes).

The interviews took place in a university telephone research facility. Interviewers were instructed that in the case of getting no answer or an answering machine, they should attempt three callbacks at different times of the day (calls were made from 10 a.m. to 7 p.m.). In instances in which no contact could be made after four tries, and in instances in which the number tried was not a working number, a name from the original list was randomly selected as a replacement. This procedure was done in order to approximately mirror the number of mail surveys sent out in the other experimental condition.

#### *Return rate and sample characteristics*

Of the 600 surveys sent out in the mail survey condition, 119 were returned as undeliverable, leaving 481 presumably delivered. Of these 481 surveys, 111 were returned completed, yielding a response rate of 23.1%. In the telephone survey

condition, 571 contacts were successfully made, of which 180 surveys were completed and 391 requests were refused, yielding a response rate of 31.5%. No answers or nonworking numbers were obtained for 374 calls.

The characteristics of the sample for each of the survey conditions are shown in Table 1, along with the same statistics for the county, state, and country. As the table indicates, the telephone survey roughly mirrored the county and state population statistics on virtually all variables. The exception was education: The telephone survey overrepresented those with more education. With respect to the mail survey, relative to both the telephone survey and the population statistics, men were overrepresented, as were Whites, and the sample tended to be older and wealthier. The percentage of those completing 4 years of college was greater than the national and state average but less than in the telephone survey. Most important for this study, the mean hours of television viewing did not differ significantly between the mail and telephone survey conditions ( $p > .47$ ). Nevertheless, in order to account for any possible effects due to sample differences, all relevant demographic variables were included as covariates in all analyses.

#### *Dependent measures*

Five general constructs were chosen for measurement: crime, marital discord, vices (e.g., drug use, illegal gambling, prostitution), occupational prevalence (e.g., doctors, lawyers, police officers), and affluence. These constructs have been shown to be consistently overrepresented on television relative to their real-world incidence (Gerbner

**Table 1** Sample and Population Statistics

	Telephone Survey	Mail Survey	County/State	United States
Sex (%)				
Men	48.9	56.8	51	49
Women	51.1	42.3	49	51
Age (median years)	35	41	35 <sup>a</sup>	35.1
Income (median \$)	45,000	65,000	47,569	35,492
Education (4+ years college) (%)	37.8	23.4	15.3 <sup>a</sup>	16.0
Race (%)				
White	63.3	75.7	59.1	72.5
Black	11.7	10.8	9.3	12.1
Hispanic	6.7	1.8	11.8	11.1
Asian	12.3	8.1	9.5	3.6
Others	5.6	2.7	0.3	0.7
TV viewing				
Median (hours)	16.7	15.5		
M (hours)	18.3	19.3		
SD	11.0	11.8		

<sup>a</sup>These statistics are from state data. All other statistics come from county data.

et al., 1980; Lichter, Lichter, & Rothman, 1994; O'Guinn & Shrum, 1997) and are thus frequently used as dependent measures when testing for cultivation effects. The particular items used to operationalize each construct were drawn from previous studies (e.g., Gerbner, Gross, Jackson-Beeck, Jeffries-Fox, & Signorielli, 1978; O'Guinn & Shrum; Shapiro, 1991; Shrum, 1996, 2001; Shrum & Bischak, 2001; Tyler, 1980). In addition, the general crime construct was broken down into three separate crime constructs: personal crime (e.g., % chance of being personally attacked), societal crime (e.g., % of Americans who ever get arrested), and personal crime outside of one's own general area (e.g., estimates of personal risk when in New York City [NYC]). Research has shown that these different crime constructs often show different patterns of relations with television viewing. Specifically, cultivation effects are typically observed for judgments of societal crime but not for personal crime (Tyler; Tyler & Cook, 1984), unless the judgments of personal crime risk concern risk outside one's own neighborhood or familiar area (Shrum & Bischak).<sup>1</sup> Therefore, cultivation effects would be expected for all of the dependent variables *except* personal crime. Inclusion of the personal crime measure thus allows for some assessment of discriminant validity.

All measures for each construct, along with the respective Cronbach's  $\alpha$ , are included in Appendix A. Reliability analyses indicated that five of the seven scales had reliabilities that were greater than .70, whereas two (vice and marital discord) fell below .70, with values of .60 and .67, respectively.

#### *Independent variables*

The two independent variables in the study were survey condition and amount of television viewing, the latter being measured rather than manipulated. Viewing was measured using four different methods adapted from previous studies (Rubin, Perse, & Taylor, 1988; Shrum, 2001; Shrum & Bischak, 2001; Shrum et al., 1998): (a) summing over self-reported weekly hours of viewing for each of 12 program categories (e.g., soap operas, movies, game shows, news); (b) summing over self-reported weekly hours of viewing across 4 day parts (e.g., 6 a.m. to noon, 7 p.m. to 10 p.m.), plus Saturday and Sunday; (c) average daily viewing hours; and (d) hours of television watched the previous day. The latter two measures were multiplied by seven to convert them to weekly estimates. The four measures were then averaged to form a composite index of weekly television viewing. Cronbach's  $\alpha$  for the four scale items was .71. Viewing was measured after the dependent variables in order to avoid source priming (Shrum et al.) and sensitivity to the independent variable (Morgan & Shanahan, 1996).

#### *Control variables*

Because a number of variables have been shown to correlate with both television viewing and perceptions of social reality (Hirsch, 1980; Hughes, 1980), six variables were also measured for use as statistical controls. Four were typical demographic variables and included age (years), sex (coded as *male* = 1, *female* = 2), education (years of school), and race (recoded as 1 = *White*, 2 = *not White*). The remaining two control variables were measures of the usage of other media: hours per week reading magazines and hours per week reading newspapers.

### *Selection variables*

Respondents were asked to indicate in which country they were born, and if they were not born in the United States, in what year they moved to the United States. In order to ensure that respondents had lived in the United States a sufficient amount of time to be influenced by television, those respondents who indicated that they had moved to the United States within the past 10 years ( $n = 19$ ) were dropped from the analysis.

### *Pretesting and manipulation checks*

Prior to conducting the surveys, pretests were conducted on 12 undergraduates and 10 university staff members to ensure that the manipulation of survey condition had the intended effect of greater time pressure in the telephone condition than in the mail condition. All 22 participants indicated that they felt more hurried to provide an answer when responding to a telephone survey than to a mail survey. Further, as expected, this was particularly the case when they were specifically asked about the dependent measures used in the study. That is, pretest participants did not indicate being more hurried to answer questions for which they had a readily available answer (e.g., demographic questions, television viewing), but they indicated feeling particularly hurried when answering what they considered “difficult” questions when they had to respond directly to a waiting interviewer (i.e., via telephone).

Although the pretests indicated that the manipulation would have the intended effect, it is also possible that another factor related to heuristic processing—task involvement—could also be related to the type of survey that was administered. Thus, even though the survey condition manipulation might induce different types of processing due to time pressure, it is also possible that respondents might differ in terms of involvement with the survey topic. To address this possibility, one item directly following the dependent measures asked respondents to indicate on a 5-point Likert scale the extent to which they felt it was important to them to provide an accurate answer. Responses did not significantly differ between the mail survey ( $M = 3.23$ ,  $SD = .91$ ) and telephone survey ( $M = 3.36$ ,  $SD = 1.06$ ,  $p > .25$ ), suggesting that involvement with the judgment task did not differ as a function of experimental condition.

## **Results**

Greater heuristic processing in the telephone survey condition than in the mail survey condition was expected to lead to higher estimates in the telephone than in the mail survey condition. Information bearing on this hypothesis can be found in the top portion of Table 2. As the table indicates, the estimates in the telephone survey condition were uniformly higher than estimates in the mail survey condition (assessed using  $t$  tests, all  $ps < .002$ ). The differences ranged from 2.9% points (affluence estimates) to 12% points (personal crime in NYC estimates), and these differences for the most part increased as the magnitude of the estimates increased (i.e., bigger differences for higher estimates). The exception was marital discord,

**Table 2** Magnitude of Incidence Estimates and Relation Between Television Viewing and Incidence Estimates as a Function of Survey Condition

Despondent Variable	Survey Condition	
	Telephone ( <i>n</i> = 180) <sup>a</sup>	Mail ( <i>n</i> = 111) <sup>a</sup>
	<i>M%</i> <sup>b</sup>	
Incidence Estimates		
Affluence	10.7 (9.0)	7.8% (6.9)
Societal crime	25.6 (13.4)	16.3% (11.9)
Personal crime (NYC)	32.4 (22.3)	20.4% (22.6)
Personal crime	11.8 (12.8)	7.3% (9.5)
Marital discord	32.6 (11.1)	27.4% (15.0)
Vice	22.5 (12.8)	15.0% (11.9)
Occupational prevalence	16.0 (13.0)	9.7% (10.1)
Relation between incidence estimates and level of television viewing ( $\beta$ coefficients)		
Affluence	.27***	.11 <sup>b</sup>
Societal crime	.26***	.08 <sup>b</sup>
Personal crime (NYC)	.25**	.15
Personal crime	.09	-.08
Marital discord	.24**	.07 <sup>b</sup>
Vice	.28***	.11 <sup>b</sup>
Occupational prevalence	.30***	.08 <sup>b</sup>

Note: NYC = New York City.

<sup>a</sup>All estimates in the telephone condition are significantly greater than in the mail condition (all *ps* < .002).

<sup>b</sup>Indicates  $\beta$ s differ significantly between survey conditions.

\*\**p* < .01. \*\*\**p* < .001.

which had one of the higher estimate magnitudes (32.6% in the telephone survey) but one of the smaller estimate differences between conditions (5.2%).

Greater heuristic processing was also expected to result in a larger cultivation effect for all variables except estimates of personal crime. To test this hypothesis, regression analyses were conducted in which the incidence estimates were regressed on amount of television viewing for each condition. The six control variables were also entered as predictor variables. The regression analyses were run separately for each condition. A cultivation effect is noted if the  $\beta$  coefficient for television viewing is significant. This provides information on the magnitude of the cultivation effect within each condition. In order to assess whether the  $\beta$  coefficients were significantly different between conditions, the same regression analyses just described were again conducted, but this time for the entire sample, and with the inclusion of the Television  $\times$  Condition Interaction Term (computed as the product of television viewing and condition). A significant difference in cultivation effects between conditions would be noted by a significant  $\beta$  coefficient for the interaction term.<sup>2</sup>

The results of this analysis are shown in the bottom portion of Table 2. The hypothesis that the cultivation effect would be greater in the telephone survey than in the mail survey was supported. Of the six incidence estimates in which this relation was expected, five were significantly different between conditions ( $p < .05$ ). The sixth (estimates of personal crime in NYC) showed directional support but failed to reach significance ( $p = .14$ ). For estimates of the incidence of personal crime, for which no cultivation effect was expected, the relation with television viewing was not significant for either the mail or telephone survey condition.

What was somewhat unexpected was that no cultivation effects were observed in the mail survey condition. Even though the mail survey was expected to produce a smaller cultivation effect, it was still expected to be significant. This was not the case. None of the correlations between television viewing and the incidence estimates were significant in the mail survey condition. However, it should be noted that the response rate for the mail survey was substantially less than for the telephone survey and thus comparisons of significance across conditions are problematic. Moreover, meta-analyses of cultivation research have shown that the effects tend to be reliable but small, with an average correlation of about .09 (Morgan & Shanahan, 1996). The correlations for the estimates expected to be significantly related to television viewing are near this magnitude (ranging from  $r = .07$  to  $r = .18$ ). Thus, lack of significance may be due to low power. (Statistical power to detect an  $r$  of .10 at  $p = .05$  with a sample of 300 is only .41.)

## Discussion

Previous research has shown that various contextual and personal factors can greatly affect the size and reliability of the cultivation effect. This study extended that research by looking at the influence of survey method on the cultivation effect. The study showed that the size of the cultivation effect is consistently greater when measured via telephone surveys than when measured via mail surveys. In estimates in which a cultivation effect was expected, this pattern held, regardless of the dependent variable (although the effect was directional but not significant for estimates of crime risk in NYC). Moreover, when cultivation effects were not expected (for estimates of personal risk in one's own neighborhood), the effects indeed were not significant and did not differ across conditions, providing a measure of discriminant validity.

The results of this study have some important implications across a number of research areas. First, from a purely descriptive perspective, conclusions about Americans' beliefs would differ depending on the survey method used. Although the absolute differences may not appear dramatic, estimates in the telephone survey condition are often over 50% greater than those in the mail survey condition. These results are generally consistent with those of past research showing that the descriptive results and conclusions based on them may differ as a function of data collection method (e.g., Bishop et al., 1988; Groves et al., 2004; Holbrook et al., 2003).

Perhaps, more importantly, the results have implications for those interested in investigating the cultivation effect. There are a number of conclusions one might

draw from the data. One is that the cultivation effect does not show up when measured by mail surveys. Although this conclusion is technically correct, as noted earlier, the mail survey condition suffered from low power. In fact, the magnitude of the effect hovers right around the average effect sizes noted in Morgan and Shanahan's (1996) meta-analysis. Clearly, large-scale surveys with sufficient power to detect the typically small correlation effect have found it, making this conclusion suspect. Conversely, another conclusion might be that the cultivation effect does not always have to be that small. The correlation coefficients are substantially greater in the telephone than in the mail survey condition, with the variance accounted for by television viewing at times up to 10 times greater in the telephone than in the mail survey conditions. Thus, based on these results, the size of the cultivation effect may vary as a function of the way it is measured. There is actually some tentative evidence that supports this conclusion. Unreported data from Morgan and Shanahan show small but significant differences in the size of the cultivation effect as a function of measurement method. The effect was the largest when measured in telephone surveys ( $\gamma = .11$ ) and smallest when measured by personal interviews ( $\gamma = .06$ ), with self-administration falling in between ( $\gamma = .09$ ).<sup>3</sup> Although these results do not break out effects as a function of first- versus second-order measures, and therefore should be interpreted with caution, they are nevertheless consistent with the results of the present study.

One of the primary purposes of this study was to test some implications of the heuristic processing theory of cultivation effects, which posits that the effects of television viewing on judgment of prevalence and likelihood result from the application of specific cognitive heuristics such as availability and simulation, and that conditions that foster the application of these heuristics should increase the magnitude of the cultivation effect (Shrum, 2002, in press). The results were generally consistent with this reasoning. Based on previous research on survey methods that shows that telephone survey methods tend to produce the greatest amount of satisficing (cf. Groves, 1979; Holbrook et al., 2003; Tarnai & Dillman, 1992), telephone survey conditions were expected to produce larger cultivation effects than mail survey conditions. This pattern was generally supported, except for estimates of personal crime within one's own neighborhood, which were not expected to be significant (nor a function of heuristic processing).

Note that the unreported results from Morgan and Shanahan (1996) discussed earlier are also consistent with a heuristic processing explanation. Face-to-face interviews generally produce the least satisficing. Although costly, they are widely acknowledged as producing the best data. The interviewer is able to establish rapport with respondents and thus is likely able to increase their level of involvement as well as reduce anxiousness. If so, then based on the theorized role of heuristic processing in producing cultivation effects, the cultivation effect should be smallest in face-to-face interviews. As noted earlier, that was indeed the case.<sup>4</sup>

The results of this study do, however, call into question some of the conclusions suggested by Shrum (2001). That study, which manipulated whether people engaged

in heuristic or systematic processing, found that both the heuristic and control (no processing instructions) groups showed substantial cultivation effects that did not differ from each other. Shrum concluded from these findings that heuristic processing is the default mode for processing these types of judgments. If that is so, then it is difficult to explain the small and nonsignificant effect sizes in the mail survey condition. It may be that heuristic processing is the default mode for *students* in a mass-testing situation (which was the situation for Shrum) but that the mail survey respondents in the present study were more committed and involved than the students. In fact, the effect sizes in the control condition of Shrum are similar (although slightly larger) in magnitude than those in the telephone survey condition of the present study.

Other unreported data from the Morgan and Shanahan (1996) meta-analysis also provide very tentative support for this reasoning. Marked differences in the size of the cultivation effect can be observed when broken out by sample characteristics. College students produced the largest cultivation effect ( $\gamma = .19$ ), whereas national samples of adults produced the smallest ( $\gamma = .06$ ), and these effects were significantly different ( $p < .001$ ).

The findings of this study also have potential implications for domains other than cultivation and other media effects. Specifically, for any judgments that might be prone to the application of judgmental heuristics, results and subsequent conclusions may differ as a function of data collection method. Consider the possible link between advertising and attitudes. As a number of researchers have documented, respondents do not always have a well-formed, stable attitude regarding a particular attitude object (for a review, see Petty & Krosnick, 1995). In fact, they may have no attitude at all (Converse, 1964). Consequently, to form a judgment, the respondent would have to recall information from memory. Given the results of this study, as well as other research, respondents providing judgments via a telephone survey may be more likely to use whatever information comes to mind most easily, rather than giving more careful consideration to a range of information. In such a case, if information from advertising comes to mind most easily, as it plausibly might, a stronger correlation between advertising and attitudes would be noted in a telephone survey than in a more involving survey such as a face-to-face interview or in a less hurried survey such as by mail.

### Limitations

Although the results of this research are consistent with the underlying theory and hypotheses of the study, there are limitations worth noting. One limitation is that, like Holbrook et al. (2003), differences in heuristic processing between survey methods were not directly measured and thus can only be inferred. However, the notion that telephone interviews would result in more heuristic processing than mail surveys has a fair amount of face validity. Consumers have expressed a great deal of dissatisfaction with telephone contact, whether it be from marketers or pollsters, which should reduce motivation to exert effort in responding. In addition, the

self-paced nature of a mail survey should reduce time pressure in responding. Moreover, Holbrook et al. clearly show that telephone surveys are more prone to exhibit outcomes of heuristic processing, such as satisficing, compared to other more involving and slower-paced administrations such as face-to-face interviewing, and other studies have found similar results (cf. Bishop et al., 1988; Groves, 1979; Jordan et al., 1980). It seems reasonable to think that the same should hold when telephone survey is compared to mail survey administrations.

A second possible limitation of the study is that the two samples that were compared were not equivalent on a number of variables (e.g., age, income, education). All demographic variables were used as control variables in assessing the television viewing—judgment relation in order to minimize this possible effect. In addition, it is worth noting that, compared to the telephone survey condition, the mean age was greater in the mail condition, and the mean education level was less in the mail condition. However, both of these factors (older, less educated) have been shown to be associated with *greater* heuristic processing (Holbrook et al., 2003; Schwarz, Park, Knäuper, & Sudman, 1999) and thus should have attenuated rather than inflated the effect of survey condition.

## Conclusions

If, as the results of this study suggest, cultivation effects (or any effects) differ as a function of data collection method, an inescapable question is, which survey method is best? A first, quick (heuristic?) answer might be that the survey method that produces the well-reasoned, high-involvement, low-distraction judgment would clearly be preferred. Yet, that may not always be the case. People make snap decisions everyday, and in fact, it is quite possible that such quick, even automatic, judgments are more the norm than the exception (Bargh & Chartrand, 1999; Wyer & Srull, 1989). Examples of quick decisions might include assessments of danger, whether a person is trustworthy, whether to avoid someone on the street, or how to react in a dangerous situation. Given that these situations occur frequently on television, it seems reasonable to think that, at least when the judgments *are* made quickly, television information may have an influence. Thus, eliciting the judgments in a more controlled manner may reduce the effect of television in the response and thereby reduce the ecological and predictive validity of the results. Although the answer to the “which is best” question may be indeterminable at this point, the fact that different effects are obtained from different data collection methods is of both practical and theoretical significance to communication research.

## Notes

- 1 People tend to rely on their own personal experience (and not media information) to make assessments of crime risk in their own neighborhoods but use media information (and not their own direct experience) to make assessments of societal crime risk.

- However, some research (Shrum & Bischak, 2001) demonstrates that direct experience and television viewing can interact, such that television viewing has a positive impact on personal crime risk but only for those with *high* direct experience with crime (termed a *resonance effect*, Gerbner et al., 1980).
- 2 Under some conditions, beta coefficients may significantly differ but correlation coefficients may not and vice versa (Cohen & Cohen, 1983). However, tests for differences between correlation coefficients with the present data resulted in no change in conclusions.
  - 3 Thanks to Michael Morgan and Jim Shanahan for sharing these results.
  - 4 In fact, the original design for this study intended to compare mail, telephone, and face-to-face interviews, but the face-to-face interviews were problematic for inexperienced students going into randomly selected neighborhoods and homes.

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## Appendix A

### Dependent measures

#### *Societal crime* ( $\alpha = .86$ )

- What percentage of Americans have been victims of violent crime?
- What percentage of police draw their guns at least once in an average day?
- What percentage of women will be raped at least once in their lifetime?
- What percentage of people will be victims of a gunshot in their lifetime?
- What percentage of American households have a handgun?
- What percentage of people ever get arrested?
- What percentage of all crimes are violent crimes—like murder, rape, robbery, and aggravated assault?
- What do you think the chances are (in %) that an unaccompanied woman would be the victim of a violent crime late at night in a NYC subway?

#### *Personal crime* ( $\alpha = .72$ )

- How likely do you think it is (in %) that you will have your house broken into during the next year?
- What are the odds (in %) that you personally will be attacked or robbed within the next year?
- What do you think are the chances (in %) that you might be the victim of an assault during the next year?

#### *Personal crime in NYC* ( $\alpha = .72$ )

- How likely do you think it is (in %) that you would be the victim of a violent crime if you were to go jogging after dark in Central Park in Manhattan?
- What would you estimate your chances (in %) of being involved in a violent crime if you spent a month in NYC?

What would you estimate are the chances (in %) that you would witness a violent crime in the next year if you spent the next year in NYC?

*Occupational prevalence* ( $\alpha = .89$ )

What percentage of the U.S. work force is lawyers?

What percentage of the U.S. work force is doctors?

What percentage of the work force have jobs in law enforcement and crime detection—like policemen, sheriffs, or detectives?

*Marital discord* ( $\alpha = .67$ )

What percentage of Americans get divorced?

What percentage of executives have affairs with their secretaries?

What percentage of Americans have had an extramarital affair?

*Vice* ( $\alpha = .60$ )

What percentage of adult Americans have used the services of a prostitute?

What percentage of Americans are currently addicted to cocaine?

What percentage of Americans gamble illegally?

*Affluence* ( $\alpha = .85$ )

What percentage of Americans attend charity balls?

What percentage of Americans have a private tennis court?

What percentage of American households have maids or servants?

What percentage of American households own an inground swimming pool?

What percentage of American households belong to a country club?

What percentage of adult Americans are millionaires?