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Mass Media



Social Cognition and Cultivation

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Cultivation theory is now approaching its third decade of empirical research. There are few areas of research in communication that have sparked more controversy, save perhaps research on media and aggression.¹ Although cultivation research has produced a voluminous amount of data (cf. Shanahan & Morgan, 1999), the effects are typically small and sometimes elusive. These two factors have contributed to a healthy skepticism regarding the validity of the cultivation effect. Moreover, I would like to argue that this skepticism is fueled by a lack of understanding about how the process actually works from a psychological perspective. How does television information, in all of its types and forms, influence judgments?

That is the question that a social cognition perspective approach to cultivation seeks to address. It attempts to flesh out and enrich a more macro cultural phenomenon by demonstrating that more micro psychological theories can also explain cultivation. In doing so, the approach provides at least two important services: (a) It provides convergent validity for the theory, and (b) it provides an understanding of conditions that facilitate and inhibit the effect.

¹Cultivation and research on media and aggression share a number of similarities, to the point of being almost indistinguishable except for the choice of dependent variable (beliefs vs. behaviors). A focus on the similarities would be instructive, but unfortunately is beyond the scope of this chapter. However, it is worth noting that many aspects of the social cognition models reviewed here, particularly the accessibility model, are similar to the mechanisms in Berkowitz's cognitive neoassociationistic model for the effects of media on aggression (cf. Berkowitz & Rogers, 1986; Jo & Berkowitz, 1994).

The goal of this chapter is to review and discuss cultivation research that has taken a social cognition perspective and to advance some opinions about the future of social cognition-oriented cultivation research. With respect to cultivation research, I am referring to any research that looks at the relation between television program content and judgment. With respect to social cognition research, I am referring to research that focuses on the “cognitive mechanisms that mediate judgments and behavior” (Wyer & Srull, 1989, p. 2). As Wyer and Srull noted, although much of the social psychological research has indeed been concerned with cognitive issues, and often makes explicit assumptions about the cognitive processes that underlie particular effects, traditional social psychological research typically has not evaluated these assumptions directly. In contrast, social cognition research is precisely concerned with these mediating processes. This point is an important one for considering research that is relevant for this chapter. Social cognition research is not merely a psychological perspective, but is more specifically an information processing perspective. Thus, with respect to cultivation, I only address (for the most part) research that deals with—and ideally tests—the cognitive processes that underlie cultivation effects.

The structure of the chapter adheres for the most part to the mandate provided by the editors: review of the state of social cognition-oriented research in the early 1980s, discussion of the major developments since then (both theoretical and methodological), and predictions about where this area of research might be headed in the near future. The only exception is a slight bending of the time line such that the initial review starts with research through the 1980s, rather than the beginning of the 1980s. I do this for two reasons. One is that little research relevant to social cognition and cultivation had been conducted prior to the early 1980s. Second, most of the research conducted in the late 1980s was a direct outgrowth of this seminal research, and thus it seems more coherent to discuss this research together.

SOCIAL COGNITION AND CULTIVATION THROUGH THE 1980S

Given that cultivation research itself did not hit the radar screen of communication research with any impact until the seminal publication of Gerbner and Gross (1976), it is not surprising that little research on the processes underlying cultivation effects occurred prior to 1980. In fact, it was around this time that the issue of cognitive processes was first raised. The first foray into this area was research by Hawkins and Pingree (1980), appropriately titled “Some Processes in the Cultivation Effect.” In a series of conceptual and empirical articles, these research-

ers broached the notion that couching cultivation effects in terms of learning is more descriptive than explanatory. They therefore developed hypotheses regarding the processes by which television information might influence various types of judgments. These processes included cognitive processing abilities (Hawkins & Pingree, 1980), perceptions of television reality (Hawkins & Pingree, 1980), and inference-making abilities (Pingree, 1983; for reviews, see Hawkins & Pingree, 1981, 1982).

Unfortunately, as is often the case with groundbreaking research, the initial attempts to investigate process were largely unsuccessful (cf. Hawkins & Pingree, 1980). In most cases, the research produced null findings with respect to the process-oriented hypotheses. For example, the notion that perceived reality of television might play a role in cultivation by increasing the propensity of high-realism viewers to use television information for real-world judgments received little support. Although viewers were found to differ on the extent to which they perceived television portrayals to reflect reality, these differences did not relate to the cultivation effect in any consistent manner. Other individual difference variables that might serve as surrogate measures for some type of processing (e.g., sex, current event knowledge, other media usage) likewise showed little relation with cultivation effects. One variable, children's age, did appear to exhibit some relation to cultivation. Age was used as a surrogate measure of processing ability, and results indicated that television did not appear to cultivate a mean worldview for students in Grades 5 and 8, but did for students in Grade 11. However, students in Grade 8 did evidence a cultivation effect for perceptions of the prevalence of societal violence, whereas those in Grade 11 did not. Thus, it is unclear how generalizable that effect is. Finally, the relation between inference making and cultivation yielded significant but counterintuitive results. Pingree (1983) hypothesized that those better at drawing inferences from information would thus be better at using television information to construct their judgments. However, the results showed stronger cultivation effects for those with low rather than high inference-making abilities.

Following these initial attempts to investigate process issues for cultivation effects, additional studies were conducted by Hawkins and Pingree, as well as others, that attempted to more precisely specify the component processes. As with the earlier studies, the hypotheses concerning these processes were derived from what was broadly described as learning theory (Hawkins, Pingree, & Adler, 1987; Potter, 1991). Essentially, three sequential processes were proposed: that viewers learn television facts from television (learning), that viewers construct real-world beliefs from these facts (construction), and that viewers generalize from these real-world beliefs related to TV facts (termed first-or-

der beliefs; e.g., estimates of the prevalence of societal crime) to construct more generalized beliefs about the world (termed second-order beliefs; e.g., fear of crime; the process is termed *generalization*).

In a series of independent studies (cf. Hawkins et al., 1987; Potter, 1988, 1991), no aspect of the learning model received consistent support. In some studies a learning process was observed (Potter, 1988), but in others no effects (Potter, 1991) or even negative effects (Hawkins et al., 1987) were found. Similarly, in some studies, evidence of a construction process was observed, but only for first-order measures (Potter, 1991), whereas in other studies just the opposite pattern was noted (Potter, 1986). Finally, no consistent evidence for generalization was noted across these sets of studies, with most results showing no relation between first- and second-order judgments. Although it is possible that problems of measurement might explain many of the null findings, the lack of any consistent pattern over multiple studies suggests that a learning model cannot account for the process through which cultivation works.

So what to make of the lack of support for the learning model? One conclusion, voiced by Potter (1991), is that a lack of evidence for certain of these processes, particularly the construction process in which beliefs about the TV world are used to form judgments about the real world, would suggest that cultivation effects are artifactual, and not the result of a causal influence of viewing on beliefs. However, the logic is predicated on the notion that the learning model is the only one through which cultivation can work. In fact, there are a number of processes that could account for how television influences judgments without recourse to any consideration of beliefs about the television world. As the next section details, it is precisely the groundbreaking research in social cognition that forms the bases of these process models.

In conclusion, early research on cultivation processes was not completely successful in illuminating how the effects work. Nevertheless, as a first step toward advancing research on the cognitive processes underlying cultivation, the contribution of Hawkins and Pingree and others cannot be overemphasized. As they noted explicitly in their later writings, understanding the processes that underlie cultivation effects is a crucial step in establishing the validity of the effect (Hawkins & Pingree, 1990). A large majority of cultivation research is correlational in nature, bringing with it the threats to validity that reside in all correlational research. Thus, providing and empirically verifying a cognitive processing model that can specify clear links between television and judgments should make threats to internal validity such as spuriousness and reverse causality less plausible (Shapiro & Lang, 1991; Shrum, 2001, 2002). In the next section, research aimed at developing these types of models is discussed.

CURRENT SOCIAL COGNITION MODELS OF CULTIVATION

Although a number of studies have dealt with information processing issues in cultivation, there are only two models that have been offered that trace cultivation effects through different processing stages (i.e., encoding, storage, retrieval, judgment) and specifically focus on the cognitive processes that mediate the relation between television viewing and judgment. Although these models have been described by a number of different names, I call them the weighing and balancing model (Shapiro & Lang, 1991) and the accessibility model (Shrum, 2002).

The two models have a number of aspects in common, most of which are central to current conceptualizations in social cognition research. The first is that they look at the process in terms of memory and judgment. That is, both models look at how information from television is encoded into memory, the effects of encoding on retrieval, and the implications of both for the judgment construction process. A second common aspect is that they view the process of judgment construction, and the critical operations within it, as a relatively automatic one. Automatic processes are ones that occur without conscious knowledge of their operations (Bargh, 1997). This is an important point, because it implies that if people are not aware of these processes, they will likely not be able to accurately describe them when asked (although they will certainly try). Consequently, indirect measures are required to investigate these processes, necessitating the need for methodological innovation.

The primary point of departure of the two models pertains to perspective. The weighing and balancing model starts out with the notion that people try to scrutinize (weigh and balance) information retrieved from memory to ascertain its veracity and then use the information resulting from this process to form a judgment. Various conditions, both individual and situational, may impact how well people perform the weighing and balancing process. The accessibility model starts out from the other end. It assumes that people typically do not put out the effort to scrutinize the information they retrieve from memory, particularly for the types of judgments used to measure cultivation, but instead rely on cognitive shortcuts such as information accessibility to form their judgments.

Thus, the two models differ in terms of perspective on the default state, but agree for the most part on the processes underlying judgments. Consequently, the models are not mutually exclusive, but highly compatible. The following sections elaborate on each model, detailing their assumptions and hypotheses, and review research that has tested these possibilities.

WEIGHING AND BALANCING MODEL OF CULTIVATION

Model Description

The weighing and balancing model was the first to apply traditional social cognition principles of memory and judgment to explain the cultivation effect. The fullest treatment of the model is provided by Shapiro and Lang (1991). The model begins with the television viewing process and the encoding of information, in the form of "event memories," into episodic memory (Shapiro & Lang, 1991, p. 686). These event memories contain information about the event itself (e.g., a shooting), as well as a variety of contextual information about the event. Such contextual information would include information about the source of the event memory (television, but also whether cartoon, soap opera, news, etc.) as well as emotional reactions to the stimuli. The next step occurs when a judgment is to be made. At that point, potentially relevant information bearing on the judgment is retrieved from memory and each individual piece of information is assessed (weighed and balanced) for its degree of relevance. Contextual information, such as the source of the memory, may be considered, and information deemed to be from an unreliable source may be discarded and the judgment constructed based on the remaining information.

The preceding process certainly appears to be one that should produce good judgments, and if properly performed, television should have a minimal effect on judgments.² The problem is, the process is not perfect. In fact, under certain conditions, and for certain people, the process is remarkably imperfect. When attempting to ascertain source (source monitoring; Johnson, Hashtroudi, & Lindsay, 1993), people may make mistakes in ascertaining the source of their memories. This source confusion may have numerous causes. One is that the event memory may have a number of surface or contextual features that make it appear real. For example, it may have been shot on video to resemble news footage, or it may have produced an emotional response similar to a real event. A second cause of errors in source monitoring might be sheer frequency. If many memories are available and each must be checked for veracity, more mistakes would be made, and thus television information would be more likely to be used than if fewer memories were available. A third possibility is the lack of motivation to scrutinize the event memories to accurately ascertain source. Finally, a fourth possibility is that individual differences in ability to ascertain source may

²In fact, Shapiro and Lang (1991) suggested that minimal effects of television information predicted by the model may explain the relatively small effect sizes noted in cultivation research (see Hawkins & Pingree, 1982; Shanahan & Morgan, 1999).

contribute to errors in source monitoring. Some people may be deficient in certain cognitive abilities that allow them to accurately determine memory sources (e.g., children, the elderly; Ceci, Ross, & Toglia, 1987; Johnson et al., 1993). Others may be simply more prone to misattribute fiction as fact (Mares, 1996).

In all of the scenarios of possible causes of errors in source monitoring, there is one unifying aspect that makes the model a plausible one to explain cultivation effects: In each instance, heavy viewers are more likely to commit these errors than light viewers simply because they have more relevant event memories to be evaluated. Because the dependent variables used to assess cultivation effects pertain to constructs portrayed more often on television than occur in real life, heavy viewers by definition should encounter these constructs more often and thus have more relevant memories available for retrieval and evaluation.

There is one additional concept noted by Shapiro and Lang (1991) that has some relation to source monitoring: the perceived reality of television. Some people may be more prone to believe that television portrayals reflect reality. If so, then even when the source monitoring and weighing and balancing process is working perfectly, some people may opt not to discount television information and thus would deliberately use it as a basis for their judgment. This would not necessarily produce a main effect for television viewing (cultivation effect) unless heavy viewing was correlated with perceived reality. However, it would imply an interaction between television viewing and perceived reality, such that those higher in perceived reality would exhibit a stronger cultivation effect than those lower in perceived reality.

Model Testing

A number of studies have provided support for various components of the model. Shapiro (1991) found that when participants were asked to recall exemplars within domains relevant to cultivation (crime, occupations), level of television viewing was positively correlated with the number of exemplars recalled. Moreover, participants were able to categorize the exemplars in terms of their source (books, movies, direct experience, etc.). However, contrary to intuition, the number of exemplars recalled was negatively correlated with estimates of societal crime and occupations. Thus, from this one study, although some of the assumptions of the model received support, it is unclear whether source discounting influenced judgments.

Other studies have looked more directly at the issue of errors in source discounting. Quite a few studies have established this general effect (for a review, see Johnson et al., 1993). In a study more directly relevant to media effects, Strange (1993) had participants read both a factual

and a fictional story about the Panama Canal, after which they rated the truthfulness and source of particular statements. Strange found that participants did indeed make mistakes in attributing source and they also rated the truthfulness of statements they (mis)believed to be from the factual account higher than statements they believed to be from the fictional account.

Other studies give indirect support to the notion that increased motivation to attend to source characteristics may increase source discounting, thereby reducing the cultivation effect. Studies by Shrum and colleagues found that when participants were motivated to provide accurate judgments (Shrum, 2001), made aware of source issues (Shrum, Wyer, & O'Guinn, 1998), or had more time to construct their judgments (Shrum, 2004b), the cultivation effect was significantly reduced from when participants were not under those conditions. Presumably, under certain conditions, participants were more able or more willing to ascertain source and thus source discount.

Some studies have investigated the role that perceived reality plays in cultivation. The weighing and balancing model predicts that those higher in perceived reality should discount less simply because they think the information is veridical. Potter (1986) provided some evidence to support this reasoning. For a few dependent variables, cultivation effects were stronger for those scoring higher on a particular dimension ("magic window") of perceived reality. However, given that the cell sizes from which the correlations were derived were often quite small (e.g., < 25), these results should be interpreted with caution.

Probably the most comprehensive study to test the key components of the weighing and balancing model, particularly the component linking errors in source discounting with social reality judgments, was conducted by Mares (1996). That study looked at individual differences in propensity to make errors in judging whether information comes from a factual or fictional source. Mares established this propensity by having participants watch both news and fictional television programming, after which they were asked to recall whether specific events had been part of the news or the fictional program. The participants also provided social reality estimates pertaining to perceptions of violence and mean world beliefs (cf. Hawkins et al., 1987). Participants were then classified as to whether they tended to mistake fact for fiction (high vs. low) and whether they tended to mistake fiction for fact (high vs. low). Mares predicted two related pattern of results. First, those who tend to make more errors of mistaking fiction for fact were expected to be more likely to use fictional information to make judgments in their everyday lives (because they think it is factual), and thus should score higher on the violence perception and mean world scales than those who make fewer of those mistakes. Second, this general pattern should also be

more pronounced for those who watch more television. Thus, those making more fiction-as-fact errors were expected to show a stronger cultivation effect than those making fewer of these errors. Conversely, a comparison of those who tend to make the opposite type of error (tending to mistake fact as fiction) with those who tend not to make such errors should show just the opposite pattern of results.

The results were generally supportive of these hypotheses. Fiction-as-fact errors were positively correlated with both the perceptions of violence and mean world measures, and these relations were stronger for those who watched more television. Further, as expected, those making the opposite type of errors showed negative correlations with social reality beliefs, but the expected differences between heavy and light viewers were not significant. However, given the correlational nature of the study, there could be explanations other than source confusions to explain the data. To address this limitation, Mares used some innovative methods (some measured, some experimentally manipulated) to further pinpoint process issues. She manipulated the extent to which the news and fictional segments were visually distinct versus visually similar and whether participants provided their source judgments immediately after viewing or 1 week later. She also measured level of certainty with which participants identified source. Mares expected that the time delay should increase source confusions and that making the segments visually distinct should decrease source confusions. In addition, level of certainty was expected to interact with the propensity to make source confusions: Those more certain should show greater effects than those less certain. All of these hypotheses were supported.

Summary

The weighing and balancing model provides an explanation for one of the conundrums of cultivation theory: Why would television information—particularly fictional information—be used to construct real-world judgments? To be more precise, why would individuals assess the landscape of the television world to determine the incidence of, say, doctors, and then use this assessment to form an estimate of the real-world incidence of doctors? The early research on cultivation processes assumed that people knowingly used television information to construct their judgments and that they were aware that television was the source (cf. Hawkins et al., 1987; Potter, 1991), but this process does not comport well with the way most of us at least think we construct judgments and make decisions. Shapiro and colleagues' work took a different tack: People would not generally use television information to form such judgments. However, when they attempt to recall examples

of doctors (which are useful in inferring incidence), they do not always realize when the examples come from television. Thus, they use the information to construct their judgments. Moreover, this process occurs for the most part outside conscious awareness. This latter proposition provides an explanation for the lack of relations between viewing and perceptions of the television world as well as lack of relations between television-world perceptions and real-world perceptions.

ACCESSIBILITY MODEL OF CULTIVATION

Initial formulations of the accessibility model for cultivation effects were provided by Shrum (1995), but more comprehensive treatments of the model did not appear until later (Shrum, 1999b, 2002). Although initial studies on the accessibility model began much earlier than 1995, and independently of Shapiro's work, later studies and fuller model development were greatly informed by the weighing and balancing model. As noted earlier, the models are similar in many respects, and differ primarily on whether weighing and balancing, or the lack of it, is the default process for most social reality judgments.

One of the primary similarities of the weighing and balancing and the accessibility models is their exclusive focus on memory-based judgments. Memory-based judgments are ones that are constructed through the recall of information from long-term memory, as opposed to online judgments, which are formed as information is encountered (Hastie & Park, 1986). More specifically, the accessibility model is primarily concerned with belief judgments, as opposed to attitudes and values. Belief judgments pertain to such things as the prevalence of a construct (e.g., societal violence) or trait characteristics of individuals or society (e.g., people cannot be trusted, women are meek). Thus, the accessibility model does not address evaluative judgments such as good-bad (attitudes) or ought (values).

The following sections provide a description of the general model and supporting evidence. Because the model has been discussed extensively elsewhere (Shrum, 1999b, 2002), the descriptions are brief, with a focus on recent studies that bear on implications of the model.

Model Description and Initial Tests

The accessibility model of cultivation effects is based on two general propositions. The first is that television viewing increases the accessibility (ease of recall) of constructs and exemplars that are often portrayed on television. The second is that social reality judgments, because they are typically perceived to be difficult to answer accurately and are seldom of any importance to study participants, are made

through heuristic processing. That is, rather than searching memory for all available information relevant to the judgment (systematic processing), people retrieve only a subset of relevant information, and the likelihood of retrieval of that subset is determined by its accessibility. A corollary of this second proposition is that for memory-based judgments such as prevalence, probability, or proportion (e.g., the percentage estimates often used in cultivation research), the judgments are constructed through the application of judgmental heuristics such as availability, simulation, and representativeness (see Kahneman, Slovic, & Tversky, 1982).

From these two general principles, more specific and testable propositions can be derived. The first is that television viewing enhances accessibility. The most direct support of this proposition was provided by Busselle and Shrum (2003). Participants indicated how easy it was to recall examples of certain constructs, some of which were frequently portrayed on television (murder, trial, highway accident). The results indicated that media examples were more frequently recalled for events portrayed often in the media but infrequently experienced personally (trial, murder). Personal experiences were more easily retrieved for events encountered frequently in real life, even when these events are frequently portrayed on television (highway accidents, dates). The results also showed that ease of retrieving media examples was related to hours of TV viewing, but only for viewing of television programs in which the events were frequently portrayed and when the direct experience with the events was likely to be low.

Indirect evidence suggesting that television viewing increases accessibility was obtained in studies that measured the speed with which participants constructed their social reality judgments. Greater accessibility was expected to result in faster judgments, and thus heavy viewers were expected to respond faster than light viewers. The expectations were confirmed in a series of studies that varied the type of dependent variables, measurement of viewing, and control variables employed (cf. O'Guinn & Shrum, 1997; Shrum, 1996; Shrum & O'Guinn, 1993).

Demonstrating that viewing enhances accessibility is only the first step in testing the model. The second proposition states that the accessibility bias resulting from viewing should mediate the cultivation effect. Indirect evidence supporting this proposition was obtained by Shrum and O'Guinn (1993), who showed that controlling for the accessibility bias (reaction time) reduces the cultivation effect to nonsignificance. In a more direct test, Shrum (1996) demonstrated via path analyses the mediating effect of accessibility across a number of social reality judgments.

Busselle (2001) used a novel procedure to provide further evidence of the mediating role of accessibility that varied the conditions under

which participants provided their estimates. In one condition, participants provided estimates of the prevalence of Black doctors, shootings, and extramarital affairs, and then recalled an example of each. In the other condition, the order of the task was reversed, and participants first recalled an example before reporting their estimates. In the first condition, a cultivation effect was observed. Presumably, television examples were more accessible for those who watched relatively more television, which influenced the estimates. In the second condition, the accessibility bias for heavier viewers was eliminated by having all participants recall an example, effectively making an example equally (and easily) accessible for everyone. Under these conditions, the cultivation effect was also eliminated.

The third proposition is related to concepts articulated in the weighing and balancing model. However, unlike the weighing and balancing model, which postulates that people typically discount media exemplars, the third proposition posits that television exemplars are not discounted. This proposition is necessary to explain the somewhat counterintuitive notion that people would use information from nonveridical sources (e.g., fictional programs) to form judgments about the real world. The proposition goes back to the second general proposition regarding lack of motivation to be accurate in constructing judgments. Due to this lack of motivation, people will likely not attend to source features in constructing their judgments. Support for this proposition was provided by Shrum et al. (1998). Two experiments manipulated whether source characteristics (television) were primed (i.e., made salient) before participants provided their social reality judgments. When source was not primed, the expected cultivation effect was obtained. However, when source was primed, the cultivation effect was significantly reduced and in some cases even eliminated. Just as important was the pattern of effects: Source discounting conditions did not affect light viewers, only heavy viewers. Thus, source discounting conditions served to bring the judgments of heavy viewers to the same level as light viewers. This general pattern of results in which source priming reduces the cultivation effect has also been replicated in other contexts such as beliefs about sex (Zhang & Krmar, 2004).

The fourth proposition relates to conditions that facilitate or inhibit heuristic processing. The second general proposition states that the default condition for constructing memory-based social reality judgments is one of heuristic processing, which results from lack of motivation to process information. However, suppose people are motivated to provide accurate judgments. Then they should be motivated to not only consider more information (rather than relying on that which is most accessible), but also be more likely to scrutinize the information retrieved from memory, notice source characteristics, and source discount when

the information is deemed to come from unreliable sources. Thus, the fourth proposition states that motivation to process information will moderate the cultivation effect such that high motivation reduces the effect. Evidence supporting this proposition was obtained by Shrum (2001; see also Mares, 1996; Shrum, 1997). Some participants were motivated to engage in systematic processing via an accuracy motivation and task importance manipulation, whereas other participants were motivated to process heuristically (instructed to answer “off the top of their head”). A third, control group was given no processing instructions, thus simulating the typical method of data collection for cultivation studies. For each of four dependent variables (estimates of crime, marital discord, affluence, and occupations), the results showed that both the control and heuristic groups exhibited cultivation effects that did not differ in magnitude. However, the systematic group showed no cultivation effects. In addition, the pattern of effects that was observed in Shrum et al. (1998) was again found: Motivation to process did not affect the judgments of light viewers, but made the judgments of heavy viewers equal to those of light viewers. These same general patterns of results have also been obtained in studies using neural network simulations to model the psychological processes underlying cultivation effects (Bradley, 2004; Bradley & Payne, 2004).

Like the fourth proposition, the fifth and final proposition of the model pertains to conditions that may affect heuristic processing. However, the fifth proposition pertains to factors that may facilitate the cultivation effect. Specifically, ability to process information is proposed to moderate the cultivation effect. Those with less ability to process should show a cultivation effect of greater magnitude than those with more ability to process. Shrum (2004b) manipulated ability to process via time pressure, and time pressure was operationalized via survey method. Some participants were surveyed by phone (high time pressure) and others by mail (low time pressure). As expected, the magnitude of the cultivation was greater in the high time pressure condition than the low time pressure condition.

Applying the Accessibility Model to Other Studies

One of the useful aspects of any model is its ability to not only account for a set of results based on specific propositions of the model, but to also account for results of other studies, particularly when those results seem counterintuitive or damaging to current theory.

Memory and Source Discounting Studies. As noted earlier in the discussion of the weighing and balancing model, Shapiro (1991) provided some counterintuitive findings regarding the relation between recall and

judgments. Remember that in that study, participants were asked to recall exemplars within domains relevant to cultivation (crime, occupations), and level of television viewing was positively correlated with number of exemplars recalled. However, unexpectedly, the recall of more exemplars was related to lower rather than higher social reality estimates of crime and occupation. This result seems at odds with the accessibility model in that individuals might be expected to infer frequency from the number of examples recalled (if more examples can be recalled, it must occur frequently). It is also reasonable to think that availability (i.e., whether the information exists in memory) and accessibility (i.e., ease of retrieving information from memory) might be correlated.

Recent research, however, has demonstrated the lack of validity of these propositions. Note that a strict application of the availability heuristic posits that frequency and probability judgments will be based on "the ease with which instances and associations come to mind" (Tversky & Kahneman, 1973, p. 208). Thus, it is what Schwarz (2004) referred to as the "megacognitive" experience of ease of recall that is posited to drive judgments, not the content of the recall. Schwarz et al. (1991) provided empirical evidence for this process. They showed that participants rated themselves as more assertive when they were asked to recall 6 examples of assertive behaviors (an easy recall task) than participants who were asked to recall 12 examples of assertive behavior (a difficult recall task). The experimental procedure thus unconfounded the content (number of examples) and ease of recall. This general effect has been confirmed in a number of other studies as well (cf. Schwarz, 2004; Wänke, Bohner, & Jurkowitsch, 1997).

The implications of Schwarz et al. (1991) for the findings of Shapiro (1991) are straightforward. Participants who listed more exemplars may have found the task more difficult than participants who listed fewer exemplars. Participants may have in turn inferred frequency or likelihood of occurrence from the experienced ease of recall, resulting in lower estimates for participants who recalled more exemplars than for those who recalled fewer exemplars.

General Cultivation Studies. The accessibility model can also account for some results that would seem to be damaging to cultivation theory (see Shrum, 1995, for a fuller discussion). For example, some researchers have suggested that typical cultivation methodology may contain a response bias because virtually all items are worded in the negative direction (e.g., perceptions of crime vs. safety; mistrust vs. faith in others; cf. Hawkins & Pingree, 1980; Rubin, Perse, & Taylor, 1987). They present evidence that when items are worded more positively, no cultivation effect is noted (e.g., a negative correlation between viewing and trust would be expected). However, the accessibility

model would expect just such a null finding. Because it is examples of the constructs to be estimated that are recalled during judgment construction, then making judgments of trustworthiness, safety, or trust would result in instances of these constructs being recalled (and not their opposites). Thus, if people form their judgments based on the ease with which relevant examples come to mind, and trustworthiness is not prevalent in television portrayals, there should be no accessibility bias as a result of viewing, and thus, no cultivation effect. Conversely, there should be a cultivation effect if the question is worded in terms of mistrust. This was in fact what was found. Note that part of the reasoning for why Rubin et al. (1987) might have expected a negative cultivation effect was that perceptions of how safe the world is (first-order judgment) might be expected to be used to form attitudes and beliefs regarding fear of crime (second-order judgment). However, as noted earlier, these two types of judgments have been shown to be relatively independent and likely are constructed via different processes.

Summary

The accessibility model provides additional explanatory mechanisms for processes underlying cultivation effects. The model specifies a number of mediating and moderating influences that help explicate the conditions under which cultivation effects would and would not be expected. As with the weighing and balancing model, the accessibility model provides a compelling explanation for why television information (examples) would be used to construct real-world judgments. Unlike the weighing and balancing model, however, the accessibility model does not assume that people (necessarily) make source discounting errors, but rather that they usually do not make the effort to source discount at all.

Of course, it should be obvious that both models are sometimes right and both are sometimes wrong. In this regard, the models are overstatements, and are not meant to reflect what all people do all of the time. Rather, the model's assumptions are intended to provide starting points from which deviations (i.e., moderating effects) are expected to occur. However, as with all models, there are always shortcomings. In the next section, these limitations are outlined and new models are proposed to account for these limitations.

BEYOND MEMORY-BASED JUDGMENTS: NEW JUDGMENTS REQUIRE NEW MODELS

Both the weighing and balancing model and the accessibility model focus exclusively on memory-based judgments such as estimates of prev-

alence and probability, and thus have little to say about cultivation processes for second-order judgments such as attitudes and values. This is unfortunate for two reasons. One is that the question of how television messages get processed and transformed into stable, evaluative beliefs perhaps better captures the true meaning of cultivation and represents inherently more interesting and important phenomena than the simple accumulation of incidental data such as frequency of occurrence. The second reason is that memory-based judgments are actually relatively rare. Not only do they not occur all that often, but they are actually difficult to produce, even in the lab (Hastie & Park, 1986). More often, people make judgments spontaneously as information is encountered (i.e., online), including forming impressions of others, stereotyping, making causal attributions, and forming attitudes, and preventing people from doing so is remarkably difficult.

Process Models for the Cultivation of Attitudes and Values

Unfortunately, developing process models for the cultivation of online judgments such as attitudes and values is not simply a matter of extending current models for memory-based judgments such as prevalence and probability to the new judgments. Because the processes underlying the construction of online and memory-based judgments differ in such fundamental ways, it seems likely that the ways in which television information figures into the construction of these judgments may be fundamentally different as well (Shrum, 2004a; Shrum, Burroughs, & Rindfleisch, 2004). In fact, not only are the processes different for the two types of judgments, but in some cases they appear to be exact opposites.

Cultivation as Online Persuasion. Assume for the moment that most attitudes and values are formed via an online process. This means that as information is encountered in everyday life, it is used to form new attitudes or update old ones. The latter case would involve activating an existing attitude from memory and either changing or reinforcing it. Note that these processes need not occur consciously, but instead may occur automatically outside of awareness of the process (Bargh, 1997).

What are the implications of such processes for cultivation? The most obvious one is that, if attitudes and values are formed via online processes, and if television messages influence attitudes and values, then this process should occur during viewing. The television message represents a persuasive communication and persuasion is evidenced by attitude or values change. The second implication follows from this proposition: If the television message is viewed as a persuasive commu-

nication, then factors that facilitate or inhibit persuasion should correspondingly facilitate or inhibit the cultivation effect. What factors might those be? As Hamilton (chap. 18, this volume) details, two factors that have been shown to moderate the effects of a persuasive message are motivation and ability to process information during information acquisition. Specifically, persuasion is enhanced when motivation to process and the ability to process information are high (Chaiken, Liberman, & Eagly, 1989; Petty & Cacioppo, 1986).³

As noted earlier, this reasoning is based on the assumption that viewers spontaneously construct judgments related to their personal values during viewing. Is this a reasonable assumption? Research suggests that people do not form judgments unless they have an explicit goal to do so (Hastie & Park, 1986; Lichtenstein & Srull, 1987; Wyer & Srull, 1989). However, research also suggests that judgments are automatically activated when objects are encountered (Fazio, Sanbonmatsu, Powell, & Kardes, 1986) and impressions tend to be formed spontaneously (see Uleman, Newman, & Moskowitz, 1996). In addition, recent research on television viewing indicates that as a process of enjoying television, viewers readily form impressions and make causal attributions about characters, even to the point of forming close, parasocial relationships with them (Russell, Norman, & Heckler, 2004). Thus, it seems reasonable to posit that beliefs such as attitudes and values would be easily activated during the viewing situation.

Some Initial Tests of the Model. A few studies have begun to test some aspects of this very rough model of cultivation for attitudes and values. In a set of studies, Shrum, Burroughs, and Rindfleisch (2005) investigated whether motivation to process information during viewing affected the extent to which television information influenced personal values. If television influences values through an online process, then those who are more motivated, active, and involved during viewing should show stronger cultivation effects than those less motivated, less active, or less involved. Motivation during viewing was operationalized as the extent to which viewers pay attention during viewing (self-reported using the Rubin et al. [1987] scale) and the extent to which viewers elaborate during viewing. The latter was operationalized as need for cognition, which is an individual difference variable related to the extent to which people like to think, elaborate, and solve problems (Cacioppo & Petty, 1982). The results of a random,

³This is true only when arguments are strong rather than weak. The arguments are assumed to be compelling (e.g., in movies or dramas) for heavy viewers given that they have made the decision to view frequently and may often suspend disbelief (and counterarguing) in an effort to become immersed in the narrative (Shrum et al., 2005).

general population survey of the United States showed that, as expected, both attention and motivation moderated the cultivation effect for the personal value of materialism (Richins, 2004). Cultivation effects were significantly and substantially stronger for those who paid more attention and for those who elaborated more during viewing. A second study provided evidence that the moderating effect of need for cognition can be traced to greater positive elaboration and transportation (Green & Brock, 2000) for individuals with a higher need for cognition who are also heavy viewers.

The online nature of attitude activation also has some interesting implications for the accessibility of attitudes (for reviews of attitude accessibility and persuasion, see Arpan, Rhodes, & Roskos-Ewoldsen, chap. 15, this volume; Roskos-Ewoldsen, 1997). If attitudes are in fact activated frequently during viewing, the attitudes may be changed in ways other than simply the extremity of the attitude. A change in attitude extremity (how positive or negative) is how attitude change has been traditionally measured. However, an attitude can be made stronger (e.g., more certain, confident) without changing the extremity of the attitude (Petty & Krosnick, 1995). Thus, for example, if viewers watch a television program that contains a general message (e.g., tough on criminals) with which they agree, they may not necessarily become more positive in their attitude (they may still be a 5 on a 5-point scale) but may reinforce that evaluative belief so that it is stronger and actually more impervious to change.

Shrum (1999a) investigated this possibility by measuring attitude accessibility (i.e., how easily they are activated) for heavy and light soap opera viewers. Viewing was expected to not only affect attitude extremity (heavy viewers would indicate greater expectations of marital discord when they married, more distrust of people, and a greater desire to own luxury products than would light viewers), but that these attitudes would be more accessible for those who viewed relatively more television. The results partially confirmed the hypotheses: Heavy viewers were more distrustful and expected more marital problems than light viewers, but there were no differences in attitude extremity toward owning luxury products. However, over and above the affects of attitude extremity, effects of attitude accessibility were observed. For all dependent variables, attitudes for heavy viewers were more accessible than those of light viewers.

These findings have important implications for cultivation research. First, they show that, just as noted by Gerbner, Gross, Morgan, Signorielli, and Shanahan (2002), television may serve to not only change beliefs, but also to reinforce them. Second, the reinforcing nature of television on existing attitudes has implications for the extent to which people act on their attitudes. As Fazio and colleagues have con-

clusively shown, attitudes that are more accessible tend to be ones that are stronger, more persistent, more resistant to change, and perhaps most important, ones that are more likely to guide behavior (Fazio, 1990; Fazio & Roskos-Ewoldsen, 1994). Thus, the findings of Shrum (1999a) suggest that heavy viewers are not just more distrustful of spouses and people in general, but they may also be more likely to act on these attitudes (e.g., perhaps through divorce, behavior toward neighbors). In addition, even though no differences were noted between heavy and light viewers on the desire to own luxury products, the accessibility differences suggest that heavy viewers may be more likely to act on their attitudes (perhaps by purchasing).

Summary

Expanding cultivation processes to include online judgments is an important step toward integrating all cultivation findings under a social cognition umbrella. It also helps dispel some misconceptions of what models for memory-based judgments imply. Although the accessibility model has always been explicitly and exclusively concerned with memory-based judgments (cf. Shrum, 1995), that distinction has often been lost. Thus, findings that the cultivation effect for memory-based judgments tended to occur through low involvement processes at the time of judgment elicitation (recall) were often interpreted as evidence that all judgments were so affected, and moreover, often interpreted as a low involvement process during viewing.

The results from the studies just reviewed make it clear that not only is that not the case, but the opposite actually tends to occur: Cultivation for online judgments such as attitudes and values seems to be enhanced by high involvement processes during viewing. It is interesting (and perhaps ironic)⁴ to note that variables that have traditionally been the purview of the uses and gratifications area of research (e.g., viewer motives, individual differences) are also central to the cultivation of online judgments. In fact, motives (in social cognition terms, processing goals) play a big part in determining the types of cognitive processes in which people engage. Thus, the cultivation effects may vary as a function of viewer motives because different viewer motives result in different types of processing of television information. Note that this proposition implies an interaction between amount of viewing and motives for viewing, a relation that has been considered in uses and gratifications research but not investigated with any consistency.

⁴Ironic because uses and gratifications is often viewed as the antithesis of social cognition research.

NEW DIRECTIONS, NEW METHODOLOGIES

So where do we go from here? The preceding discussion should make it clear that there are a whole host of possibilities. Some of these possibilities are a function of applying well-established principles of social cognition to new ways of looking at cultivation effects and other possibilities arise from new directions in social cognition research.

Experimental Manipulations of Viewing

Even contemplating the notion of experimental manipulations of viewing is probably a taboo from the perspective of Gerbner and colleagues. Their argument is that short-term manipulations that occur in experiments are problematic because (a) they are unlikely to influence most beliefs with such brief exposures, and (b) they do not capture the long-term nature of the cultivation process (Gerbner et al., 2002). I have to confess to having made this same argument on a number of occasions. In fact, the logic for deriving complex social cognition models for cultivation processes was in part a function of not being able to manipulate television viewing and still capture the concept of cultivation (Shrum, 2002).

However, the fact of the matter is, it is almost impossible to study on-line processes without experiments. When the judgments are memory based, one can experimentally manipulate processing at the time of judgment elicitation to make inferences about how television influences judgments (cf. Shrum, 2001; Shrum et al., 1998). However, for on line judgments, the only alternative to experiments is measuring both television and the proposed moderators (e.g., attention, involvement). Although this strategy has been useful (Shrum et al., 2005), it is extremely limited and remarkably imprecise. Consequently, to truly understand the role online processes play in cultivation, some manipulation of processing during viewing is vital.

Narrative Processing

One of the more interesting directions in recent social cognition research is a focus on narrative processing and its implications for social judgment (cf. Green & Brock, 2000; Green, Strange, & Brock, 2002; Wyer, 2004; Wyer & Radvansky, 1999). This research has begun to explore how traditional social and cognitive mechanisms (e.g., memory, persuasion) relate to these "metamessages" that narratives produce. Thus, as Johnson (2002) noted, "the study of narratives provides a clear bridge between examining cognition on an individual level and at the social-cultural level" (p. xi).

The relation between cultivation and narrative processing could not be more clear. As Busselle, Ryabovolova, and Wilson (2004) pointed out, cultivation has always been concerned with stories, rather than simply the various messages, characters, facts, or behaviors that comprise those stories (see Gerbner, 1999). Research in this area is already underway. For example, research has investigated the utility of mental models (how situations or events are represented in memory) for cultivation research (Roskos-Ewoldsen, Davies, & Roskos-Ewoldsen, 2004). Other research has looked at the effects of verbal and visual media, and their narrative messages, on memory and judgment (Adaval & Wyer, 1998; Wyer & Adaval, 2004). Still other research has looked at the persuasive power of narratives, including those conveyed in television programs, with a particular focus on the process of transportation during narrative processing (Busselle & Wilson, 2004; Green & Brock, 2000; Green, Garst, & Brock, 2004; Shrum et al., 2005).

Implicit Measures of Processes and Beliefs

Another promising area of research, one that is primarily methodological in nature, is on the use of implicit measures to infer both processes and beliefs. They are termed implicit because they are not direct or overt measures, but instead are measures that are assumed to imply particular processes or beliefs.

Response Latencies. Probably the most common technique is the use of response latencies. Response latencies refer to how fast someone responds to a particular stimuli. This technique has been used for many decades to show how closely linked particular concepts are in memory, allowing for assessments of associative strength. Response latencies have also been used to measure the accessibility of constructs from memory, and this technique has proved useful for linking accessibility of both exemplars (e.g., Busselle, 2001; Shrum & O'Guinn, 1993) and attitudes (Shrum, 1999a) with frequency of television viewing.

Despite their productive use in past research, however, response latencies can be messy, and particularly so for cultivation research. In most reaction time procedures, the task for respondents is to provide simple yes–no or like–dislike responses. However, these types of responses do not translate well into the typical measures used in cultivation research, particularly ones that ask for percentage estimates such as prevalence or probability. Fazio (1990) recommended only two response categories ideally, but no more than five response categories. The reasoning is that with numerous, finely scaled options, respondents may spend an inordinate amount of time trying to make those fine distinctions (e.g., whether to press 7, 8, or 9, even though they arrived at the general number, between 7 and 9, very quickly).

Five response categories work well for most attitude measures (cf. Shrum, 1999a). However, reducing a 101-point scale to 5 points is problematic because people do not think in terms of categories such as 0% to 20%, 30% to 50%, and so forth. Thus, in the studies in which I measured response times for constructing social reality estimates (e.g., O'Guinn & Shrum, 1997; Shrum, 1996; Shrum & O'Guinn, 1993), I reduced the 0 to 100 scale to a 0 to 9 scale (0%–9%, 10%–19%, etc.). This proved workable, but nevertheless resulted in a significant amount of error variance, necessitating quite a bit of training for participants to learn the use of the scale prior to the study.

One additional, and quite unexpected, problem with using response latencies in cultivation research also became apparent at times: reluctance to provide a response. This occurred in the instances in which I used the 0 to 9 scale to measure the time it took participants to construct a social reality estimate. More specifically, it occurred when I attempted to expand external validity by using nonstudent, general population adults. For the most part, with student participants, they accept the anonymity and confidentiality statements, as well as the notion that there are no wrong answers (students seem to love those types of questions). Consequently, they are more than happy to give a quick response. Not so the adults that participated. Perhaps it was the lack of familiarity with computers (this was in the late 1980s), the intimidation of the university setting or the professor, or simply a higher level of involvement with the task. Whatever the reasons, the latencies—which averaged about 4 to 6 seconds for students, including reading time—were often well over 10 seconds. In some cases, some people took over 1 minute to respond, despite significant training for the task. The reasons for this type of behavior are still unclear, as I quickly abandoned this particular quest for external validity. However, those interested in pursuing this type of research should be cognizant of these potential problems.

Implicit Association Test. More recently, response latency techniques have been used to construct what are termed *implicit attitude measures*. The most well known is the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998). The purpose and underlying logic are straightforward. It is well known that explicit, overt measures of attitudes (e.g., Likert scales) are subject to response bias, particularly when the attitude object pertains to sensitive or threatening topics (e.g., race, sex). In addition, one of the principles of Freudian psychology is that we hold attitudes and beliefs of which we may not be consciously aware (Erdelyi & Zizak, 2004). Thus, explicit attitude scales may not be able to get at these attitudes either.

The IAT is designed to solve both problems (but see Olsen & Fazio, 2004, for a discussion of problems with the IAT). It measures attitudes implicitly via a reaction time task in which participants classify four categories of items, two of which are concepts such as race (e.g., Black, White) and two of which are evaluative attributes (like, dislike). The logic is that categorization should be easier (faster) when the pairing of a concept and attribute reflect a strong association in memory than when they reflect a weak association. Thus, a person who is racially biased against African Americans should more quickly categorize Black or White faces and positive or negative words when Black and dislike are paired together than when Black and like are paired together. The important aspect of this method is that the assessment of bias is wholly dependent on the latencies, and has nothing to do with overt evaluative responses.

Procedures such as the IAT may be useful in investigating certain types of cultivation effects. In particular, any type of dependent variable that might be subject to socially desirable responding would be a good candidate. Obvious examples would include racism, sexism, and materialism, all of which have been a focus of prior cultivation research. Thus, it might be useful to determine whether heavy and light viewers differ in terms of racism, and to compare their explicitly measured beliefs (e.g., a racism scale) with their implicitly measured beliefs.

CONCLUSION

A social cognition perspective on cultivation effects is a relatively recent phenomenon. This research adds the always needed convergent findings that are so important to theory development and validation. Although this is true for any theory, I have argued that it is particularly the case for cultivation theory. Previous cultivation research has been subject to substantial criticism, some of it clearly warranted, some of it less so. At least part of the problem was that, even though the theory was presented as sociocultural, it tended to be described in psychological terms (perceptions, beliefs, attitudes, reinforcement, learning, extrapolation), and thus made itself vulnerable to general psychological criticisms (e.g., direction of causality).

However, cultivation is a psychological theory, just as it may also be sociological and cultural. In my mind, these are not mutually exclusive, but inextricably entwined. The only difference is the level or unit of measure. A social cognition perspective simply adds an additional level of measurement, as well as more precision, to the cultivation research paradigm. New methods and theories are allowing us to gain a better understanding of how the process works. Thus, the best is ahead of us in terms of understanding how television information influences judgment.

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*Attitude Accessibility: Theory, Methods,
and Future Directions*

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A group of colleagues is discussing current events over dinner at a conference. A new topic comes up. Some of the people at the table immediately express their evaluation of the topic. Others at the table are a bit slower to express their views. In talking to this second group, it is clear that some of them have not thought about the issue much at all. Others have clearly thought about the issue but are unsure how they feel—they know the arguments on both sides, but have not decided which set of arguments is the most persuasive. Still others have a clearly defined attitude: They know how they feel, but they seem to just not have thought about the issue for a while and seem a bit rusty.

This vignette demonstrates some of the nuances of attitude accessibility. By *attitude accessibility* we refer to the ease with which an attitude is activated from memory. That is, some people, for some issues, know how they feel and can report on those feelings very quickly. These people have accessible attitudes toward the issue at hand. Other people respond more slowly to an attitude issue. They have a less accessible attitude. As we will see in this chapter, there could be a number of reasons why an attitude could be more or less accessible. Furthermore, the accessibility of an attitude has strong implications for how an attitude functions for an individual. This chapter addresses these issues. First, we quickly describe some of the early work that forms our understanding of what attitudes are and how they function.

When Roloff and Berger's (1982) volume appeared, the study of persuasion was beginning an explosion of research on dual-process models of persuasion (see Hamilton, chap. 18, this volume). At the same time, the pace of research into the nature of attitudes was somewhat sluggish. The little research that was being conducted on the nature of attitudes had been spurred by disappointments in the study of the attitude-behavior relation (Zanna & Fazio, 1982). However, an important outgrowth of this research on the connection between attitudes and behavior was work on attitude accessibility. Only a few articles had been published on attitude accessibility when Roloff and Berger's (1982) volume appeared (Fazio, Powell, & Herr, 1983; Fazio & Zanna, 1981), however, since that time, our understanding of attitude accessibility has advanced tremendously.

THE NATURE OF ATTITUDES

Attitudes have long been a focus of study by social scientists. From early on, definitions of attitudes have usually comprised three components—cognitive, affective, and behavioral (e.g., Allport, 1935)—that make up the tripartite model of attitudes. The tripartite model of attitudes has been extremely influential in shaping research on attitudes and research suggests that these three components of attitudes can function as both antecedents and consequences of attitudes (Eagly & Chaiken, 1983). For the most part, however, the concept of attitude generally refers to the evaluation of an object or concept. This evaluation is generally thought to encompass cognitive, behavioral, and affective components. This is, the beliefs one has about an attitude object, how one acts toward the object, and how one feels about the object are most often thought of as the main components of an attitude.

The cognitive component is generally thought to encompass the thoughts and beliefs related to the attitude object. For example, people generally believe that Diet Coke is low in calories (which is presumably positive). Of course, the beliefs about the attitude object are not necessarily evaluative in nature (e.g., the belief that Diet Coke is made of matter), although the preponderance of pro or anti thoughts is a good indication as to whether the attitude is favorable or unfavorable toward the issue (Cacioppo, Harkins, & Petty, 1981; Fishbein & Ajzen, 1975).

The affective component of an attitude is the emotional reaction to the attitude object; that is, one's feeling that the object is good or bad. The "yuck" reaction to a cockroach (or political leader) involves the affective component of the attitude. One way in which the affective component of an attitude is formed is by repeated associations of positive feelings with the attitude object (Olson & Fazio, 2001, 2002). Likewise, the mere exposure effect—when people develop positive attitudes to-

ward objects they are repeatedly exposed to—involves the affective component of attitudes (Fink, Monahan, & Kaplowitz, 1989; Monahan, Murphy, & Zajonc, 2000).

The behavioral component of an attitude refers to the actions of the individual in regard to the attitude object. In a sense, this is the component that has been considered the most important historically (Zanna & Fazio, 1982). Early in the history of social psychology there was an implicit assumption that the value of studying an attitude was to be able to predict behavior related to the attitude (Allport, 1935). However, as noted by Wicker (1969), a review of the research in attitudes demonstrated that the prediction of behavior from attitudes was far from certain. Although Wicker's findings were startling at the time, work since then has established that attitudes are related to behavior, albeit in a somewhat more complex fashion than originally assumed (Fazio & Roskos-Ewoldsen, 2005).

DEFINING ATTITUDE ACCESSIBILITY

During the 1980s and 1990s, research focused on the structure of attitudes in memory (Ajzen, 1989; Baron & Misovich, 1999; McGuire, 1986, 1989; Pratkanis, 1989; Smith & DeCoster, 1999; Wood, Rhodes, & Biek, 1995). Based on the idea of memory as a semantic network, the understanding of attitudes was that they are constructed of associated nodes in memory (Fazio, 1986; Fazio, Sanbonmatsu, Powell, & Kardes, 1986). In this model of memory, concepts that are frequently activated together form a strong association. Through the process of spreading activation, when one concept is activated, related concepts are also activated.

Within the attitude accessibility framework, we define attitudes as associations between objects and evaluations of those objects stored in memory (Fazio, 1986, 1989). Relating the network model to attitudes, then, the mental representation of the attitude object is stored as a node in this network. Similarly, the evaluation of this object is also represented as a node in the network.

There is variability in how easily constructs can be retrieved from memory. For example, the name of your best friend or your birthday are constructs that are easily and quickly accessed when you need them. In contrast, the name of your third-grade teacher (assuming you have been out of third grade for at least a few years) takes much longer to recall. You most likely have not forgotten the name of the teacher; that is, with some time and a few good memory cues, you are likely to eventually come up with the correct name. However, because it is not information that you use frequently, it is far less accessible to you than your birth date.

To the extent that an evaluation is strongly associated with the object, the evaluation will be highly accessible; that is, when the node for the attitude object is activated, the strength of the association will ensure that, due to spreading activation, the node containing the evaluation of the object is also activated. Indeed, this is the definition of an accessible attitude according to Fazio (1986): Attitudes for which there is a strong association between the object and the evaluation are highly accessible. When the strength of the connection reaches a certain level, the attitude becomes automatically accessible from memory. In this instance, when the attitude object (specifically, the mental representation thereof) is activated, the evaluation of that object is quickly and effortlessly accessed as well. In this way, judgments can be made rapidly and without extensive reflection.

In contrast, for attitudes that are not accessible, the associations between the object and the evaluation of that object are not as strong. In this case, the activation of the object does not spontaneously activate the evaluation of the object. Consequently, it may take more time to activate the judgment, or it could be that this object has no evaluation associated with it.

Of course, because we cannot possess an attitude toward everything (e.g., new objects in our environment or those toward which we have not been motivated to form an attitude), our responses to all possible attitude objects will fall somewhere on a nonattitude to attitude continuum. As described in the opening vignette, there is variability in the extent to which individuals have formed judgments about potential attitude objects. Some people will have extensively thought about an issue. They will be familiar with the arguments on both sides of the issue, and will have a clear understanding of relative merits of both sides. They will have thought about the ways in which the various sides of the argument are consistent with their own values. They will know whether they would expect to gain or lose personally if they engaged in behavior related to the issue. Furthermore, they will have examined their feelings about the issues and will have made an evaluation as to whether they have positive or negative feelings about the issue.

In contrast, a nonattitude refers to a construct that has not been associated with an evaluation. This might be something new, such as the first time someone heard about a new proposal for reforming health care funding. Or, it might be something that has not been important enough to the person to evaluate. For example, young adults may not form an evaluation of a particular brand of washing machine until they purchase their first home and are suddenly faced with needing to purchase such an appliance. Until the evaluation becomes relevant, they most likely have a nonattitude about specific washing machine brands.

Many attitudes lie somewhere between these two extremes. Most people, when asked, can report their evaluation of a wide range of atti-

tude objects. For any given person, some of these attitudes will be strong and very quickly retrieved and others may be relatively weak and slowly accessed, but for most attitude objects, people are able to report where on a continuum their attitude lies.

FUNCTIONS OF ACCESSIBLE ATTITUDES

As we have already suggested, accessible attitudes are important predictors of various phenomenon of interest to communication scholars and psychologists (Roskos-Ewoldsen, 1997). We continue Fazio's (1989) practice of discussing the functions that accessible attitudes serve for the individual because we feel it is important to focus on what the attitude does for the individual. In other words, how does the accessible attitude influence how a person operates in her or his environment? We discuss several functions of accessible attitudes, but going back to the original functionalist theories of Smith, Bruner, and White (1956) and Katz (1960), accessible attitudes generally serve a knowledge function because, as we argue, accessible attitudes influence how a person understands and acts within a social environment. However, the basic argument for why accessible attitudes are more functional is the observation that for an attitude toward some object in the environment to influence what a person perceives, or how a person understands a situation, or that person's behavior, the attitude must be activated in memory. Of course, accessible attitudes have a greater likelihood of being activated, which results in their being more functional for the individual. In this section, we briefly discuss the influence of attitude accessibility of attention, information processing, and behavior.

ATTENTION

Accessible attitudes attract our attention, literally determining what we notice in our environment. Roskos-Ewoldsen and Fazio (1992) found that research participants were more likely to orient their attention to objects in a complex visual field when they had more accessible attitudes toward those objects. Similarly, research participants who had more accessible attitudes toward particular consumer products were more likely to find those products on a shelf and choose them from a group of many other products toward which their attitudes were less accessible (Fazio, Powell, & Williams, 1989). Interestingly, when people did not have accessible attitudes toward the objects in a visual display, people's attention was attracted to those items in the display that was more salient (Fazio et al., 1989). The implications are clear in a world full of information and visual clutter. We cannot act positively (or nega-

tively) toward objects we do not “see.” The orienting function of accessible attitudes will be the gateway to attitude-consistent behaviors in most cases.

The finding that accessible attitudes serve an orienting function suggests that, at some level, attitudes are activated extremely early in the processing of incoming stimuli (Roskos-Ewoldsen & Fazio, 1992). More recent research has focused on how early accessible attitudes play a role in the processing of incoming stimuli. Do attitudes influence other cognitive processes that occur at the early stages of the processing of incoming stimuli? One characteristic of social situations is that most stimuli are open to multiple classifications or interpretations. When interacting with a person, do we pay attention to that person’s ethnicity, gender, age, physical characteristics, and so forth? Smith, Fazio, and Cejka (1996) established that the accessibility of our attitudes toward the various possible categorizations of an object ultimately influence how the object is categorized and perceived. Likewise, Fazio and Dunton (1997) found that as the accessibility of participants’ attitudes toward a person’s race increased, the more likely they were to categorize novel people in terms of race (see also Fazio, 2000; Fazio & Towles-Schwen, 1999). Apparently, accessible attitudes influence how ambiguous stimuli are categorized and what they come to mean.

INFORMATION PROCESSING

Accessible attitudes offer us an efficient, although not always desirable, means of processing myriad pieces of information we encounter each day by motivating us to attend to and carefully consider some messages and by facilitating avoidance or biased processing of other messages (Fazio & Towles-Schwen, 1999; Roskos-Ewoldsen, 1997).

Motivated Processing

Accessible attitudes often signal for us which topics or message sources are important, thereby encouraging us to attend to and elaborate on persuasive messages related to the important topic or delivered by a favored message source (Fabrigar, Priester, Petty, & Wegener, 1998; Roskos-Ewoldsen, Bichsel, & Hoffman, 2002). For example, Fabrigar et al. (1998) found that people with more accessible attitudes toward vegetarianism were more likely to centrally process a message about vegetarianism. Roskos-Ewoldsen et al. (2002) extended this finding by demonstrating that the activation of an attitude toward other components of the message could also increase central processing. In this experiment, participants with a more accessible positive attitude toward the source of the message were more likely to centrally process a mes-

sage attributed to that source. Importantly, the attitude toward the source did not result in biased processing of the message. Rather, the accessible attitude toward the source of the message acted as a piece of information indicating the importance of the message, which motivated participants to more carefully process the message (see also Fabrigar et al., 1998; Roese & Olson, 1994). This attitude-as-information explanation is similar to research and theorizing on the effects of mood on judgment that has found that mood can both act as information that influences people's judgments and bias how information is interpreted (Clore, 1992).

Although studies of the elaboration likelihood model (ELM) and heuristic-systematic model (HSM) have shown that we tend to pay careful attention to messages about topics that are personally relevant or that relate to core values or desired outcomes (Johnson & Eagly, 1989), the evaluation of these topics as important must be accessible to start the elaborative process in a natural situation. For example, if we do not remember that we like or need to get more information about a particular political candidate, we might not read or listen to a news story about that candidate's most recent speech. The assumption here is that accessible attitudes toward the topic or the message source are one way to inform us that a message is important. The ELM and HSM suggest that we elaborate on messages we consider to be important to arrive at a correct decision with respect to the behavior or attitude advocated within the message (Chaiken, Liberman, & Eagly, 1989; Petty & Cacioppo, 1986). We would suggest that one way to think about the research on the ELM and HSM testing the role of motivation on how a message is processed is that the research involved experimental "primes" of the topic's importance. For example, studies involving messages advocating the research participants' having to take comprehensive exams before they would graduate certainly primed negative attitudes about exams. In short, accessible attitudes will often cause us to attend to and carefully scrutinize persuasive messages. However, this careful processing might not be intended to help us revisit and revise existing attitudes. Rather, such scrutiny might take the form of biased processing.

Biased Processing

Although accessible attitudes can influence us to studiously gather information to make correct decisions, they can also encourage us to cognitively reinforce our existing attitudes and past or ongoing behaviors. Early scholars recognized that attitudes can function as lenses through which we view and interpret our world (Allport, 1935; Katz, 1960; Smith et al., 1956). More recent research has shown that accessible attitudes often color our judgments of messages and attitude objects in

a manner that is consistent with our attitudes (Fazio, 1990a; Fazio, Roskos-Ewoldsen, & Powell, 1994). For example, research participants with more accessible, positive attitudes toward a presidential candidate were more likely to say their favored candidate won a debate than were participants with equally positive, but less accessible attitudes (Fazio & Williams, 1986). Additionally, when it was more difficult to determine the winner in a televised vice-presidential debate, the same pattern of effects associated with accessible attitudes was found, but was even more pronounced (see also Houston & Fazio, 1989).

An important caveat to these studies is that accessible attitudes are more likely to bias processing when the information or situation is relatively ambiguous (Fazio & Williams, 1986; Roskos-Ewoldsen, 1997). In addition, the relation between attitude accessibility and biased processing is also typically attenuated among individuals who are motivated to make a correct decision and given the opportunity to arrive at a correct decision (Fazio, 1990b; Sanbonmatsu & Fazio, 1990; Schuette & Fazio, 1995). Schuette and Fazio (1995) had research participants read a study that found that capital punishment either deterred crime or did not deter crime. They found that when research participants expected their evaluations of a scientific study to be read by a panel of expert scientists, they showed less biased processing of the study. However, participants who did not expect their responses to be read by the experts showed biased processing of the study. When the results of the study were proattitudinal (consistent with participants' prior attitudes), participants with more accessible attitudes judged it to be much stronger and more convincing than participants with less accessible attitudes; when the study was counterattitudinal, they judged it to be weaker and less well conducted than participants with similar, but less accessible, attitudes (see also Houston & Fazio, 1989).

BEHAVIOR

Perhaps the most important contribution of the conceptualization and study of attitude accessibility in social psychological research is the identification of consistently strong correlations between accessible attitudes and behavior. Prior work in this area, some scholars had rejected the existence of a relation between attitudes and behaviors, nearly sounding a death knell for research in attitudes and attitude structure in the early 1970s (Wicker, 1969). However, research has established that accessible attitudes are strongly correlated with eventual behaviors and behavioral intent (for general reviews, see Fazio, 1986, 1990a; Fazio & Roskos-Ewoldsen, 2005) in the areas of voting behavior, consumer product choice, loyalty to retail stores, intended charitable contributions, exercise behaviors, choice of a game to play, and racist

behaviors (Bassili, 1995; Kokkinski & Lunt, 1997; Posavac, Sanbonmatsu, & Fazio, 1997; Woodside & Trappey, 1996). Going back to our earlier observation, attitudes are most likely to affect behavior when they are activated from memory at the moment the attitude is initially observed. Of course, attitudes that are more accessible from memory are more likely to be activated and to influence behaviors.

Accessible attitudes most often affect behavior in situations that allow or require spontaneous decisions (e.g., deciding which gas station to turn into when your tank is empty), or in ambiguous social situations (Fazio, 1986, 1990a). With situations that facilitate or require spontaneous behaviors, highly accessible attitudes will likely determine which evaluations or objects come to mind when a behavioral decision must be made. For example, when research participants were asked to which charity they would donate monetary compensation for research participation, they chose the charities for which their attitudes were most accessible, even though they had evaluated other charities just as or more favorably in a pretest (Posavac et al., 1997).

With ambiguous objects or social situations, accessible attitudes can influence how we define or categorize the situation or object: This categorization, in turn, influences behavior (Fazio, 1986, 1990a). For example, imagine you are sitting in your car at an intersection and someone walks toward your door. If you had recently been reading and worrying about local carjacking incidents (so that the concept of carjacking, as well as your attitude toward it, would be relatively accessible), you might automatically interpret the person as a carjacker and immediately lock your door. Someone who did not have accessible attitudes toward carjacking might not know how to interpret the intentions of this person. However, on recognizing the name of a local charity on the person's shirt, one could interpret the person as a representative of a local charity who was asking for donations from people stuck at traffic lights. In the latter case, one might quickly start to look for change or try to avoid eye contact with the person. In the first case, spontaneous perceptions of the attitude object (the person walking up to the car) were driven by an accessible attitude, and attitude-consistent behavior followed spontaneously. In the second case, in which no relevant concepts were particularly accessible, a salient feature in the situation (the name of the charity on the person's shirt) drove the perception of the attitude object and the subsequent behavior. In essence, accessible attitudes can influence (sometimes incorrectly) perceptions of objects, people, and situations, causing the event or person to be defined or categorized according to accessible concepts and criteria, and situational behavior to follow from these perceptions and definitions.

So, in situations that call for spontaneous behavior, attitude accessibility should be most predictive of behavior (Fazio, 1990a; Sanbonmatsu & Fazio, 1990). However, in situations that require accu-

rate decisions or a consideration of norms, we might reflect on the underpinnings or cognitive components of our attitude toward the behavior, social norms regarding the behavior, and the unique characteristics of the situation and then act accordingly (Ajzen, 1991; Ajzen & Fishbein, 1980; Fazio, 1990a). Hence, our behavior might not be strongly correlated with our attitudes in more deliberative situations that give us the opportunity to reflect on those attitudes. However, even in situations that involve careful, deliberative decision making, accessible attitudes can influence decisions (Roskos-Ewoldsen, 1997; Roskos-Ewoldsen, Wu, & Rhodes, 2004). As discussed earlier, the attitude-as-information hypothesis suggests that accessible attitudes can motivate deliberative decision making (Roskos-Ewoldsen et al., 2004). Consistent with this, Roskos-Ewoldsen et al. (2004) found that women with more accessible attitudes toward breast self-exams were more likely to intend to perform breast self-exams in the future. Likewise, accessible attitudes might bias how information is interpreted when making a more deliberative decision.

INCREASING ATTITUDE ACCESSIBILITY

Although few studies have systematically attempted to isolate effective methods of enhancing attitude accessibility, the transactive model of attitude accessibility (Roskos-Ewoldsen, 1997) suggests processes by which attitudes become accessible. Four basic means of making attitudes more accessible have been identified: recent activation, frequent activation, expectation of need, and cognitive elaboration.

Recency of activation is one mechanism for increasing attitude accessibility. However, recent activation of an attitude only temporarily increases accessibility. In network models of memory, recently activated nodes will temporarily be more accessible (Roskos-Ewoldsen, Klinger, & Roskos-Ewoldsen, in press). Therefore, an attitude that has recently been reflected on, acted on, or activated via a pathway from a related concept or evaluation should be relatively accessible. This activation typically dissipates quickly, with accessibility returning to preactivation levels within about 550 to 600 milliseconds (Neeley, 1977). Even during this brief period of time when attitudes are made temporarily more accessible, they have been shown in experimental settings to influence attention to and processing of subsequently presented information (Bargh, Chaiken, Govender, & Pratto, 1992; Fazio, 1993; Fazio et al., 1986) and to influence judgments of ambiguous information for slightly longer periods of time (Fazio, Powell, & Herr, 1983; Roskos-Ewoldsen et al., in press). In most research, attitudes are made temporarily more accessible via a priming procedure (see methodological considerations later).

In contrast to attitudes that are made accessible for a short time through priming techniques, some attitudes are chronically accessible. Attitudes that are activated frequently are likely to become chronically accessible (Powell & Fazio, 1984). Frequent activation and enhanced accessibility can occur via repeated judgments of an attitude object, expressions of one's attitude (e.g., giving a short speech), or through activation of related concepts or attitudes (Downing, Judd, & Brauer, 1992; Fazio et al., 1986; Houston & Fazio, 1989; Roskos-Ewoldsen & Fazio, 1992). Repeated expression of attitudes has been shown to enhance accessibility for up to 4 months (Zanna, Fazio, & Ross, 1994).

Third, merely expecting to need an attitude toward a particular object has been shown to increase chronic accessibility. For example, research participants who were told they would need to evaluate a novel object in the future were more likely to spontaneously form an attitude and had more accessible attitudes toward the object than participants who were not told they would need to evaluate the object (Fazio, Lenn, & Effrein, 1984). Similarly, participants in two studies of comparative advertising spontaneously developed attitudes toward the novel brand in the comparative ad, ostensibly because the message suggested a need to have an attitude toward the novel brand to evaluate its worth compared to the existing, well-liked brand (Mothersbaugh, Viosca, Phelps, & Roskos-Ewoldsen, 1998; Yi, Phelps, & Roskos-Ewoldsen, 1998). In short, when we perceive a need to have an attitude in the near future we will likely develop an accessible attitude toward the object in question.

Finally, cognitive elaboration is another manner by which attitudes are made accessible. Recall that an attitude is defined as an association of an evaluation with an object. In the network model, evaluations and attitude objects (or concepts) are considered to be nodes in memory that are connected to other relevant nodes. Activation of one node spreads to associated nodes. Each time these pathways are traveled as a result of activation of a related node, the pathways are strengthened. Therefore, considering or reconsidering one's evaluation of an object strengthens not only the association between the evaluation and the attitude object, but also the association with related nodes (related objects and evaluations). The result is a greater likelihood that the original attitude will be activated more frequently because of its stronger connection to more nodes in memory. Each subsequent activation of the attitude further strengthens its accessibility. The ELM and HSM suggest many ways in which individuals intrinsically or externally are motivated to engage in cognitive elaboration, and both models suggest that careful attention to the content of, or arguments within, a persuasive message results in more accessible attitudes (Chaiken et al., 1989; Kardes, 1988; Petty & Cacioppo, 1986, Sherman, 1987). Other processes that result in cognitive elaboration have also been shown to increase accessibility, such as direct experience

with the attitude object (Fazio, 1983; Fazio & Zanna, 1981), exposure to fear appeals that results in a desire to control the danger (as opposed to the fear) associated with an unwanted outcome (Roskos-Ewoldsen et al., 2004), and the belief that possessing an attitude toward a particular object is personally important (Krosnick, 1989).

Concepts that are automatically accessible from memory will be come less accessible over time if the accessibility is not reinforced (Grant & Logan, 1993). Although this has not been demonstrated with accessible attitudes, certainly, the accessibility of attitudes must decrease over time if they are not reinforced. Consider your favorite TV character from your childhood. If you have not seen or thought of that character in a long time, the accessibility of your attitude toward that character has probably faded. Notice that we are not saying that the extremity of the attitudes will necessarily change, but the accessibility will weaken. However, according to the transactive model, accessible attitudes tend to operate in a manner that maintains their accessibility through frequent activation and through elaboration. For example, because accessible attitudes orient our attention to objects in our environment, they are reactivated or rehearsed via the automatic judgment that occurs when one attends to a liked or disliked object (Roskos-Ewoldsen, 1997). Additionally, because accessible attitudes motivate elaborative processing, more associations in memory to related nodes are created that will maintain or enhance the accessibility of the attitude. Finally, direct experience with an attitude object makes attitudes more accessible from memory, which can easily and consistently initiate the process from accessibility to attention to behavior that constitutes the remaining section of the transactive model described later (DeBono & Snyder, 1995; Fazio & Zanna, 1981). For example, in a recent study, cigarette smokers showed more biased processing of antismoking messages than nonsmokers (Rhodes & Roskos-Ewoldsen, 2004). In addition, as the smokers judged the antismoking ad to be more biased, they also indicated they were less likely to quit smoking. In other words, the antismoking ad created reactance in the smokers, which reinforced their desire to smoke. Importantly, the accessibility of the smokers' attitudes mediated this process. It was smokers with more accessible attitudes that judged the antismoking ads as more biased and were less likely to want to quit smoking. The accessible prosmoking attitude operated as a defense mechanism for these smokers to protect their smoking behavior from threats such as antismoking ads, and their accessible attitudes also strengthened the behavioral response to continue smoking.

METHODOLOGICAL AND STATISTICAL CONSIDERATIONS IN ATTITUDE ACCESSIBILITY RESEARCH

Research methodologies used to study attitude accessibility draw heavily from cognitive psychology, including the use of reaction time

procedures to measure the accessibility of attitudes from memory (Bargh et al., 1992; Bassili, 1993; Berger & Mitchell, 1989; Fazio et al., 1986; Houston & Fazio, 1989; Powell & Fazio, 1984; Roskos-Ewoldsen & Fazio, 1992; Yi, Phelps, & Roskos-Ewoldsen, 1995). In a research setting, attitude accessibility can be measured or manipulated. Although measuring and manipulating accessibility can be fairly straightforward, researchers should keep in mind some individual and situational variables that may affect reaction times. For example, participants' motor operations or reading speeds naturally vary, such that some participants in an experimental setting will respond, on the average, more quickly than others. Furthermore, participants' attention levels vary during experiments, and this can be exacerbated by any extraneous noise or activity near where the experiment is being conducted. Additionally, differences in participants' desired decision-making confidence can affect their response times. Finally, researchers should expect reaction time data to be skewed. Techniques for managing these effects are described next.

Measuring Accessibility

Studies in which accessibility is measured rely on participant reaction times to attitude probes. Typically, research participants are first presented with the name or picture of an object (i.e., the attitude probe) on a computer screen and are then asked to press one of two keys or buttons to indicate whether they like or dislike the object. For example, a participant seated in front of a computer would be shown a photo of an ice cream cone and would be instructed to press either a + key (for a positive evaluation) or a - key (for a negative evaluation) as soon as he or she was able to form or recall an evaluation of ice cream cones. To equalize the distance from the resting area for the participants' hands, the Z key can be labeled + (positive), and the / key can be labeled - (negative). The elapsed time (captured by a computer) between presentation of the probe and the participant's pressing of the positive or negative key provides a measure of response latency. The assumption is that more accessible attitudes are associated with faster reaction times (Powell & Fazio, 1984; Roskos-Ewoldsen & Fazio, 1992). Software programs such as Superlab (<http://www.superlab.com/>), E-Prime (<http://www.pstnet.com/products/e-prime/>), and DirectRT (<http://www.empirisoft.com/>) are commonly used in this procedure. Although most accessibility experiments use words and pictures as stimuli, audio stimuli have also been employed in a study that required participants to listen to tape-recorded statements and respond to those statements by pressing a button on a response box (Fazio & Williams, 1986).

One limitation to the widespread use of the concept of attitude accessibility has been the necessity to engage research participants in a com-

puterized reaction time task. In most cases, this has required bringing participants into the research lab to respond to programmed stimuli on individual computers. As a result, much of this type of work has been conducted using college student samples. However, reaction time procedures for phone surveys have recently seen an increase in use (Bassili & Krosnick, 2000). In particular, such surveys have employed reaction time techniques to assess the accessibility of political attitudes. Research employing these techniques has been used, for example, to demonstrate that the speed with which one retrieves a behavioral intention to vote predicts actual voting behavior up to a year later (Fletcher, 2000), and that individuals who are ambivalent toward abortion have less accessible attitudes than individuals who are not ambivalent (Huckfeldt & Sprague, 2000). The ready availability of such reaction time techniques should enable attitude researchers to more easily move beyond lab-based work with college student research participants.

Gathering and analyzing reaction time data presents a number of unique challenges. Reaction time data are inherently messy (Fazio, 1990b). The messiness of reaction time data results from a number of sources including a lack of practice sessions for participants, undesired variance in participants' speed of responding to probes and attention to the experiment, unintended effects of independent variables, and the order of attitude probes.

A major issue that accessibility researchers should consider is the general notion of speed-accuracy trade-off, which refers to the tendency that participants will vary in terms of desired decision-making confidence and in their desire to pay attention during the experiment and respond to probes quickly. For example, some participants may want to be absolutely correct before responding to an attitudinal probe, whereas other participants will respond based on their initial reaction. Both tendencies can create variance in response latency that is unrelated to attitude accessibility. Therefore, participants should be instructed to respond to probes quickly, but accurately, and researchers should take care to keep participants on task and attentive during the study (Fazio, 1990b).

Additionally, research participants should perform several practice trials with probes unrelated to those in the eventual experiment before critical response latency measures are taken. Reaction times are a product of the time it takes participants to make a decision and the motor skills that are necessary to respond by pressing the key. These practice trials allow participants to become familiar with study procedures and to learn the motor skills necessary for responding to the attitude probes, thereby reducing natural variability in the speed of responding across participants. For example, Roskos-Ewoldsen et al. (2004) had participants complete two blocks of 20 trials using randomly ordered probes

“Press the like key” and “Press the dislike key” before having them complete a block of 20 practice trials with actual objects or concepts as probes. The fourth block contained the critical items (“breast cancer” and “breast self-exams” in this study), the probes “Press the like key” and “Press the dislike key,” and 16 distracter items to generate a total of 20 trials. The probes in the third and fourth blocks were presented in a different random order to each participant. Although a total of three blocks of 20 practice trials each before the block of 20 items with the critical items may seem excessive, it ensures that participants are familiar with the task so that part of the reaction time does not reflect their hunting for the correct key to press after they made their decision.

Researchers should also plan to control for participants’ individual response speeds. With between-subject designs, participants’ mean response latencies in the filler trials (either the mean reaction time for responses to the “Press the like key” and “Press the dislike key” prompts presented in the fourth block or the harmonic mean of the reaction times for the 16 distracter items in the fourth block of trials) can be used to create an index of each participant’s general response speed. This index can then be used as a control variable for responses to the critical attitude probes (e.g., as a covariate in an analysis of covariance). Latencies for filler trials can also be used to create difference scores that subtract mean filler latencies from latencies for key attitude probes (Fazio, 1990b; Fazio et al., 1984). The issue of individual response speeds is not as critical in within-subjects designs because the same participant is responding to all of the critical items.

With all designs, the number of response categories should be kept to a minimum. Most experiments employ a two-response option (yes–no, good–bad, like–dislike). Some experiments have successfully used 5-point, Likert-type response categories, but direct comparisons between the 2-point and 5-point options have not been made (Fazio, 1990b). If a greater number of response categories is essential to the design, a traditional questionnaire that includes more categories can be distributed after latency is measured with a dichotomous response system (Fazio, Powell, & Williams, 1988). In this case, participants will have two scores for each attitude object or two indexes for related objects: response latency from the dichotomous variables and an attitude score from the expanded set of response categories on the questionnaire.

Finally, there are several issues involved with the analysis of reaction time data. Reaction time data tend to be heavily skewed (Fazio, 1990b). When reporting reaction times, the skewness of the sample should always be reported. In addition, if the data are skewed, they need to be normalized prior to analysis using any parametric statistical test. Although the most common technique for transforming reaction time data

involves a log-linear transformation, other methods of transforming the data are preferred. A better technique if several reaction times are going to be combined is to use the harmonic mean (Ratcliff, 1993). The harmonic mean involves reciprocally transforming each of the reaction times, averaging the reaction times, and then reciprocally transforming the mean back into the original metric of the reaction times (e.g., milliseconds). If only a single reaction time is being analyzed—as is often the case in attitude accessibility studies—a reciprocal transformation is still the preferred technique because it distorts the underlying distribution of reaction times less than other methods (Fazio, 1990b; Ratcliff, 1993). Another technique for dealing with the skewness of reaction time data is to discard scores that appear below a threshold (often 350 milliseconds) or longer than a threshold (often 2,000 or 2,500 milliseconds). However, this is a dangerous practice because simply discarding the error data can result in misinterpretations of the reaction time data. Ulrich and Miller (1994) did a series of simulations demonstrating that discarding as few as 0.5% of the reaction times from an analysis can make a main effect appear as a two-way interaction (see also Roskos-Ewoldsen & Franks, 1998).

Manipulating Accessibility

Because attitude accessibility is a measure of attitude strength, it is often correlated with attitude extremity. This correlation can cause difficulties for interpretation and data analysis (see, e.g., Fazio & Williams, 1986). Because of this, it is sometimes desirable to manipulate attitude accessibility. Experiments in which accessibility is manipulated typically employ a priming process or a repeated expression or judgment process. Such processes increase the accessibility of the attitudes without affecting the extremity of the attitudes (Roskos-Ewoldsen, 1997).

Asking a participant to make an attitude judgment about a given object several times is one way to manipulate accessibility, as repeated attitude judgments of an object have been shown to increase the chronic accessibility of the attitude toward that object from memory (Fazio, 1995; Fazio et al., 1986; Powell & Fazio, 1984; Roskos-Ewoldsen & Fazio, 1992). For example, if one wanted to manipulate the accessibility of an attitude toward candy bars, participants could be asked to indicate how much they liked candy bars during a pretest, using semantic differential or Likert-type response categories. The effect of repeated attitude judgments is found whether individuals make the same attitude judgment several times (e.g., good–bad; Fazio et al., 1986) or make multiple judgments using different evaluative scales (e.g., like–dislike, good–bad, pleasant–unpleasant; see Downing et al., 1992; Houston & Fazio, 1989; Powell & Fazio, 1984; Roskos-Ewoldsen & Fazio, 1992).

A priming procedure can also be used to temporarily increase the accessibility of an attitude. In this procedure the attitude object of interest is immediately preceded by an object for which participants have been shown to have highly accessible attitudes (Bargh et al., 1992; Fazio, 1993; Fazio et al., 1986). For example, if an earlier reaction time task had established that an individual had a highly accessible, negative attitude toward the word "bad," presenting the word "bad" (prime) immediately prior to the presentation of the word "snake" (target) would temporarily increase the accessibility of that individual's attitude toward snakes. However, for this type of priming to increase attitude accessibility for the target, the participant's attitude toward the target and his or her attitude toward the prime must have the same valence (e.g., a negative evaluation of the word "bad" and a negative evaluation of snakes).

Other methods can be used to manipulate attitude accessibility, such as asking participants to assign attitude objects of interest to the proper category or to rank-order objects in terms of favorability (Posavac et al., 1997); instructing participants that they will need to provide an evaluation of the object at a later time (Fazio et al., 1992); or encouraging participants to elaborate on the attitude toward the object (Kardes, 1988; Stayman & Kardes, 1992).

RECENT DEVELOPMENTS AND FUTURE DIRECTIONS IN ATTITUDE ACCESSIBILITY RESEARCH

The study of attitude accessibility has become extensive since the early 1980s and our knowledge of the causes and consequences of attitude accessibility has grown due to this research. Research continues to expand our understanding of attitude accessibility. First, we discuss research on implicit racism and implicit attitudes. Second, we discuss recent research exploring attitude and norm accessibility.

Implicit Racism

Although the study of racist attitudes has a long history in the social sciences, there is also a long history of difficulty associated with measuring racist attitudes. Whereas the explicit disclosure of racist attitudes was socially acceptable many years ago, the change in consciousness of racial issues resulting from the civil rights movement has made it generally undesirable to endorse racist attitudes in most social contexts today. Because of this, the measurement and study of racism has changed over the past few decades. Researchers have recognized that in direct assessments of attitudes toward minority groups respondents are likely to deny racist attitudes and beliefs to present themselves in a favorable

light. A variety of techniques have been developed to try to circumvent this socially desirable responding. Perhaps the most clever technique was the development of the bogus pipeline. This technique deceived participants into believing that their true feelings could be seen by researchers through a variety of physiological measurements that the participant believed were being taken. Participants in the bogus pipeline condition reported more racist attitudes than those in the control condition (Jones & Sigall, 1971; Sigall & Page, 1971).

More recently, building on the work in attitude accessibility, techniques have been developed to assess racist attitudes in ways that circumvent the self-presentation concerns of research participants. In particular, Fazio, Jackson, Dunton, and Williams (1995) described a technique for measuring attitudes toward minority groups that build directly on work in attitude accessibility. In this research paradigm, research participants are led to believe that their primary task is to remember a series of faces they are shown on the computer monitor. Later during the experimental session, participants are told that the task will be made more difficult by presented words between each of the faces, and their task is to indicate whether they like or dislike the word as quickly as possible. The critical issue is whether the faces of African Americans influence how quickly participants respond to positive or negative words. Participants for whom faces of African Americans accelerated how quickly they responded to the negative words (e.g., the face of the African American primed a negative attitude) were much more likely to respond in a racist manner later in the experiment. In other words, the task involved a priming paradigm to implicitly measure people's racist responses.

This work and related work by other researchers has furthered our understanding of the functions of attitudes and stereotypes in thinking about members of minority groups (Devine, Monteith, & Zuwerink, 1991; Dovidio, Kawakami, & Johnson, 1997; Fazio & Dunton, 1997; see Oliver, Ramasubramanian, & Kim, chap. 12, this volume). In particular, these findings have been largely consistent with dual-process accounts of stereotype activation. That is, under most circumstances, the initial response to a minority group member is the automatic and rapid retrieval of the concepts stored in the stereotype. Because of spreading activation processes, the evaluations associated with those concepts are also activated, enabling a quick, stereotype-based judgment of the person. In dual-process accounts, the second process is a deliberative override of the initial judgment. This override occurs when the person making the judgment is both motivated and able to reflect on the judgment, bring additional information to bear, and correct the initial judgment.

The research on implicit racism points to the importance of measuring implicit social reactions (Greenwald & Banaji, 1995). Most of the re-

search on attitudes has measured people's explicit attitudes because people are asked to indicate their attitudes. However, attitudes can influence behavior without conscious recollection of the attitude. Consider Roskos-Ewoldsen and Fazio's (1992) study where participants' attention was more likely to be drawn to distracter items in a visual search task if their attitudes toward the distracter items were more accessible from memory. In that task, participants probably did not consciously think about their attitude while completing the search task (the reaction times were fast enough to rule out this possibility). However, their attitudes did influence how they performed on this task. More research needs to consider the influence of implicit attitudes on persuasion and to measure effects of persuasion via implicit attitude measures.

Norm Accessibility

Research demonstrating the importance of norms in explaining social behavior includes work by Cialdini and his colleagues (Cialdini, Reno, & Kallgren, 1990; Kallgren, Reno, & Cialdini, 2000; Reno, Cialdini, & Kallgren, 1993) showing strong social influences on behaviors such as littering. Likewise, beliefs about the typical behavior of members of a personally important peer group, even if erroneous, have been shown to influence behavior (Miller, Monin, & Prentice, 2000; Prentice & Miller, 1993; Terry & Hogg, 1996). In particular, studies of misperceived norms of drinking behavior affect the drinking behavior of college undergraduates. Further examples of social influence on judgments include polarization of attitudes on the basis of information regarding in-group norms (Mackie, 1986) and judgments made under the scrutiny of others (e.g., Asch, 1956). Clearly, there is substantial evidence for normative influence on behavior.

Often, however, in tests of models of the attitude-behavior relations such as the theory of planned behavior, attitude emerges as a more important predictor of behavior than subjective norm. To better understand the dynamic interplay of attitudes and subjective norms, recent work has begun to examine the accessibility of the subjective norm (Rhodes & Roskos-Ewoldsen, 2005). Just as accessible attitudes are more strongly related to behavior, it is believed that accessible norms will also more strongly predict actions.

Rhodes and Roskos-Ewoldsen (2005) developed a methodology to assess norm accessibility that is similar to that used to assess attitude accessibility. The stimuli used are patterned after the paper-and-pencil measures of subjective norms described by Ajzen and Fishbein (1980). Specifically, participants are asked to respond quickly but accurately to a series of questions inquiring whether each of a number of important people in their lives

(e.g., parents, siblings, best friend, boyfriend or girlfriend) wants them to engage in a number of behaviors (e.g., smoking cigarettes, drinking alcohol, and filler items). Each prompt is shown on the screen until the participant presses either the “yes” key or the “no” key.

Although the findings are somewhat preliminary as yet, there is evidence that norm accessibility can be a useful construct in predicting behavior. Attitude and norm accessibility together have been found to account for variance in smoking and drinking behavior ($R^2 = .78$) beyond that accounted for by traditional measures of attitude and subjective norm ($R^2 = .35$). Furthermore, norm accessibility is strongly related to other measures of social pressure to smoke and drink, such as the percentage of one’s peers who engage in these behaviors and self-reported peer influence to smoke.

Future research also needs to explore how norms become chronically accessible. Self-reported peer influence to smoke was related to norm accessibility (Rhodes & Roskos-Ewoldsen, 2005). Research suggests that at least part of the influence of peers on smoking behavior occurs because of repeated offers of cigarettes and discussions of smoking (Jacobson et al., 2001). The finding that peer influence is related to norm accessibility suggests that repeated expression of the social norms probably increases norm accessibility in the same way that it influences attitude accessibility (Fazio, 1986). Clearly, more research is necessary to explore the mechanisms by which norms become more accessible from memory.

A further direction for future research in this area is to understand how the accessibility of norms might bias perceptions of information in situations. Just as accessible attitudes color perceptions, when one has a clear idea of the normative expectations for behavior, persuasive appeals might be interpreted accordingly. We believe that there is great potential to capitalize on norm accessibility in constructing health-related persuasive appeals.

CONCLUSIONS

As a result of a research tradition spanning more than 70 years of study, the understanding of the interrelation between attitudes and persuasion has flourished and is still growing. The growth of this knowledge is, in part, due to increases in our understanding of the characteristics of attitudes. This chapter has focused primarily on attitude accessibility, although other characteristics of attitudes, such as ambivalence, are also relevant. Attitude accessibility has been a concern for attitude scholars for close to 20 years, and more recently, research has begun to look at the interrelations between attitude accessibility and persuasion (Roskos-Ewoldsen, 1997; Roskos-Ewoldsen et al., 2002; Roskos-Ewoldsen et al., 2004). Accessible at-

itudes are more resistant to attempts at persuasion, longer lasting, better at predicting behavior, and more likely to bias how future information is interpreted.

Although there has been extensive research on attitude accessibility, this research has tended to focus on the consequences of accessible attitudes—the consequences of accessible attitudes on the orienting of attention, the processing of messages, and future behavior. However, research to further our understanding of the development of accessible attitudes is still in its infancy. Importantly, the research on attitude accessibility suggests that attitude accessibility should be one of the dependent and independent variables of choice for persuasion scholars. Future research needs to focus both on how messages influence attitudes (i.e., attitude accessibility as dependent variable), and on how attitudes influence attention to, and processing of, persuasive messages (i.e., attitude accessibility as independent variable). In addition, research and theorizing needs to include a consideration of implicit attitudes and norms. Research is beginning to suggest the importance of norm accessibility in predicting behavior. Future research in this area will demonstrate, once again, the importance of understanding the cognitive underpinnings of social behavior.

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