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Role and Influence of Communication Modality in the Process of Resistance to Persuasion

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This investigation examined the role and influence of print and video communication modalities in inoculation. Inoculation is assumed to be an active cognitive process, and past research has assumed that inoculation treatments function in much the same way in fostering resistance to influence, irrespective of the medium employed to deliver them. The pattern of results indicates that print and video forms do not differ appreciably in their capacity to confer resistance, but they vary considerably in terms of how they promote resistance. Compared to controls, both inoculation approaches effectively generated threat but, contrary to what was predicted, only video elicited significant counterarguing output. In addition, the results confirmed that video treatments employ an alternative mechanism in conferring resistance, one that is based more on source considerations. Video treatments immediately generated positive relational perceptions about the source of the treatments, and they immediately bolstered attitudes. Positive relational perceptions of the source of inoculation treatments were subsequently associated with more negative perceptions of the source of counterattitudinal attacks, and to resistance to the attacks. By contrast, print treatments worked through more cognitive means, eventually inducing resistance, but only after participant exposure to counterattitudinal attacks.

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The inoculation approach of conferring resistance to the influence of counterattitudinal attacks has been the subject of renewed theoretical and practical interest in recent years. The accumulation of research findings since the early 1960s clearly indicates that inoculation is effective in promoting resistance to influence (McGuire, 1961a, 1961b, 1962, 1964, 1966; McGuire & Papageorgis, 1961, 1962; Papageorgis & McGuire, 1961; Pfau, Tusing, Koerner, et al., 1997; Pfau, Tusing, Lee, et al., 1997). Recent research has demonstrated the viability of inoculation in a number of applied settings, including commercial advertising (Pfau, 1992), political campaign communication (Pfau & Burgoon, 1988; Pfau, Kenski, Nitz, & Sorenson, 1990), public relations (Burgoon, Pfau, & Birk, 1995), adolescent alcohol (Godbold, 1998), and smoking prevention (Pfau & Van Bockern, 1994; Pfau, Van Bockern, & Kang, 1992). Further, other studies are underway that expand applications of inoculation to new domains.

However, despite its efficacy and potential applications, much remains to be learned about inoculation, particularly in terms of message delivery and its influence on the process of resistance. One unresolved question is the role and influence of communication modality, or form, in inoculation. The overwhelming preponderance of extant research on social influence, in general, has focused on the role and impact of messages: their content or, to a somewhat lesser extent, their sources. Although some social influence research has stressed communication modality or form (e.g., Chaiken & Eagly, 1976, 1983; McGinnies, 1965; Pfau, 1990; Wiegman, 1989; Worchel, Andreoli, & Eason, 1975), there has been no research on the role and influence of communication modality in resistance. Instead, communication modality or form "has been treated as a 'neutral' conduit of message content" (Pfau, 1990, p. 195).

Because Chesebro (1984), Meyrowitz (1985), Salomon (1987), and other scholars stressed that different communication media manifest unique symbol systems that shape what is communicated and how it is received, communication modality should play an integral role in the process of resistance. This examination explores the use of print and video inoculation treatments in fostering resistance to persuasive attacks. The study examines the relative efficacy of print and video in promoting resistance, and it probes their effect on the underlying process of resistance.

EFFICACY OF PRINT AND VIDEO MODALITIES IN RESISTANCE

The overwhelming majority of inoculation studies have used print treatments. This is true of all of McGuire's early work in addition to most of Pfau's recent

studies. However, some studies have employed other media forms. For example, Pfau, Van Bockern, and Kang (1992) employed television as the delivery mechanism for inoculation messages designed to instill resistance to adolescent smoking. Inoculation treatments were able to induce threat, which functions as the motivational catalyst to resistance (Pfau, 1997), and they fostered resistance to smoking initiation in adolescents up to 84 weeks following the administration of treatments (Pfau & Van Bockern, 1994). Godbold (1998) employed video to deliver inoculation messages intended to promote resistance to adolescent drinking. Results indicated that normative inoculation appeals fared better than more traditional informational appeals in reducing perceptions of the acceptance of alcohol use, but both appeals exerted limited impact on young adolescents'attitudes or behavioral intentions about drinking.

Other research in the smoking prevention context has used an approach termed *social inoculation* to promote resistance to adolescent smoking onset.[1] Two studies employed video treatments to promote resistance to smoking (Evans, Rozelle, & Mittlemark, 1978; Murray, Davis-Hearn, Goldman, Pirie, & Luepker, 1988). However, in both cases, the videos produced weak effects, which the authors blamed on failings in operationalization as opposed to limitations of the video form.

Thus, research employing video communication in the health prevention context is mixed. Studies using video in inoculation, and utilizing both threat and refutational preemption components, suggest efficacy for nonprint modalities, whereas those employing video in social inoculation, and featuring only the refutational preemption element, cast doubt on video. However, no studies have compared the relative efficacy of print and video modalities in inoculation.

A number of studies have examined the relative strength of various media forms in inducing a range of effects that pertain to attitude formation and change (Burns & Beier, 1973; Cantril & Allport, 1935; Chaiken & Eagly, 1976, 1983; Cohen, 1976; Keating, 1972; McGinnies, 1965; Neuman, Just, & Crigler, 1992; Pfau, 1990; B. Rubin, 1967; Weiss, 1969; Wiegman, 1989; Wilke, 1934; Wilson, 1973; Worchel et al., 1975). However, results from these studies are equivocal.

McGinnies (1965) found print to be superior to radio in terms of its ability to persuade. However, Cantril and Allport (1935) and Wilke (1934) reported the opposite result: radio was superior to print under certain conditions. Some studies have shown little in the way of significant differences in influence due to communication form (Neuman et al., 1992; Pfau, 1990; Worchel et al., 1975), whereas other studies indicate considerable difference (Burns & Beier, 1973; Graber, 1990), primarily because communication modalities intrinsically vary in their capacity to carry nonverbal messages (Graber, 1990; Keating & Latane, 1976).

Finally, several contradictory theoretical arguments have been advanced as to why one medium of communication may be more effective in achieving attitude change. Wiegman (1989) maintained that overpowering source factors undermine the effectiveness of television. However, other scholars argue that source and media variables interact, such that source factors exert differential impact on influence across media. For example, B. Rubin (1967) and Cohen (1976) found that some people are more effective on radio, whereas others are more effective on television. In comparing particular source traits across media, Andreoli and Worchel (1978) reported that television is most persuasive with high trustworthy sources, and Chaiken and Eagly (1983) indicated that video and audio forms are superior to print with more likable sources. Finally, Keating (1972) argued that television is a much livelier medium and, thus, it is much more influential in producing attitude change.

The results of research on the relative superiority of one communication form compared to another have proven contradictory. Nonetheless, the very nature of inoculation appeals implies that print treatments should prove superior to video. The reason goes to the nature of television and of inoculation. Several scholars theorize that television is, intrinsically, a relatively passive medium (e.g., Chesebro, 1984; Graber, 1987; Salomon, 1981), and thus is incapable of eliciting a great deal of cognitive activity in users. Yet, McGuire assumed that the process of inoculation was active, in which treatments unleash a process of counterarguing in receivers (Pfau, 1997). As a result, inoculation messages are typically cognitive in nature, featuring arguments supported with verifiable evidence, including statistics, facts, and research findings, and are objective and rational in their tone, inviting critical reasoning and elaboration.

Research on the use of communication forms with cognitive messages suggests the superiority of the print form over video. Chaiken and Eagly conducted two strong empirical studies of the role of form in the process of persuasion that support this position. One of their studies (1976) revealed that media forms interact with message features, affecting influence. For example, print messages were found to be more persuasive for material deemed to be "difficult," whereas television and radio was more effective with message content defined as "easy." Building on this result, a second study (1983) revealed that source was more persuasive in television and radio communication, relative to print. However, heightened source-based impacts came at the expense of content-specific cues for broadcast modalities, thus indicating that the inherent characteristics of respective media forms exert unique influences in the process of persuasion.

Source factors, such as expertise or trustworthiness, usually are treated as peripheral cues in the Elaboration Likelihood Model (ELM) and as heuristic cues

in the Heuristic Systematic Model (HSM). In ELM research, in particular, central message processing, which consists of "careful, thoughtful consideration of the . . . merits of the information presented" (Petty & Cacioppo, 1978, p. 85), results in attitudes more resistant to subsequent counterpersuasion (Cacioppo & Petty, 1989; Petty & Cacioppo, 1981, 1986). Because communication modalities vary in their tendencies with regard to message processing, with print more likely to elicit central or systematic processing (Chaiken & Eagly, 1976, 1983; Graber, 1987; Krugman, 1965; Markus & Zajonc, 1985; Salomon, 1981), especially with more involving content (Petty, Cacioppo, & Kasmer, 1988; Wright, 1974), the following is predicted:

H1: For people who receive an inoculation treatment, as compared to those who do not, print inoculation treatments are more effective in conferring resistance than video treatments.

IMPACT OF MODALITY ON THE PROCESS OF RESISTANCE

In most respects, the question of whether print and video forms differ in their capacity to confer resistance is of only modest theoretical interest. The more interesting and important theoretical issue concerns whether these forms vary in terms of how they promote resistance. In other words, do print and video modalities uniquely impact the underlying process of resistance?

As indicated previously, threat and refutational preemption are considered to be instrumental components in the process of resistance. Threat elicits an acceptance of the vulnerability of attitudes to change and, once internalized, it motivates people to strengthen attitudes by anticipating potential challenges to their attitudes and then generating responses to counterarguments (Pfau, 1997). Refutational preemption facilitates counteraguing in two ways. First, it provides ammunition for counterarguing by raising specific challenges and then refuting them (Pfau, 1997). Second, it functions as an exemplar of, and affords practice in, counterarguing (Godbold, 1998). In this way, inoculation, above and beyond the function of preempting specific challenges, lays a "broad umbrella of protection," conferring resistance both to the the influence of specific content raised in treatments as well as to content not preempted (Pfau, Tusing, Koerner, et al., 1997, p. 188).

The threat component in inoculation is motivational, but it is unclear how print and video forms would vary in terms of their capacity to generate threat. Most early inoculation studies did not attempt to confirm the presence of threat

(e.g., McGuire, 1961a, 1961b, 1966; Papageorgis & McGuire, 1961), but other research, both early studies that manipulated threat conditions (McGuire, 1962, 1964; McGuire & Papageorgis, 1961, 1962) and more recent studies that measured threat levels (Pfau & Burgoon, 1988; Pfau, 1992; Pfau et al., 1990; Pfau, Tusing, Koerner, et al., 1997, Pfau, Tusing, Lee, et al., 1997), exclusively employed print treatments. Of the two studies that utilized video inoculation treatments, one confirmed the presence of additional threat levels (Pfau, Van Bockern, & Kang, 1992), whereas the other did not (Godbold, 1998). Therefore, this study poses a research question about media form and threat:

> R1: Do print and video inoculation treatments vary in their capacity to elicit receiver threat?

The relative contributions of print and video modalities in counterarguing are much clearer. Counterarguing is an active cognitive process. It requires what Wyer called *cognitive work* (1974, p. 206), in which a person thinks about his/her attitude, enumerates potential arguments of opposing attitudes, and elicits responses to those arguments (Pfau, Tusing, Koerner, et al., 1997). This process should require central or systematic processing, which are the more engaging message processing strategies in, respectively, the ELM (e.g., Petty & Cacioppo, 1986) and the HSM (e.g., Chaiken, 1987). Support for the position that counterarguing is an active cognitive process in resistance can be found in research conducted by Petty and Cacioppo (1986) in support of the ELM and in recent inoculation studies that indicate that issue involvement functions as a precondition for threat, counterarguing, and resistance (Pfau, Tusing, Koerner, et al., 1997); more involved inoculated participants are more active counterarguers (Pfau, Tusing, Koerner, et al., 1997); and need for cognition enhances resistance, but only with more involving issues (Pfau, Tusing, Lee, et al., 1997).

Print and video modalities vary in their capacity to elicit active message processing. Video, because it stresses “the primacy of the visual over the audio channel” (Paletz & Guthrie, 1987, p. 2), is perceived as less involving (Chesebro, 1984; Graber, 1987, 1990; Krugman, 1965; Salomon, 1981; Wright, 1974). Video is much more likely to elicit peripheral (ELM) or heuristic (HSM) message processing, in which influence occurs “with only a minimal amount of information processing” (Chaiken, 1987, p. 3). Although some studies suggest otherwise (Tyebjee, 1979; Worchel et al., 1975), most research indicates superiority of print over video form in triggering active thought in receivers (Chaiken & Eagly, 1976, 1983; Graber, 1987, 1990; Krugman, 1965; Markus & Zajonc, 1985; Petty & Cacioppo, 1986; Petty, Cacioppo, & Kasmer, 1988; Salomon, 1981; Wright, 1974). Thus, the following is predicted:

H2: Compared to video, print inoculation treatments elicit more counterarguing output.

If print inoculation treatments are superior to video in fostering counterarguing, it either means that video treatments are inherently inferior in conferring resistance, or that they must go about it in a somewhat different manner. Because research indicates that video inoculation treatments do, in fact, foster resistance (Godbold, 1998; Pfau & Van Bockern, 1994; Pfau et al., 1992), as opposed to the null findings for video in social inoculation (Evans et al., 1978; Murray et al., 1988), this study explores plausible alternative routes that video treatments may employ.

The most likely alternative route involves the influence of the source of a video inoculation treatment. This could manifest itself as a difference in the role of source and content factors in resistance and/or in terms of the nature and influence of source cues in resistance. Pfau (1990) found that television is distinct from print in its capacity to elevate the influence of source cues.

Video places greater reliance on the affective relational aspect of treatments as opposed to the content dimension. Ruesch and Bateson (1951) and Watzlawick, Beavin, and Jackson (1967) initially theorized that communication contains both a "report" dimension, which consists of a message's content, and "command," later referred to as "relational," dimension, which involves how people perceive their relationship with the source of a message (J. K. Burgoon & Hale, 1984). Meyrowitz (1985) applied this distinction to differences in the communication of media forms. Building on the previous work of McLuhan (1964) and Goffman (1969), Meyrowitz (1985) maintains that different media forms vary in the way that they communicate. For example, print is communicative, grounded in symbols and, as a result, nicely suited to presentation of arguments and facts, whereas television, because of the primacy of the visual channel, is expressive, stressing images and impressions; print is more discursive, and its messages are abstract, whereas television is presentational, emphasizing visual messages; finally, print is digital, featuring content, whereas video is analogic, stressing more intimate relational messages.

These distinctions drawn by Meyrowitz in print and television, or video, communication come down to one overarching difference: Print is about the content of a message, whereas video is more about the source of the message.

This rationale is supported in research that points to an accented role for source cues in television influence (Andreoli & Worchel, 1978; Chaiken, 1987; Chaiken & Eagly, 1983; Gold, 1988). Pfau (1990) compared the relative influence of five communication modalities, including print, television, and

radio media, plus public address and interpersonal communication. He reported that all communication forms were persuasive, compared to a control condition, but that there were with no differences in influence between modalities. However, results revealed that the factors responsible for influence varied across modalities; contribution of source overwhelmed content with television and interpersonal modalities, but content dominated source in print and public address forms.

The role that source plays in inoculation has received very limited attention to date (Pfau, 1997). Shortly after McGuire's initial studies, Freedman and Sears (1965) called for research comparing content and source approaches. Their call was unheeded, except for a study by Stone (1969) that reported that message content exerted more influence than source cues in inoculation treatments designed to foster resistance.

Relational messages have been reported to exert considerable impact on persuasion in those instances where communication form facilitates real or perceived personal contact between a source and a receiver, as is obvious in the example of interpersonal communication (J. K. Burgoon, 1980; J. K. Burgoon & Hale, 1987), but just as real, although less apparent, in the case of television (Pfau, 1990). Television creates the perception of contact (Levy, 1979; R. B. Rubin & McHugh, 1987). It fosters the illusion of interpersonal contact, even a sense of intimacy (Beniger, 1987; Horton & Wohl, 1956; Jamieson, 1988; Keating & Latane, 1976; Perse & Rubin, 1989).

As a result of the primacy of source over content, coupled with a heightened sense of intimacy, the video modality rewards a warmer, much more casual communication style (Jamieson, 1988; Keating & Latane, 1976; Meyrowitz, 1985; Pfau, 1990), similar to what is required in effective interpersonal communication (Levy, 1979). This manifests itself in terms of more positive relational messages. Relational messages communicate the way people perceive their relationship with another (J. K. Burgoon & Hale, 1984, p. 193). They can be transmitted verbally or nonverbally (J. K. Burgoon, Buller, Hale, & deTurck, 1984).

Pfau's (1990) study of factors that facilitate influence across communication modalities found that relational messages exerted much more influence than content in television, whereas the reverse was true for print communication. The dimensions of relational communication that have proven the most influential in studies focusing specifically on television communication include immediacy/affection, similarity/depth, and receptivity/trust (Pfau, 1990; Pfau, Diedrich, et al., 1993; Pfau & Kang, 1991).

Because no studies have compared communication modalities in inoculation, it can only be inferred how video and print forms compare, either in

terms of source versus content or the role of relational cues. Nonetheless, based on the logic developed above, this study posits the following:

> H3: Compared to print, video inoculation treatments initially instill positive relational perceptions of the source of treatments, which subsequently produces resistance to the source of persuasive attacks, and to the attacks themselves.

The final issue examined in this study is the effectiveness of print and video inoculation treatments at different points in time. At what point in time is resistance induced, and does this vary across treatment modalities? The issue of precise timing in resistance is an important process consideration.

This issue is relevant because of the finding of Pfau, Tusing, Koerner, et al. (1997) that specific elements of the inoculation model manifest their unique contribution to resistance at different points in time. For instance, with low- and moderately involving issues, inoculation treatments elicited perceived threat, and threat, in turn, produced an immediate impact in rendering attitudes more resistant. By contrast, inoculation's direct effect across all topics and, with the moderately involving topic, its indirect path through counterarguing occurred over time, not manifesting their influence until after administration of counterattitudinal attacks. Although there is no theoretical reason to expect that print and video inoculation treatments would differ across time, because this investigation anticipated that the two communication forms differ in the way they elicit resistance, this study posed the following research question:

> R2: Do print and video inoculation treatments vary in the timing of their unique contributions to resistance?

METHOD

Topic Selection

The investigation featured two issues, representing moderate and high issue involvement and reflecting an approximately equal distribution of opinion for and against. The issues were selected from a pool of 15 contemporary policy propositions on the basis of results of a survey of 75 undergraduates. The high-involvement issue (the manufacture, sale, and possession of handguns should be banned throughout the U.S.) scored a mean of 7.3 on a three-item, 10-interval, involvement scale that was adapted from an instrument originally developed by

Traylor (1981). This issue ranked among the top three policy propositions in involvement and was the only high-involvement issues to manifest a relatively even distribution of opinion. The moderate-involvement issue (the U.S. should legalize the sale and use of marijuana) scored 6.1 on the same scale and ranked eighth in involvement.

Participants

Participants were recruited from introductory courses in the School of Journalism and Mass Communication and the Department of Communication Arts at the University of Wisconsin—Madison. A total of 638 participants completed all four phases of the study (a retention rate of 95%).

Design and Independent Variables

Experimental condition was the single independent variable in the study. Experimental condition was operationalized as print inoculation treatment, video inoculation treatment, and control (no inoculation). The effectiveness of inoculation treatments was assessed by comparing the attitudes of the inoculated and control participants to counterattitudinal attacks, following exposure to the attacks. Reliability of all measures employed in the study was gauged using Cronbach's (1951) coefficient alpha.

Receiver prior attitude was employed as a covariate. Prior attitude was assessed with six bipolar adjective pairs employed in recent inoculation research. Adjective pairs were *bad/good, unfavorable/favorable, unacceptable/acceptable, foolish/wise, negative/positive*, and *wrong/right.* The reliability rating for prior attitude was .90.

Experimental Materials

Researchers prepared multiple messages for administration in the study. Two attack messages were written for each of the two topics: one opposing the proposition and directed to participants who favored it, and one favoring the proposition and directed to those who opposed it. Two distinct arguments were featured in each attack message. The attack messages ranged in length from 401 to 406 words. Each attack message was evaluated for written style and comprehensibility using Becker, Bavelas, and Braden's (1961) Index of Contingency with ratings ranging from 14.1 to 14.8, thus suggesting equivalence.

Six inoculation messages were written in response to each attack message: three inoculation-same and inoculation-different messages for each attack. Inoculation-same messages contained an explicit refutation of the content raised in the corresponding attack message, whereas inoculation-different messages consisted of generic content, with no rebuttal of specific content featured in the corresponding attack message.

Because inoculation theory posits that threat is a motivating catalyst in resistance, the first paragraph of each inoculation message was designed to elicit threat. Threat was operationalized as a warning of an impending and potentially influential attack against the position on the issue supported by the participant. The remainder of each inoculation message raised arguments that ran contrary to the participant's position on the issue, while providing systematic answers to those arguments. However, only inoculation-same messages dealt with the specific content that was contained in the corresponding attack message. The length of the 24 inoculation messages ranged from 301 to 303 words. The Index of Contingency ratings of the inoculation messages ranged from 13.6 to 15.5, suggesting equivalence.

All participants in the treatment conditions were exposed to a single inoculation message presented either via print or video. One of the researchers, a former media professional who teaches television broadcasting, produced the messages for video. In the video condition, the messages were delivered by a single source, a female graduate student with television announcing experience. The video messages were produced with a single camera focused on the announcer during most of the presentation. In addition, three 8- to 10-second video excerpts featuring scenes relevant to the issue being discussed were included in the presentation. Care was taken to insure that, except for intrinsic channel features, messages remained relatively constant across media. Source of the message was not identified in either the video or print conditions. Video messages were administered to the participants in viewing rooms, whereas print messages were administered in a large conference room.

Because this study was one facet of a larger investigation of resistance, most treatments were communicated via print. All together, 74 participants received video inoculation treatments, 381 received print messages, and 142 functioned as controls and received no inoculation treatment.

Procedure

The study was conducted in three phases. During Phase 1, the participants completed a questionnaire designed to provide basic sociodemographic

information and assess attitudes, involvement, and self-efficacy concerning each of the two issue propositions. They were told that they were participating in a study of message processing. Phase 1 took 2 days. Following Phase 1, researchers analyzed the preliminary results on attitude and involvement and, based on the results, assigned participants to conditions. They were assigned to the print inoculation, video inoculation, or the control condition on one of the two topics, consistent with their initial attitude. Issue involvement was trichotomized as low, moderate, or high, and assignment was made randomly, except that care was taken to insure equivalence in involvement across all cells in the design.

Then, Phase 2 and 3 experimental booklets were prepared for participants. Phase 2 booklets contained an inoculation message supporting attitudinal positions or instructions that participants report to a viewing room. Following exposure to the inoculation message, participants completed a questionnaire that assessed threat, the number and strength of counterarguments and responses to counterarguments, and for inoculated participants, the relational communication cues of the message's source. The Phase 3 booklets contained a persuasive attack message opposing the participants' initial attitudinal position, plus a questionnaire designed to evaluate the credibility of the source of the attack and attitude toward the position advocated in the attack. Phase 2 commenced 3 weeks after Phase 1 was completed and was conducted over a period of 3 days. Phase 3 commenced 27 days after Phase 2 was completed and continued for 12 days.

Dependent Measures

Five dependent measures were employed, three at Phase 2 and two at Phase 3. Following administration of inoculation messages during Phase 2, threat, counterarguing output, and perceptions of relational communication of the source of inoculation messages were evaluated.

Threat elicited by inoculation treatments was measured using five bipolar adjective pairs employed in all recent inoculation studies (e.g., Pfau & Burgoon, 1988; Pfau, Tusing, Koerner, et al., 1997). It was assessed immediately following administration of the inoculation treatments. Participants in inoculation and control conditions responded to the prospect that they could come in contact with persuasive information that might cause them to rethink their position on the issue in question. Scale items included *not risky/risky, nonthreatening/ threatening, not harmful/harmful, unintimidating/intimidating,* and *safe/ dangerous.* Reliability of the threat measure was .96. Another Phase 2 measure was counterarguing output. After indicating their attitudes at Phase 2,

participants completed an open-ended measure on which they identified possible arguments contrary to their own position and then listed potential answers to those arguments in the spaces provided. The procedure is based on the thought-listing technique pioneered by Brock (1967) and Greenwald (1968). However, past use of this technique alone has proven to be inadequate in inoculation research (Pfau, Tusing, Koerner, et al., 1997). Eagly and Chaiken (1993) have argued that thought listing does not reflect the amount of cognitive effort expended. In addition, thought listing, by itself, fails to acknowledge the prospect that respondents may view their own thoughts as varying in power and intensity, both in cognitive and affective terms. Therefore, after generating their list of arguments contrary to their position and answers to those arguments, respondents were asked to rate the perceived strength of arguments and answers on a 7-point scale.

Three researchers coded participant thoughts. They coded all declarative statements that opposed a participant's position as a counterargument and all statements that refuted, or answered, the counterargument as a response. One unique idea per space that met the criteria was counted, based on a scoring method previously employed by Brock (1967), Osterhouse and Brock (1970), and Petty, Wells, and Brock (1976). Researchers spent 2 hours discussing rating procedure and then participated in practice sessions. One researcher coded all counterarguments and responses, teaming with the two other researchers who each coded half. Coding took about 40 hours. Intercoder reliability was assessed via Krippendorff's Agreement Coefficient Alpha (1980). The following are the reliability coefficients for the coding pairs: for counterarguments: .91 and .98; and for responses: .97 and .94. The Cronbach's alpha for the rating of the strength of counterarguments and responses was .67.

Because resistance is based on the premise that inoculation treatments trigger the internal process of generating responses to arguments opposing the individual's attitude, thus rendering attitudes less resistant to attack, and because the sheer number of responses, by itself, does not reflect the perceived strength of responses, especially relative to the strength of arguments contrary to attitude, counterarguing output was operationalized in relative terms. Counterarguing output was computed: first, by multiplying the sheer number of counterarguments by respondents' perceptions of the average strength of counterarguments, and then multiplying the sheer number of responses to counterarguments by respondents' perceptions of the average strength of responses to counterarguments; second, the product of number and strength of counterarguments was subtracted from the product of number and strength of responses to counterarguments.

The final Phase 2 measure was participants' perceptions of the relational communication of the source of the inoculation treatments. Perceptions of relational communication were assessed using scales developed in previous factor-analytic research by J. K. Burgoon and Hale (1987). Three dimensions that have proven to be particularly powerful in social influence were employed in this investigation: *immediacy/affection, receptivity/trust,* and *similarity/depth.* Scale items asked participants the extent to which they agreed with a series of statements about the source: for immediacy/affection: the source communicated a sense of warmth, the source seemed enthusiastic in communicating, the source seemed interested in communicating with me, the source seemed involved in the communication; for receptivity/trust: the source seemed like the kind of person who would be willing to listen to me, the source seemed sincere in communicating to me, the source appeared interested in communicating with me, the source communicated a sense of honesty; and for the dimension of similarity/depth: the source made me feel he/she was similar to me, the source seemed friendly to me, the source appeared to care whether or not I liked him or her, the source acted as if he/she would like to get to know me better. Reliability ratings of the relational communication dimensions were as follows: immediacy/affection, .78; receptivity/trust, .81; and similarity/depth, .77.

During Phase 3, respondents' perceptions of the strength of the arguments contained in the counterattitudinal attacks, their attitudes toward persuasive attacks, and their perceptions of the source credibility of the source of the attacks were evaluated. Perceptions of the argument strength of the persuasive attack messages were assessed via three 7-point Likert-type scales. Using a procedure adapted from Pfau (1990), participants revealed the extent to which they agreed with three statements about the message: The message contained useful information; the message advanced a compelling case; and the message contained strong arguments. Reliability of the argument strength measure was .88.

Attitude toward the counterattitudinal attacks was assessed using six bipolar adjective pairs developed for use in resistance research by M. Burgoon, Cohen, Miller, and Montgomery (1978). Adjective opposite pairs were *unacceptable/ acceptable, foolish/wise, negative/positive, unfavorable/favorable, wrong/right,* and *bad/good.* Alpha reliability of the attitude scale was .96.

The factors and scales used to assess the credibility of the source of persuasive attacks were based on prior factor analytic research by McCroskey and colleagues (McCroskey, Holdridge, & Toomb, 1974; McCroskey, Jenson, & Valencia, 1973). These scales have proven to be controversial, however. Cronkhite and Liska (1976) maintained that the scales don't generalize across topics, situations, or audiences. McCroskey and Young (1981) argued that the

dimensions of competence and character are "adequate," although acknowledging that source credibility is one part of the broader construct of person perception. In addition, McCroskey and Jensen argued that competence, character, and sociability are "probably the most important" dimensions of source credibility, and that the scales generalize across subject populations (1975, p. 178). McCroskey's source credibility scales have been used extensively in past research (R. B. Rubin, Palmgreen, & Sypher, 1994), especially those evaluating the three dominant dimensions of competence, character, and sociability. Each of these dimensions of the credibility of the source of persuasive attacks was assessed using three bipolar adjective pairs, including the following: for competence: *unintelligent/intelligent, unqualified/qualified,* and *incompetent/competent;* for character: *selfish/unselfish, bad/good,* and *dishonest/honest;* and for sociability: *unsociable/sociable, gloomy/cheerful,* and *irritable/good natured.* Alpha reliability ratings of the source credibility dimensions were as follows: competence, .90; character, .82; and sociability, .78.

RESULTS

Statistical Analyses

As the initial step in assessing predictions, two one-way multivariate analyses of covariance (MANCOVA) were computed, each examining experimental condition means (print inoculation, video inoculation, and control). Initial attitude was employed as a covariate in both MANCOVAs.

One MANCOVA examined the process of resistance, exploring the impact of experimental condition on the Phase 2 variables of threat, counterarguing output, and relational communication of the source of inoculation messages. For the second MANCOVA, Phase 2 variables joined initial attitude as covariates. This MANCOVA examined the influence of experimental condition on the Phase 3 variables of the credibility of the source of counterattitudinal attacks, perceptions of the argument strength of the attacks, and overall attitude toward the persuasive attacks. Significant omnibus effects were followed by tests of simple effects and, where significant, by assessment of the pattern of means using planned comparisons for all predicted effects (Kirk, 1995) and Scheffe post hoc tests for nonpredicted effects.

Omnibus results are presented first. Then, the patterns of means are evaluated, first, in terms of the effectiveness of print and video inoculation treatments in conferring resistance to the counterattitudinal attacks, and second, with regard to the role and influence of print and video inoculation treatments in the process of resistance.

Finally, to provide further nuance concerning the workings of communication modality in inoculation, relationships between variables were assessed with structural equation analysis using a linear structural relationship (LISREL) technique (Joreskog, 1993). Maximum likelihood was the estimation method used to test the fit of the model. The hypothesized model included all relevant Phase 2 and 3 measures.[2] Communication modality was operationalized as print and video (Because we were only interested in relative influence of print versus video inoculation treatments in the process of resistance, the control condition was not included in the structural equation modeling, SEM, analyses.). The print condition was coded low, and the video condition was coded high. All variables have been rescaled to reflect unit variance, resulting in fixed parameters taking on new values. The model examined the influence of communication modality on Phase 2 measures of threat, counterarguing output, and relational communication, and the impact of these variables on Phase 2 attitudes; then, the model examined the influence of communication modality and all Phase 2 measures on perceptions of argument quality and credibility of the source of the persuasive attacks, and, finally, the influence communication modality and all Phase 2 and 3 measures on participants' attitudes toward the persuasive attacks. Because operationalization of communication modality did not include the control condition, the model does not reflect the influence of inoculation in resistance. Rather, the model simply depicts the relative influence of print and video inoculation treatments in the process of resistance.

Omnibus Results

The results of both MANCOVAs reveal main effects involving experimental condition. The first MANCOVA examined experimental condition across the Phase 2 variables of threat, counterarguing output, and relational communication of the source of inoculation messages. Initial attitude was treated as a covariate for this analysis, and it was statistically significant, $F(5,589) = 2.85$, $p < .05$, $\eta^2 = .02$. Univariate tests for initial attitude were significant on all Phase 2 measures except for counterarguing output. The initial attitude covariate was significant on the dependent measures of threat, $F(1,593) = 4.40$, $p < .05$, $\eta^2 = .01$, immediacy/affection, $F(1,593) = 3.87$, $p < .05$, $\eta^2 = .01$, receptivity/trust, $F(1,593) = 7.47$, $p < .01$, $\eta^2 = .01$, and similarity/depth, $F(1,593) = 8.63$, $p < .01$, $\eta^2 = .02$. Betas were positive, except for threat. The omnibus MANCOVA indicated a nearly significant main effect for experimental condition, $F(10,1178) = 1.62$, $p < .10$, $\eta^2 = .01$. Tests of simple effects revealed that experimental

condition was significant on Phase 2 measures of threat, $F(2,594) = 3.39$, $p < .05$, $\eta^2 = .01$, and similarity/depth, $F(2,594) = 3.38$, $p < .05$, $\eta^2 = .01$.

The second MANCOVA examined the effectiveness of print and video inoculation treatments in conferring resistance to Phase 3 counterattitudinal attacks. Initial attitude and the Phase 2 measures of threat, counterarguing output, and the relational communication of the source of the inoculation treatments were treated as covariates. The results indicate that the following covariates were significant: initial attitude, $F(5,583) = 7.38$, $p < .01$, $\eta^2 = .06$, counterarguing output, $F(5,583) = 4.07$, $p < .01$, $\eta^2 = .03$, receptivity/trust, $F(5,583) = 2.35$, $p < .05$, $\eta^2 = .02$, and similarity/depth, $F(5,583) = 2.79$, $p < .05$, $\eta^2 = .03$. The univariate tests reveal significant differences for initial attitude on competence, $F(1,587) = 5.71$, $p < .05$, $\eta^2 = .01$ (positive beta), and sociability, $F(1,587) = 11.16$, $p < .01$, $\eta^2 = .02$ (negative beta); for counterarguing output (all betas negative) on attitude toward attacks, $F(1,587) = 9.94$, $p < .01$, $\eta^2 = .02$, argument strength, $F(1,587) = 16.92$, $p < .01$, $\eta^2 = .03$, competence, $F(1,587) = 7.87$, $p < .01$, $\eta^2 = .01$, character, $F(1,587) = 10.86$, $p < .01$, $\eta^2 = .02$, and sociability, $F(1,587) = 3.99$, $p < .05$, $\eta^2 = .01$; for receptivity/trust on attitude toward attacks, $F(1,587) = 5.66$, $p < .05$, $\eta^2 = .01$ (negative beta); and for similarity/depth on character, $F(1,587) = 5.66$, $p < .05$, $\eta^2 = .01$ (negative beta).

The omnibus MANCOVA revealed a significant main effect for experimental condition, $F(10,1168) = 3.74$, $p < .01$, $\eta^2 = .03$. Tests of simple effects were significant on the Phase 3 variable of attitude toward counterattitudinal attacks, $F(2,587) = 11.77$, $p < .01$, $\eta^2 = .04$, and approached significance on perceptions of the character, $F(2,587) = 2.85$, $p < .06$, $\eta^2 = .01$, and competence, $F(2,587) = 2.54$, $p < .08$, $\eta^2 = .01$, of the source of attacks.

Impact of Modality on the Concepts of Threat and Counterarguing

Hypothesis 1 posited that, for people who receive an inoculation treatment, as compared to those who do not, print inoculation treatments are more effective than video treatments in conferring resistance. This prediction was not supported. As Table 1 illustrates, compared to controls, both print and video inoculation treatments promoted resistance to counterattitudinal attacks, $F(1,587) = 16.32$, $p < .01$, $\eta^2 = .06$. But, the pattern of print and video means was contrary to prediction. Video was superior to print in instilling resistance, but mean differences fell short of statistical significance ($t = 1.92$, $p < .07$).

TABLE 1
Threat, Counterarguing Output, and Attitude Means as a Function of Experimental Condition

	Experimental Condition		
Dependent Measure	Print Inoculation[a]	Video Inoculation[b]	Control Inoculation[c]
Threat			
M	3.09*	3.24*	2.75
SD	1.55	1.43	1.48
Counterarguing Output			
M	1.175	1.41**	1.05
SD	1.93	1.825	2.04
Attitude toward Attack			
M	3.34*	3.11†	4.03
SD	1.49	1.495	1.54

Note. Threat and attitude were measured using 7-point scales. Higher scores on the threat measure signify greater threat in inoculation. Higher scores on the attitude measure indicate greater influence of attacks. Counterarguing output was operationalized as the number of and strength of (7-point scales) responses to counterarguments minus number and strength of counterarguments.

[a]$n = 381$. [b]$n = 74$. [c]$n = 142$.

*Significant compared to control at $p < .01$.

**Significant compared to control at $p < .05$.

†Nearly significant compared to print inoculation at $p < .10$.

Research Question 1 and Hypothesis 2 examined differences in print and video inoculation treatments in impacting the critical theoretical components in the process of resistance: threat and counterarguing. Research Question 1 probed whether print and video inoculation treatments vary in their capacity to elicit receiver threat, whereas Hypothesis 2 predicted that, compared to video, print treatments elicit more counterarguing output.

Results of planned comparisons on threat revealed that, in comparison to the control condition, both print and video were effective in inducing receiver threat, $F(1,594) = 6.84$, $p < .01$, $\eta^2 = .01$. However, as Table 1 illustrates, the pattern of means for print and video were opposite what was predicted, although the differences were not statistically significant. The planned comparisons on counterarguing output indicated that, contrary to prediction, only video inoculation treatments elicited greater counterarguing output, compared to

controls, $F(1,594) = 2.63$, $p < .05$, $\eta^2 = .01$. However, the difference in counterarguing output between the print and video modalities was not significant.

Thus, the results indicate that both approaches are capable of eliciting receiver threat and instilling resistance to the influence of persuasive attacks. To the extent that one treatment approach is superior to another, contrary to prediction, results intimate a slight advantage for video over print treatments, due mainly to video's success in generating counterarguing output.

Impact of Modality on the Role and Influence of Source Factors

The more interesting theoretical question that is raised in this investigation concerns the prospect that video inoculation treatments may introduce as yet unexplored nuance to the process of resistance by elevating source considerations. Hypothesis 3 predicted that, compared to print, video inoculation treatments initially instill positive relational perceptions of the source of such treatments, which in time produce resistance to the source of a persuasive attack and to the attack itself.

Two steps were required to evaluate this prediction. First, it was necessary to examine the impact of treatments on receiver perception of relational cues of the source of the treatments at Phase 2, following their administration. Second, relational cues were incorporated as covariates in the analysis of the impact of video and print treatments on receiver perceptions of the source of persuasive attacks, and on the influence of attacks, following administration of counterattitudinal attacks in Phase 3.

At Phase 2, the results indicate modest differences in the effectiveness of video and print treatments in inducing positive relational perceptions toward the source of inoculation messages. The pattern of means in Table 2 reveals that the video treatments elicited more positive relational perceptions, but differences in video and print were significant only on the single dimension of similarity/depth, $F(1,594) = 8.38$, $p < .01$, $\eta^2 = .01$.

As indicated previously, the results of the omnibus MANCOVA at Phase 3 revealed that initial attitude, counterarguing output, receptivity/trust, and similarity/depth served as significant covariates. Of particular interest as to the factors contributing to resistance, counterarguing output was associated with greater resistance on the measures of attitude toward the persuasive attacks, perceptions of argument strength of the attacks, and perceptions of competence, character, and sociability of the source of the attacks; receptivity/trust was related to more negative attitudes toward attacks; and similarity/depth was associated

with negative perceptions of the character of the source of attacks. Thus, the counterarguing output generated at Phase 2, in conjunction with the more positive receptivity/trust and similarity/depth relational perceptions elicited at Phase 2, all contributed in some manner to resistance achieved at Phase 3.

TABLE 2
Inoculation Source Relational Means as a Function of Inoculation Media

	Inoculation Media	
Relational Dimension	Print[a]	Video[b]
Immediacy/Affection		
M	4.17	4.31
SD	1.24	1.24
Receptivity/Trust		
M	4.62	4.77
SD	1.25	1.15
Similarity/Depth		
M	3.25	3.58*
SD	1.17	1.05

Note. Dimensions of relational communication of the source of inoculation treatments was measured using 7-point scales. Higher scores signify more positive ratings of the source of inoculation treatments.
[a]$n = 381$. [b]$n = 74$.
*Significant compared to print inoculation at $p < .01$.

The results revealed differences between the print and video inoculation treatments in their capacity to foster more negative perceptions of the source of counterattitudinal attacks at Phase 3. Video treatments generated more negative perceptions of the competence, $F(1,587) = 5.32$, $p < .01$, $\eta^2 = .01$, and character, $F(1,587) = 5.30$, $p < .01$, $\eta^2 = .01$, of the source of persuasive attacks. As Table 3 reveals, there were no differences involving sociability. There were no differences between print and video treatments in perceptions of argument strength of the attacks.

Finally, Research Question 2 probed whether print and video inoculation treatments vary with regard to the timing of their unique contributions to the process of resistance. As previously reported, at Phase 3, following exposure to counterattitudinal attacks, both the print and video inoculation treatments fostered resistance, but the differences between them fell just short of statistical significance. To explore this research question, a one-way ANOVA was computed at Phase 2, immediately following the administration of the

inoculation treatments, on the influence of experimental condition on participant attitudes. The results were significant, $F(2,594) = 3.75$, $p < .05$, $\eta^2 = .01$. However, the pattern of means at Phase 2 differed. Compared to controls ($M = 3.85$), video inoculation treatments ($M = 3.40$) elicited immediate resistance ($t = 2.60$, $p < .05$), and were superior to print ($M = 4.04$) treatments ($t = 4.24$, $p < .01$), which did not produce an immediate impact. Subsequently, the video treatment and control means did not change appreciably between Phases 2 and 3; however, the print inoculation means declined significantly ($t = 6.13$, $p < .01$). Thus, as Table 1 reveals, both video and print inoculation treatments conferred resistance to the influence of persuasive attacks at Phase 3. However, whereas video treatments triggered an immediate impact in the process of resistance, print messages required time, eventually inducing resistance, but only following respondents'exposure to persuasive attacks.

TABLE 3

Counterattitudinal Attack Message Source Credibility Means as a Function of Inoculation Media

	Inoculation Media	
Credibility Dimension	Print[a]	Video[b]
Competence		
M	4.47	4.12*
SD	1.34	1.31
Character		
M	4.55	4.26*
SD	1.10	1.18
Sociability		
M	4.33	4.225
SD	0.95	0.91

Note. Dimensions of the credibility of the source of persuasive attacks was measured using 7-point scales. Higher scores signify more positive ratings of the source of attacks, thus indicating greater influence of the counterattitudinal attacks.

[a]$n = 381$. [b]$n = 74$.

*Significant compared to print inoculation at $p < .01$.

The Overall Picture

Structural equation analysis provides an overall view of the relative influence of print and video inoculation treatments in the process of resistance. First, a model was posited based on the results of the tests of hypotheses and research questions

reported above (Joreskog, 1993). Second, the model was modified by opening or closing paths based on the Langranian Multiplier (LM) Test (Bollen, 1987). The final model fit the data well, as indicated by a nonsignificant χ^2 (39, N = 455) = 38.35, p = .50, and a comparative fit of .99.

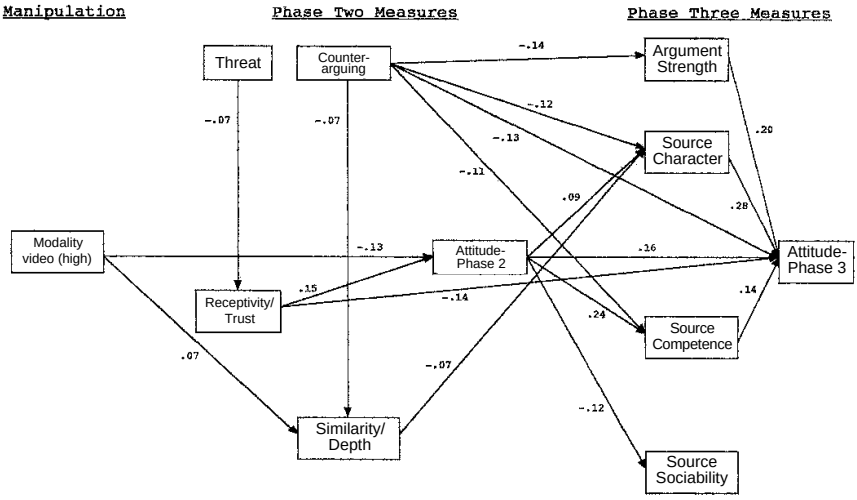

Figure 1. Final structural model. Path diagram of the resistance model using standardized estimates. Operationalization of communication modality did not include the control condition, therefore the model does not reflect the influence of inoculation in resistance, which is a function of a comparison of the influence of persuasive attacks on treated versus control participants. Rather, the model depicts the relative influence of print and video inoculation treatments in the process of resistance. N = 445.

Figure 1 contains estimates for standardized solutions.[3] The z values for all the factor-to-factor paths depicted in the model were all significant at $p < .05$: communication modality to the Phase 2 measures of relational similarity/depth (z = 2.18) and attitude (z = –2.77); Phase 2 threat to Phase 2 relational receptivity/trust (z = –2.11); Phase 2 counterarguing output to Phase 2 relational similarity/depth (z = –2.17), and to Phase 3 measures of perceived argument strength (z = –3.03), perceptions of character (z = –2.90) and competence (z = –2.78) of the source of the attacks, and attitude toward attacks (z = –3.56); Phase 2 relational receptivity/trust to Phase 2 attitude (z = 3.19), and Phase 3 attitude toward the persuasive attacks (z = –3.83); Phase 2 relational similarity/depth to Phase 3 perceptions of character of the source of the attacks (z = –2.19); Phase 2

attitude to Phase 3 measures of perceptions of character ($z = 2.33$), competence ($z = 6.77$), and sociability ($z = –2.75$) of the source of persuasive attacks, and attitude toward attacks ($z = 4.02$); and the Phase 3 measures of perceived strength of argument of the persuasive attacks ($z = 4.17$), source character ($z = 5.16$), and source competence ($z = 2.27$) to the Phase 3 measure of attitude toward attacks.

The SEM results provide additional support for the results of the previous analyses. The model reveals that print and video inoculation treatments did not differ in terms of their influence on threat or counterarguing, theoretically pivotal elements in resistance. However, compared to print, video inoculation elicited positive perceptions of relational similarity/depth, which subsequently resulted in more negative perception of the character of the source of persuasive attacks and in resistance to the attacks themselves. As indicated previously, compared to controls, both print and video inoculation treatments initially elicited greater counterarguing output and, as the model reveals, counterarguing output served as a pivotal element in resistance, contributing indirectly, by fostering negative perceptions of the character and competence of the source of persuasive attacks, and directly to resistance to attacks. Finally, the results indicate that, compared to print, video inoculation treatments elicited an immediate impact, triggering resistance to attitudes at Phase 2, an effect that extended to Phase 3.

DISCUSSION

This is the first study to examine the role and influence of print and video modalities in inoculation. A number of recent studies have moved beyond print as the vehicle for the delivery of inoculation treatments, instead, using the video modality to promote resistance (Godbold, 1998; Pfau, Van Bockern, & Kang, 1992). Further uses of inoculation in applied settings, such as politics, public opinion, advertising, public relations, or preventative health campaigns, are likely to rely increasingly on video forms to instill resistance. Given these developments, it is important, from both theoretical and applied perspectives, to develop a much clearer understanding of the role and influence of communication form in the process of resistance.

This study featured two controversial issues, representing moderate and high involvement and a roughly equal distribution of opinion both for and against. The study compared print and video inoculation treatments, both in terms of their effectiveness and their role in the process of resistance. The study reasoned that, because communication media manifest unique symbol systems that shape the way messages are communicated and how they are received (Chesebro, 1984; Graber, 1987; Meyrowitz, 1985, 1994, 1997; Pfau, 1990; Salomon, 1987), communication modality or form should play an integral role in resistance.

However, communication form, in influence and in resistance, in particular, "has been treated as a 'neutral'conduit of message content" (Pfau, 1990, p. 195), and has been largely ignored (McGuire, 1986).

The results suggest that print and video forms do not differ appreciably in their capacity to confer resistance, but they vary considerably in terms of *how* they promote resistance. Both forms promoted resistance to counterattitudinal attacks but, contrary to Hypothesis 1, print was not superior to video in conferring resistance.

The study explored differences in video and print forms in impacting the key theoretical components in resistance: threat, which motivates the individual to initiate the effort to bolster attitudes, and counterarguing, which is the cognitive process of raising potential challenges to attitudes and generating possible responses to them (Pfau, 1997). The results indicate that both approaches generated significant threat levels, but that only video treatments elicited more counterarguing output compared to controls. The latter finding was contrary to prediction. It was reasoned that print treatments would be more likely to generate active message processing in receivers and, therefore, produce more counterarguing output, because it is a more involving medium (Chaiken & Eagly, 1976, 1983; Chesebro, 1984; Graber, 1987, 1990; Krugman, 1965; Markus & Zajonc, 1985; Petty & Cacioppo, 1986; Petty, Cacioppo, & Kasmer, 1988; Salomon, 1981; Wright, 1974). At first glance, the counterarguing finding appears to support the results of past research by Worchel et al. (1975) and Tyebjee (1979), which question the superiority of the print form in eliciting active cognition. However, results of planned comparisons and SEM analyses reveal that apparent superiority for video over print in promoting counterarguing output was not statistically significant. Further study is required in order to definitively resolve this matter.

The most important issue addressed in this investigation is whether print and video treatments may employ alternative routes to resistance. The study reasoned that, because video places more reliance than print on source considerations (Andreoli & Worchel, 1978; Chaiken, 1980, 1987; Chaiken & Eagly, 1983; Gold, 1988; Pfau, 1990), particularly more intimate relational cues (Pfau, 1990; Pfau & Kang, 1991), video inoculation treatments initially instill positive relational perceptions of the source of such treatments, which subsequently produce resistance to the source of persuasive attacks and to the attacks themselves. The results reveal that video treatments elicited more positive relational perceptions of the source of inoculation messages at Phase 2, but the finding was only significant for the relational dimension of similarity/depth. Subsequently, following exposure to persuasive attacks in Phase 3, the relational dimension of

similarity/depth directly militated perceptions of the character of the source of attacks. Subsequent regression analysis examined the influence of the source credibility dimensions of character, competence, and sociability on Phase 3 attitudes, while controlling for initial attitudes. The results revealed that the credibility dimensions of character ($b = .30$, $p < .01$) and competence ($b = .24$, $p < .01$) both predicted attitudes toward persuasive attacks. In addition to similarity/depth, the relational dimension receptivity/trust negatively influenced Phase 3 attitudes. Thus, two of the three relational dimensions contributed to resistance during Phase 3: similarity/depth, indirectly through perceptions of the character of the source of attacks, and directly; and receptivity/trust, directly. SEM results further reinforce these findings.

Overall, the pattern of results supports the prediction that video inoculation treatments employ a unique route in conferring resistance, one that relies much more heavily on source factors. This finding provides empirical support for the position advanced by Meyrowitz (1985, 1994, 1997) that media forms vary in the manner in which they communicate: Print places predominate emphasis on the content of messages, whereas video brings into play the role and influence of sources of messages. The results of this study suggest new urgency in Freedman and Sears's (1965) initial call for more research comparing content and source approaches to resistance.

Finally, results reveal that video and print forms differ in the timing of their particular contributions to the process of resistance. Video treatments trigger an immediate impact after their administration. By contrast, print treatments require time, eventually inducing resistance, but not until actual exposure to persuasive attacks. This result, coupled with the Pfau, Tusing, Koerner, et al. (1997) finding that threat's contribution to resistance is more immediate, whereas the influence of inoculation, generally, and counterarguing, specifically, is delayed, indicate the need for further research addressing the timing of various elements in the process of resistance.

The most important limitation of the results of this study concerns the operationalization of the print and video message forms. First, operationalization of the video manipulation was admittedly narrow, featuring a single source, and produced using a single camera focused on the source most of the time with only brief cuts to other video material. This approach was designed to minimize intrinsic channel features. Future research may consider the use of multiple sources and alternative presentational styles in order to determine whether these findings will replicate using varied sources and operationalizations of video. Second, this investigation compared the relative effectiveness of print and video inoculation treatments in conferring resistance to the influence of print attacks.

Further research is needed that compares the efficacy of print and video inoculation in fostering resistance to print and video persuasive attacks.

NOTES

[1] Social inoculation should not be confused with inoculation, because the former does not contain threat. In addition, social inoculation has been criticized for methodological failings (see Best, Thomson, Santi, Smith, & Brown, 1988; Flay, 1985; Foon, 1986).

[2] The three Phase 2 relational variables have been allowed to freely covary within the model. Although the three relational variables are interrelated, there is no clear causal claim that can be made across these variables. Also, the Phase 3 source and argument strength variables were permitted to freely covary with one another. Once again, no clear causal claim can be made across these variables. The model accounts for 38% of the variance in Phase 3 attitude toward the persuasive attacks.

[3] The immediacy/affection variable was not influenced by any other variable in the model, nor did it have any direct influence on any of the other variables in the model. Consequently, this variable was discarded from Figure 1.

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