Attitude Accessibility as an Alternative Explanation for How Inoculation Confers Resistance

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The investigation examined attitude accessibility as an alternative to the accepted explanation, which is based on threat and counterarguing, for the way that inoculation confers resistance to influence. A total of 333 participants took part in the study in three phases spanning 36 days. The results of multivariate and correlational analyses indicated that inoculation treatments confer resistance, in part, by promoting attitude accessibility. Inoculation treatments immediately elicit attitude accessibility, which enhances attitude strength. Attitude strength, in time, contributes to resistance to the influence of counterattitudinal attacks. The theoretical implications of these findings are discussed.

Eagly and Chaiken (1993) characterize inoculation as "the grandparent theory of resistance to attitude change" (p. 561). They term McGuire's inoculation analogy "clever and valid," but call for further study about the process of resistance (p. 568).

There is no question that inoculation works. Studies support the efficacy of inoculation to promote resistance to influence both in the laboratory (McGuire, 1961a, 1961b, 1962, 1964, 1966; McGuire & Papageorgis, 1961, 1962; Papageorgis & McGuire, 1961; Pfau, Holbert, Zubric, Pasha, & Lin, 2000; Pfau, Szabo, Anderson, Morrill, Zubric, & Wan, 2001b; Pfau et al., 1997a; Pfau et al., 1997b) and in various applied settings such as adolescent smoking prevention (Pfau & Van Bockern, 1994; Pfau, Van Bockern, & Kang, 1992; Szabo & Pfau, 2001), adolescent drinking prevention (Godbold & Pfau, 2000), political campaigns (Pfau & Burgoon, 1988; Pfau, Kenski, Nitz, & Sorenson, 1990; Pfau, Park, Holbert, & Cho, 2001a), commercial advertising (Pfau, 1992), and public relations (Burgoon, Pfau, & Birk, 1995; Wan & Pfau, 2001). Much of this research is recent in nature, which suggests a resurgence of theoretical and applied interest in inoculation. Yet, as Eagly and Chaiken (1993) advise, more research is needed to increase understanding of how inoculation works.

The Traditional Explanation

Inoculation theory posits that two components contribute to resistance: threat and refutational preemption. Threat consists of a forewarning of impending challenges to existing attitudes. The threat element serves as a motivational trigger, stirring a

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receiver to strengthen attitudes, setting in motion the internal process of resistance. The second element, refutational preemption, triggers the process of counterarguing, which involves raising, and then answering, specific challenges to attitudes.

Research confirms the dual roles of threat and counterarguing in the process of resistance. Initially, threat was inferred from the results of early studies revealing comparable efficacy for refutational-same and -different inoculation messages (refutational-same treatments systematically preempt specific counterarguments raised in subsequent attacks; refutational-different treatments are generic in nature in that they address content not raised in subsequent attacks) (McGuire, 1961b, 1962, 1964, 1966; Papageorgis & McGuire, 1961). Later research explicitly measured threat, with the results revealing that greater elicited threat enhanced resistance to subsequent influence attempts (Pfau, 1992; Pfau & Burgoon, 1988; Pfau et al., 1990, 1992, 1997a, 2001b). Early studies also inferred the presence of overt counterarguing in receivers.

More recent research confirms the roles of both threat and counterarguing in resistance. Pfau and colleagues (1997a, 2001b) measured both threat and counterarguing and employed structural equation modeling to pinpoint the key elements in the process of resistance. Results of these studies confirmed that inoculation works much as McGuire had envisioned: Threat triggers overt counterarguing, and both produce resistance to influence.

The results of recent studies, however, suggest that more is at work in resistance than simply threat and counterarguing. The results revealed a direct path from the administration of the inoculation treatment to subsequent resistance (Pfau et al., 1997a, 2001b). The presence of a direct path implies the possibility of, as yet, unexplained elements in the process of resistance. Insko (1967) was the first to raise the specter of an additional mechanism in resistance. He observed: "Beyond these defense alerting [threat element] and defense producing [refutational preemption element] mechanisms, it is entirely possible that other mechanisms result in the creation of defenses" (p. 319); he concluded that, "a complete explanation of resistance to persuasion will depend upon the inoculation theory mechanisms as well as upon ... additional mechanisms" (p. 328). This investigation posits that attitude accessibility is such a mechanism. It is offered as an alternative, or complimentary, explanation for the way inoculation confers resistance.

Attitude Accessibility as an Alternative Explanation for Resistance

Attitude accessibility refers to the ease of activating an attitude from memory (Fazio, 1986, 1995; Fazio, Chen, McDonel, & Sherman, 1982; Fazio, Powell, & Herr, 1983; Roskos-Ewoldsen, 1997). Attitude accessibility operates from a view of attitudes, which is based on network models of memory (see Anderson, 1983; Greene, 1984; Smith, 1994). Such models assume that information is represented in memory as nodes. Nodes that are associated in some manner are connected via associative pathways. Based on the network model of memory, attitudes are viewed as associations in memory between an attitude object and evaluation of the object.

The network model perspective also stipulates that the strength of the associative pathways in memory varies as a function of the relatedness of any two nodes. Nodes that are highly related are assumed to be connected by stronger pathways (Anderson, 1983; Wyer & Srull, 1989). The strength of association between two objects determines how accessible the two objects are in relation to one another, with

stronger associations resulting in higher levels of accessibility of one object in relation to the other. Information easy to retrieve from memory is said to be highly accessible, whereas information difficult to retrieve is low in accessibility.

Associative strength can be viewed in terms of an attitude/nonattitude continuum (Fazio, 1986; Roskos-Ewoldsen & Fazio, 1992). At one extreme, individuals may possess no a priori evaluation of the object stored in memory. As one moves further along the continuum an evaluation is available in memory and the strength of the association between the object and the evaluation increases. As the strength of association between the object and the evaluation increases, so does the probability that the attitude will be activated given observation of the attitude object. At the other extreme is the firmly established association. In this instance the strength of the association between the attitude object and the evaluation of that object is sufficiently strong such that evaluation is capable of being activated automatically from memory upon mere observation of the attitude object. The attitudinal response is automatic. Studies confirm that attitudes toward a word can be accessed automatically from memory upon mere observation of the word or object (e.g., Fazio et al., 1982; Fazio, Sanbonmatsu, Powell, & Kardes, 1986; Powell & Fazio, 1984; Roskos-Ewoldsen & Fazio, 1992).

Determining whether or not an inoculation treatment fosters attitude accessibility is important because accessible attitudes are highly functional and influence whether subsequent persuasive messages relevant to that attitude are attended to and processed and whether such messages are able to produce an attitudinal or behavioral response (for reviews see Fazio, 1989; Fazio & Roskos-Ewoldsen, 1994; Fazio, Roskos-Ewoldsen, & Powell, 1994; Roskos-Ewoldsen, 1997; Roskos-Ewoldsen, Apran-Ralstin, & St. Pierre, 2002). If inoculation treatments enhance attitude accessibility, it provides an additional explanation for how inoculation works to maintain an individual's attitude. Although inoculation itself has not been studied in the context of attitude accessibility, research indicates that accessible attitudes are resistant to persuasion in much the same manner that inoculated attitudes are resistant to influence (e.g., Fazio & Williams, 1986; Houston & Fazio, 1989; Roskos-Ewoldsen, 1997).

This study posits that inoculation enhances accessibility of attitudes from memory. The refutational preemption component of inoculation treatments should elicit more complex belief networks in relation to an attitude and more elaborative message processing. More elaborative message processing involves cognitive work, which directly contributes to attitude accessibility (Chaiken, Liberman, & Eagly, 1989; Petty & Cacioppo, 1986; Petty & Wegener, 1998; Sherman, 1987; Wu & Shaffer, 1987).

The role of attitude accessibility in resistance may be direct, but, more likely, it is indirect via increases in attitude strength. Research indicates that more elaborative processing produces more integrated attitudes (Chaudhuri & Buck, 1995) and makes pathways linked to attitudes stronger (Kardes, 1988; Petty, Haugtvedt, & Smith, 1995; Roskos-Ewoldsen, 1997; Staymen & Kardes, 1992). Other studies document a positive association between attitude accessibility and attitude strength (e.g., Fazio, 2001; Fazio et al., 1986; Kokkinaki & Lunt, 1997; Roskos-Ewoldsen, 1997: Roskos-Ewoldsen et al., 2002) and between attitude strength and resistance to influence (Bassili, 1996; Swann & Ely, 1984; Swann, Pelham, & Chidester, 1988).

Based on this rationale the current study posits that, compared to controls (no inoculation), for participants who receive an inoculation treatment:

H1: Inoculation treatments immediately enhance attitude accessibility, which promotes attitude strength and, in time, fosters resistance to persuasive attacks.

Role of Issue Involvement in Resistance

Issue involvement is defined as an individual's perception of the importance or salience of an attitude object (Zaichkowsky, 1985), what Johnson and Eagly (1989) call "outcome-relevant involvement" and Petty and Cacioppo (1979) term "issue involvement." Issue involvement affects people's motivation to process information (Burnkrant & Sawyer, 1983; Chaiken, 1980; Petty & Cacioppo, 1986). Consequently, research indicates that issue involvement is associated positively with both attitude accessibility (Kardes, 1988; Roskos-Ewoldsen, 1997; Yi, Phelps, & Roskos-Ewoldsen, 1998) and attitude strength (Fazio, 1989; Petty et al., 1995; Petty, Priester, & Brinol, 2000), and that issue involvement both directly and indirectly contributes to resistance (Pfau et al., 1997a, 2001b). Hence, this study posits that:

H2: Greater issue involvement is associated positively with attitude accessibility, attitude strength, and resistance to persuasive attacks.

Methods

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 policy propositions based on the results of a previous survey.

Participants

Participants were recruited from introductory communication and journalism courses at the University of Wisconsin, Madison. A total of 333 participants completed all three phases of the study.

Design and Independent Variables

The investigation employed a 2×2 factorial design. The independent variables were experimental condition (inoculation and control) and issue (banning handguns, a relatively high-involvement issue, and legalizing marijuana, a moderate-involvement issue). Reliability of all scales was gauged using Cronbach's coefficient alpha.

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. The attack messages were longer than the inoculation messages because attacks needed to contain multiple counterarguments and blended approaches, whereas inoculation treatments featured single counterarguments and approaches.

Attack messages were evaluated for written comprehensibility using Becker, Bavelas, and Braden's (1961) Index of Contingency. The Index of Contingency assesses the readability of sentences. There are many readability measures: the

Gunning Fog Index, which emphasizes word difficulty; the Flesch Readability Formula, which stresses word and sentence length; and others (for a summary, see McArthur, 1992, or Zakaluk & Samuels, 1988). The Index of Contingency was chosen because of its emphasis on word *usage* and because it has been used in inoculation research since the 1970s and, therefore, provides a frame of reference for comparing treatment messages across years of resistance research. In interpreting Index of Contingency ratings, lower scores suggest diversity in word use, and higher ratings signify repetition in word use. The Index of Contingency was used to insure that the messages employed in the investigation were relatively similar in readability. Ratings of attack messages ranged from 14.1 to 14.8 ($SD = 0.26$), thus suggesting equivalence.

Inoculation messages were designed consistent with past research. All together, four inoculation messages were written in response to each of the attack messages. Messages were written as inoculation same or different, following the same strategy used in almost all inoculation studies dating back to McGuire's initial investigations. All inoculation-same messages contained an explicit refutation of content raised in the corresponding attack message, whereas all inoculation-different messages consisted of generic content, with no rebuttal of specific content contained in the corresponding attack message.[1]

The first paragraph of each inoculation message was designed to elicit threat. Threat was defined 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 contrary to a participant's position on the issue, and provided systematic answers to those arguments. Nevertheless, only inoculation-same messages dealt with the specific content that was contained in the corresponding attack message.

The length of the 16 inoculation messages ranged from 301 to 303 words. Index of Contingency ratings ranged from 13.6 to 15.5 ($SD = 0.36$), suggesting equivalence.

Procedure

The study was conducted in three phases. During Phase 1 the participants completed a questionnaire designed to provide basic sociodemographic information and to assess prior attitudes and issue involvement on each of the two issue propositions. They were told that they were participating in a study of message processing. Phase 1 was conducted over a period of three days. After Phase 1 researchers analyzed preliminary results on receiver attitude and involvement and, based on the results, assigned participants to conditions. Participants were assigned to one of the inoculation conditions or to the control condition on one of the two topics. Selection was random except that participants were assigned to a condition consistent with their initial attitude (e.g., either for or against either legalizing sale and use or marijuana or banning of handguns), and care was taken to insure that each of the cells in the design reflected an approximate equivalence of low-, moderate-, and high-involved participants.

Next, Phase 2 and 3 experimental booklets were prepared for participants. Phase 2 booklets contained an inoculation message supporting attitudinal positions and a questionnaire that assessed threat, attitude accessibility, and strength of attitudes. Phase 3 booklets contained an attack message opposed to the participants' initial attitudinal position and a questionnaire that assessed attitude toward the position

advocated in the counterattitudinal attack. Phase 2 commenced three weeks after Phase 1 was completed and was conducted over a period of 11 days. Phase 3 began 5 days following the completion of Phase 2 and continued for 17 days.

Measures

Issue involvement was assessed at Phase 1 and was defined as the importance or salience of the topic. It was measured using an abbreviated version of Zaichkowsky's (1985) Personal Involvement Inventory (PII). Six items of the PII, pertaining to policy issues, were employed in this study, including: insignificant/significant, unimportant/important, of no concern/of much concern, means nothing/means a lot, irrelevant/relevant, and doesn't/does matter to me. Reliability for the issue involvement scale was .88.

Threat elicited by inoculation treatments was measured using five bi-polar adjective pairs, which have been used in all recent inoculation studies (e.g., Pfau et al., 1997a, 2001b). It was assessed at Phase 2 following the 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. The scale items were: unintimidating/intimidating, nonthreatening/threatening, not risky/risky, not harmful/harmful, and safe/dangerous. The reliability of the threat measure was .96.

Attitude accessibility was assessed at Phase 2 following the administration of inoculation treatments using the thinking and talking protocol developed by Krosnick, Boninger, Chuang, Berent, and Carnot (1993). The approach asks respondents how often they think about and talk about the issue in question. Wording of the items was: "Compared to other issues, how often do you think about [or for the next item, how often do you discuss with friends, family members, or others] the issue of government policy concerning handguns [or for the other issue, government policy concerning marijuana]?" Fazio and colleagues reason that an individual's thought and expression reflecting an attitude enhance the "speed and ease with which an attitude can be accessed from memory" (Fazio et al., 1982, p. 340). Krosnick et al.'s research (1993) finds significant correlations between response-latency data and both thought and talk scales. The two items were summed and achieved a reliability rating of .89.

Strength of attitude was assessed during Phase 2. It was assessed using a 0–100 point probability continuum asking respondents to estimate the strength of their attitude about the issue in question, where 0 indicates "no certainty" and 100 indicates "absolute certainty."

During Phase 3 attitude toward the counterattitudinal attack was assessed. Global attitude concerning the persuasive attack was assessed using six bipolar adjective pairs developed for use in resistance research by Burgoon, Cohen, Miller, and Montgomery (1978). Adjective pairs were: foolish/wise, unacceptable/acceptable, wrong/right, unfavorable/favorable, bad/good, and negative/positive. Alpha reliability of the attitude scale was .95.

Results

Statistical Analyses

A series of 2 (inoculation and control) × 2 (the high-involving handguns issue and moderate-involving marijuana topic) ANOVAs were computed on the measures of

TABLE 1

PHASE 2 ATTITUDE ACCESSIBILITY AND STRENGTH OF ATTITUDE AND PHASE 3 GLOBAL ATTITUDE TOWARD THE COUNTERATTITUDINAL ATTACK AS A FUNCTION OF EXPERIMENTAL CONDITION (INOCULATION AND CONTROL)

	Experimental Condition	
Dependent Measure	Control	Inoculation
Attitude Accessibility		
M (*SD*)	2.51 (1.04)	2.88[b] (1.50)
n	65	265
Strength of Attitude		
M (*SD*)	56.25 (24.06)	72.90[a] (22.38)
n	67	256
Global Attitude		
M (*SD*)	4.17 (1.23)	3.41[a] (1.44)
n	68	265

Note. Attitude accessibility was measured using 7-point scales and strength of attitude using a 100-point scale. Higher scores indicate greater accessibility and strength of attitude. Attitude toward the counterattitudinal attack was measured using 7-point scales. A lower score indicates greater resistance to the influence of the counterattitudinal attacks.
[a]Significant compared to control at $p < .01$.
[b]Significant compared to control at $p < .05$, one-tailed.

Phase 2 threat, attitude accessibility, and attitude strength, and on Phase 3 attitude toward the counterattitudinal attack.[2] To further explicate the process of resistance, correlations were computed on experimental condition, issue involvement, attitude accessibility, attitude strength, and Phase 3 attitude toward the counterattitudinal attack.

Induction Checks

Inoculation treatments elicited threat and conferred resistance. As explained previously, threat is inoculation's precondition to resistance. The results indicated that inoculation elicited significant threat, $F(1, 329) = 4.43$, $p < .05$, $r = .12$. In addition, the high-involving handguns topic produced greater elicited threat than the moderate-involving marijuana issue, $F(1, 329) = 5.80$, $p < .05$, $r = .13$. Finally, inoculation fostered resistance to counterattitudinal attacks, $F(1, 329) = 16.04$, $p < .01$, $r = .22$[3] (see Table 1). There were no main or interaction effects for issue on the measure of attitude toward counterattitudinal attacks.

Hypotheses

Hypothesis 1 posited that inoculation treatments enhance Phase 2 attitude accessibility, which strengthens attitudes and, in time, contributes to resistance. The results supported this prediction. The multivariate results indicated that, compared to the control condition, inoculation treatments elicit attitude accessibility, $F(1, 326) = 3.67$, $p < .05$, one-tailed, $r = .11$, and enhance attitude strength, $F(1, 319) = 29.50$, $p < .01$, $r = .29$. Both effects occur immediately following administration of inoculation treatments. There was no main or interaction effect for issue on attitude accessibility. Nevertheless, the results indicated that the high-involving handguns topic was associated with greater Phase 2 attitude strength, $F(1, 319) = 8.90$, $p < .01$, $r = .16$. There was no interaction effect involving attitude strength. These means are shown in Table 1.

TABLE 2

CORRELATIONS AMONG EXPERIMENTAL CONDITION, ISSUE INVOLVEMENT, ATTITUDE ACCESSIBILITY, ATTITUDE STRENGTH, AND ATTITUDE TOWARD THE COUNTERATTITUDINAL ATTACK

	Experimental Condition	Issue Involvement	Attitude Accessibility	Attitude Strength	Attitude Toward the Attack
Experimental Condition	–				
Issue Involvement	.08 ($n = 333$)	–			
Attitude Accessibility	.11[b] ($n = 330$)	.38[a] ($n = 330$)	–		
Attitude Strength	.285[a] ($n = 323$)	.25[a] ($n = 323$)	.27[a] ($n = 321$)	–	
Attitude Toward the Attack	−.22[a] ($n = 333$)	−.17[a] ($n = 333$)	−.06 ($n = 330$)	−.19[a] ($n = 323$)	–

Note: Issue involvement and attitude accessibility were measured using 7-point scales and strength of attitude using a 100-point scale. Higher scores indicate greater involvement, accessibility, and strength of attitude, respectively. Experimental condition was defined as control and the combined inoculation treatments with the higher score reflecting inoculation. Attitude toward the counterattitudinal attack was measured using 7-point scales. Higher scores on this measure mean greater influence of the counterattitudinal attacks and, hence, less resistance.

[a] Significant at $p < .01$.

[b] Significant at $p < .05$.

Hypothesis 2 examined the influence of issue involvement in the process of resistance. It posited that greater issue involvement is positively associated with attitude accessibility, attitude strength, and resistance to persuasive attacks. The correlational analysis supported this prediction. As Table 2 reveals, issue involvement is positively associated with Phase 2 attitude accessibility and attitude strength; and issue involvement is negatively associated with Phase 3 attitude toward the counterattitudinal attack, thus positively linked to resistance.

In addition, the correlational results shed further light on the process of resistance. The results revealed that inoculation is positively related to Phase 2 attitude accessibility, that Phase 2 attitude accessibility is positively linked with Phase 2 attitude strength, and that Phase 2 attitude strength is negatively associated with Phase 3 attitude toward the counterattitudinal attack, and therefore, that it is positively related to resistance. This pattern of results is consistent with the argument that allowed Hypothesis 1 to be deduced.

Discussion

This investigation examined an alternative explanation for resistance to influence based on attitude accessibility. The results of recent studies (Pfau et al., 1997a, 2001b) suggest that there is more to the process of eliciting resistance than simply the dual mechanisms of threat and counterarguing, which McGuire had theorized to be responsible for resistance to influence. In addition to these accepted mechanisms, Pfau et al. (1997a, 2001b) uncovered a direct, unexplained path to resistance. In response, the present investigation tested the role of attitude accessibility in the process of resistance.

The results of this study are consistent with the alternative explanation for the way

that inoculation confers resistance and, in the process, contribute to a better understanding of the process of resistance. The manipulation checks indicated that the inoculation treatments initially elicited threat and subsequently conferred resistance to the counterattitudinal attacks, adding further support to previous findings on threat and the efficacy of inoculation (McGuire, 1961b, 1962, 1964, 1966; Papageorgis & McGuire, 1961; Pfau, 1992; Pfau & Burgoon, 1988; Pfau et al., 1990, 1992, 1997a, 2001b).

Hypothesis 1 posited that inoculation treatments initially enhance attitude accessibility, which contributes to attitude strength and, in time, confers resistance. Both the multivariate and correlational analyses indicated that inoculation treatments elicit Phase 2 attitude accessibility and enhance Phase 2 attitude strength. Subsequently, attitude strength fosters greater resistance to influence. Investigators reasoned that the refutational preemption component of the inoculation treatments produces a more elaborative and integrated structure of beliefs in relation to an attitude, thus rendering the attitude stronger in the face of subsequent attack. The pattern of results is consistent with this explanation.

Although past studies have found that accessible attitudes are more resistant to influence (Fazio & Williams, 1986; Houston & Fazio, 1989; Roskos-Ewoldsen, 1997), this study is the first to suggest that inoculation works, in part, through the mechanism of attitude accessibility. The results of this investigation indicate that inoculation treatments render attitudes more accessible and stronger and that, in time, enhanced attitude strength fosters resistance to counterattitudinal attacks. Insko appears to have been right in speculating that, beyond threat and counterarguing, "other mechanisms result in the creation of defenses" (1967, p. 319). Additional study is needed to flesh out the role of attitude accessibility in the process of resistance, for example, to determine whether attitude accessibility operates independently of, or in tandem with, the accepted mechanisms of threat and counterarguing.

Hypothesis 2 examined the influence of issue involvement in the process of resistance. It posited that greater issue involvement is positively associated with attitude accessibility, attitude strength, and resistance to persuasive attacks. Past research indicates that issue involvement facilitates information processing (Burnkrant & Sawyer, 1983; Chaiken, 1980; Petty & Cacioppo, 1986) and, therefore, that issue involvement plays an important role in unleashing the cognitive processes that underpin resistance (Pfau et al., 1997a, 2001b). Correlational analysis supported this prediction, indicating that issue involvement is positively associated with Phase 2 attitude accessibility and attitude strength, and issue involvement is negatively associated with Phase 3 attitude toward the counterattitudinal attack, and thus positively linked to resistance.

Conclusion

The results of this investigation suggest that Insko (1967) was right in speculating more than 35 years ago that other mechanisms than simply threat and counterarguing are involved in resistance and, therefore, that "a complete explanation of resistance to persuasion will depend upon the inoculation theory mechanisms as well as upon ... additional mechanisms" (p. 328). The results of multivariate and correlational analyses of this study indicated that inoculation treatments confer resistance,

in part, by promoting attitude accessibility. Inoculation treatments immediately elicit attitude accessibility, which enhances attitude strength. Attitude strength, in time, fosters resistance to the influence of counterattitudinal attacks. In addition, correlational results further illuminated the process of resistance, indicating that issue involvement plays an active role in resistance, contributing both to attitude accessibility and attitude strength and, in time, enhancing resistance to counterattitudinal attacks.

Footnotes

[1]In addition to refutational same and different message design, the inoculation messages were written as either cognitive or affective-anger. This message approach replicates that used by Pfau et al. (2001b). Cognitive messages emphasized verifiable evidence, including statistics and research findings. Use of affect-laden words, anecdote, and opinion were avoided. Affective-anger messages were designed to elicit anger. Researchers employed a strategy for triggering emotional arousal based on Lazarus's (1991) appraisal theory. The theory posits that goal attainment or obstruction is central to the appraisal process and to elicited emotion (Lazarus, 1994a, 1994b). According to Lazarus (1994a), achievement, or what Fridja (1986) terms "well-being," and affiliation are central goals for most people. Affective-anger inoculation messages were designed using two sentences embedded in each message intimating that arguments contrary to a person's attitude may thwart goal attainment. Blame was placed for potential goal obstruction on attitude-discrepant arguments and advocates. The affective-anger messages employed in the study were pretested previously for emotional response and found to elicit anger.

[2]Basic assumptions for multivariate analyses were examined. Independence was assured via random assignment of participants to groups. Homogeneity of error variance was satisfied by comparing error variances across all cells in the design for all dependent variables. The resulting ratio of high to low error variance, $F^{max}(265, 68) = 3.44$, was within acceptable limits. Normality was achieved for all dependent measures except for the Phase 2 measure, attitude strength, which manifested a positive skew. Nevertheless, Monte Carlo tests prove that the *F*-test is insensitive to "even flagrant violations" of the assumption of normality, especially with large samples (Cohen, 1988, p. 75; Keppel, 1982, p. 85). Hence, corrective steps were not taken. Initial attitudes were virtually identical in control and treatment conditions (control, $M = 4.01$, $n = 68$; treatment, $M = 4.03$, $n = 265$).

[3]Planned comparisons indicated that, compared to the control condition, the same and different treatments and the cognitive and affective-anger messages were effective in conferring resistance to counterattitudinal attacks. There were no statistically significant differences in the relative effectiveness of the same and different treatments or of the cognitive and affective-anger messages.

References

Anderson, J. R. (1983). *The architecture of cognition.* Cambridge, MA: Harvard University Press.

Bassili, J. N. (1996). Meta-judgmental versus operative indexes of psychological attributes: The case of measures of attitude strength. *Journal of Personality and Social Psychology, 71,* 637–653.

Becker, S. W., Bavelas, A., & Braden, M. (1961). An index to measure contingency of English sentences. *Language and Speech, 4,* 138–154.

Burgoon, M., Cohen, M., Miller, M. D., & Montgomery, C. L. (1978). An empirical test of a model of resistance to persuasion. *Human Communication Research, 5,* 27–39.

Burgoon, M., Pfau, M., & Birk, T. (1995). An inoculation theory explanation for the effects of corporate issue/advocacy advertising. *Communication Research, 22,* 485–505.

Burnkrant, R. E., & Sawyer, A. G. (1983). Effects of involvement and message content on information-processing intensity. In R. J. Harris (Ed.), *Information processing research in advertising* (pp. 43–64). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Chaiken, S. (1980). Heuristic versus systematic information processing and the use of source versus message cues in persuasion. *Journal of Personality and Social Psychology, 39,* 752–766.

Chaiken, S., Liberman, A., & Eagly, A. H. (1989). Heuristic and systematic information processing within and beyond the persuasion context. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp. 212–252). New York: Guilford Press.

Chaudhuri, A., & Buck, R. (1995). Affect, reason, and persuasion: Advertising strategies that predict affective and analytic-cognitive responses. *Human Communication Research, 21,* 422–441.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes.* Orlando, FL: Harcourt Brace Jovanovich.

Fazio, R. H. (1986). How do attitudes guide behavior? In R. H. Sorrentino & E. T. Higgins (Eds.), *The handbook of motivation and cognition: Foundations of social behavior* (pp. 204–243). New York: Guilford Press.

Fazio, R. H. (1989). On the power and functionality of attitudes: The role of attitude accessibility. In A. R. Pratkanis, S. J. Breckler, & A. G. Greenwald (Eds.), *Attitude structure and function* (pp. 153–179). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Fazio, R. H. (1995). Attitudes as object-evaluation associations: Determinants, consequences, and correlates of attitude accessibility. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 247–282). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Fazio, R. H. (2001). On the automatic evaluation of associated evaluations: An overview. *Cognition and Emotion, 15*, 115–141.

Fazio, R. H., Chen, J., McDonel, E. C., & Sherman, S. J. (1982). Attitude accessibility, attitude-behavior consistency, and the strength of the object-evaluation association. *Journal of Experimental Social Psychology, 18*, 339–357.

Fazio, R. H., Powell, M. C., & Herr, P. M. (1983). Toward a process model of the attitude-behavior relation: Accessing one's attitude upon mere observation of the attitude object. *Journal of Personality and Social Psychology, 44*, 723–735.

Fazio, R. H., & Roskos-Ewoldsen, D. R. (1994). Acting as we feel: When and how attitudes guide behavior. In T. C. Brock & S. Shavitt (Eds.), *Psychology of persuasion* (pp. 71–94). Boston: Allyn & Bacon.

Fazio, R. H., Roskos-Ewoldsen, D. R., & Powell, M. C. (1994). Attitudes, perception, and attention. In P. M. Niedenthal & S. Kitayama (Eds.), *The heart's eye: Emotional influences in perception and attention* (pp. 197–216). Orlando, FL: Academic Press.

Fazio, R. H., Sanbonmatsu, D. M., Powell, M. C., & Kardes, F. F. (1986). On the automatic activation of attitudes. *Journal of Personality and Social Psychology, 50*, 229–238.

Fazio, R. H., & Williams, C. J. (1986). Attitude accessibility as a moderator of the attitude-perception and attitude behavior relations: An investigation of the 1984 presidential election. *Journal of Personality and Social Psychology, 51*, 505–514.

Frijda, N. H. (1986). *The emotions*. New York: Cambridge University Press.

Godbold, L. C., & Pfau, M. (2000). Conferring resistance to peer pressure among adolescents: Using inoculation theory to discourage alcohol use. *Communication Research, 27*, 411–437.

Greene, J. O. (1984). A cognitive approach to human communication: An action assembly theory. *Communication Monographs, 51*, 289–306.

Houston, D. A., & Fazio, R. H. (1989). Biased processing as a function of attitude accessibility: Making objective judgments subjectively. *Social Cognition, 7*, 51–66.

Insko, C. A. (1967). *Theories of attitude change*. New York: Appleton-Century-Crofts.

Johnson, B. T., & Eagly, A. H. (1989). The effects of involvement on persuasion: A meta-analysis. *Psychological Bulletin, 106*, 290–314.

Kardes, F. R. (1988). Spontaneous inference processes in advertising: The effects of conclusion omission and involvement on persuasion. *Journal of Consumer Research, 15*, 225–233.

Keppel, G. (1982). *Design and analysis: A researcher's handbook* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Kokkinaki, F., & Lunt, P. (1997). The relationship between involvement, attitude accessibility, and attitude-behavior consistency. *British Journal of Social Psychology, 36*, 497–509.

Krosnick, J. A., Boninger, C. S., Chuang, Y. C., Berent, M. K., & Carnot, C. G. (1993). Attitude strength: One construct or many related constructs? *Journal of Personality and Social Psychology, 65*, 1132–1151.

Lazarus, R. S. (1991). *Emotion and adaptation*. New York: Oxford University Press.

Lazarus, R. S. (1994a). Appraisal: The long and short of it. In P. Ekman & R. J. Davidson (Eds.), *The nature of emotions: Fundamental questions* (pp. 208–215). New York: Oxford University Press.

Lazarus, R. S. (1994b). The stable and the unstable in emotion. In P. Ekman & R. J. Davidson (Eds.), *The nature of emotions: Fundamental questions* (pp. 79–85). New York: Oxford University Press.

McArthur, T. (Ed.). (1992). *Oxford companion to the English language*. New York: Oxford University Press.

McGuire, W. J. (1961a). The effectiveness of supportive and refutational defenses in immunizing and restoring beliefs against persuasion. *Sociometry, 24*, 184–197.

McGuire, W. J. (1961b). Resistance to persuasion conferred by active and passive prior refutation of the same and alternative counterarguments. *Journal of Abnormal and Social Psychology, 63*, 326–332.

McGuire, W. J. (1962). Persistence of the resistance to persuasion induced by various types of prior belief defenses. *Journal of Abnormal and Social Psychology, 64*, 241–248.

McGuire, W. J. (1964). Inducing resistance to persuasion: Some contemporary approaches. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. I, pp. 191–229). New York: Academic Press.

McGuire, W. J. (1966). Persistence of the resistance to persuasion induced by various types of prior belief defenses. In C. W. Backman & P. F. Secord (Eds.), *Problems in social psychology* (pp. 128–135). New York: McGraw-Hill.

McGuire, W. J., & Papageorgis, D. (1961). The relative efficacy of various types of prior belief-defense in producing immunity against persuasion. *Journal of Abnormal Social Psychology, 62*, 327–337.

McGuire, W. J., & Papageorgis, D. (1962). Effectiveness of forewarning in developing resistance to persuasion. *Public Opinion Quarterly, 26*, 24–34.

Papageorgis, D., & McGuire, W. J. (1961). The generality of immunity to persuasion produced by pre-exposure to weakened counterarguments. *Journal of Abnormal and Social Psychology, 62*, 475–481.

Petty, R. E., & Cacioppo, J. T. (1979). Issue involvement can increase or decrease persuasion by enhancing message-relevant cognitive responses. *Journal of Personality and Social Psychology, 37*, 1915–1926.

Petty, R. E., & Cacioppo, J. T. (1986). *Communication and persuasion: Central and peripheral routes to attitude change.* New York: Springer-Verlag.

Petty, R. E., Haugtvedt, C. P., & Smith, S. M. (1995). Elaboration as a determinant of attitude strength: Creating attitudes that are persistent, resistant, and predictive or behavior. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 93–130). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Petty, R. E., Priester, J. R., & Brinol, P. (2002). Mass media attitude change: Implications of the Elaboration Likelihood Model of persuasion. In J. Bryant & D. Zillmann (Eds.), *Media effects: Advances in theory and research* (2nd ed., pp. 155–198). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Petty, R. E., & Wegener, D. T. (1998). Attitude change: Multiple roles for persuasion variables. In D. T. Gilbert, S. T. Fiske, & G. Lindzen (Eds.), *Handbook of social psychology* (5th ed., Vol. 1, pp. 323–390). New York: McGraw-Hill.

Pfau, M. (1992). The potential of inoculation in promoting resistance to the effectiveness of comparative advertising messages. *Communication Quarterly, 40*, 26–44.

Pfau, M., & Burgoon, M. (1988). Inoculation in political campaign communication. *Human Communication Research, 15*, 91–111.

Pfau, M., Holbert, R. L., Zubric, S. J., Pasha, N. H., & Lin, W.K. (2000). Role and influence of communication modality in the process of resistance to influence. *Media Psychology, 2*, 1–33.

Pfau, M., Kenski, H. C., Nitz, M., & Sorenson, J. (1990). Efficacy of inoculation strategies in promoting resistance to political attack messages: Application to direct mail. *Communication Monographs, 57*, 25–43.

Pfau, M., Park, D., Holbert, R. L., & Cho, J. (2001a). The effects of party- and PAC-sponsored issue advertising and the potential of inoculation to combat its impact on the democratic process. *American Behavioral Scientist, 44*, 2379–2397.

Pfau, M., Szabo, E. A., Anderson, J., Morrill, J. Zubric, J., & Wan, H.-H. (2001b). The role and impact of affect in the process of resistance to persuasion. *Human Communication Research, 27*, 216–252.

Pfau, M., Tusing, K. J., Koerner, A. F., Lee, W. Godbold, L. C., Penaloza, L. J., Yang, V. S., & Hong, Y. (1997a). Enriching the inoculation construct: The role of critical components in the process of resistance. *Human Communication Research, 24*, 187–215.

Pfau, M., Tusing, K. J., Lee, W., Godbold, L. C., Koerner, A., Penaloza, L. J., Hong, Y., & Yang, V. S. (1997b). Nuances in inoculation: The role of inoculation approach, ego-involvement, and message processing disposition in resistance. *Communication Quarterly, 45*, 461–481.

Pfau, M., & Van Bockern, S. (1994). The persistence of inoculation in conferring resistance to smoking initiation among adolescents: A second year. *Human Communication Research, 20*, 413–430.

Pfau, M., Van Bockern, S., & Kang, J. G. (1992). Use of inoculation to promote resistance to smoking initiation among adolescents. *Communication Monographs, 59*, 213–230.

Powell, M. C., & Fazio, R. H. (1984). Attitude accessibility as a function of repeated attitude expression. *Personality and Social Psychology Bulletin, 10*, 139–148.

Roskos-Ewoldsen, D. R. (1997). Attitude accessibility and persuasion: Review and a transactive model. In B. Burleson's (Ed.), *Communication yearbook 20* (pp. 185–225). Beverly Hills, CA: Sage.

Roskos-Ewoldsen, D. R., Apran-Ralstin, L. A., & St. Pierre, J. (2002). Attitude accessibility and persuasion: The quick and the strong. In J. P. Dillard & M. Pfau (Eds.), *Persuasion: Developments in theory and practice* (pp. 39–61). Thousand Oaks, CA: Sage.

Roskos-Ewoldsen, D. R., & Fazio, R. H. (1992). On the orienting value of attitudes: Attitude accessibility as a determinant of an object's attraction of visual attention. *Journal of Personality and Social Psychology, 63*, 198–211.

Sherman, S. J. (1987). Cognitive processes in the formation, change, and expression of attitudes. In. M. P. Zanna, J. M. Olson, & C. P. Herman (Eds.), *Social influence: The Ontario Symposium* (Vol. 5, pp. 75–106). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Smith, E. R. (1994). Procedural knowledge and processing strategies in social cognition. In R. S. Wyer, Jr., & T. K. Srull (Eds.), *Handbook of social cognition: Vol. 1. Basic processes* (pp. 99–151). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Stayman, D. M., & Kardes, F. R. (1992). Spontaneous inference processes in advertising: Effects of need for cognition and self-monitoring on inference generation and utilization. *Journal of Consumer Psychology, 1*, 125–142.

Swann, W, B., Jr., & Ely, R. J. (1984). A battle of wills: Self-verification versus behavioral confirmation. *Journal of Personality and Social Psychology, 46*, 1287–1302.

Swann, W. B., Jr., Pelham, B. W., & Chidester, T. R. (1988). Change through paradox: Using self-verification to alter beliefs. *Journal of Personality and Social Psychology, 54*, 268–273.

Szabo, E. A., & Pfau, M. (2001, November). *Reactance as a response to antismoking messages.* Paper presented at the annual meeting of the National Communication Association, Atlanta, GA.

Wan, H.-H., & Pfau, M. (2001, May). *Inoculation–A promising proactive approach in crisis communication.* Paper presented at the annual meeting of the International Communication Association, Washington, DC.

Wu, C., & Shaffer, D. R. (1987). Susceptibility to persuasive appeals as a function of source credibility and prior experience with the attitude object. *Journal of Personality and Social Psychology, 52,* 677–688.

Wyer, R. S., & Srull, T. K. (1989). *Memory and cognition in its social context.* Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Yi, H., Phelps, J. E., & Roskos-Ewoldsen, D. R. (1998). Examining the effectiveness of comparative advertising: The role of attitude accessibility. *Journal of Current Issues and Research in Advertising, 20,* 61–74.

Zaichkowsky, J. L. (1985). Measuring the involvement construct. *Journal of Consumer Research, 12,* 341–352.

Zakaluk, B. L., & Samuels, S. J. (Eds.). (1988). *Readability: Its past, present, and future.* Newark, DE: International Reading Association.

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