

ORIGINAL ARTICLE

**Spreading Inoculation: Inoculation,
Resistance to Influence, and
Word-of-Mouth Communication**Josh Compton¹ & Michael Pfau²

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Although inoculation has established efficacy in conferring resistance to influence for those directly exposed to inoculation pretreatment messages, we argue that inoculation's effects may extend beyond those directly exposed to others via word-of-mouth communication (WOMC) along social networks. Specifically, we argue that inoculation's effects on attitude accessibility, involvement, and threat are particularly conducive to the spread of inoculation content, offering WOMC as a new inoculation modality.

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After introducing cowpox inoculation in their own districts, many recipients are passing the vaccine on to others.

—Stefan Riedel, Baylor University Medical Center Proceedings

In the 19th century, Edward Jenner—who built “the foundation of immunology” (Riedel, 2005, p. 21)—sent vaccination materials to his acquaintances who then passed the vaccines on to others (Riedel, 2005). In other words, original medical vaccines “spread” from community to community via social and professional networks, as people literally passed the medicine along to others. Similar to the way people passed cowpox vaccines from community to community more than a century ago, might people also spread attitudinal inoculations via social networks? This is the question that guides the current essay, leading us to articulate a theoretical rationale for spreading inoculation as we note distinctive attributes of inoculation messages that may motivate proselytizing. We argue that ensuing research in this vein would lead to, in the words of the person who formulated the theory, “more elegant and complex derivations from [inoculation] theory” (McGuire, 1964, p. 227). Furthermore, support for our overriding proposition that spreading inoculation is possible would expand the practical value of inoculation-based campaigns, extending the reach of inoculation treatments far beyond those directly exposed to campaign messages.

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Inoculation theory boasts an impressive body of scholarship testifying to its efficacy in conferring resistance to influence (see Compton & Pfau, 2005, for a comprehensive review). In laboratory and field settings, inoculation treatments consistently and effectively confer resistance to subsequent persuasive attempts in contexts such as politics (e.g., Pfau & Burgoon, 1988; Pfau, Kenski, Nitz, & Sorenson, 1990), marketing (e.g., Compton & Pfau, 2004; Ivanov, Pfau, & Parker, 2007), public relations (e.g., Pfau, Haigh, Sims, & Wigley, 2007; Wan & Pfau, 2004), and health (e.g., Godbold & Pfau, 2000; Pfau, Van Bockern, & Kang, 1992). Although conferring resistance to the influence of counterattitudinal attacks is the primary focus of inoculation research, research also reveals a number of incidental effects, with inoculation treatment messages enhancing perceived issue involvement (Pfau et al., 2004, 2005), attitude accessibility (Pfau et al., 2004, 2003), vested interest (Compton & Pfau, 2008), and intent to talk to others about the target issue (Compton & Pfau, 2004; Lin & Pfau, 2007).

It is this latter finding that we believe has particular promise in resistance research and significant implications for mass-mediated campaigns. If inoculation treatments motivate proselytizing about the target issue then inoculation's effects may reach far beyond those immediately inoculated. We term this prospect *spreading inoculation* as content from inoculation treatment messages spreads along social networks via word-of-mouth communication (WOMC).

Word-of-mouth communication

WOMC—pass-along effects or “social diffusion” (Hornik & Yanovitzky, 2003, p. 209)—is particularly powerful, especially in its ability to sustain influence as messages are “passed” from person to person (Goldenberg, Libai, & Muller, 2001). Some research suggests that subsequent conversations about issues may be as influential as the initial reception of a message (Robinson & Levy, 1986) and may motivate behaviors, such as participating in civic forums (McLeod, Scheufele, & Moy, 1999). If inoculation motivates continued conversations within social networks, its reach should extend beyond those directly affected by original inoculation messages. Perhaps, as research suggests, the pass-along messages would be even more persuasive than the original inoculation messages (see Southwell & Yzer, 2007, for a comprehensive review of interpersonal communication and campaign effects).

In our discussion of inoculation and WOMC, we approach the concept of talk in two broad areas: talk as reassurance (i.e., finding support for views through conversations with one's social network) and talk as advocacy (i.e., proselytizing specific campaign information). We acknowledge, of course, that talk varies in content and purpose and that situation affects conversational topics, as recognized in some of the earliest conversation research (e.g., Landis & Burt, 1924). Furthermore, we treat conversation as reasoned behavior (Southwell & Yzer, 2007). We assert that if inoculation motivates *any* type of talk, its effects move beyond direct recipients of inoculation message campaigns and warrant closer scrutiny. Furthermore, though we examine some motivations of talk here (reassurance and advocacy), we also assert

that if the topics only arise more often in everyday talk, the conversations can influence attitudes and subsequent behaviors irrespective of the motivations (see Carl, 2006, for an example of everyday WOM in a marketing context).

Conventional explanation for how inoculation works

The conventional explanation for how inoculation works traces back to McGuire's inaugural inoculation scholarship (see McGuire, 1964, for a comprehensive review of early research). McGuire based the theory on a biological analogy. He reasoned that, just as a biological vaccination confers resistance to viruses by injecting a weakened version of the viral agent into the body, triggering the production of antibodies that later protect against stronger viral attacks, an attitudinal inoculation treatment subjects people to a counterattitudinal message (i.e., a weakened attack) with refutations, motivating attitude bolstering prior to a stronger persuasive attack, thereby conferring resistance.

A conventional inoculation message contains three classic components: threat, counterarguments, and refutations. Threat is the motivating force in inoculation (Pfau, 1997). By calling attention to vulnerability in an existing attitude, it initially motivates people to read and process the inoculation message content (the counterarguments and refutations), and, during the interim between inoculation and exposure to a subsequent attack, it continues to motivate people to generate counterarguments and refutations (McGuire, 1964). The counterargument and refutation elements of an inoculation message contain specific content that may be used in defense of attitudes and provide an illustration of attitude defense. These three components, in tandem, confer resistance, manifested in preserving attitudes in the face of persuasive attacks.

But that is not all inoculation messages do. As documented above, inoculation treatment messages have been shown to increase perceived issue involvement, enhance attitude accessibility, increase perceived vested interest, and facilitate communication about the issue with others.

The Compton and Pfau (2004) finding that inoculation spurs subsequent talk is especially relevant to the thesis of this essay. The study examined whether inoculation could confer resistance to credit card marketing targeting college students. With some inoculation treatment conditions, those inoculated indicated that they were less likely to share positive things about credit card usage and/or were more likely to tell others negative things about credit card usage. Although the finding is intriguing—and the first to suggest that inoculation content may spread along social networks—it also is limited. Because it was an incidental finding, a number of issues remained unresolved. What constitutes “positive things” or “negative things” is unclear. More importantly, the study failed to assess whether those inoculated would be more inclined to share both positive *and* negative “things,” a blending of which is typical in inoculation treatments (i.e., counterarguments and refutations). As we noted at the conclusion of the study, more remains to be discovered regarding WOMC effects of inoculation treatments (Compton & Pfau, 2004).

Nevertheless, this study is the first to offer empirical evidence that inoculation messages motivate WOMC. Although an argument can be made that any encountered message is viable for sharing with others—Schulster (2006) notes, “[t]he contents of our conversations are drawn in large part from a mix of materials from our memory and knowledge banks” (p. 407)—we argue next that inoculation messages have distinctive characteristics that make them more conducive to WOMC when compared to other types of persuasive campaign messages.

Talk as reassurance: Inoculation’s threat and WOMC

Threat is a requisite for inoculation (Pfau, 1997), but what specifically does threat *do* in the process of inoculation? We have argued that it motivates processing of inoculation messages and that it also bolsters continued counterarguing output in the lapse between inoculation messages and the ultimate attack (McGuire, 1964). But notably, these effects are limited to intrapersonal communication—offering internal motivation and internal counterarguing. But could threat also affect behavioral responses and, specifically, WOMC? We argue in this section that it likely does, with the subsequent talk serving as reassurance.

Conversation research reveals that interpersonal communication is often goal directed (e.g., Step & Finucane, 2002). Schachter (1959) recounts “a handful of studies suggesting that people will seek one another out when their opinions are shaken” (p. 6) (though some of Schachter’s subsequent research casts doubt on whether communicating with others or simply being in the presence of others alleviates anxiety). In inoculation, the dissonance generated by threat may motivate WOMC to rebalance the assailed attitudes, offering reassurance to the individual. WOMC is more likely when uncertainty (Rosnow, Esposito, & Gibney, 1988; Valente, Poppe, & Merritt, 1996) and stress (Ryfe, 2005) are high—two conditions that are influenced by the threat component of inoculation treatment messages. Inoculation treatments elicit threat (McGuire, 1961) and threat negatively affects attitude confidence (Pfau et al., 2004).

Step and Finucane (2002) argue that “the role of affect in conversations is considerable and should be investigated further” (p. 104). We argue that threat—and its related affect—may play a decisive role in conversations after inoculation treatments. Although Pfau, Szabo et al. (2001) once reasoned that “inoculated individuals will aggress against threat by engaging in counterarguing in order to reestablish control” (p. 223), we propose here that inoculated individuals may also go to their social networks for reassurance—discussing the issue with friends and peers to restore confidence in the assailed attitude, thereby reassuring those directly inoculated while also spreading inoculation content along social networks.

Talk as advocacy: Inoculation and issue involvement

Recent inoculation research indicates that issue involvement dictates boundary conditions for inoculation theory. Pfau et al. (1997) argue that “involvement holds the

key to inoculation's terrain" (p. 210). If involvement levels are too low or too high, inoculation treatments cannot generate sufficient threat. If they are too low, people do not care whether attitudes are vulnerable to attack; conversely, if they are too high, people are already aware that attitudes are vulnerable and previously have taken steps to bolster attitudes. In this research, involvement has been conceptualized as "the importance or salience of an attitude object for a receiver" (Pfau et al., 1997, p. 190), a conceptualization consistent with Zaichkowsky's (1985) *personal involvement*, Johnson and Eagly's (1989) *outcome-relevant involvement*, and Petty and Cacioppo's (1979) *issue involvement*. Generally, more highly involving attitudes are more resistant to influence (Zuwerink & Devine, 1996), although inoculation exerts optimal effects with moderate involving attitudes (Pfau et al., 1997).

Two recent studies indicate that the role of involvement in resistance is dynamic (Pfau et al., 2004, 2005). These studies confirmed that threat elicited by the inoculation treatment messages directly contributes to resistance by bolstering counterarguments but also that inoculation treatments enhance base issue involvement levels. In other words, involvement is not just a moderator of inoculation—it is also a *product* of inoculation treatments.

Enhanced involvement, we argue, is conducive to WOMC. In a marketing context, Giese, Spangenberg, and Crowley (1996) found that WOMC and involvement levels are linked. Similarly, Chung and Darke (2006) found an increased likelihood of WOMC when an object was more self-relevant (i.e., products that communicate something about themselves). Involvement may also play a role in rumor spreading (Rosnow, 1991). Simply, "people talk about important matters with others who are important to them" (Bearman & Parigi, 2004, p. 536). If inoculation messages bolster perceived involvement levels—as some research suggests (Pfau et al., 2004, 2005)—then inoculation messages should create a healthy climate for word-of-mouth dissemination of topical content.

Talk as advocacy: Inoculation and attitude accessibility

Attitude accessibility refers to how quickly one accesses (i.e., activates or retrieves) an attitude from memory (Fazio, 1995), and the more accessible the attitude, the more influential the attitude is when making evaluations (Roskos-Ewoldsen & Fazio, 1997). Inoculation treatments enhance attitude accessibility (Pfau et al., 2004, 2003). Vested interest (Crano, 1995), a related construct in that it includes topic salience, is also enhanced by inoculation (Compton & Pfau, 2008).

Accessibility provides further explanation for the likely role of WOMC in resistance. Several studies operationalize attitude accessibility with the thinking-and-talking measure first used by Brown (1974). The assumption is "the more accessible the attitude is, the more an individual will report thinking or talking about it" (Wegener, Downing, Krosnick, & Petty, 1995, p. 459). Talking about an issue, then, is one indication of how accessible the related attitude is to the individual.

We reason that people are most likely to talk to peers about those things on the top-of-the-mind. Accessibility may even sustain the effects of inoculation messages as well as spread them, as frequency of retrieval further enhances accessibility (Roskos-Ewoldsen & Fazio, 1997), which would in turn keep the issue salient.

In summary, the preceding rationale argues that threat, issue involvement, and accessibility are products of inoculation treatments and are uniquely conducive to WOMC. In contrast to conventional one-sided persuasive messages, inoculation treatments contain the requisites for spreading the information along social networks. Next, we assess whether spreading inoculation is consistent with the medical analogy from which inoculation theory was derived.

Is spreading inoculation consistent with the medical analogy?

As we noted in a previous essay, the medical analogy employed as an explanatory for how attitudinal inoculation confers resistance is more than mere rhetorical decoration (Compton & Pfau, 2005). We agree with early pioneers of inoculation research who noted: "Pursuit of the medical analogy suggests many further [research] questions" (McGuire & Papageorgis, 1962, p. 34). Returning to the medical analogy, we must ask whether there is precedence for biological vaccines to spread.

The uncomplicated explanation in support of our proposition is that vaccines (live vaccines, containing weakened versions of the viral agent) could behave like viruses simply because they contain viruses (e.g., Fine & Carneiro, 1999). Subsequently, passing vaccinations from person to person is not unprecedented. Writing for the William Beaumont Army Medical Center, Major Steven Battle, MD, describes the case of an armed service member who received a smallpox vaccination and then later passed it on to his wife who then passed it on to their baby via breast feeding (Battle, n.d., "Smallpox Vaccine Update"). *The New York Times* reported that genetically altered animal vaccines are in development that "spread" like a disease (Browne, 1991) and some live avian vaccines can spread from bird to bird (Glisson, 2002).

There is an offending agent in an inoculation message. The "viral" component is the presence of counterattitudinal arguments, albeit weakened by refutations of the arguments. Nevertheless, this viral component leads to the possibility of spreading, just as the live vaccine component of a medical vaccine may also spread. We argue that the extension of a spreading biological inoculation toward spreading attitudinal inoculation is justified, joining other biological metaphors used to describe transmission of information along social networks (see, e.g., Rosnow & Fine's, 1976, neural impulse comparison with rumor spreading).

Issues of WOMC content and modality postinoculation

The preceding makes a strong case for why inoculation messages would be more prone to instigate WOMC and argues that this possibility also is consistent with the

medical analogy on which the theory is grounded. But to this point, we have only established the theoretical rationale for why inoculation messages may promote further discussions about the target issue—spreading issue content. We have not yet addressed whether conditions would be conducive for spreading inoculation (two-sided messages or counterarguments and refutations). Furthermore, is word-of-mouth conversation along social networks a viable modality for inoculating?

Contemporary inoculation research has examined effects of modality on resistance (Pfau, Holbert, Zubric, Pasha, & Lin, 2000). We argue that WOMC is a particularly promising additional mode for conferring resistance. First, irrespective of whether the ensuing discussion is of counterarguments and refutations, the act of simply talking about an issue among social networks may lead to more resistant attitudes. Visser and Mirabile (2004) revealed that engaging in dialogue with like-minded individuals causes attitudes to be more resistant to persuasive attempts.

Second, how recipients view the source of conversational content affects how the information is interpreted (Hilton, 1995). We argue that the pass-along effects of postinoculation talk may be particularly strong due to the role of source credibility in messages transfer. Simply, high source credibility enhances persuasiveness (Hovland, Janis, & Kelley, 1960). “[O]ften,” assert Huckfeldt and Sprague (1995), “the most credible messengers are the friends and neighbors and coworkers whose viewpoints we take seriously” (p. 22). Although source credibility is commonplace in persuasion research (Eagly & Chaiken, 1993), investigations of source credibility in inoculation research are relatively sparse (Compton & Pfau, 2005). The research that has considered source effects in resistance focused nearly exclusively on perceived credibility of the source of the attack (e.g., Pfau & Kenski, 1990; Stone, 1969; Tannenbaum, 1967; Tannenbaum, Macaulay, & Norris, 1966). One study looked at the perceived credibility of the source of the inoculation message and found that when perceived expertise and trustworthiness are more positive, inoculation’s efficacy is enhanced and vice versa (An & Pfau, 2004a). There is reason to believe that inoculation messages transmitted along social networks would be more effective than those transmitted by a more sterile source. Simply, if inoculation messages motivate continued conversations about the target issue, the message moves from a sterile source (the source of the inoculation message) to a trusted friend. Even if inoculation messages only motivate talking about one side of the issue, the ensuing WOMC would likely be influential: It bolsters the attitude and comes from a trusted member of one’s social network. As Carl and Duck (2004) have observed, “the relationship between people can exert a perpetually influential effect on their acceptance of, or resistance to, persuasion attempts” (p. 26).

But can we extend analysis from one-sided messages to two-sided messages—sharing both counterarguments and refutations as an effect of inoculation? We argue that we can, with the same rationale provided above. We argued previously that inoculation messages enhance issue involvement, negative affect, and attitude accessibility and that these, in turn, should trigger subsequent WOMC (e.g., seeking

reassurance or engaging in advocacy). Although this proposition requires empirical support, we maintain that, because inoculation treatments provide both counterarguments and refutations, people will talk with others about both.

We will take our argument one step further: WOMC may be more than an incidental product of inoculation; under some circumstances, it may be a process of inoculation. Inoculation scholars have long argued that the interim between the inoculation treatment message and the eventual attitude attack is an important time—from McGuire's (1964) early theorizing that the delay would involve "the believer's accumulating more supportive material" (p. 209) to more contemporary theorizing of the importance of the delay between inoculation and attack (e.g., Pfau et al., 2004; Pfau, Compton, et al., 2006). Extant inoculation research indicates only that *something* happens between the administration of inoculation treatment message and the eventual attack message that leads to "more supportive material." Scholars assume that the process is internal (Pfau, 1997). During the delay those inoculated engage in "cognitive reorganization" (Wyer, 1974, p. 206) "are motivated to think about their position, enumerate arguments contrary to their attitude, and contemplate responses to those argument" (Pfau et al., 1997, p. 192) and are "stimulate[d] ... to develop supporting arguments and to think up and refute other counterarguments" (McGuire & Papageorgis, 1961, p. 333). The consistent thread in these explanations is that the change in the interim occurs within the individual, seemingly affecting cognitive processing (e.g., Bechwati & Siegal, 2005) or affective reactions (e.g., Jacks & Devine, 2000). Yet, the focus is nearly exclusively on internal processes—primarily counterarguing (e.g., Pfau, Compton, et al., 2006). Counterarguing is described in contemporary resistance research as: "[A] person begins to think through potential arguments contrary to attitudes and answers to those arguments" (Pfau et al., 2004, p. 331).

Perhaps the process is also external. Postinoculation, people may turn to their friends and family to discuss the issue, moving our focus from the conventional internal process of bolstering attitudes (counterarguing) to the external process of conversation among social networks. As Robinson and Levy (1986) assert of television's influence: "[W]e would contend that to a large extent information does not sink in (or become 'deep processed') until it has been tested and evaluated against the norms and attitudes of one's peers and colleagues" (p. 234).

Based on unique characteristics of the inoculation messages (threat, involvement, and accessibility) and the special nature of the modality of word-of-mouth communicating along social networks, spreading inoculation is much more than a possibility; it is a likelihood.

Campaign contexts and modes

Next, we turn to two broad contextual applications of inoculation campaigns and their effects on intent to talk about the issue: politics and healthcare. These two contexts provide exemplars for spreading inoculation in myriad campaign contexts.

Furthermore, our discussion of the following context-specific types of inoculation-motivated WOMC further illustrates the nature and content of postinoculation talk (e.g., confrontations).

We have had empirical support for inoculation's efficacy in politics since 1988 (Pfau & Burgoon, 1988). Subsequent research has established its efficacy in direct mail advertising (Pfau et al., 1990), party-sponsored issue advertising (Pfau, Park, Holbert, & Cho, 2001), television debates (An & Pfau, 2004b), and even photographs in newspapers (Pfau, Haigh et al., 2006). Recently, inoculation's efficacy was extended to an international political context (Lin, 2005; Lin & Pfau, 2007). How might inoculation-motivated WOM political talk function as a product of inoculation-based campaign messages?

People feel free to talk about politics (Wyatt, Katz, & Kim, 2000; Wyatt, Kim, & Katz, 2000) and are doing a lot of it (Wyatt, Kim et al., 2000)—particularly during campaigns (Pan, Shen, Paek, & Sun, 2006). The sheer volume of political conversations portends potential for influence. Greenberg (1975) indicates that attempts to persuade (albeit unsuccessful in most instances) occur in 47% of all conversations (even more often in political conversations). Although most talk occurs with people who are similar in attitude disposition, where the potential for influence is limited (Beck, 1991), “citizens are frequently exposed to political disagreement, and political homogeneity is not the norm” (Huckfeldt, Johnson, & Sprague, 2004, p. 203).

Political talk leads to political learning (Kennamer, 1990) and political behaviors (Lee, 2005; Wyatt, Kim et al., 2000), and effects are even greater when talk is combined with other forms of newsgathering, such as the Internet (Nisbet & Scheufele, 2004). Mohammed (2001) found that effects of discussion following mediated campaigns are stronger than the campaign itself—a “turbocharger” effect. Furthermore, engaging in political talk with those who disagree leads to enhanced understanding, what Price, Cappella, and Nir (2002) term “the ‘value of disagreement’ thesis” (p. 108). This type of dialogue is common; for example, Stromer-Galley (2003) found that online political conversation is often with people holding divergent viewpoints. Sotirovic and McLeod (2001) found that discussions with those of contrasting views also contribute to positive political behaviors. Furthermore, a number of political studies have looked at the commingling effects of mass-communicated campaigns and interpersonal communication (e.g., Lenart, 1997; Sotirovic & McLeod, 2000). For example, Sotirovic and McLeod revealed that “people learn from newspaper public affairs content and that they elaborate and argue about what they learned in interpersonal discussions” (p. 287). Notably, inoculation provides refutation to counterarguments, which might make those inoculated more confident to engage in confrontations with those with opposing viewpoints, or to overcome the tendency to suppress opinion sharing with those of divergent viewpoints (Verplanck, 1955).

If inoculation motivates dialogue within social networks, and conversation plays such a prominent role in politics, the potential for spreading inoculation in the context of politics seems especially promising. Indeed, political conversations

have unique attributes that suggest politics may be the best context for spreading inoculation. For example, Pan et al. (2006) found that “the more extreme one’s ideological orientation, the more frequently one talked politics” (p. 333). Because inoculation bolsters attitudes toward issues, it creates the ideal climate for political discussions. We can draw a number of other connections among political discussion and inoculation treatments. Encounters with divergent viewpoints are powerful (Price et al., 2002; Sotirovic & McLeod, 2000), and an inoculation treatment includes oppositional views by design.

Research indicates that inoculation treatments, initiated via media campaign communication, render political attitudes resistant to change; it locks in people’s attitudes toward candidates and their likelihood of voting for them (An & Pfau, 2004a, 2004b; Pfau & Burgoon, 1988; Pfau et al., 1990). Furthermore, it may work both for convergent and for divergent political attitudes. Indeed, the unique nature of inoculation messages may overcome a hurdle recognized by many political communication scholars, reinforcing attitudes among both convergent and divergent receivers. The reason is that inoculation messages contain both “like-minded” and “unlike-minded” content. Scheufele, Nibset, Brossard, and Nisbet (2004) discuss the motivational component of political discussion in heterogeneous networks, suggesting further benefits of pass-along inoculation:

Being exposed to contradictory information in their social environment also forces individuals to follow up on these interactions by seeking out more information in mass media or other sources in order to bolster their initial positions or even rethink their original issue stances. (p. 332)

This position is supported by the findings of recent research by Wood (2007), which revealed that inoculation treatments exerted reinforcing effects, including the generation of counterarguing output and resistance to counterattitudinal attacks, both with receivers who initially supported the attitudinal position that investigators had sought to bolster and among those who were initially neutral; among those who opposed that position, the inoculation treatment produced persuasive outcomes.

Not only does inoculation render attitudes more resistant, it uniquely contributes to further political talk, even among those who think their attitudes are out of favor. Lin and Pfau (2007) investigated the potential of inoculation to combat “fear of isolation,” which renders people mute in the face of what they perceive to be majority opinion. The fear of isolation is the motivational underpinning of Noelle-Neumann’s (1984, 1993) spiral of silence, which renders people silent in the presence of others who hold the prevailing opinion. Lin and Pfau (2007) studied inoculation using a hotly contested issue in Taiwan politics: That country’s future with regard to the People’s Republic of China. They found that inoculated participants became more confident in their initial attitudes, were more likely to speak out on behalf of those attitudes, even in the presence of those who might disagree, and were more likely to overtly resist the counterattitudinal influence attempts of others. In this

study, inoculation was accomplished using traditional media. However, results carry important implications for political discussion. Early work in conversation suggests that encountering disagreement suppresses individuals' opinion sharing (e.g., Verplanck, 1955), so perhaps inoculation is an antidote, prompting the sharing of opinions.

Health campaigns also provide fertile ground for continued exploration of spreading inoculation (see Southwell & Yzer, 2007, for a review of health campaigns and interpersonal communication). Discussions with potential sex partners about AIDS, for example, are important in its prevention (Snell & Finney, 1990). Some campaigns explicitly implore viewers to talk with others about the issues, such as an antidrinking and driving advertisement from Project TEAM (Techniques for Effective Alcohol Management) (Dejong & Atkin, 1995), and researchers have encouraged antidrug campaigns to explicitly point out how the campaign information can be used in future conversations with others (e.g., Hanneman, 1973). Exposure to antib tobacco campaigns has been found to motivate discussions with friends, family, and others (e.g., White, Tan, Wakefield, & Hill, 2003). Peer-led campaigns have established efficacy (e.g., Perry, 1987). Researchers have called for continuing explorations into dissemination of health messages (e.g., Foon, 1986). Mohammed (2001) calls for "designers of entertainment-education and other health interventions [to] consider ways in which peer networks can turbocharge their efforts" (p. 152). Inoculation may be a method to turbocharge these postcampaign discussions.

We have argued that inoculation message campaigns have inherent components that are uniquely conducive to WOMC when compared to conventional persuasive messages. Furthermore, in our discussion of two campaign contexts, politics and health, we articulate what this postinoculation talk may look like and its potential effects on engaging in advocacy and confrontation. We summarize our analysis of postinoculation talk in the following propositions:

1. Inoculation has two features that motivate talk: Threat leads those inoculated to seek reassurance from one's social network and the attitude bolstering effect of inoculation compels individuals to advocate for the now-strengthened position.
2. The reassurance function of postinoculation talk strengthens the inoculative effect on direct recipients of the inoculation message. That is, those inoculated experience elicited threat, turn to those in their social network for reassurance, and thereby strengthen the target attitude.
3. Those inoculated are more confident in their ability to confront others holding opposing attitudes. The inoculation message preempts counterarguments and strengthened attitudes, including issue involvement and attitude accessibility (i.e., enabling better and faster counterarguing).
4. Inoculation messages coming from those in one's social network are more influential than from a more sterile source, such as mass media.

Future research

The preceding rationale for spreading inoculation along social networks raises a number of areas for future research and theory development. Next, we outline some of these issues.

As research continues to investigate pass-along effects of inoculation treatments, scholars should ask not only *if* those inoculated are talking about the issue with others but also *what* specifically they are talking about—filling a void in social science scholarship (Okamoto & Smith-Lovin, 2001). As Bearman and Parigi (2004) noted, “little attention has been paid to what people actually talk about when they talk about important matters” (p. 537). Researchers should ask *why* they are talking about the issue as well—what Schank (1977) calls “conversational purposes” (p. 441). In our current essay, we focused primarily on reassurance (a result of the threat component of inoculation) and advocacy (a result of the attitude bolstering product of inoculation), but we acknowledge other goals of talk. Conversation planning theory (e.g., Waldron, 1997) suggests that goals of conversations matter and empirical evidence assessing attribution theory, and WOMC also, suggests that recipients’ views of why someone is sharing information influences how the information is received (e.g., Lacznik, DeCarlo, & Ramaswami, 2001). Perceived goals of inoculation-motivated WOM talk warrant further exploration.

We must also continue to flesh out potential differences in how inoculation WOMC functions in the laboratory with how it functions in the field. Although exposure to “attack messages” has been allowed to occur naturally in previous research (e.g., Pfau et al., 1992), exposure to the initial inoculation messages in resistance research has been forced. To promote the naturally occurring WOMC that has been the focus of this essay, we must consider how to motivate people to choose to attend to the inoculating messages in the first place. Also, McGuire (1961) once wondered whether inoculation would retain its efficacy in the face of attitude attacks launched by one’s friends. In the natural context of postinoculation WOM conversations, maybe those listening to the pass-along inoculation content may not simply listen—they might talk back and attempt to refute the arguments. Indeed, it is plausible that some in one’s social network may not respond favorably to the postinoculation WOM talk, leading to second-order inoculation effects that prohibit rather than promote the intent of the inoculation campaign. Indeed, Lacznik et al. (2001) found in their marketing research that when a communicator of negative WOMC is blamed for the negativity, individuals may instead “rally to [the brand’s] defense” (p. 69). Finally, although we argue that those inoculated will be motivated to share all the content from an inoculation message (counterarguments, refutations, and threat), our argument needs empirical support.

As inoculation research continues to add more nuanced understanding of the time and scope of inoculation treatments and processes (e.g., Pfau et al., 2004), future WOMC inoculation research should look at the duration of pass-along effects.

When do the WOMC effects stop? Dutwin (2003) found that political conversation leads to more political conversation—with subsequent conversations of more depth, breadth, and quality. What is the optimal duration of time for postinoculation WOMC—and can inoculation messages be crafted to sustain WOMC for this amount of time? Furthermore, are pass-along effects more likely immediately following the inoculation message, in the interim between treatment and attack, or after the attack?

Individual differences matter when it comes to talking about issues postcampaign messages (David, Cappella, & Fishbein, 2006). Huckfeldt and Sprague (1995), for example, note that “gender has a pronounced effect on the choice (and evaluation) of discussion partners by men and women” (p. 203). Inoculation research has failed to reveal many significant gender differences. However, some extant research into personal conversations suggests that we may find gender influence on WOMC (e.g., Schulster, 2006). Gender, then, may be a moderator for WOMC effects of inoculation campaigns. Other individual differences need further study in the context of WOMC and inoculation, including potential effects of sensation seeking (Hwang & Southwell, 2007).

Conversations with those who disagree can lead to enhanced understanding of oppositional viewpoints, thereby promoting civility (Price et al., 2002). Can we reason, then, that an inoculation message—which presents two sides of an issue—also enhances not only political conversation but also civility? Of course, for this prediction to materialize, we would need a better understanding of the tone of the word-of-mouth dialogue. As an early conversation guide reminds us: “[I]t is the manner, the tone, in which the disagreement is expressed that makes it acceptable—or offensive” (Nutley, 1953, p. 128). Civility warrants inclusion in future inoculation/WOMC research.

There are a few caveats to our primary argument that need further assessment. First, not all inoculation message features are conducive to continued WOM dialogue. For example, Pfau and colleagues found that inoculation messages directly enhance attitude certainty (Pfau et al., 2004, 2005) and attitude strength (Pfau et al., 2003). If uncertainty motivates WOMC (Valente et al., 1996), it is reasonable to assume attitude certainty and strength exert the opposite effect and may deter the intent to talk about the issue.

As we have noted previously, it is possible that the spread of inoculation content may be one sided. We have assumed to this point that the one side would be the “positive” side—the side that supports the position of the inoculated. However, it may be that the viral agent itself is spread or the “negative” side. Just as epidemiologists are concerned about the spread of the actual polio virus with live polio vaccines (Fine & Carneiro, 1999), inoculation practitioners should investigate the spread of the counterarguments postinoculation. As we continue to better understand the inoculation process of resistance, practitioners of campaign messages will be more likely to craft inoculation messages that promote the spread of intended information.

Conclusions

Our proposed direction for inoculation research presented here would shift the focus of future inoculation research about the process of resistance from intrapersonal to interpersonal communication. Inoculation research to date has stressed what goes on in people's minds during the process of resistance. What inoculation research needs to do next is to learn what goes on in people's discussions and dialogues with others following the administration of inoculation treatments. As Southwell and Yzer (2007) note, more research into WOMC's impact on resistance is needed. Implications abound not only for how inoculation functions but also for its practical applications in campaigns. Powerful campaigns are those that not only inform and persuade but also motivate further talk (Pan et al., 2006). "A person is more likely to be influenced by messages that stimulate discussion between the individual and his or her groups of significant others or associates" (Carl & Duck, 2004, p. 26).

Future inoculation research should assess the role of WOMC in resistance to influence and campaigning. Quantitative, experimental approaches should include intent to talk about the issue as both an independent and dependent variable—assessing whether WOMC is an effect and a moderator of conferred resistance. Structural equation modeling seems a viable approach to clarify WOMC's role. Furthermore, qualitative research (e.g., focus groups, in-depth interviews) seems a useful method to further clarify whether those inoculated are more prone to share the content with others postinoculation treatments.

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La diffusion de l'inoculation : Inoculation, résistance à l'influence et communication de bouche à oreille

Résumé

Bien que l'efficacité de l'inoculation pour générer de la résistance face à l'influence ait été établie chez ceux directement exposés à des messages d'inoculation pré-traitement, nous soumettons que les effets de l'inoculation peuvent s'étendre des personnes directement exposées à d'autres personnes par le biais de la communication de bouche à oreille (CBO) dans les réseaux sociaux. Nommément, nous arguons que les effets de l'inoculation sur l'accessibilité des attitudes, sur l'implication et sur la menace sont particulièrement propices à la propagation du contenu d'inoculation et nous proposons la CBO comme une nouvelle modalité d'inoculation.

Die Verbreitung von Inokulation: Inokulation, Widerstand gegen Beeinflussung und mündliche Kommunikation

Auch wenn die Wirksamkeit von Inokulation bezüglich des Widerstand gegen eine Beeinflussung für diejenigen, die der inokulativ behandelten Botschaft direkt ausgesetzt werden, nachgewiesen wurde, argumentieren wir, dass diese Inokulationseffekte auch auf diejenigen ausgedehnt werden können, die über einen direkten Zugang hinaus, nämlich durch mündliche Kommunikation in sozialen Netzwerken, mit diesen in Kontakt kommen. Wir nehmen an, dass insbesondere die Inokulationseinflüsse auf Einstellungszugänglichkeit, Involvement und Bedrohung dazu dienen, den Inokulationsinhalt zu verbreiten, und führen deshalb die mündliche Kommunikation als neue Inokulationsmodalität ein.

Diseminando la Inoculación: La Inoculación, La Resistencia a la Influencia, y la Comunicación Boca a Boca

Resumen

Aún cuando la inoculación ha establecido eficacia en conferir resistencia a la influencia de aquellos expuestos directamente a los mensajes de pre-tratamiento de inoculación, sostenemos que los efectos de la inoculación pueden extenderse más allá de aquellos directamente expuestos a otros mediante la comunicación boca a boca (WOMC) en las redes sociales. Mantenemos, específicamente, que los efectos de la inoculación sobre la actitud de accesibilidad, participación y amenaza son particularmente propicios para la diseminación del contenido de la inoculación, ofreciendo la comunicación boca a boca (WOMC) como una nueva modalidad de la inoculación.

预防的扩散：预防、对影响的抵制和口头传播

对于那些直接暴露在实验前信息的人来说，预防已证明了其在抵制影响方面的有效性。 尽管如此，我们认为预防的影响不限于那些直接接收信息的人，而且可以通过社会网络的口头传播延伸至其他人群。 具体来说，我们认为，预防对态度的可达性、参与程度及威胁的影响有益于预防的扩散，使口头传播成为一种新的预防方式

감화의 확산: 감화, 반응에 대한 저항, 그리고 구전 커뮤니케이션

요약

비록 감화가 감화사전처리 메시지의 직접 노출 영향에 대한 저항에 있어 효력을 보여 왔어도, 본 논문은 감화의 효과는 사회적 네트워크를 통한 구전 커뮤니케이션을 통해서 다른 사람들에게 직접적으로 노출되는 것을 넘어서 확대될 수 있다는 것을 논의하고 있다. 특히, 본 논문은 태도 접근성, 개입 그리고 처리에 대한 감화의 효과는 특별히 감화내용의 확산에 대해 전도성이 있다는 것을 논의하였는바, 이는 구전 커뮤니케이션이 새로운 감화 양상이라는 것을 제의하는 것이다.

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