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Beyond Simple Inoculation: Examining the Persuasive Value of Inoculation for Audiences with Initially Neutral or Opposing Attitudes

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*It is well established that—among individuals who hold an attitude toward a topic—inoculation messages can help promote resistance to counterattitudinal attacks. Yet, the utility of inoculation theory for communication campaigns may ultimately depend upon the effects inoculation messages have on individuals who are initially opposed or neutral regarding the topic. A three-phase experiment (*N = *282) was conducted to examine the effects of inoculation and supportive messages among individuals with neutral and opposing attitudes. The results revealed that, compared to the control groups, inoculation and supportive messages moved neutral and opposing attitudes in the message-advocated direction. Moreover, inoculation and supportive messages protected these attitudinal gains from attack-message-induced slippage. Since inoculation messages outperformed supportive messages, inoculation has potential utility for communication campaigns.*

Keywords: Attitude Change; Inoculation; Message-Sidedness; Persuasion; Resistance

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Inoculation theory offers a robust strategy for making individuals resistant to counterattitudinal attacks. Developed by McGuire (McGuire, 1961, 1962; McGuire & Papageorgis, 1961), inoculation involves forewarning individuals about an impending attack on an attitude they hold and identifying and refuting potential counterarguments. An inoculation campaign targeting loyal consumers of a particular brand of automobile, for example, would first recognize that the audience members might encounter others (e.g., competitors or owners of other automobile brands) attempting to persuade them to try a different brand; then, it would highlight some of the claims would-be persuaders might make about the limitations of the consumers' preferred brand and refute these claims. When they encounter these would-be persuaders, loyal consumers would be better prepared to defend their preferred brand's attitude and less likely to be persuaded. A series of studies (Ivanov, Pfau, & Parker, 2009b; McGuire, 1961; 1962; Pfau et al., 2006; for a review see, Compton, 2013), including a recent meta-analysis (Banas & Rains, 2010), have demonstrated the superiority of inoculation over supportive, attitude-bolstering message strategies in conferring resistance to later persuasion attempts. Despite such evidence, questions remain about the theory and its potential applications (Compton, 2013; Compton & Pfau, 2005).

One important question involves the utility of inoculation theory for developing effective communication campaigns (Ivanov, 2011; Pfau, 1995). Applying inoculation in a campaign would seem to require targeting only those individuals who already have an established attitude toward a given topic that is desired by the campaign specialist. In a campaign, for inoculation to make a person's attitude resistant to counterattitudinal attacks, this attitude has to be already in place and consistent with the campaign's message. Yet, it seems reasonable that, particularly in media campaigns, individuals who have attitudes opposed and/or neutral to the campaign's advocated message will be routinely exposed to inoculation messages as well. So, what happens, for instance, when people who do not have strong feelings (i.e., have a neutral attitude) about, or actively dislike (i.e., have an opposing attitude), a particular automobile brand encounter an inoculation message targeting the brand's loyal consumers? Wood (2007) hypothesized that inoculation would have no influence on individuals holding a neutral attitude and create a boomerang effect among individuals holding an opposing attitude (to the position advocated in the inoculation message, henceforth referred to simply as *opposed* or *opposing*). Her findings, however, were inconsistent with these predictions. After receiving an attack message, inoculated participants with initially neutral and opposing attitudes exhibited a shift toward the inoculation-advocated position on the focal topic to a greater degree than participants in the control groups.

The purpose of the present study is to extend prior research and better understand the effects of inoculation messages on individuals with neutral and opposed attitudes about a target topic. We first explicitly consider how and why inoculation might serve to improve the attitudes of individuals who initially hold a neutral or opposing position. Then, we report a test designed to isolate the effects of inoculation on these two groups. Beyond advancing our understanding of the practical implications of inoculation theory, exploring the effects of inoculation on individuals with neutral and opposing attitudes will offer novel insights about the basic mechanisms driving inoculation processes.

LITERATURE REVIEW

The Effects of Inoculation on People with Established Attitudes

Inoculation theory emerged from earlier studies that suggested the superiority of two-sided messages over one-sided messages in generating resistance (Ivanov, Parker, & Compton, 2011; Lumsdaine & Janis, 1953). Dubbed "the grandparent theory of resistance to attitude change" by Eagly and Chaiken (1993, p. 561), inoculation uses a medical analogy to explain how it provides resistance: Just as a vaccine confers resistance to illness by injecting an otherwise healthy individual with a weakened form of a virus, an inoculation message confers resistance to attitude change by introducing an individual to weakened arguments opposing his or her initial attitudes. The theory draws a parallel between the antibodies the body creates to fight a virus and the counterarguments an individual produces to resist a persuasive challenge (Compton, 2009).

Reasoning that vaccines are administered to patients in a germ-free environment, McGuire (1964) tested attitudes that were previously unquestioned and unexposed to counterattitudinal messaging. The attitudes McGuire tested were cultural truisms, or widely accepted beliefs; he theorized that living in an ideologically monolithic environment would prevent individuals from considering the vulnerability of their attitudes or the likelihood of encountering an attack (McGuire & Papageorgis, 1961). Contemporary studies expanded inoculation theory beyond cultural truisms and provided strong evidence that the theory is not contextually bound. Indeed, Szabo and Pfau (2002, p. 252) noted, "Inoculation is appropriate for any context where strongly held attitudes are vulnerable to challenge."

Traditionally, inoculation has been used as a defense strategy to bolster established attitudes before these attitudes are attacked. For example, the automobile company highlighted in the introduction would deliver its inoculation message to its loyal consumers in advance of an attack from rival brands. Results from previous studies have demonstrated that inoculated participants are more resistant to subsequent attacks than participants who receive no preemptive treatment (Pfau, Holbert, Zubric, Pasha, & Lin, 2000; Pfau et al., 1997, 2001, 2003, 2004, 2005; Wood, 2007). In addition, Banas and Rains's (2010) meta-analysis of more than 40 inoculation experiments showed that inoculation treatments are effective in promoting resistance. As such, to first demonstrate the effects of inoculation on protecting established attitudes, the following hypothesis is advanced:

> H1: Individuals with established attitudes who receive an *inoculation* message designed to protect these attitudes will report less attitude change in the opposite direction (i.e., greater resistance) as a result of a persuasive message attack compared to individuals with initially established attitudes who receive a *control* message.

McGuire and Papageorgis theorized that supportive messages, which only advocate the position already held by an audience, actually make individuals overconfident in the strength of their beliefs, rendering these attitudes more vulnerable to attacks (1961). As such, inoculation theory scholars have traditionally compared the effectiveness of inoculation messages to that of bolstering (supportive) one-sided messages

in various contexts ranging from health campaigns to politics. A supportive message used by an automobile company, for instance, would simply involve highlighting the benefits of the preferred brand; the potential for one's probrand attitude to be attacked or the nature of such attacks would not be addressed. In their meta-analysis, Banas and Rains (2010) concluded that individuals who received inoculation treatments were more resistant to subsequent attacks on their attitudes than participants who received supportive treatments. This conclusion is supported by Compton and Pfau's (2005) review of inoculation research. However, the value of supportive messages, relative to no protection at all, should not be overlooked. Researchers have tested supportive messages in various settings (Belch & Belch, 2007; Healy & Griffin, 2004; Ivanov et al., 2009b; Sawyer, 1973; Wan & Pfau, 2004) and found supportive messages to be effective in promoting resistance relative to no-message control conditions (for a review, see Banas & Rains, 2010). In sum, although a supportive defense strategy may be more effective in conferring resistance than no preemptive treatment, it should produce less resistance than inoculation. The following hypotheses are advanced to test these expectations:

H2: Individuals with established attitudes who receive a *supportive* message designed to protect these attitudes will report less attitude change in the opposite direction (i.e., greater resistance) as a result of a persuasive message attack compared to individuals with initially established attitudes who receive a *control* message.

H3: Individuals with established attitudes who receive an *inoculation* message designed to protect these attitudes will report less attitude change in the opposite direction (i.e., greater resistance) as a result of a persuasive message attack compared to individuals with initially established attitudes who receive a *supportive* message.

The Effects of Inoculation on People with Neutral or Opposing Attitudes

Because inoculation is almost exclusively studied among people with an established attitude toward a target topic, questions remain about the effects of inoculation on audience members with a neutral or opposing attitude. Yet, it seems reasonable that these groups would be reached in an inoculation campaign. Beyond loyal consumers, an automobile company's inoculation messages could be heard or read by people who do not feel strongly about or dislike the brand. Moreover, historical precedent exists for examining the effects of inoculation on individuals with neutral or opposing attitudes. In one of McGuire's (1961) first studies, he concluded that refutational messages were equally successful when given before an attack (inoculation) or after an attack (restoration). The initial beliefs of participants were attacked and moved in the opposite direction as a result. The use of refutational messages after the attack had the effect of partially restoring the original beliefs. If a message receiver with an opposing attitude is analogous to a receiver whose original attitude was attacked and moved in the opposite direction as a result, then an inoculation message directed to an individual with an initially opposing attitude may have a similar effect as an

inoculation message serving an attitude-restorative function. More recently, Wood (2007) directly examined the effects of inoculation on individuals with neutral and opposing attitudes. The original purpose of her study was to investigate whether inoculation produced unintended effects among those individuals opposed or neutral to a campaign's message. She hypothesized that, particularly among individuals with opposing attitudes, inoculation might create reactance and lead them to feel even more opposed to the inoculation message-advocated position. Contrary to her predictions, she found that, after an attack, inoculated participants who initially held a neutral or opposing attitude to the one advocated in the inoculation message ended with attitudes more consistent with those advocated in the inoculation message condition than did participants in the control conditions.

Although Wood's (2007) study makes a valuable contribution to research on inoculation theory, important questions remain about the effects of inoculation on individuals with neutral and opposing attitudes. Because Wood used a no-message control group, it is not possible to rule out the competing explanation that the differences she found stemmed from exposure to arguments in favor of the topic—and not specifically inoculation processes. It may be that simply seeing a message advocating for a topic that one is against (i.e., a one-sided supportive message) would be sufficient to prevent individuals' attitudes from becoming even more opposing in response to a message attacking the topic. Comparing the effect of an inoculation condition with that of a supportive message condition would help address this issue and better isolate the unique effects of inoculation. Additionally, Wood's study only examined the impact of inoculation on participants' attitudes following a counter-attitudinal attack. It remains to be seen whether—after receiving an inoculation message, but before an attack—inoculation fosters stronger attitudes toward the target topic. Finally, the attack messages in Wood's study addressed exactly the same issues as were discussed in the inoculation message. The effects of inoculation—in a persuasion, rather than resistance, setting—on individuals with neutral and opposing attitudes may not extend to instances when individuals are exposed to novel attack messages.

Given Wood's (2007) prediction that inoculation would be ineffective or backfire among individuals with neutral or opposing attitudes, it is not surprising that those potential reasons why inoculation might foster attitude change among these groups were not considered in greater depth. However, closer inspection of the structure of inoculation messages suggests their persuasive potential among individuals with neutral and opposing attitudes. The two components of an inoculation message include threat and refutational preemption. A passive refutational preemption, which is commonly used in inoculation research (Banas & Rains, 2010; Compton & Pfau, 2005), essentially consists of a two-sided message. Indeed, message sidedness has been repeatedly cited as the inspiration for inoculation theory (e.g., Compton & Ivanov, 2012, 2013; Ivanov, 2011). Whereas a one-sided (supportive or bolstering) message strictly argues in support of only one side of an issue, a refutational two-sided message identifies competing arguments against an issue and then proceeds to refute them (Allen et al., 1990). O'Keefe's (1999) meta-analysis showed that two-sided

refutational messages were superior to both one-sided (supportive or bolstering) messages and two-sided nonrefutational (offering opposing viewpoints without refuting them) messages. As such, two-sided refutational messages, which are an essential element of inoculation messages, appear to offer a strategy not just for maintaining attitudes (or resisting persuasion), but for creating new attitudes and changing opposing attitudes.

Through serving as a two-sided message, the refutational preemption component of inoculation could shape neutral attitudes and change opposing attitudes. For individuals who have opposing or neutral attitudes toward a topic, an inoculation message may—particularly through refutational preemption—make them aware of alternate positions on an issue that may have not been previously considered and, as a result, cause their attitudes toward the topic to become more consistent with the inoculation message. In attempting to protect established attitudes toward a topic, an inoculation message would raise and refute arguments against the topic. In addition to bolstering the attitudes consistent with the inoculation message, this process could serve to highlight limitations of arguments against the opposite position on the topic and make the inoculation-consistent position seem more appealing to individuals initially holding an opposing or neutral attitude. For example, an inoculation message highlighting some purported limitations of an automobile brand and then dispelling those limitations could lead people who initially (i.e., prior to hearing the message) felt negatively or were indifferent to feel more positively about the brand.

Taken as a whole, the previous argument suggests that, in addition to serving as a means to protect established attitudes, inoculation messages may foster attitude change among individuals with initially neutral or opposing attitudes toward a target topic. Prior to having that attitude attacked, individuals with neutral or opposing attitudes should be moved in the direction advocated in the inoculation message. This possibility was not examined in Wood's (2007) study. A series of hypotheses were proposed in this project to test this notion. Along with a control message condition, the effects of inoculation were tested in comparison with a supportive message condition. Including a supportive message condition makes it possible to isolate the effects of inoculation above and beyond simply providing arguments in favor of a topic. Among individuals who have neutral or opposing attitudes toward a topic, receiving an inoculation message is proposed to render attitudes more consistent with the inoculation message advocated position than receiving a control message or a supportive message. Consistent with research on one-sided messages (O'Keefe, 1999), a one-sided message is proposed to foster more positive attitudes among these two groups than a control message.

H4: Among individuals with initially *neutral* attitudes, receiving an inoculation message will result in greater attitude change in the direction of the message compared to receiving a (a) control message or (b) supportive message; (c) receiving a supportive message will result in greater attitude change than receiving a control message.

H5: Among individuals with initially *opposing* attitudes, receiving an inoculation message will result in greater attitude change in the direction of the message compared to receiving a (a) control message or (b) supportive message; (c) receiving a supportive message will result in greater attitude change than receiving a control message.

Finally, in addition to investigating whether inoculation messages can persuade individuals with initially neutral or opposing attitudes, it is critical to understand the robustness of those attitudes shaped and changed by inoculation messages. Even if inoculation is effective in generating attitude formation and/or change, how stable are the results in the face of a persuasive attack? Although an inoculation message might lead people who hold neutral or opposing attitudes to feel more positive about the brand, it remains to be seen whether those gains would be sustained after exposure to a message attacking the brand. Moreover, which strategy (supportive or inoculation) has the greatest combined effect (persuasion and protection); that is, which strategy results in the most message-consistent attitude change when comparing postattack attitudes to the initial attitudes? Answering such questions is critical to understanding the practical consequences of inoculation. If the impact of inoculation messages is only limited to the realm of resistance and to individuals who already hold an established attitude, then inoculation is best used as a narrowly targeted strategy. However, if inoculation's impact on individuals with neutral or opposing attitudes is not only innocuous (i.e., not creating reactance; see Wood, 2007), but perhaps comparable to or even stronger than the effect of using a supportive message, then inoculation could be a strategy that is employed with general target audience members regardless of their initial attitudes. To assess the comparative effectiveness of inoculation and supportive strategies in protecting the gained changes against subsequent persuasive attacks, as well as the combined effects of persuasion and protection conferred by each strategy, the following research questions are posited:

RQ1: For individuals with initially opposing or neutral attitudes, how effective are inoculation and supportive strategies, compared to the control condition and one another, in protecting gains in attitude change (in the advocated direction) from a persuasive message attack?

RQ2: For individuals with initially opposing or neutral attitudes compared to the control group and one another, what is the combined (persuasion and protection) effect on attitudes (measured as attitude change from baseline to postattack) of inoculation and supportive strategies?

METHOD

A three-phase experiment was conducted to test the study hypotheses and answer the research questions. Participants who had a positive, negative, or neutral attitude toward one of three tourist destinations were randomly assigned to receive an inoculation message, supportive message, or control message. In the third phase of the study, participants read an attack message addressing the limitations of their destination.

Tourist Destination Selection

The experiment was designed to target respondents' positive (for the purpose of this study treated as *established*, treatment message congruent, attitudes), negative (for the

purpose of this study treated as *opposing*, treatment message *in*congruent, attitudes), or neutral attitudes about a tourist destination. As such, it was important to select tourist destinations about which participants' attitudes had some variation. To that end, participants' attitudes toward seven tourist destinations (Hong Kong, Salzburg, Beijing, Bangkok, Cozumel, Aruba, and Alaska) were assessed in the initial phase of the study. Based on the results, three tourist destinations were chosen for the study (Bangkok, $n = 95$; Hong Kong, $n = 107$; Salzburg, $n = 80$). Combined, they offered the most balanced distribution of initial attitudes by valence (i.e., positive, neutral, and negative).

Participants

Undergraduate students ($n = 282$) from a large southwestern university completed the three experimental phases (retention rate of 74% from Phase 1, $n = 381$; and 87% from Phase 2, $n = 324$) in return for extra course credit. The attrition rate is comparable to previous online inoculation studies (e.g., Miller et al., 2013). The composition of the sample was 31.2% male (68.8% female) and 70.6% Caucasian (18.8% Hispanic, 5.7% Asian or Pacific Islander, and 5.0% African American or Black). The average age of the participants was 20 years.

Procedure

The study was conducted in three phases. During the initial phase, participants' demographic (age, ethnicity, and sex) information was collected. In addition, the level of importance ascribed to each of the three tourist destinations, as well as participants' familiarity with each tourist destination (i.e., Hong Kong, Salzburg, and Bangkok), was captured to serve as covariates in the study. Each participant was asked whether he or she had previously visited the tourist destination in order to control for level of personal experience with each location. Baseline attitudes toward the tourist destinations were also assessed. At the conclusion of Phase 1, participants were randomly assigned to one of the three destinations (i.e., Hong Kong, Salzburg, and Bangkok) they had not previously visited.

Phase 2 commenced approximately 2 weeks after the conclusion of the first phase and involved presenting each participant with a treatment (i.e., inoculation or supportive message) or control message. Participants then completed a questionnaire assessing their level of perceived threat regarding the possibility of their attitude toward the tourist destination being attacked and an assessment of their attitude toward the destination. The third phase commenced approximately 2 weeks after the conclusion of Phase 2. Participants were first presented with the attack message. Then they completed the measures assessing their postattack attitude toward the tourist destination and level of counterarguing while reading the attack message. Counterarguing and threat served as manipulation check variables.

Experimental Materials

Treatment/Control Messages

The investigation featured both treatment/control and attack messages. Three treatment/control messages were prepared for each tourist destination and randomly distributed among the participants within each tourist destination condition. The control message, which was used in all control message conditions, was about the history of regulation. This message was unrelated to any of the travel destinations. The following is an excerpt from the control message:

> Government regulations through restrictions are not new, as they trace their history from the ancient Egyptian, Indian, Greek, and Roman civilizations. In a more contemporary context, beginning in the late 19th and 20th century, much of the regulatory policy in the United States was administered and enforced by regulatory agencies which produced their own administrative law and procedures under the authority of statutes.

There were two types of treatment messages. First, supportive messages provided several reasons why one should hold a positive (i.e., *established*) attitude toward the tourist destination. The supportive messages had the same format for all three destinations with the difference being that each argument for the destination was based on the strengths of the specific location. In accordance with previous studies (e.g., Ivanov, Pfau, & Parker, 2009a), only the positive attributes of the tourist destination were highlighted.[1]

The second treatment message consisted of the inoculation messages. According to both McGuire (1964) and Pfau (1995), threat is an integral component of the inoculation process. Hence, similar to previous inoculation studies (e.g., Miller et al., 2013; Pfau et al., 2005), the inoculation message began with a paragraph intended to explicitly generate threat by forewarning participants of an impending attack on their attitudes about the destination.[2] The refutational preemption component of the message consisted of two components: (a) an argument designed to tarnish the image of the tourist destination[3] and (b) refutations of these counterarguments in accordance with previous inoculation studies (e.g., Ivanov et al., 2009a; McGuire, 1964; Miller et al., 2013; Pfau et al., 2005).[4] Once again, the inoculation messages for all three tourist destinations were similarly structured, with the difference being the highlighted attributes, which were specific to each travel destination.

To ensure equivalence of all treatment/control messages and to avoid any confounds related to language or message variables (Burgoon, Miller, Cohen, & Montgomery, 1978), Becker, Bavelas, and Braden's (1961) Index of Contingency was used in this investigation. The index measures the reconstructability of sentences or readability by taking into consideration the total number of nouns and words of each message. Messages receiving similar index scores indicate equivalence. The treatment/control messages' index scores in this study ranged from .68 to .72 (787 to 797 words) indicating relative equivalence.

Attack Messages

The attack messages were designed specifically for the target audience (i.e., college students) and attempted to tarnish the image of the tourist destinations. Each participant within a tourist destination condition received the same attack message. The messages across tourist destinations were similar in form and differed only in the arguments presented, which were specific to each destination. The tarnishing arguments for each destination were different from the ones presented in the treatment/control messages. This setup allowed for greater generalizability of the results as one cannot always anticipate the exact arguments to be featured in a forthcoming message attack. The attack message was structured to appear to be coming from a fellow college student via social media[5] and offered specific arguments highlighting negative attributes of the tourist destination.[6] Becker et al.'s (1961) Index of Contingency was again used to demonstrate the equivalence of the three attack messages. The index score for all attack messages used in this study was 1.06, indicating equivalence. Attack messages ranged from 433 to 434 words.

Manipulation Check Variables

The success of inoculation has been ascribed primarily to two mechanisms associated with the inoculation process: threat and counterarguing (e.g., Compton, 2013; Compton & Pfau, 2005; Ivanov, 2011; McGuire, 1964). The threat acts as a catalyst, generating motivation for the individual to shore up her or his defenses after the attitudes have been rendered vulnerable. This motivation, in concert with the guided practice of refutation that the inoculation message provides, inspires the individual to engage in a process of counterarguing where he or she defends the attitudes in place. To ensure that the process of inoculation was successfully induced, the level of perceived threat and counterarguing were assessed.

Perceived Threat

Perceived threat regarding one's attitude toward the tourist destination was evaluated in the second phase of the study with a scale successfully applied in previous inoculation research (e.g., Ivanov et al., 2009a; Pfau, 1992; Pfau et al., 2005). The 7-point, six-item scale was composed of the following bipolar adjectives: nonthreatening/threatening, not harmful/harmful, not dangerous/dangerous, not risky/risky, calm/anxious, and not scary/scary. These items demonstrated excellent internal consistency ($\alpha = .95$).

Counterarguing

The level of counterarguing was assessed via a thought-listing technique (Petty, Wells, & Brock, 1976) successfully applied in a number of inoculation studies (e.g., Pfau et al., 2009). First, participants were asked to list and number all the arguments contrary to their position on the issue. Next, they were asked to list and number all

of their arguments in support of the issue. The level of counterarguing was derived by adding all of the arguments provided by the individual in support and opposition of the issue.

Moderators and Dependent Variables

Initial Importance of Tourist Destination Image

To control for the potential impact of initial importance of the tourist destination on the dependent variables, this variable was assessed using a simplified version of Zaichkowsky's (1985) personal inventory scale used in previous inoculation studies (e.g., Ivanov et al., 2009a). The 15-point, seven-item scale featured the following bipolar adjectives: unimportant/important, irrelevant/relevant, nonessential/essential, of no concern/of concern to me, does not matter/matters to me, useless/useful, and trivial/fundamental ($\alpha = .95$).

Attitude toward the Tourist Destination

Attitudes toward the tourist destination were measured using a 15-point, seven-item (where 1 is most negative and 15 is most positive) scale used in previous inoculation research (Ivanov et al., 2009a; Parker, Ivanov, & Compton, 2012). The items were bound by the following bipolar adjectives: negative/positive, dislikable/likable, bad/good, unfavorable/favorable, unacceptable/acceptable, undesirable/desirable, and all wrong/all right. This scale was used to evaluate initial (Phase 1), posttreatment (Phase 2), and postattack (Phase 3) attitudes toward the tourist destination. Reliabilities for the scale ranged from $\alpha = .97$ to $\alpha = .98$.

RESULTS

Preliminary Analysis: Manipulation Checks

Before addressing the hypotheses in the current study, it was important to first conduct some preliminary analyses. The main objective of this study was to assess the effects of inoculation when used on participants with established (in this study operationalized as *positive*), opposing (in this study operationalized as *negative*), and neutral initial attitudes. As such, it was essential to confirm that participants were appropriately assigned to these attitude groups. A one-way ANOVA was performed with attitude valence (i.e., positive, negative, or neutral) serving as the criterion variable and the initial (i.e., Phase 1) attitude toward the tourist destination as the outcome. As expected, the test result was significant, $F(2, 279) = 158.68$, $p < .01$, $\eta^2 = .53$. Dunn's planned comparisons (Kirk, 1995) showed that mean attitudes in the established groups, positive; $M = 11.21$; $SD = 2.52$; $n = 109$; neutral $M = 8.15$; $SD = 1.83$; $n = 101$; and opposing negative; $M = 5.22$; $SD = 2.27$; $n = 72$, were significantly different from one another. These results indicate that participants were properly grouped based on initial attitudes toward the tourist destination.

It was also essential to confirm that, consistent with previous inoculation studies (e.g., Miller et al., 2013; Pfau et al., 2009), inoculation was properly manipulated in its traditional sense (i.e., as a strategy of resistance). If effectively manipulated, inoculated participants with initially established (in this study *positive*) attitudes should have reported greater levels of threat and shown greater ability to counterargue compared to control participants with initially established (in this study *positive*) attitudes. A MANCOVA test was performed comparing control and inoculation group participants with established (in this study *positive*) initial attitudes on these variables. The level of importance of the tourist destination was treated as a covariate and the discrete variables of sex and destination were included in the analysis as fixed factors to ensure that the results were not an artifact of these variables.

The omnibus results revealed a main effect for condition, $F(2, 66) = 14.92$, $p < .01$, $\eta_p^2 = .31$, but not for sex, $F(2, 66) = .19$, $p = .83$, or tourist destination (i.e., Bangkok, Hong Kong, and Salzburg), $F(2, 67) = 2.11$, $p = .13$. None of the interactions were significant and neither was the covariate, $F(2, 66) = .39$, $p = .68$. The univariate tests for condition indicated significant effects on the dependent measures threat, $F(1, 67) = 20.08$, $p < .01$, $\eta^2 = .21$, and counterarguing, $F(1, 67) = 4.97$, $p < .05$, $\eta^2 = .06$. Individuals in the inoculation condition who had a positive initial attitude toward the tourist destination reported greater perceived threat ($M = 4.21$; $SD = .84$; $n = 32$) and provided greater counterarguing output ($M = 5.22$; $SD = 3.97$; $n = 32$) compared to individuals in the control condition who reported lower levels of perceived threat ($M = 3.03$; $SD = 1.26$; $n = 48$) and counterarguing ($M = 2.83$; $SD = 3.10$; $n = 48$). The preliminary analyses offer evidence that the inoculation manipulation was successful. Consequently, we proceeded with the main analyses to test the hypotheses and answer the research questions.

Main Analyses

Protecting Established Attitudes from Attack

The first set of the main analyses examined the efficacy of inoculation and supportive messages among individuals who initially held an established positive attitude. A univariate ANCOVA was conducted testing experimental message condition (inoculation, supportive, and control) as the independent variable and attitude change from Phase 1 to Phase 3 as the dependent variable. As with the preliminary analyses, in order to control for sex and tourist destination effects, these variables were entered as fixed factors in the analysis. Initial involvement with the destination (at Phase 1) was treated as a covariate in all three analyses. The univariate tests showed significant differences across the three conditions in attitude change among participants who initially had an established positive attitude, $F(2, 89) = 10.81$, $p < .01$, $\eta^2 = .17$. The main effects for sex and tourist destination were not significant; nor were the interaction effects or the covariate.

Dunn's planned comparisons were used to evaluate the mean differences among the conditions. Consistent with Hypotheses 1 and 2, the results showed that inoculation was a superior message strategy to a supportive message (H2) and the control message (H1) in protecting established (in this study *positive*) attitudes from a

Table 1 Dunn's Planned Comparison Results for the Hypotheses

Pairs Compared			
Dependent variables (initial attitude valance)	*F*	*df*	p/η^2
Inoculation and Control Message Comparisons			
(H1) *Attitude Change (Phase 3—Phase 1) (positive)**	26.06	(1, 79)	.17
(H4a) *Attitude Change (Phase 2—Phase 1) (neutral)**	11.68	(1, 69)	.20
(H5a) *Attitude Change (Phase 2—Phase 1) (negative)**	16.33	(1, 46)	.16
Inoculation and Supportive Message Comparisons			
(H2) *Attitude Change (Phase 3—Phase 1) (positive)**	7.75	(1, 59)	.06
(H4b) *Attitude Change (Phase 2—Phase 1) (neutral)*	1.90	(1, 71)	.17
(H5b) *Attitude Change (Phase 2—Phase 1) (negative)**	5.06	(1, 53)	.06
Supportive and Control Message Comparisons			
(H3) *Attitude Change (Phase 3—Phase 1) (positive)*	3.50	(1, 76)	.07
(H4c) *Attitude Change (Phase 2—Phase 1) (neutral)**	16.62	(1, 59)	.12
(H5c) *Attitude Change (Phase 2—Phase 1) (negative)*	3.87	(1, 46)	.06

Note. Negative attitudes were used as *opposing* attitudes, while *positive* attitudes were used as *established* attitudes. *Depicts statistical significance at $p < .05$. For nonsignificant results, the *p*-value is displayed. For significant results at $\alpha < .05$, η^2 is displayed.

persuasive attack. However, Hypothesis 3 was not supported. Although the mean differences were in the predicted direction and approached significance ($\alpha = .07$), supportive messages were not significantly more effective than control messages in protecting participants' established attitudes against a persuasive attack. The results of the planned contrasts are reported in Table 1. Means, standard deviations, and sample sizes for the various conditions are reported in Table 2.

Promoting Attitude Change

Two univariate ANCOVAs were conducted to evaluate the effects of inoculation among individuals with opposing (in this study *negative*) and neutral attitudes. The ANCOVAs were identical to the ones described in the previous section, except for the dependent variable and sample examined; attitude change was examined between Phases 1 and 2, and separate analyses were conducted for participants who initially had opposing and neutral attitudes. The ANCOVAs revealed significant omnibus differences in attitude change among individuals who initially had neutral, $F(2, 83) = 11.68$, $p < .01$, $\eta^2 = .18$, and opposing, $F(2, 55) = 3.21$, $p < .01$, $\eta^2 = .08$, attitudes. The main effects for sex and tourist destination were not significant nor were the interaction effects or the covariate.

In the *neutral* initial attitude condition, Dunn's planned comparisons showed that, consistent with Hypotheses 4a and 4c, both inoculation (H4a) and supportive (H4c) messages generated greater attitude change in the message-advocated direction from the first to the second phase compared to control messages (see Tables 1 and 2).

Table 2 Attitude Change across Message Conditions and Measurement Times Based on Initial Attitude Valence

	Attitude Change								
	Phase 2—Phase 1			Phase 3—Phase 2			Phase 3—Phase 1		
Initial Attitudes	Inoc	Sup	Cont	Inoc	Sup	Cont	Inoc	Sup	Cont
Positive									
M	—	—	—	—	—	—	$-.57^{a}$	-2.95^{a}	-4.42^{a}
SD	—	—	—	—	—	—	3.04	2.67	3.64
n	—	—	—	—	—	—	32	28	48
Neutral									
M	2.95^{a}	1.96^{b}	$-.07^{ab}$	$-.89^{a}$	-1.55^{b}	-2.83^{ab}	1.71^{a}	$.41^{a}$	-2.90^{a}
SD	1.31	2.53	1.76	1.15	2.05	2.38	1.83	2.28	2.82
n	41	31	29	41	31	29	41	31	29
Negative									
M	3.39^{ab}	1.78^{a}	$.25^{a}$	$-.18^{a}$	-1.14^{b}	-2.34^{ab}	3.21^{a}	$.63^{a}$	-2.09^{a}
SD	2.25	3.43	1.25	1.27	2.27	1.96	2.41	3.85	2.13
N	27	27	20	27	27	20	27	27	20

Note. Negative attitudes were used as *opposing* attitudes, while *positive* attitudes were used as *established* attitudes. Attitude change scores represent the difference between the two specified phases of the study. Greater scores indicate less negative (or undesirable) attitude change. *Identical* letter superscripts depict statistically different groups at the .05 level or below within initial attitude level condition (i.e., positive, neutral, or negative) and within period of attitude change measurement (i.e., Phase 3—Phase 1, Phase 2—Phase 1, or Phase 3—Phase 2).

However, inoculation messages did not generate significantly greater attitude change from Phase 1 to Phase 2 compared to supportive messages (H4b). In the *opposing* initial attitude condition, the results supported Hypotheses 5a and 5b. Dunn's multiple comparisons indicated that inoculation messages generated significantly greater attitude change from Phase 1 to Phase 2 compared to both the supportive (H5b) and control (H5a) conditions. Supportive messages did not generate significantly greater attitude change from Phase 1 to Phase 2 compared to control messages (H5c), even though the means were in the predicted direction and approached significance ($\alpha = .06$). These results are presented in Tables 1 and 2.

The Stability of Attitude Change

Four additional univariate ANCOVA analyses were conducted to answer the research questions. In each of the analyses, the experimental message condition (i.e., inoculation, supportive, and control) was used as the independent variable and attitude change as the dependent variable (RQ1: change from Phase 2 to Phase 3; RQ2: change from Phase 1 to Phase 3). Sex and tourist destination effects were entered as fixed factors, and initial involvement with the destination was treated as a covariate. All four ANCOVAs, once again, displayed identical results to the analyses performed for

the hypotheses. In all four analyses, a significant main effect was detected for experimental condition, but not for sex or tourist destination. The effects of the interactions and the covariate were also not statistically significant. The significant univariate findings were followed up with paired comparisons.

Research Question 1 inquired into the comparative effectiveness of inoculation, supportive, and control messages in protecting the newly formed attitudes (or the attitudinal gains from Phase 1 to Phase 2) from persuasive message attacks. The ANCOVAs showed significant differences across the three groups among participants with a neutral initial attitude, $F(2, 83) = 4.41$, $p < .01$, $\eta^2 = .07$, and opposing (in this study *negative*) initial attitude, $F(2, 55) = 3.97$, $p < .01$, $\eta^2 = .08$. Mean comparisons conducted on the individuals in both the *neutral* and *opposing* initial attitude conditions showed a similar pattern: Individuals who received inoculation or supportive messages experienced significantly less attitude change in the direction of the attack message (see Tables 2 and 3). Among individuals with *neutral* and *opposing* initial attitudes, the pattern of means suggested less attitude change in the direction of the attack message due to inoculation as compared to supportive messages; however, the differences were not statistically significant at $\alpha < .05$. The difference approached significance ($p < .07$) for participants who had a *neutral* initial attitude (see Tables 2 and 3).

Research Question 2 inquired about the combined (persuasive and protective) effect of supportive and inoculation strategies compared to controls and one another (i.e., comparing attitude change from Phase 1 to Phase 3). The ANCOVAs showed significant differences across the three groups among participants with a neutral initial attitude, $F(2, 83) = 20.00$, $p < .01$, $\eta^2 = .24$, and opposing (in this study *negative*) initial attitude, $F(2, 55) = 8.70$, $p < .01$, $\eta^2 = .14$. Mean comparisons conducted on the individuals in both the *neutral* and *opposing* initial attitude conditions showed equivalent patterns: Individuals with *neutral* and *opposing* attitudes who received inoculation or supportive messages experienced significantly less attitude change in the direction of the attack message from Phase 1 to Phase 3 compared to those who received control messages. In addition, individuals who received inoculation messages displayed significantly less attitude change in the direction of the attack message compared to those who received supportive messages (see Tables 2 and 3).

DISCUSSION

In attitude-protection campaigns, resistance messages are likely to reach beyond the intended audience to individuals with opposing and neutral attitudes. Consequently, understanding the impact of inoculation messages among these two groups is critically important. This study sought first to determine if inoculation could improve the attitudes of individuals with initially neutral and opposing attitudes, as well as to determine if such changes could be maintained in response to a counterattitudinal attack. In order to isolate the effects of inoculation, participants in the inoculation condition were compared to participants who received a control message or a

Table 3 Dunn's Planned Comparison Results for the Research Questions

Pairs Compared			
Dependent variables (initial attitude valance)	*F*	*df*	p/η^2
Inoculation and Control Message Comparisons			
(RQ1) *Attitude Change (Phase 3—Phase 2) (neutral)**	20.25	(1, 69)	.17
(RQ1) *Attitude Change (Phase 3—Phase 2) (negative)**	15.78	(1, 46)	.20
(RQ2) *Attitude Change (Phase 3—Phase 1) (neutral)**	106.30	(1, 69)	.20
(RQ2) *Attitude Change (Phase 3—Phase 1) (negative)**	95.03	(1, 46)	.16
Inoculation and Supportive Message Comparisons			
(RQ1) *Attitude Change (Phase 3—Phase 2) (neutral)*	2.44	(1, 71)	.06
(RQ1) *Attitude Change (Phase 3—Phase 2) (negative)*	3.66	(1, 53)	.17
(RQ2) *Attitude Change (Phase 3—Phase 1) (neutral)**	8.78	(1, 71)	.20
(RQ2) *Attitude Change (Phase 3—Phase 1) (negative)**	26.46	(1, 53)	.06
Supportive and Control Message Comparisons			
(RQ1) *Attitude Change (Phase 3—Phase 2) (neutral)**	7.78	(1, 59)	.07
(RQ1) *Attitude Change (Phase 3—Phase 2) (negative)**	4.87	(1, 46)	.20
(RQ2) *Attitude Change (Phase 3—Phase 1) (neutral)**	48.34	(1, 59)	.12
(RQ2) *Attitude Change (Phase 3—Phase 1) (negative)**	25.03	(1, 46)	.06

Note. Negative attitudes were used as *opposing* attitudes, while *positive* attitudes were used as *established* attitudes. *Depicts statistical significance at $p < .05$. For nonsignificant results, the *p*-value is displayed. For significant results at $\alpha < .05$, η^2 is displayed.

supportive message. The results show that inoculation can result in attitude change among individuals with initially neutral or opposing attitudes, and those changes are relatively robust to a counterattitudinal attack. The findings have implications for both inoculation theory and persuasive message campaigns.

The results suggest the utility of inoculation as a strategy for promoting attitude change. Although Wood (2007) argued that inoculation may have a counterproductive effect if received by individuals with neutral or opposing attitudes, the results of this study confirm that individuals with neutral or opposing attitudes did not suffer attitudinal harm as a result of receiving an inoculation message. Compared to control participants, the initially neutral or opposing attitudes of inoculated participants moved in the direction advocated in the inoculation message. In this study, that meant that participants who initially felt negatively or did not feel strongly about the tourist destination felt more positively about it after receiving the inoculation message. Moreover, the results of the current study suggest that inoculation is capable of protecting these persuasive gains. Postattack slippage was significantly less pronounced for participants who received an inoculation message as compared to participants who received control messages. Beyond being made more positive toward the treatment-advocated position by the inoculation message, participants who initially had neutral or opposing attitudes were less influenced by the attack message than

participants in the control group. This was the case regardless of whether participants' initial attitudes were neutral or opposing. Supportive messages had a similar protective effect as inoculation messages compared to the control message condition. Even though the gains sustained in the inoculation condition were not greater than those sustained in the supportive message condition, the pattern of means were in the desired direction and approached significance for individuals with neutral attitudes.

This study's results advance previous research and our understanding of inoculation theory. The results replicate Wood's (2007) finding that inoculation can protect individuals with initially neutral and opposing attitudes from becoming even more negative in response to a message advocating against the target topic. Relative to the control condition, individuals became less opposed to the treatment-advocated position of the target attitude following the attack message. Yet, the findings also extend Wood's research in several important ways. The tests examining participants' attitudes posttreatment, but prior to the attack, showed both inoculation and supportive messages to be successful in moving neutral and opposing attitudes in the treatment-advocated direction. The inoculation and supportive messages made people with initially neutral or opposing attitudes feel more positive toward the advocated tourist destinations. However, the effectiveness of these two message strategies was differentiated by the addition of the attack message. The inoculation message was more effective than the supportive and control messages in protecting participants' attitudes during the attack in Phase 3. Participants with opposing or neutral attitudes who received the inoculation message experienced less negative (i.e., proattack message) attitude change from their baseline (measured in Phase 1) to postattack (measured in Phase 3) than participants who received the supportive message. This finding is important because it offers compelling evidence that there is something unique about inoculation messages above and beyond supportive messages in serving to make neutral and opposing attitudes more resistant to attack. The two-sided nature of the refutational message used in inoculation may have been particularly critical. The one-sided message in the supportive message condition simply discussed the benefits of a topic about which participants were conflicted (neutral attitude condition) or against (opposing attitude). The inoculation message, in contrast, addressed arguments against the topic and refuted them. In doing so, the inoculation message may have encouraged participants with neutral and opposing attitudes to consider both sides of the issue, as well as the potential weaknesses of their position. The results of this study also extend Wood's work by demonstrating that inoculation can make individuals with neutral and opposing attitudes resistant to novel attacks not addressed in the inoculation message.

This study contributes to inoculation theory by considering its implications beyond reinforcing attitudes. Inoculation messages may serve to shape neutral attitudes toward a topic and change those attitudes that are opposing. The results also have several implications for the use of inoculation theory in the context of a campaign. Inoculation is a potentially potent message strategy at the disposal of campaigners who, given the collection of results of this and previous studies (Banas & Rains, 2010; Eisend, 2006; McGuire, 1961; O'Keefe, 1999; Wood, 2007), would not have to rely on

using multiple strategies to reach individuals with differently valenced attitudes. If inoculation is a strategy limited to those who currently hold a specific or desired attitude, then its use must be narrowly targeted in order to limit expense and avoid wasted message coverage. Campaign designers would need to use inoculation for individuals with already established desired attitudes and an alternative (e.g., supportive) strategy for individuals with neutral or opposing attitudes. However, the findings from this study indicate that campaign effects can be maximized by using inoculation as a strategy to protect desired attitudes and simultaneously move neutral or opposing ones in the desired direction. Inoculation messages generated a greater level of persuasion than the other two (supportive and control) messages, without greater propensity to sacrifice the gains once faced with an attack message. Although supportive messages were more effective than control messages in generating less undesirable attitude change among individuals with both neutral and opposing initial attitudes, the overall attitudinal gains were significantly lower than those generated by inoculation messages. Hence, inoculation messages were superior not only in protecting individuals with initially established desired attitudes, but also in shifting the attitudes in the desired attitudinal direction in individuals with initially neutral or opposing attitudes—and protecting these gains from attack-induced slippage.

Finally, consistent with prior research (Banas & Rains, 2010), the study's results also confirm that inoculation is an effective strategy for protecting established attitudes from a counterattitudinal attack. Participants with established attitudes who received an inoculation message prior to a persuasive attack experienced less undesirable postattack attitude change compared to participants who were treated with supportive or control messages. However, participants who received supportive preattack messages were not significantly more resistant to attitudinal slippage compared to participants who received a control message.

This study was not without limitations. The sample size in some of the cells was limited. Although this was not a major factor throughout the analyses, there were occasions in which the results approached statistical significance and it is possible that a larger sample would have increased the power associated with the statistical tests and rendered the marginally significant findings as statistically significant at the $\alpha < .05$ level. Another limitation was the conception of neutral attitudes. Neutral attitudes may be a result of an individual not having formed an attitude on an issue or it could be a result of holding a highly conflicted (i.e., ambivalent) attitude (Fabrigar, MacDonald, & Wegener, 2005). We did not make the distinction between these two possibilities. It is conceivable that the effects of the message strategies tested in this study may differ depending on whether individuals are conflicted about their attitudes or just disinterested. Future studies should decouple ambivalent and nonestablished attitudes to better test the effects of inoculation and supportive strategies.

CONCLUSION

Despite its standing as a "grandparent theory" (Eagly & Chaiken, 1993, p. 561), there is still much to be learned about the nuances of inoculation theory. This project examined the implications of inoculation messages for individuals who have initially neutral or

opposing attitudes. The results suggest that there are important consequences of inoculation messages among these two groups. In contrast with predictions made in previous research that inoculation messages would have deleterious effects among such individuals, the utility of inoculation theory was demonstrated in this project.

Notes

1. The following is an excerpt from the supportive message used for the tourist destination of Salzburg, Austria:

   > The art and cultural attractions in Salzburg are endless, as the city was home to great composers, authors, singers, gallery owners and conductors, who have left their marks on the land. Various tours throughout the city allow travelers to retrace the history of Wolfgang Amadeus Mozart and to see sites such as his birthplace in Getreidegasse, the Mozart Residence on Makart Square and the Mozarteum.

2. The following is an excerpt from the inoculation message about Salzburg as a tourist destination that provides example of an explicit threat:

   > Salzburg is unlike any other city on Earth…. Despite the huge popularity of this city among travelers, there has been a recent upsurge of social media activity characterizing the city as an undesirable place to visit…. Misinformation is persuading young travelers like you into missing out on experiencing the wonders of Salzburg.

3. The following is an excerpt from the inoculation message about Salzburg as a tourist destination providing an example of opposing argument used to tarnish the image of this tourist destination:

   > Another significant, yet faulty, claim circulating around travel-posts involves the idea that Salzburg has nothing to offer those that are not extremely fascinated with history. People have posted comments such as, "I don't want to go be bored to death and get an Austrian history lesson. There is nothing else to do in Salzburg. If I'm on vacation, I want to experience something much more exciting than that."

4. The following excerpt from the inoculation message about Salzburg as a tourist destination provides an example of a refutation of arguments designed to tarnish the image of the tourist destination:

   > This claim is also silly and simply untrue. Though Salzburg is rich with historical and cultural gems, such as the birthplace of Mozart, it offers a variety of experiences for different travelers. According to the Salzburg Tourism Council, the city hosts various sporting events, as well as festivals and a vibrant night life. Musicians of all different genres perform in the city's various music halls. Salzburg is also commonly regarded as home to some of the most stunningly beautiful natural sites in Europe, with the Austrian Alps, cliffs, lakes and valleys scattered within and across its borders….

5. The following excerpt is extracted from the attack message:

   > I am a college student and a traveler, and I think that one of the major reasons for increased youth travel is our ability to share our experiences and plans via social media. And on that note, I would like to share some of my recent travel-thoughts with you.

6. The following is an excerpt from the attack message designed to tarnish the image of Salzburg as a tourist destination:

> Another thing that would overshadow Salzburg's appeal is the weather. Apparently it is unpredictable. Sometimes it's swelteringly hot; sometimes it's freezing cold, but there never seems to be any middle ground where people describe the weather as comfortable. That defeats the point of traveling there!

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