

Vaccinating Against Hate: Using Attitudinal Inoculation to Confer Resistance to Persuasion by Extremist Propaganda

Kurt Braddock

To cite this article: Kurt Braddock (2019): Vaccinating Against Hate: Using Attitudinal Inoculation to Confer Resistance to Persuasion by Extremist Propaganda, *Terrorism and Political Violence*, DOI: [10.1080/09546553.2019.1693370](https://doi.org/10.1080/09546553.2019.1693370)

To link to this article: <https://doi.org/10.1080/09546553.2019.1693370>



Published online: 25 Nov 2019.



Submit your article to this journal [↗](#)



View related articles [↗](#)



View Crossmark data [↗](#)



Vaccinating Against Hate: Using Attitudinal Inoculation to Confer Resistance to Persuasion by Extremist Propaganda

Kurt Braddock 

Department of Communication Arts & Sciences, The Pennsylvania State University, University Park, PA, USA

ABSTRACT

Research in several domains has shown that attitudinal inoculation effectively promotes resistance to persuasion. Despite its proven efficacy, inoculation has not been empirically tested as a strategy for preventing the adoption of beliefs and attitudes consistent with violent extremist ideologies. The current study addresses this gap in the literature. In a between-subjects experiment performed in the U.S., participants ($N = 357$) were exposed to an inoculation message or no-inoculation control message before reading left- or right-wing extremist propaganda. Inoculation positively predicted psychological reactance, which in turn, reduced intention to support the extremist group. Inoculation also negatively predicted perceptions of the extremist group's credibility, which positively predicted support intention. Neither the apparent source of the inoculation message, nor the ideological focus of the propaganda, moderated any of these relationships. These results effectively extend the scope of inoculation theory into the realm of violent extremism and have implications for the development of messages intended to prevent persuasive outcomes consistent with extremist ideologies.

KEYWORDS

Counter-radicalization; strategic communication; countering violent extremism (CVE); inoculation; reactance; source credibility

In recent years, violent extremism has come to the fore as a pressing, sometimes deadly phenomenon. At the height of its political power and geographic expanse, the self-stylized “Islamic State,” one of the most ruthless terrorist threats in recent memory, was notoriously effective at inducing foreigners to fight on its behalf.¹ Lone-actor terrorists have carried out lethal attacks in Europe, killing scores in Paris, Nice, and Brussels.² Dozens of left-wing and anarchist terrorists have been arrested for attacks in Greece, Italy, Spain, France, and Germany.³ White nationalists in the United States have been emboldened, leading to the emergence of a troubling number of neo-Nazi and white supremacist organizations.⁴ The ongoing presence of these and other threats demands a continuous effort to confront them. To this end, some researchers have begun to explore the utility of different types of strategic communication for counter-radicalization—a process whereby message targets are persuaded to argue against or dismiss messages that promote the adoption of extremist ideologies—to mitigate the threat of terrorist violence.⁵

Despite increased attention to counter-radicalization strategies, the use of *attitudinal inoculation*⁶ has not been tested as a means of preventing the assimilation of extremist ideologies. This represents a missed opportunity, given the time-tested efficacy of inoculation for conferring resistance to persuasion and the variety of domains in which it has

proven useful.⁷ This article seeks to redress this oversight by experimentally evaluating the use of attitudinal inoculation as a tool for counter-radicalization.

In this study, 357 participants were randomly assigned to one of six conditions. In all conditions, participants were exposed to propaganda originally produced by either a left- or right-wing extremist organization.⁸ In four of the six conditions, the stimulus was preceded by an inoculation message framed as being delivered by either the author of the current study or a former member of the extremist group that produced the propaganda. In the other two conditions, no inoculation message was presented before exposure to extremist propaganda.

Results indicate that exposure to an inoculation message incited psychological reactance (the combination of anger and counter-arguing) against the extremist propaganda. Inoculation also significantly reduced participants' perceptions of the extremist group's credibility and intention to support it. Structural equation models showed that reactance and perceptions of the extremist group's credibility almost fully mediated the relationship between inoculation and intention.

As the first experimental test of attitudinal inoculation's effectiveness for counter-radicalization, this analysis has several scholarly and practical implications. First, it extends the applicable range of inoculation theory into the domain of political violence. Although the theory has been tested many times since its inception, this article serves as further evidence of inoculation's robustness as a tool for strengthening resistance to persuasion. This study also provides support for the notion that the nature of psychological reactance in response to inoculation messages is the "intertwined" combination of anger and counter-arguing. This suggests that messages inoculating against extremist propaganda prompt a reactance response comprised of affective and cognitive elements.

Practically speaking, by demonstrating the effectiveness of attitudinal inoculation for preventing persuasion via extremist propaganda, this study informs the development of viable communication-based counter-radicalization strategies.⁹ More specifically, results indicate that counter-radicalization practitioners should consider carefully crafted inoculation messages as strategic components of their efforts.

The next section features a brief conceptual review of radicalization and counter-radicalization, as well as how attitudinal inoculation relates to the latter. This will be followed by an explanation of the experimental design and procedures employed in the study. Then, a summary of results will be presented and discussed. A consideration of the study's theoretical contributions and practical applications will conclude the paper.

Rationale

Counter-radicalization as persuasion

One perennial feature of research on violent extremism is the attempt to emphasize that extremist behavior is somehow unusual.¹⁰ Despite the persistence of this assertion, there is little evidence to suggest that it is true. Violent extremism and engagement in terrorism may be considered unusual because they are statistically and socially abnormal, but the processes that drive them are affected by the same dynamics that drive all behavior.¹¹ For instance, there is no convincing evidence to indicate that the social and psychological processes through which politicians persuade audiences are any

different from those through which extremists persuade theirs. The content of the messages may differ, but the strategic objectives and underlying persuasive mechanisms are alike. When influence over an audience is a strategic objective of a communicator, messages are used to alter audiences' beliefs and attitudes such that they are consistent with the communicator's goals. When this persuasive process results in positions that advocate the use of violence for a political, religious, or ideological goal, it is often referred to as "radicalization."

Despite inconsistent usage and competing definitions within the literature, radicalization is generally defined as a process of social and psychological change whereby an individual adopts beliefs and attitudes that can motivate, among other things, involvement in terrorist activity.¹² Given this definition, radicalization can be thought of as a persuasive process whereby exposure to messages consistent with an extremist ideology (particularly those that advocate the use of violence) promote the adoption of beliefs and attitudes consistent with that ideology.¹³ If radicalization is a persuasive process, it can be challenged with communication that disrupts the persuasive appeal of extremist messages (i.e., counter-radicalization). Attitudinal inoculation represents one strategy that may be useful to this end.

Inoculation theory

Originally developed by William McGuire, inoculation theory proposes that people can be made resistant to persuasion if they (a) perceive threat from an impending attempt to change their beliefs or attitudes and (b) receive information to refute such an attempt.¹⁴ This theory is based on a biological metaphor which suggests that an individual's beliefs and attitudes can be protected against persuasive attacks in the same way that one's body can be protected against attacks by viruses.¹⁵ When an individual is medically inoculated, a weakened form of a virus is introduced into the body. This weakened virus should be sufficiently potent to trigger a protective response from the body's immune system, but not so strong as to overpower it.¹⁶ By being exposed to the weakened virus, the body develops resistance to future attacks by that virus, thereby protecting the inoculated person from being sickened by it.

Attitudinal inoculation operates in the same manner. Individuals that hold "healthy" (i.e., preferred) positions are exposed to a message that initiates the development of defenses that prepare the individual for future persuasive attempts to change those positions.¹⁷ Upon recognizing the threat that future persuasive attacks pose to their current beliefs and attitudes, individuals are motivated to defend against any future challenges to the positions they currently hold.¹⁸

At the beginning of an inoculation message, the individual is directly and explicitly forewarned that his/her beliefs are likely to be challenged. This cautions the individual that his/her beliefs and attitudes may be susceptible to change.¹⁹ After presenting this unambiguous threat, inoculation messages then offer weakened arguments that challenge the individual's extant beliefs and attitudes and provide him/her with information to refute the arguments. By combining these two elements, a traditional inoculation message will begin with an explicit warning of imminent

challenges to an individual's current beliefs and attitudes, and then introduce and refute weakened versions of the challenges that opponents may raise.²⁰

Both narrative reviews and statistical summaries of the literature have shown inoculation to effectively promote resistance to persuasion in a variety of contexts.²¹ To illustrate, researchers have demonstrated the efficacy of inoculation messages in politics,²² health and wellness,²³ advertising,²⁴ public discourse,²⁵ animal rights,²⁶ the environment,²⁷ and several other areas.²⁸ After decades of scholarship, these studies have produced substantial evidence to corroborate a succinct claim made by Ivanov and his colleagues—inoculation messages work.²⁹

Inoculation and psychological reactance

There is a growing body of research to suggest that *psychological reactance*—a negative response to threats to volitional freedom—may be one mechanism by which inoculation messages successfully confer resistance to persuasion. Reactance theory explains that when individuals perceive a threat to their autonomy, they are motivated to respond in ways that restore their lost freedoms and reassert their independence.³⁰ Because inoculation messages contain warnings of impending threats to targets' beliefs and attitudes, they may incite preemptive psychological reactance in response to those expected threats. Moreover, past research has shown reactance to be the dual function of *counter-arguing* and *anger*,³¹ both of which are sensitive to inoculation treatments.³² For these reasons, inoculation messages targeting extremist propaganda may induce reactance in response to that propaganda.

H1: Inoculated participants will experience greater psychological reactance in response to extremist propaganda than non-inoculated participants.

Inoculation and source credibility

One of the fundamental components of an effective inoculation message is refutational preemption—the provision of counter-arguments with which message targets can defend against future persuasive attacks.³³ Given that refutational preemption involves the debunking of arguments with which message targets will be threatened, inoculation messages should reduce the credibility of those messages, and by extension, the sources from which they come.³⁴ Related to this, Compton and Pfau found that participants exposed to an inoculation message designed to induce fear about a topic perceived the source of an attack message to be less competent than non-inoculated participants.³⁵ Taken together, these past results suggest that inoculation messages can harm the credibility of an attack message source.

H2: Inoculated participants will perceive the source of extremist propaganda to be less credible than non-inoculated participants.

Inoculation and behavioral intention

Although a substantial amount of work on inoculation has focused on cognitive or emotional responses that strengthen resistance to persuasion, some research has shown

that inoculation is effective at conferring resistance to intention- or behavior-based outcomes as well.³⁶ It follows that inoculation messages that warn of terrorist propaganda may affect behavioral intentions related to that propaganda and the group that produced it.

However, reasoned action theory tells us that intentions (and subsequent behaviors) are not directly influenced by persuasive messages.³⁷ Instead, persuasive messages can influence an individual's beliefs and/or attitudes, which in turn, affect intentions. It therefore follows that although there is likely to be a negative relationship between inoculation and intention to support the extremist group, it will probably be mediated by reactance against the extremist groups' messages and perceptions of the groups' credibility, both of which are based on beliefs (and are therefore more directly affected by persuasive messaging).

H3: Participants receiving an inoculation message about extremist group propaganda will report less intention to support the extremist group than non-inoculated participants.

H3a: The negative relationship between inoculation and intention to support the extremist group will be mediated by psychological reactance.

H3b: The negative relationship between inoculation and intention to support the extremist group will be mediated by source credibility.

Potential moderators

Some researchers contend that counter-radicalization messages are most effective when delivered by former members of violent extremist groups.³⁸ These researchers argue that individuals with firsthand experience in these groups would be perceived as having greater expertise in matters related to the extremist ideology than those who have not been part of the group. Indeed, many current counter-radicalization efforts are predicated on the involvement of former adherents to the extremist ideologies being challenged. Though anecdotal evidence supports the notion that former extremists are optimal sources of counter-radicalization messages, there is little empirical evidence to this effect.

In addition, the ideologically charged nature of issues surrounding violent extremism suggest that individuals with different political values may vary in their receptivity to messages produced by extremist organizations. Moreover, the lack of empirical evidence on inoculation in the domain of violent extremism makes it difficult to predict whether inoculation operates differently when used to preempt persuasion by different kinds of extremist propaganda. To explore these issues, it is useful to test whether inoculation effects differ as a function of (a) the apparent source of the inoculation message, or (b) the ideology of the message being protected against.

RQ1: Is inoculation's capacity for conferring resistance to persuasion by extremist propaganda moderated by the apparent source of the inoculation message?

RQ2: Is inoculation's capacity for conferring resistance to persuasion by extremist propaganda moderated by the nature of the ideology being inoculated against?

Methods and materials

Participants

Data were gathered from a national, paid, opt-in online survey panel of American adults through Qualtrics Panels in June, 2018. Screening questions disqualified participants who were younger than eighteen or could not understand English (the language in which the inoculation and propaganda messages were presented). This resulted in an initial sample of 410 participants. After removing participants who completed the survey in less than $\frac{1}{4}$ of the median completion time, provided non-differentiated data (also known as straight-lining), or failed to provide data altogether, the final N was 357. Missing data among these 357 participants were imputed to produce a complete dataset.³⁹ Power analyses revealed that this sample size allowed for the detection of small-to-medium-sized effects in the ANOVAs, t -tests, and structural equation model described below, assuming statistical power of 0.80 and an alpha level of 0.05 for each.⁴⁰

The final sample was 52.7 percent male and 63.6 percent White. Consistent with recent findings on the ages of individuals most prone to terrorist recruitment and activity,⁴¹ a quota was implemented to ensure that most respondents were below the age of thirty-five. This yielded a sample in which 67.8 percent of respondents were between the ages of eighteen and thirty-five (median age: 26–30 years old). See [Table 1](#) for a complete summary of the sample's characteristics.

Table 1. Sample characteristics.

Attribute	Count (Proportion)
Sex	
Male	188 (52.7%)
Female	165 (46.2%)
Other/did not disclose	4 (1.2%)
Age	
18–21 years old	55 (15.4%)
22–25 years old	63 (17.6%)
26–30 years old	79 (22.1%)
31–35 years old	45 (12.6%)
36–40 years old	20 (5.4%)
41–50 years old	36 (9.8%)
51 years old or older	59 (16.1%)
Ethnicity	
Non-Hispanic Caucasian/White	227 (63.6%)
African American/Black	52 (14.6%)
Hispanic	38 (10.6%)
Asian	18 (5.0%)
Native American	8 (2.2%)
Other	6 (1.7%)
Did not disclose	8 (2.3%)

Design and procedure

The investigation used a 2 (propaganda ideology: extremist left-wing vs. extremist right-wing) \times 2 (inoculation source: researcher vs. former extremist) between-subjects experimental design with two no-inoculation control conditions (see Figure 1).

After enrolling in the study, respondents were directed to the Qualtrics-hosted survey website where they provided informed consent. Next, they viewed a screen welcoming them to the study, telling them they would be randomly assigned to read one of eight messages, and in some cases, inoculating them against the extremist propaganda to which they might be exposed. In the inoculation conditions, participants were warned that one of the messages they may encounter was produced by a “political extremist group” because the study was interested in how audiences respond to “all kinds of messages.” After clicking “Next,” they were directed to one of two propaganda messages produced by The Weather Underground (a former left-wing, anti-imperialist violent extremist organization) or the National Alliance (a current, right-wing, neo-Nazi, white supremacist organization).⁴² Explicit references to the terrorist organizations were removed from the propaganda to avoid potential familiarity with them.

Because the National Alliance propaganda emphasized white supremacy and purity, it was assumed that nonwhite participants would have an automatic aversion to that propaganda. Therefore, only white participants were eligible to be assigned to the right-

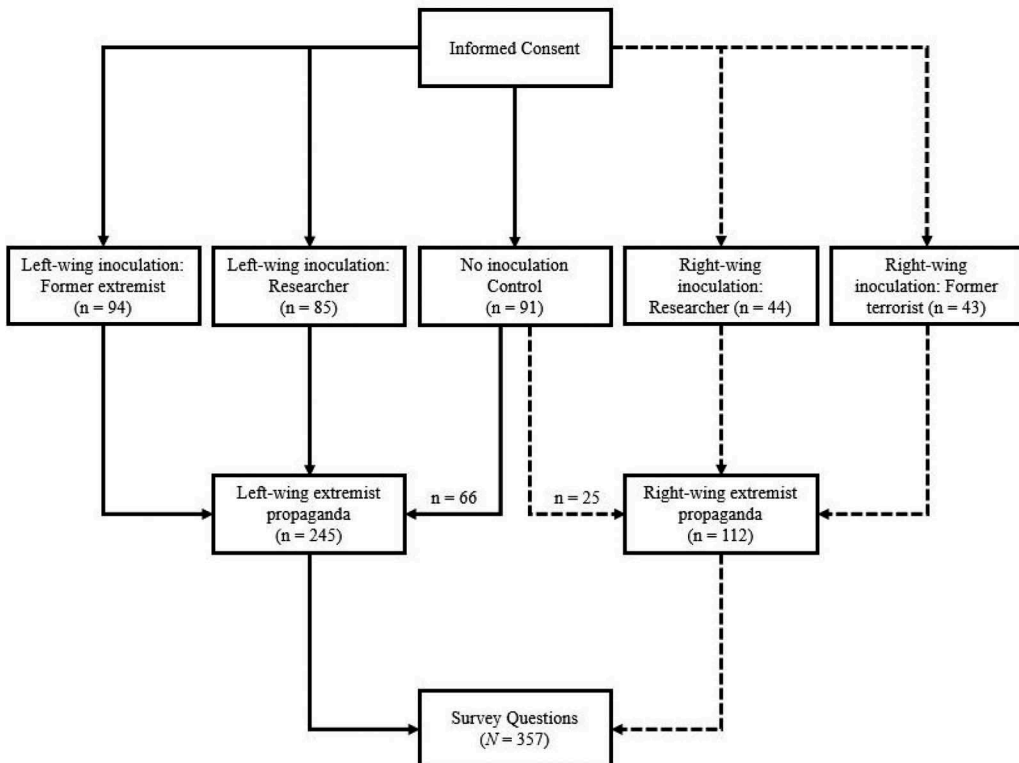


Figure 1. Study design. Dashed lines indicate white participants only.

wing stimulus conditions. Participants of all ethnicities were eligible to be assigned to the left-wing conditions.⁴³

After reading the left- or right-wing propaganda, participants were directed to a survey asking about their perceptions of the message and the group that produced it. Upon completing the questionnaire, participants were thanked and debriefed.

Materials

All participants were exposed to two messages—a pre-stimulus message (left-wing inoculation treatment, right-wing inoculation treatment, or no-inoculation control) and a stimulus message (left- or right-wing extremist propaganda). All pre-stimulus messages and propaganda stimuli are available via the Open Science Framework at <https://tinyurl.com/inoc-conditions>.

Inoculation and control messages

Two inoculation treatments were tailored to challenge each propaganda message. For both sets of inoculation messages, one was framed as being authored by the researcher; the other was framed as being authored by a former member of the group.

Inoculation messages included explicit warnings that (a) participants had a 12.5 percent (1 in 8) chance of being directed to a message produced by a “political extremist group,” (b) the extremist group’s message has been extremely persuasive to people like the participant, and (c) the persuasiveness of the extremist group’s propaganda puts the participant’s current beliefs and attitudes at risk for changing. All inoculation messages also included weakened versions of the arguments in the propaganda stimuli and defenses against them.

The control message simply welcomed respondents to the study, thanked them for their participation, and informed them that they had a 12.5 percent chance of being directed to any of the messages being studied. Participants exposed to the control message were subsequently directed to either the Weather Underground or National Alliance propaganda. To control for effects associated with participants’ potential familiarity with the groups, all references to the names of both groups were removed from the propaganda excerpts.⁴⁴

Extremist propaganda

The left- and right-wing stimuli were respectively adapted from the manifesto of the Weather Underground and the website of the National Alliance. The Weather Underground was a militant, left-wing anti-imperialist terrorist group formed in the late 1960s. The excerpt of its manifesto chosen as a stimulus for the current study emphasizes the moral bankruptcy of capitalist society, the evils of imperialism, and the need to use violence to build a more righteous society. The National Alliance is a white nationalist, neo-Nazi organization. The passage used as the right-wing stimulus message argued for the importance of racial purity, white pride, and legislation that prioritizes racial segregation.⁴⁵

Measures

Counter-arguing

Following Miller et al., counterarguing against the propaganda was measured with a single seven-point Likert-type scale ranging from 1 (*I accepted all of the points made in the message*) to 7 (*I argued against all of the points made in the message*).⁴⁶ The use of a single item to measure counterarguing has been validated in past research where the single item was found to be correlated with the results of traditional open-ended counterarguing measures.⁴⁷

Anger

Participants were presented with a three-item scale (randomly embedded in a larger scale measuring other emotions) on which they indicated how much they felt *anger*, *irritation*, and *frustration* in response to the extremist propaganda message.⁴⁸ Each item was presented as a Likert scale ranging from 1 (*none at all*) to 7 (*a great deal*). Overall score for anger was calculated as the mean of these three items ($\alpha = .87$).

Source credibility

The credibility of the source of the extremist propaganda message was evaluated with six sliding-bar items (ranging from 0–100) adapted from a scale originated by McCroskey.⁴⁹ Participants were instructed to indicate the degree to which they perceived the propaganda source to be *sincere*, *honest*, *dependable*, *trustworthy*, *credible*, and *reliable*. Overall score for source credibility was calculated as the mean of these six items ($\alpha = .97$).

Behavioral intentions

Following Richards and Banas,⁵⁰ participants manipulated four sliding-bar items (ranging from 0–100) indicating whether, if given the opportunity, they would support the source of the propaganda message *ideologically* (e.g., protest in support of the group), *financially* (e.g., give the group money), *logistically* (e.g., help the group's members hide from authorities), and/or *violently* (e.g., fight against the group's enemies). Cronbach's alpha for this scale was .93.

Social dominance orientation

To ensure participants in all conditions were equivalent in terms of their intrinsic preferences for the values espoused in either stimulus message, they also completed a scale comprised of sixteen Likert-type items ranging from 1 (*strongly disagree*) to 9 (*strongly agree*) measuring the extent to which they agreed with statements concerning social equality (a central theme in the right-wing stimulus message) and power hierarchies (a central theme in the left-wing stimulus message).⁵¹ This scale was not included in the difference tests or structural models but was included as a check against potential political leaning. The reliability estimate for the social dominance orientation scale was good ($\alpha = .89$).

Measurement analysis

A confirmatory factor analysis was performed that treated reactance, source credibility, and behavioral intention as first-order latent constructs. Reactance was structured per an

Table 2. Correlations and descriptive statistics.

Variable	1	2	3	4
1. Counter-arguing ^a	–			
2. Anger	.42	.87		
3. Source credibility	–.77	–.37	.97	
4. Behavioral intention	–.70	–.28	.79	.93
Scale endpoints	1 – 7	1 – 7	0 – 100	0 – 100
Mean	3.90	3.75	47.84	35.17
Standard deviation	2.10	1.73	31.75	31.27

N = 357. All correlations significant ($p < .001$). Cronbach's α for each scale appears in the diagonal.

^aSingle-item measure; no reliability estimate calculated.

“intertwined model” such that its indicators were the anger construct (i.e., the average of the items measuring anger, irritation, and frustration) and counter-arguing,⁵² both of which were treated as manifest variables.⁵³ Source credibility and behavioral intention were predicted by the items in their respective scales. This model presented a good fit to the data ($\chi^2(51) = 175.02$ ($p < .001$), CFI = .98, SRMR = .03, AIC = 229.02). See Table 2 for all scales' descriptive statistics, correlations, and reliability estimates.

Results

Hypothesis tests

Before testing the hypotheses, it was necessary to determine if there were any significant differences among the four inoculation conditions or the two control conditions. Analyses of variance showed no significant differences across the four treatment conditions (counter-arguing: $F(3, 262) = .33, p = .80$; anger: $F(3, 262) = .79, p = .50$; perceived credibility of extremist group: $F(3, 262) = .48, p = .70$; intention to support the extremist group: $F(3, 262) = .31, p = .82$). ANOVAs across the two control conditions produced similar non-significant results (counter-arguing: $F(1, 89) = 1.58, p = .21$; anger: $F(1, 89) = .63, p = .43$; perceived credibility of extremist group: $F(1, 89) = .24, p = .62$; intention to support the extremist group: $F(1, 89) = 1.41, p = .24$). Moreover, measures of social dominance orientation were not significantly different across any conditions ($F(4, 352) = 0.86, p = .49$), suggesting no danger of participants' political leanings affecting the results of the hypothesis tests. Given these results, the four treatment conditions were collapsed into a single inoculation condition and the two control conditions were collapsed into a single no-inoculation condition.

H1 predicted a positive relationship between exposure to an inoculation message about extremist propaganda and psychological reactance in response to that propaganda. Inoculation was positively related to both elements of reactance (i.e., counter-arguing and anger). Participants who were exposed to an inoculation message counter-argued against the extremist propaganda to a significantly greater degree than non-inoculated individuals ($M_{\text{inoc}} = 4.09, SD_{\text{inoc}} = 2.03; M_{\text{cont}} = 3.34, SD_{\text{cont}} = 1.25; t(355) = 2.99, p < .01$) and experienced marginally greater anger ($M_{\text{inoc}} = 3.69, SD_{\text{inoc}} = 1.55; M_{\text{cont}} = 3.42, SD_{\text{cont}} = 1.73; t(355) = 1.95, p = .08$). These findings provide partial support for H1, though later structural equation models provided stronger support (see the section called “Evaluating the System of Variables with Structural Equation Modeling” below).

H2 posited a negative relationship between inoculation and participants' perceptions of the extremist group's credibility. Inoculated respondents reported significantly worse perceptions of the extremist group's credibility than non-inoculated individuals ($M_{\text{inoc}} = 46.77$, $SD_{\text{inoc}} = 31.23$; $M_{\text{cont}} = 56.51$, $SD_{\text{cont}} = 28.79$; $t(355) = 2.62$, $p < .01$). This result supported H2.

H3 predicted a negative relationship between inoculation and participants' intentions to support the extremist group that authored the propaganda. Inoculated participants reported significantly less intention to support the group than non-inoculated participants ($M_{\text{inoc}} = 35.41$, $SD_{\text{inoc}} = 32.02$; $M_{\text{cont}} = 44.96$, $SD_{\text{cont}} = 34.41$; $t(355) = 2.41$, $p < .01$). H3 was supported. Subsequent structural equation models verified that the relationship between inoculation and behavioral intention was, indeed, mediated by psychological reactance and perceived credibility of the extremist group. These results supported H3a and H3b.

RQ1 and RQ2 respectively asked whether the association between inoculation and persuasion was moderated by the source of an inoculation message or the ideological focus of the propaganda being inoculated against. Neither potential moderator showed evidence of moderating the relationship between inoculation and any dependent variables. Table 3 shows the means for each moderator and statistical tests demonstrating their non-significant differences (all $p > .10$).

Evaluating the system of variables with structural equation modeling

Although the hypothesis tests provided some evidence about the effects of inoculation on reactance, perceptions of the extremist group's credibility, and intention to support the extremist group, they failed to indicate how the variables are causally related. To supplement the results of analyses that tested H1-H3 and address the question of how the variables are related, structural models were developed and tested with AMOS Graphics (v. 25). In line with the hypotheses' predictions, the initial model treated inoculation as an exogenous, manifest variable that predicted three endogenous variables: reactance (a second-order latent variable comprised of counter-arguing and anger), perceived credibility of the extremist group (manifest), and intention to support the group (manifest). No further paths were included. The model did not fit well ($\chi^2(4) = 367.0$ ($p < .001$),

Table 3. Means (standard deviations) of dependent variables by stimulus group.

	Counter-arguing	Anger	Perceptions of extremist group credibility	Intention to support extremist group
Source of inoculation message				
Researcher ($n = 129$)	4.20 (2.02)	3.86 (1.79)	45.62 (31.99)	32.56 (30.53)
Former extremist ($n = 137$)	3.99 (2.08)	3.78 (1.60)	45.00 (32.20)	33.83 (30.90)
Difference test (two-tailed)	$t(264) = .83$ ($p = .41$)	$t(264) = .39$ ($p = .69$)	$t(264) = .16$ ($p = .87$)	$t(264) = -.34$ ($p = .74$)
Propaganda ideology				
Left-wing ($n = 245$)	3.82 (2.05)	3.71 (1.64)	49.41 (31.68)	36.58 (31.02)
Right-wing ($n = 112$)	4.09 (2.20)	3.84 (1.91)	44.40 (31.78)	32.08 (31.73)
Difference test (two-tailed)	$t(355) = -1.14$ ($p = .26$)	$t(355) = -.67$ ($p = .51$)	$t(355) = 1.38$ ($p = .17$)	$t(264) = 1.26$ ($p = .21$)

In the inoculation message source test, $n = 266$ because participants in control conditions ($n = 91$) were not exposed to any inoculation message and were therefore not included in the moderator analysis.

CFI = .525, SRMR = .2758, RMSEA = 0.505, AIC = 388.953); modification indices suggested the creation of paths from reactance and credibility to behavioral intention.

This resulted in a modified model in which inoculation predicted intention to support the extremist group via a direct path and two indirect paths respectively mediated by reactance (modeled as the function of anger and counter-arguing) and perceptions of the extremist group's credibility. Per the modification indices derived from the first model, the error variances for perceived credibility and reactance were allowed to covary. The model fit well ($\chi^2(60) = 181.12$ ($p < .001$), CFI = .98, SRMR = .03, RMSEA = 0.07, AIC = 243.12). All paths were significant (at least $p < .05$), except for the direct path from inoculation to behavioral intention. Despite its non-significance, this path was retained to avoid overfitting the model to the data or artificially inflating the other path coefficients. In this model, the indirect effect of inoculation on intention to support the extremist group through psychological reactance is -0.04 . The indirect effect of inoculation on intention via source credibility is -0.09 . Taken together (and including the value of the direct path between inoculation and intention), the data indicate that the total effect of inoculation on intention to support the extremist group is -0.14 . Figure 2 pictures the model and its corresponding path coefficients.

Given the second model's fit and parsimony it was selected as the optimal match to the data. However, to ensure the accuracy of how reactance was modeled, an additional model was tested that separated reactance into its constituent elements—anger and counter-arguing. Along with perceptions of credibility, anger and counter-arguing were treated as latent mediators of the

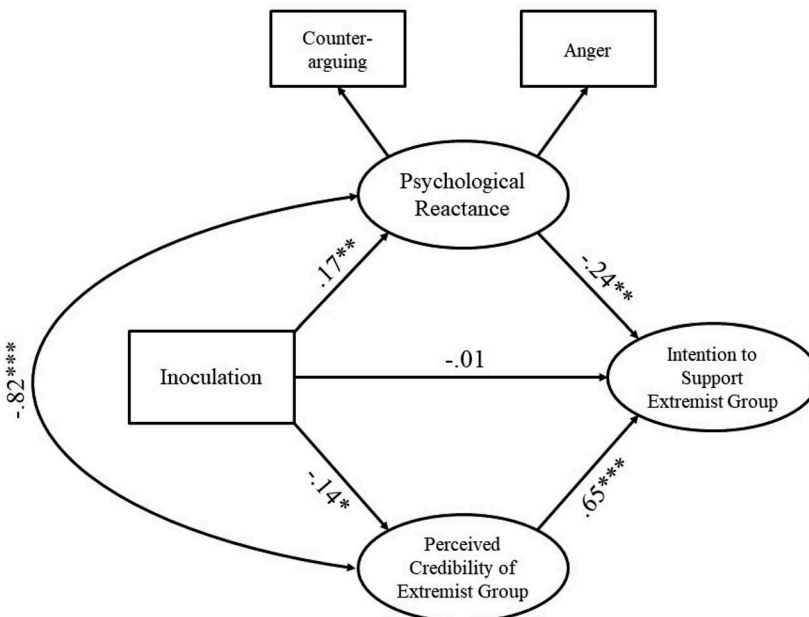


Figure 2. Structural model. All coefficients are standardized. Items comprising the credibility and intention scales on which the latent constructs are based were included in the model but are not pictured.

*** $p < .001$, ** $p < .01$, * $p < .05$.

inoculation-intention relationship. This model did not fit well ($\chi^2(4) = 386.0$ ($p < .001$), CFI = .500, SRMR = .2781, RMSEA = 0.518, AIC = 408.020). This further supported the selected model (Figure 2) and provided evidence for the notion that psychological reactance prompted by attitudinal inoculation against extremist propaganda manifests as the combination of anger and counter-arguing.

Results of the structural equation model analyses provide additional support for H1 and H2. First, despite a marginal relationship between inoculation and anger ($p = .08$), the path coefficient relating inoculation to reactance is positive and significant ($\beta = .17$, $p < .01$), supporting H1. Second, consistent with H2, the path coefficient linking inoculation to perceptions of the extremist group's credibility is negative and significant ($\beta = -.14$, $p < .05$).

The structural equation model also allows for closer inspection of results related to H3. Although H3 correctly predicted a negative relationship between inoculation and intention to support the extremist group, the magnitude of the *direct* relationship between these variables was negligible. However, the path analysis showed inoculation to be *indirectly* related to behavioral intention via mediation by reactance (path to intention: $\beta = -.24$, $p < .01$) and perceptions of the group's credibility (path to intention: $\beta = .65$, $p < .001$), thereby supporting H3a and H3b.

Discussion

The main impetus for this study was to determine whether inoculation can diminish the persuasiveness of extremist propaganda. The data seem to indicate that it can. Consistent with H1, inoculated participants experienced greater psychological reactance in response to extremist propaganda than their non-inoculated counterparts. Inoculation also reduced participants' perceptions of the extremist groups' credibility, thereby supporting H2. Finally, consistent with H3, inoculation diminished participants' intentions to support the extremist groups that authored the propaganda. The inverse effect of inoculation on behavioral intentions was almost entirely mediated by reactance and perceptions of extremist group credibility. There was no evidence to suggest that the source of the inoculation message or the ideological focus of the propaganda moderated any of these relationships. In short, this study can be added to the file of substantial evidence showing inoculation to be one of the "most consistent and reliable method[s] for conferring resistance to persuasion."⁵⁴

Of course, this claim fails to illustrate the nuances of this study's findings and their implications for inoculation theory or its application to strategic counter-radicalization messaging. The following sections address some of these complexities.

Extending inoculation theory

Scores of studies have shown inoculation to effectively confer resistance to persuasion. Indeed, researchers continue to provide valuable support for inoculation's efficacy in time-tested areas. However, some inoculation researchers have begun to apply the theory to emergent and pressing civic issues. For instance, inoculation has recently been shown to neutralize the negative effects of "fake news" on public knowledge,⁵⁵ decrease adherence to unfounded

conspiracy theories that reduce participation in democratic practices,⁵⁶ and promote acceptance of scientifically proven phenomena.⁵⁷

Like these studies, the current research expands the viable scope of the theory's utility. To be sure, the current research corroborates findings reported in traditional areas of inoculation research. That said, they also show the promise of inoculation in contexts related to ideological hostility and/or violence—a largely unexplored domain. Ivanov et al. performed some research in this area, showing that inoculation can instill public confidence in government responses to terrorism.⁵⁸ However, this study shows that inoculation can persuade not only those *affected by* violence, but also those *vulnerable to persuasion to perform* violence. Continued empirical work on similar issues is sure to provide additional support for inoculation's effectiveness in this regard.

The mediated model and the nature of psychological reactance

This study originally sought to identify direct effects of inoculation on persuasive outcomes. The data show that inoculation does, indeed, exert direct effects on cognitions (counter-arguing and perceptions of credibility) and emotions (anger). However, the negative relationship between inoculation and intention to support the extremist group was almost entirely mediated by reactance and perceptions of the extremist group's credibility. This result is consistent with past work showing that inoculation's relationship with health-related intentions is partially mediated by reactance.⁵⁹

The results also inform the literature on the very nature of reactance. Early reactance scholarship defined the phenomenon in terms of the outcomes it affects.⁶⁰ As a result, it has been conceptualized as a “negative emotional state,”⁶¹ a “motivational force,”⁶² or simply “hostility.”⁶³ This operational imprecision raised questions about the true character of the reactance construct. Dillard and Shen sought to clarify the situation, testing structural models that respectively treated reactance as a purely cognitive response, a purely emotional response, or some mixture of the two. Their analyses showed reactance to be a combination of negative cognitions and anger that is so intertwined that that each element's effect on persuasive outcomes could not be “disentangled.”⁶⁴ Subsequent research supported this conceptualization.⁶⁵

The current study provides even more evidence for the intertwined model of reactance. Structural models that treated counter-arguing (cognitions) and anger (emotions) as independent mediators of the relationship between inoculation and intentions did not fit the data. However, when counter-arguing and anger were modeled as constituent elements of a second-order factor (reactance) that mediated the inoculation-intention relationship, the model matched the data very well. Consistent with Dillard and Shen,⁶⁶ inoculation-induced reactance to extremist propaganda had both cognitive and affective elements. The intertwined nature of reactance and the mediated relationship between inoculation and intention have implications for counter-messaging designed to confer resistance to extremist groups' propaganda.

The lack of a significant direct effect of inoculation on intentions suggests that the refutational preemption segments of inoculation messages should seek to elicit cognitive and emotional responses rather than behavioral ones. Although this would not *directly* reduce intentions to support extremist groups, promoting counter-arguing and eliciting anger would stimulate reactance, which would reduce intentions to support the extremist

group in turn. The data further show that inoculation messages designed to harm an extremist group's credibility would also have an indirect, discouraging effect on intentions to support an extremist group.

Support for inoculation in counter-radicalization practices

Researchers and security specialists have expended significant time and effort to understand how to reduce incidents of terrorism. Although traditional security measures (i.e., arrest, incarceration, elimination) remain key strategies for dealing with *active* violent extremists, many have come to recognize that preventing terrorism also requires stemming the number of individuals who adopt violent ideologies in the first place.

To this end, several governments and institutions have implemented programs intended to challenge messages that promote such ideologies. For example, in the U.K., the Prevent Program seeks to preclude the adoption of terrorist ideologies through counter-messaging and other strategic initiatives.⁶⁷ In Saudi Arabia, the recently launched Etidal Center seeks to “out-brand extremism” by refuting extremist rhetoric.⁶⁸ These and similar initiatives are regularly described as critical tools for countering violent extremism.

Despite the ostensible utility of these programs, they are often plagued by doubts of their efficacy. Few of their interventions are grounded in empirical evidence, resulting in ineffective or counter-productive practices. Developers of the U.S. State Department's (defunct) “Think Again, Turn Away” program—which simply challenged the self-declared Islamic State's propaganda with counter-propaganda on social media—failed to consider the psychological implications of its messaging. There were also no data to support the effectiveness of the practices on which the program was based. As a result, the program devolved into “embarrassing” online arguments between State personnel and the group's supporters, leading to the program's termination.⁶⁹ In the same vein, as of mid-2018, only two of thirty-three active Prevent-related programs in the U.K. have had any discernible effect. Worse, the Director of the Home Office lamented that even the two successful programs only worked “by chance” and had “no grounding in psychological research that could potentially lead to impactful projects.”⁷⁰

In addition to the doubts surrounding the efficacy of these programs, they have also been criticized for their failure to address the myriad drivers of terrorist violence and how those drivers interact with the sorts of messages that counter-radicalization programs are meant to challenge, instead placing an inordinate focus on targeting specific segments of the population (particularly Muslims) from which only a small percentage of individuals undergo violent radicalization. For instance, the aforementioned Prevent program has been accused of specifically targeting Muslim communities without recognizing that only a small portion of Muslims are at any risk for engaging in ideological violence.⁷¹ Some have argued that imprecise message targeting practices that unfairly brand large segments of the population as terrorists can even alienate those they target, thus undermining the goals of counter-radicalization efforts.⁷²

Questions surrounding the claimed efficacy of extant counter-radicalization efforts and the marginalization of large swaths of peaceful populations highlight the questionable nature of how counter-radicalization has been implemented in some institutionalized programs. Although a complete audit of current counter-radicalization practices is beyond

the scope of the current study, concerns about efficacy, targeting, and implementation underscore two key requirements for successfully incorporating any new communicative strategy into counter-radicalization programs, where persuasive failures can cost time, money, public trust, and potentially, lives. These requirements are (a) data-based empirical evidence supporting the proposed strategy and (b) the capacity to implement the proposed strategy without unduly targeting (and criminalizing) specific segments of the population. Taken together, the results of the current study and the very nature of attitudinal inoculation meet these two requirements.

First, any strategy to be included in counter-radicalization practice should be founded on sound evidence produced by rigorous empirical research. In this vein, and in contrast to the atheoretical speculation that has guided the development of many counter-radicalization efforts, this study provides data-based, empirical support for the notion that inoculation can benefit counter-radicalization programs by promoting resistance to persuasion via extremist propaganda. It further shows that the efficacy of inoculation can be tested in different contexts and under different conditions (see the Limitations and Future Research section for more detail about testing inoculation in real-world contexts). Abandoning speculation in favor of empirical rigor increases the likelihood of implementing effective counter-radicalization strategies. As such, the combination of past evidence and the results of the current study suggests that inoculation messages can be useful components of counter-radicalization programs.

Second, the success of attitudinal inoculation as a communicative counter-radicalization tool hinges on its capacity for being implemented such that it does not assume target audiences are, in effect, already terrorists. On the contrary, one of the foundations of successful attitudinal inoculation is the expressed assumption that target audiences already have “correct” or “safe” beliefs and attitudes, and that those beliefs and attitudes should be protected rather than attacked. Instead of expressing suspicions about target audiences’ beliefs and attitudes and suggesting that they require revision, effective inoculation messages intended for counter-radicalization would (a) demonstrate an understanding that message recipients are not inherently dangerous and (b) communicate concern about others’ impending attempts to manipulate target audiences with potentially violent ideologies. By the very nature of the messages that define its use, inoculation in the context of counter-radicalization would assume innocence on the part of target audiences rather than guilt. In this way, it represents a less-contentious strategy for communicative counter-radicalization than some strategies that have been used in the past.

Of course, the addition of any one communicative strategy into the larger repertoire of practices employed by institutionalized counter-radicalization programs will not remedy problems associated with undue targeting practices or other large-scale issues that have historically undermined counter-radicalization efforts. However, the deployment of inoculation messages designed as described (and shown effective) in this study may mitigate, to a degree, some negative effects associated with categorizing and criminalizing target audiences.

Limitations and future research

Despite the novelty and utility of this study’s findings, it has some limitations that future researchers would benefit from addressing. Foremost, the nascence of this research and the exploratory nature of the structural equation model serving as the basis for

inoculation's efficacy demands that the model be replicated with other data. Should future work replicate the procedures employed in this study and uncover similar findings, it would further support the notion that attitudinal inoculation is a viable method for counter-radicalization. It is further recommended that any replication of the current study is pre-registered to promote methodological transparency and openness; doing so will only strengthen the arguments to be made for inoculation's efficacy.

Second, given the preliminary and exploratory nature of this study, there was no *a priori* evidence indicating that participants were familiar with or sympathetic to the propaganda outside the context of the study. Related to this, the nature of experiments in laboratory settings, like the one performed here, does not account for contextual factors that may influence psychological outcomes in real-world situations. This is particularly true regarding phenomena like radicalization and terrorism, where decisions to engage in violence are often complicated and contingent on multiple social, psychological, and setting-based factors. The current study considered only how the influence of a single factor—the persuasiveness of extremist ideology—might be mitigated. Moreover, some experts have questioned the very connection between extremist ideology and the performance of violent activity, suggesting that other factors may be more consequential.⁷³ These researchers essentially argue that an individual can engage in terrorism without being motivated by an extremist ideology. As summarized by Anthony Richards:

It is quite possible, therefore, that terrorism (as an *extremist activity*) may be carried out in pursuit of non-extremist doctrines, while, conversely, it is also true that non-extremist activity may be used in pursuit of extremist ideologies.⁷⁴

Because this exploratory study was performed in a controlled setting, contextual factors that might have contributed to (or inhibited) participants' assimilation of extremist beliefs and attitudes were unaccounted for.

Given this, future work would benefit from evaluating the efficacy of inoculation in real-world populations that are targeted by specific kinds of extremist propaganda. For example, experimental and quasi-experimental studies that utilize samples targeted by messages from the violent segments of the extreme right (e.g., isolated rural, white communities in the Rust Belt) or jihadi Islamists (e.g., disaffected Muslims in the Minneapolis Somali community) would provide evidence for the effectiveness of inoculation in settings where participants would not be isolated from factors that might influence salient outcomes.

Related to this, constraints on resources and access to participants limited the number and type of extremist propaganda messages against which inoculation could be tested. An examination of inoculation's effect on the persuasiveness of left- and right-wing political extremist propaganda was convenient for an American sample, as other culture- or religion-based extremist ideologies (e.g., militant jihadi Islam) would be unlikely to appeal to participants outside that culture or religion under any circumstances. However, the scope of inoculation's utility for dissuading persuasion via extremist propaganda likely extends beyond the ideologies featured in this study. Indeed, past inoculation work on controversial issues has argued that inoculation messages should be tested on a variety of topics (that extend beyond the "sensational") and with participants of different ideological backgrounds.⁷⁵ In this vein, future research should further examine the scope of attitudinal inoculation's efficacy for protecting against the appeal of extremist ideologies among

different audiences—particularly those for whom agreement with propaganda consistent with specific extremist ideologies is more likely.

In addition, the inoculation and stimulus treatments used for this study were exclusively text-based. Although past work has shown inoculation messages to be effective regardless of how they are presented,⁷⁶ it is possible that the illusion of proximity conveyed by richer media would more effectively communicate the threat posed by extremist propaganda to participants' existing beliefs and attitudes. Richer media could also make the sources of the inoculation messages seem more present to participants, thereby increasing the potency of the messages they deliver. Therefore, future work should test whether modality moderates inoculation's effect on persuasion in the realm of violent extremism.

Finally, the treatment material used in the stimulus conditions were respectively drawn from propaganda produced by a *former* left-wing extremist group and a *current* right-wing extremist group. Although the left-wing propaganda material taken from the manifesto of the Weather Underground aligns with many facets of current left-wing extremist ideology, it cannot be guaranteed that it is *entirely* consistent with anti-imperialism as it is contemporarily understood or operationalized. In contrast, the National Alliance propaganda was taken from the group's current website, suggesting it to be reflective of current neo-Nazi ideology. In short, that the left-wing and right-wing extremist propaganda were drawn from different eras in contemporary American history may represent a confound in the study design that should be redressed in future research. Subsequent work in this area would benefit from comparing the efficacy of inoculation for conferring resistance to persuasion by propaganda messages drawn from expressly current extremist organizations.

Concluding remarks

In the wake of criticism surrounding the questionable efficacy of a French initiative meant to change the entrenched beliefs of jailed terrorists, French intelligence specialist Jean-Charles Brisard argued that “the best thing to do is to act with preventative measures rather than try to change the minds of people after the fact.”⁷⁷ Attitudinal inoculation has promise as one such measure. This study has shown that inoculating individuals against extremist propaganda helps those individuals resist being persuaded by it. As such, inoculation could make a useful tool in the ongoing fight against extremist groups and their efforts to draw otherwise peaceful people into violence.

Disclosure statement

No potential conflict of interest was reported by the authors.

ORCID

Kurt Braddock  <http://orcid.org/0000-0002-8480-6970>

Notes on contributor

Dr. Kurt Braddock is an Assistant Teaching Professor of Communication Arts and Sciences and Homeland Security at Penn State University. His research focuses on the communicative strategies used by extremists for recruitment and radicalization, as well as how researchers and security professionals can leverage strategic persuasive practices to prevent these outcomes.

Notes

1. Richard Barrett, *Foreign Fighters in Syria* (New York, NY: The Soufan Group, 2014).
2. Paul Cruickshank, "The Inside Story of the Paris and Brussels Attacks," *CNN*, last modified October 30, 2017. <https://www.cnn.com/2016/03/30/europe/inside-paris-brussels-terror-attacks/index.html> (accessed July 27, 2019); Mathew Katz and Vivienne Walt, "At Least 84 Dead After Truck Crashes into Crowd in Nice, France," *Time*, last modified July 15, 2016. <http://time.com/4407268/nice-attack-france-truck-bastille-day/> (accessed July 27, 2019).
3. Europol, "European Union Terrorism Situation and Trend Report, 2018," https://www.europol.europa.eu/sites/default/files/documents/tesat_2018_1.pdf (accessed September 11, 2019).
4. Southern Poverty Law Center, "The Year in Hate: Trump Buoyed White Supremacists in 2017, Sparking Backlash among Black Nationalist Groups," Southern Poverty Law Center, last modified February 21, 2018. <https://www.splcenter.org/news/2018/02/21/year-hate-trump-buoyed-white-supremacists-2017-sparking-backlash-among-black-nationalist> (accessed July 27, 2019).
5. Kurt Braddock and John Horgan, "Towards a Guide for Constructing and Disseminating Counternarratives to Reduce Support for Terrorism," *Studies in Conflict & Terrorism* 39, no. 5 (2016): 385; R. Benett Furlow and H.L. Goodall, "The War of Ideas and the Battle of Narratives: A Comparison of Extremist Storytelling Structures," *Critical Studies & Critical Methodologies* 11, no. 3 (2011): 215–23.
6. William J. McGuire, "The Effectiveness of Supportive and Refutational Defenses in Immunizing and Restoring Beliefs against Persuasion," *Sociometry* 24 (1961): 184–97; William J. McGuire, "Inducing Resistance to Persuasion: Some Contemporary Approaches," in *Advances in Experimental Social Psychology*, edited by Leonard Berkowitz (New York: Academic Press, 1964), 191–229.
7. John A. Banas and Stephen A. Rains, "A Meta-Analysis of Research on Inoculation Theory," *Communication Monographs* 77 (2010): 281–311.
8. Data for this study are available from the author upon request.
9. Adrienne Ou, "Hearts and Minds: A Comparison of Counter-Radicalization Strategies in Britain and the United States," *Cornell International Affairs Review* 11, no. 2 (2016). <http://www.inquiriesjournal.com/articles/1413/hearts-and-minds-a-comparison-of-counter-radicalization-strategies-in-britain-and-the-united-states>.
10. John Horgan, *The Psychology of Terrorism*, 2nd ed. (Oxon, UK: Routledge, 2014).
11. Braddock and Horgan, "Towards a Guide for Constructing and Disseminating Counternarratives to Reduce Support for Terrorism."
12. Horgan, *The Psychology of Terrorism*; Brian A. Jackson, "Training for Urban Resistance: The Case of the Irish Republican Army," in *The Making of a Terrorist: Recruitment, Training, and Root Causes*, edited by James J. F. Forest, vol. 1 (Westport, CT: Praeger, 2006), 118–35.
13. Christina Archetti, "Terrorism, Communication and New Media: Explaining Radicalization in the Digital Age," *Perspectives on Terrorism* 9, no. 1 (2015): 49–59; Kurt Braddock, "The Utility of Narratives for Promoting Radicalization: The Case of the Animal Liberation Front," *Dynamics of Asymmetric Conflict* 8 (2015): 38–59; Braddock and Horgan, "Towards a Guide for Constructing and Disseminating Counternarratives to Reduce Support for Terrorism"; Steven R. Corman, Angela Trethewey, and H.L. Goodall Jr., eds., *Weapons of Mass Persuasion: Strategic Communication to Combat Violent Extremism* (New York: Peter Lang, 2008).
14. McGuire, "The Effectiveness of Supportive and Refutational Defenses"; McGuire, "Inducing Resistance to Persuasion"; Banas and Rains, A Meta-Analysis of Research on Inoculation

- Theory”; Michael Pfau, Bobi Ivanov, Brian Houston, Michel Haigh, Jeanetta Sims, et al., “Inoculation and Mental Processing: The Instrumental Role of Associative Networks in the Process of Resistance to Counterattitudinal Influence,” *Communication Monographs* 72, no. 4 (2005): 414–41; Adam Richards and John A. Banas, “Inoculating against Reactance to Persuasive Health Messages,” *Health Communication* 30 (2015): 451–60.
15. Bobi Ivanov, William J. Burns, Timothy L. Sellnow, Elizabeth L. Petrun Sayers, Shari R. Veil, Marcus W. Mayorga, “Using an Inoculation Message Approach to Promote Public Confidence in Protective Agencies,” *Journal of Applied Communication Research* 44 (2016): 381–98; McGuire, “Inducing Resistance to Persuasion.”
 16. Bobi Ivanov, “Designing Inoculation Messages for Health Communication Campaigns,” in *Health Communication Message Design: Theory and Practice*, edited by Hyunyi Cho (Thousand Oaks, CA: Sage, 2012), 73–93.
 17. Kimberly A. Parker, Stephen A. Rains, and Bobi Ivanov, “Examining the ‘Blanket of Protection’ Conferred by Inoculation: The Effects of Inoculation Messages on the Cross-Protection of Related Attitudes,” *Communication Monographs* 83 (2016):49–68; Ivanov et al., “Using an Inoculation Message Approach to Promote Public.”
 18. McGuire, “Inducing Resistance to Persuasion.”
 19. Although many inoculation researchers have used explicit forewarning as part of their inoculation messages, McGuire (1961) and other, more-recent researchers have shown that threat can be aroused simply by exposing message recipients to counter-attitudinal content; see for example John Compton and Michael Pfau, “Inoculation Theory of Resistance to Influence at Maturity: Recent Progress in Theory Development and Application and Suggestions for Future Research,” in *Communication Yearbook* 29, edited by Pamela J. Kalbfleisch (Newbury Park, CA: Sage, 2005): 97–145.
 20. Josh Compton, Ben Jackson, and James A. Dimmock, “Persuading Others to Avoid Persuasion: Inoculation Theory and Resistant Health Attitudes,” *Frontiers in Psychology* 7 (2016). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4746429/pdf/fpsyg-07-00122.pdf>; William J. McGuire and Demetrios Papageorgis, “Effectiveness of Forewarning in Developing Resistance to Persuasion,” *Public Opinion Quarterly* 26 (1962): 24–34; Banas and Rains, “A Meta-Analysis of Research on Inoculation Theory”; Pfau et al., “Inoculation and Mental Processing”; Compton and Pfau, “Inoculation Theory of Resistance to Influence at Maturity”; Parker et al., “Examining the ‘Blanket of Protection’ Conferred by Inoculation.”
 21. See Banas and Rains, “A Meta-Analysis of Research on Inoculation Theory”; Compton and Pfau, “Inoculation Theory of Resistance to Influence at Maturity.”
 22. Chasu An and Michael Pfau, “The Efficacy of Inoculation in Televised Political Debates,” *Journal of Communication* 54 (2004): 421–36.
 23. Parker et al., “Examining the ‘Blanket of Protection’ Conferred by Inoculation”; Richards and Banas, “Inoculating against Reactance to Persuasive Health Messages.”
 24. Bobi Ivanov, “The Process of Inoculation and its Potential in Promoting Resistance to the Effectiveness of Multiple Competitive Attacks on the Country of Origin Concept” (Ph.D. Dissertation, University of Oklahoma, 2006).
 25. Wei-Kuo Lin and Michael Pfau, “Can Inoculation Work against the Spiral of Silence? A Study of Public Opinion on the Future of Taiwan,” *International Journal of Public Opinion Research* 19 (2007): 155–72.
 26. Robin Nabi, “‘Feeling’ Resistance: Exploring the Role of Emotionally Evocative Visuals in Inducing Persuasion,” *Media Psychology* 5 (2003): 199–223.
 27. Michelle L. M. Wood, “Rethinking the Inoculation Analogy: Effects on Subjects with Differing Preexisting Attitudes,” *Human Communication Research* 33 (2007): 357–78.
 28. Josh Compton, “Inoculation Theory,” in *The SAGE Handbook of Persuasion: Developments in Theory and Practice*, edited by James Price Dillard and Lijiang Shen (Thousand Oaks, CA: Sage, 2013), 220–36.
 29. Ivanov et al., “Using an Inoculation Message Approach to Promote Public Confidence,” 384.

30. Jack W. Brehm, *A Theory of Psychological Reactance* (New York: Academic Press, 1966); Sharon S. Brehm and Jack W. Brehm, *Psychological Reactance: A Theory of Freedom and Control* (New York: Academic Press, 1981).
31. James Price Dillard and Lijiang Shen, "On the Nature of Reactance and its Role in Persuasive Health Communication," *Communication Monographs* 72 (2005): 144–68; Brian L. Quick and Michael T. Stephenson, "Further Evidence that Psychological Reactance Can Be Modeled as a Combination of Anger and Negative Cognitions," *Communication Research* 34, no. 3 (2007): 255–76; Steven A. Rains and Monique Mitchell Turner, "Psychological Reactance and Persuasive Health Communication: A Test and Extension of the Intertwined Model," *Human Communication Research* 33 (2007): 241–69; Richards and Banas, "Inoculating against Reactance to Persuasive Health Messages."
32. Dillard and Shen, "On the Nature of Reactance"; Parker et al., "Examining the 'Blanket of Protection' Conferred by Inoculation."
33. McGuire and Papageorgis, "Effectiveness of Forewarning."
34. An and Pfau, "The Efficacy of Inoculation."
35. Compton and Pfau, "Inoculation Theory of Resistance to Influence at Maturity."
36. See Ivanov, "The Process of Inoculation."
37. Martin Fishbein and Icek Ajzen, *Predicting and Changing Behavior: The Reasoned Action Approach* (New York: Routledge, 2010).
38. Kurt Braddock, "Developing and Disseminating Narratives for Countering Violent Extremism: The Utility of Former Offenders" (paper presented at the Understanding Terrorism and Political Violence Conference, University College, Cork, Ireland, March 2015).
39. The proportion of missing values within variables ranged from 0.0 percent to 6.5 percent. A Little's MCAR test showed these missing values to be missing completely at random ($\chi^2(5209) = 2447.12$ ($p > 0.999$)). Given the non-significant MCAR test, non-missing data points across all variables were used to predict values for the missing data points five times. This produced five unique values for each missing data point, the statistical means of which were used to fill in missing values; For a synopsis of this process, see John W. Allison E. Olchowski, and Tamika Gilreath, "How Many Imputations are Really Needed? Some Practical Clarifications of Multiple Imputation Theory," *Prevention Science* 8 (2007): 206–13.
40. Critical n s for these analyses were as follows: ANOVA_{stimulus} = 232 (actual n = 266); ANOVA_{control} = 90 (actual n = 91); t -tests = 204 (actual n = 357); SEM = 181 (actual n = 357); Jacob Cohen, *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed. (Hillsdale, NJ: Earlbaum, 1988); Jacob Cohen, "A Power Primer," *Quantitative Methods in Psychology* 112 (1992): 155–59.
41. Brian Dodwell, Daniel Milton, and Don Rassler, *The Caliphate's Global Workforce: An Inside Look at the Islamic State's Foreign Fighter Paper Trail* (West Point, NY: Combating Terrorism Center, 2016); Paul Gill, John Horgan, and Paige Deckert, "Bombing Alone: Tracing the Motivations and Antecedent Behaviors of Lone-Actor Terrorists," *Journal of Forensic Sciences* 59, no. 2 (2014): 425–35.
42. Some past inoculation research has advocated for a longer period between inoculation treatments and exposure to an attack message to ensure the inoculation's effectiveness. However, more recent research has found no difference in the protective effectiveness of inoculation if it is administered shortly before exposure to an attack message (as in this study) or in the medium-term (a few days to two weeks). See Banas and Rains, "A Meta-Analysis of Research on Inoculation Theory."
43. By allocating participants to conditions in this way, there were more participants that were exposed to the left-wing propaganda ($n = 245$) than the right-wing propaganda ($n = 112$). Per Cohen's (1988) standards, a power analysis showed that this inequality among cell sizes did not prevent the detection of small- to medium-sized differences between effects attributable to the ideological focus of the propaganda to which participants were exposed (for Power $[1 - \beta] = 0.80$, $d = 0.32$). In short, dividing participants in this way did not weaken my ability to answer RQ2.

44. All inoculation treatments were of similar length, ranging from 614 to 742 words. The control condition pre-message was shorter (owing to there being no inoculation messages within it), with 144 words. Also, because all inoculation treatments contained similar structural elements, they were similar in terms of dialectical complexity (complexity achieved by discussing two opposing viewpoints) and integrative complexity (complexity achieved by using multifaceted arguments to support a single viewpoint).
45. Both stimuli were relatively short (Weather Underground manifesto excerpt = 805 words; National Alliance website excerpt = 588 words). These excerpts were also similar in terms of their dialectical complexity (i.e., neither discussed opposing viewpoints) and integrative complexity (i.e., both used multiple complex arguments to support their respective extremist positions).
46. Claude H. Miller, Bobi Ivanov, Jeanetta Sims, Josh Compton, Kylie J. Herrison, et al., "Boosting the Potency of Reactance: Combining the Motivational Forces of Inoculation and Psychological Reactance," *Human Communication Research* 39 (2013): 127–55.
47. See *ibid.*; Parker et al., "Examining the 'Blanket of Protection' Conferred by Inoculation."
48. Bobi Ivanov, Michael Pfau, and Kimberly Parker, "The Attitude Base as a Moderator of the Effectiveness of Inoculation Strategy," *Communication Monographs* 76 (2009): 47–72.
49. James C. McCroskey, "Scales for the Measurement of Ethos," *Speech Monographs* 33 (1966): 65–72.
50. Richards and Banas, "Inoculating against Reactance to Persuasive Health Messages."
51. Felecia Pratto, Jim Sidanius, Lisa M. Stallworth, and Bertram Malle, "Social Dominance Orientation: A Personality Variable Predicting Social and Political Attitudes," *Journal of Personality and Social Psychology* 67, no. 4 (1994): 741–63.
52. See Dillard and Shen, "On the Nature of Reactance"; Richards and Banas, "Inoculating against Reactance to Persuasive Health Messages."
53. In addition to this model, another model was tested that treated reactance to be the "inter-twined" function of cognitive and affective elements in a different way. In this model, rather than use the average of the items measuring anger, irritation, and frustration (as in the main measurement model), these items were treated as individual indicators of reactance along with counter-arguing. This model was not a good fit to the data ($\chi^2(62) = 453.08$ ($p < .001$), CFI = .92, SRMR = .16, RMSEA = .13, AIC = 511.08).
54. Miller et al., "Boosting the Potency of Reactance," 126.
55. John Cook, Stephan Lewandowski, and Ullrich K. H. Ecker, "Neutralizing Misinformation Through Inoculation: Exposing Misleading Argumentation Techniques Reduces Their Influence," *PLoS ONE* 12, no. 5 (2017). <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0175799>.
56. Eric Bonetto, Jaïs Troïan, Florent Varet, Gregory Lo Monaco, and Fabien Girandola, "Priming Resistance to Persuasion Decreases Adherence to Conspiracy Theories," *Social Influence* 13, no. 3 (2018): 125–36.
57. Sander van der Linden, Anthony Leiserowitz, Seth Rosenthal, and Edward Maibach, "Inoculating the Public against Misinformation about Climate Change," *Global Challenges* 1, no. 2 (2017). <https://onlinelibrary.wiley.com/doi/full/10.1002/gch2.201600008>.
58. Ivanov et al. "Using an Inoculation Message Approach to Promote Public Confidence."
59. Richards and Banas, "Inoculating against Reactance to Persuasive Health Messages"; Adam Richards, John A. Banas, and Yoav Magid, "More on Inoculating against Reactance to Persuasive Health Messages: The Paradox of Threat," *Health Communication* 32, no. 7 (2017): 1–13.
60. Brehm and Brehm, *Psychological Reactance*.
61. Alice H. Eagly and Shelly Chaiken, *The Psychology of Attitudes* (Orlando, FL: Harcourt Brace Jovanovich, 1993), 571.
62. Daniel A. Sachau, Dan Houlihan, and Tanya Gilbertson, "Predictors of Employee Resistance to Supervisors' Requests," *The Journal of Social Psychology* 139, no. 5 (1999): 611–21.
63. Leonard Berkowitz, "Reactance and the Unwillingness to Help Others," *Psychological Bulletin* 79, no. 5 (1973): 311.

64. Dillard and Shen, "On the Nature of Reactance."
65. E.g., Rains and Turner, "Psychological Reactance and Persuasive Health Communication."
66. Dillard and Shen, "On the Nature of Reactance."
67. United Kingdom Government, *CONTEST: The United Kingdom's Strategy for Countering Terrorism* (London, UK: United Kingdom Government, 2018).
68. Etidal, "About Etidal," last modified 2019. <https://etidal.org/en/about-etidal/> (accessed July 27, 2019).
69. Rita Katz, "The State Department's Twitter War with ISIS is Embarrassing," *Time*, last modified September 16, 2014. <http://time.com/3387065/isis-twitter-war-state-department> (accessed July 27, 2019).
70. Fiona Hamilton, "Most Programmes to Stop Radicalisation are Failing," *The Times*, last modified June 6, 2018. <https://www.thetimes.co.uk/article/most-programmes-to-stop-radicalisation-are-failing-0bwh9pbtd> (accessed July 27, 2019).
71. See Imran Awan, "'I am a Muslim Not an Extremist': How the Prevent Strategy has Constructed a 'Suspect' Community," *Politics & Policy* 40, no. 6 (2012): 1158–85; Paul Thomas, "Failed and Friendless: The UK's 'Preventing Violent Extremism' Programme," *The British Journal of Politics and International Relations* 12, no. 3 (2010): 442–58; Asim Qureshi, "PREVENT: Creating 'Radicals' to Strengthen Anti-Muslim Narratives," *Critical Studies on Terrorism* 8, no. 1 (2015): 181–91; Anthony Richards, "The Problem with 'Radicalization': The Remit of 'Prevent' and the Need to Refocus Terrorism in the UK," *International Affairs* 87, no. 1 (2011): 143–52.
72. See Joel David Taylor, "'Suspect Categories,' Alienation and Counterterrorism: Critically Assessing PREVENT in the UK," *Terrorism and Political Violence* (2018).
73. Randy Borum, "Rethinking Radicalization," *Journal of Strategic Security* 4, no. 4 (2012): 1–6; Randy Borum, "Radicalization into Violent Extremism I: A Review of Social Science Theories," *Journal of Strategic Security* 4, no. 4 (2012): 7–36; Clark R. McCauley and Sophia Moskalenko, "Understanding Political Radicalization: The Two-Pyramids Model," *American Psychologist* 72, no. 3 (2017): 205–16; John Horgan, *Walking Away from Terrorism: Accounts of Disengagement from Radical and Extremist Movements* (Oxon, UK: Routledge, 2009): 144, 152; Max Taylor and John Horgan, "A Conceptual Framework for Addressing Psychological Process in the Development of the Terrorist," *Terrorism and Political Violence* 18, no. 4 (2006): 585–601.
74. Anthony Richards, "From Terrorism to 'Radicalization' to 'Extremism': Counterterrorism or Loss of Focus?" *International Affairs* 91, no. 2 (2015): 376.
75. See, for example, John A. Banas and Gregory Miller, "Inducing Resistance to Conspiracy Theory Propaganda: Testing Inoculation and Metainoculation Strategies," *Human Communication Research* 39, no. 2 (2013): 184–207.
76. Michael Pfau, R. Lance Holbert, Stephen J. Zubric, Nilofer H. Pasha, and Wei-Kuo Lin, "Role and Influence of Communication Modality in the Process of Resistance to Persuasion," *Media Psychology* 2 (2000): 1–33.
77. James McAuley, "French Deradicalization Centers Seen As a 'Total Fiasco,'" *Washington Post*, last updated February 24, 2017. https://www.washingtonpost.com/world/europe/frances-deradicalization-centers-are-a-total-fiasco-lawmakers-say/2017/02/24/218a8072-fa97-11e6-aa1e-5f735ee31334_story.html (accessed July 27, 2019).