Inoculating against Persuasion by White Supremacist Scientific Racism Propaganda: The Moderating Roles of Propaganda Form and Subtlety

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Abstract

The general effectiveness of attitudinal inoculation in reducing the persuasive appeal of undesirable beliefs, attitudes, intentions, and behaviors is well-established. However, there remain numerous, as-yet unexplored subtleties in the development of attitudinal inoculation countermeasures intended to prevent violent extremism. Demographic receptivity and variations in reactance and support measures are two such subtleties. Ongoing research into conditional variance promises to enrich and refine the efficacy of inoculation and our understanding of how inoculation works.

Toward that goal, this study ($N = 404$) examines the moderating effects of medium type and message subtlety on the counter-persuasive effects of attitudinal inoculation. This study tests these effects against propaganda that conveys certain beliefs, attitudes, and intentions consistent with scientific racism. Through a 2 (inoculation vs. control) x 2 (video vs. meme) x 2 (subtle vs. blatant) controlled experiment, this study reaffirms the established science that attitudinal inoculation prevents persuasion by far-right propaganda. Generally, inoculated individuals demonstrated reduced persuadability -- as indicated by felt gratification and attribution of credibility to the source of the propaganda, and intention to support the source of the propaganda. However, both medium type and message subtlety were correlated with variations in these effects, including effects on attitudinal response. These results have significant implications for the development and distribution of inoculation campaigns to prevent far-right violent extremism. They also lead us to refine our cognitive model of inoculation itself. As with viral inoculations, attitudinal inoculation only sometimes confers "pure" immunity to manipulative and/or false content. As suggested by our results, inoculation can also confer more variable forms of resistance depending on circumstance, moderating symptomology and severity of "infection" and "cognitive immune response."

Introduction

White supremacy is a global "political, economic, and cultural system" of domination reproduced and "reenacted across a broad array of institutions and social settings"(Ansley, 1989, p. 993). It relies, in part, on-taken-for-granted notions of racial hierarchy, which have been conceptualized and justified variously in different colonial, settler colonial, and imperial contexts both past and present (Fanon, 2008; Memmi, 2000; Monarrez et al., 2022; Robinson, 2000). Scientific racism, which we define as the use of scientific language and framing to make false, racist claims regarding people of color's intelligence and criminality and the viability of racially diverse societies, is one such framework for justifying white supremacy. And while "overt" claims of supposed white superiority have largely fallen out of fashion in the "mainstream" post-Civil rights era (Bonilla-Silva, 2015), scientific racism endures as a way of reinforcing white supremacist ideas in far-right online spaces. As such, countering scientific racism propaganda is a crucial step towards interrupting white supremacist recruitment and building a racially just and inclusive society.

In this article, we describe an approach to countering scientific racism propaganda based on the principles of "attitudinal inoculation": an evidence-based approach to countering right-wing propaganda and disinformation by teaching people to recognize and become more skeptical of manipulative rhetoric. We chose this approach, because existing studies have shown gaps in the efficacy of factual rebuttal (de Wit et al., 2008; Falk & Scholz, 2018; Hughes et al., 2021; Ooms et al., 2019) and because scientific language remains inaccessible to many in our society (Kennedy & Hefferon, 2019; Zaboski & Therriault, 2020). Moreover, scientific racism propaganda is manipulative by design. Thus, we presented audiences with brief instructional videos, showing several narrative tropes and rhetorical strategies which had been identified as common in scientific racism propaganda. The instructional video explained how these narratives and rhetorics were manipulative and why they were incorrect. We then presented respondents with an example of scientific racism propaganda and used a variety of measures to assess their responses towards that propaganda and its creator.

Overall, we found that video-based inoculation effectively diminished the persuasiveness of scientific racism propaganda. Here, we define effectiveness as statistically significant reductions in propaganda source credibility, reductions of willingness to support the source of propaganda, and increases in anger, anxiety, and counter-arguing in response to the propaganda, relative to a no-inoculation control. However, effectiveness was contingent on various factors, including (a) the relative subtlety of propaganda and (b) the medium through which that propaganda was presented. Three-way interaction effects suggested the combined influence of these factors on inoculation efficacy with respect to different measures of counter-persuasion. While this indicates that attitudinal inoculation messaging offers an effective means of combating public vulnerability to scientific racism propaganda, it also points to the need for

further work evaluating relevant boundary conditions under which inoculation will be most effective.

In light of these findings, we advance a reframing of attitudinal inoculation: one that recognizes it as a tool embedded in sociopolitical context(s) and more or less effective depending on such contexts. In other words, we propose that scholars understand attitudinal inoculation not only in psychological but also sociological terms. Moreover, while we acknowledge - and demonstrate - the usefulness of attitudinal inoculation as a method of intervention, we depart with approaches that take for granted its analogousness to processes that confer immunity to biological organisms. Rather, we conceptualize attitudinal inoculation as a method that interrupts the persuasiveness of ideologies and affective flows into which people are likely already familiar or have been socialized. As linguistic anthropologists have shown, "speakers [and audience members] are not unified entities, and their words are not transparent expressions of subjective experience" (Keane, 2000, p. 271). Rather, all utterances draw from and gesture towards ways of being in, thinking about, and knowing the world. These in turn crisscross social interactions, both transcending and informing individual experiences. In a Western context, this process is often reductively framed as completely subjective. However, propaganda and counter-persuasion messages targeting that propaganda are *always* voiced, understood, taken up, and (re)made through social interaction.

Inoculation, when taken for granted as metaphor, runs the risk of obscuring this dynamic process. Perhaps more importantly, when used to counter messages that reinforce and reproduce supremacist ideologies, it implies that forms of supremacy originate from the utterances of individuals who then "spread" such ideas throughout the rest of the population, which obscures the systemic character of white, cis, and male supremacy. To counter this, we approach scientific racism as a systemic phenomenon within the larger structure of white supremacy.

Literature Review

Scientific Racism and Propaganda

It is perhaps misleading to treat "scientific racism" as an "exceptional use of science to support racist ideas" (Roberts, 2011, p. 27). Rather, we might understand scientific racism as the naturalization of racial categories and hierarchies through scientific practices, institutions, and rhetorical registers. Scientific racism is not solely a fringe phenomenon, and contemporary mainstream examples abound. For instance, physicians use race-based algorithms in individual patient risk assessments "in ways that may direct more attention or resources to white patients than to members of racial and ethnic minorities" (Vyas et al., 2020, p. 874).

The rhetoric of scientific racism can still be found throughout our public discourse, from the fringes of the white supremacist movement to the organs of mainstream media. The extreme right continues to promote scientific racism in both its crude forms and more sophisticated

guises. So-called "alt-lite" broadcasters promote this junk science (Lewis, 2020), and the premiere "scholarly" journal of scientific racism *Mankind Quarterly* continues to publish (Saini, 2019). Even voices from within the mainstream carry the banner of scientific racism, from "new atheist" Sam Harris (Evans, 2019) to the so-called "rationalist" community of Silicon Valley and beyond (Lewis-Kraus, 2020), to retired *New York Times* science writer Nicholas Wade (Cohen, 2015). Sometimes rebranded as "human biodiversity," it continues to exploit the language of science's latest breakthroughs to justify racist stereotypes and hierarchies (Byrd & Hughey, 2015).

Roberts (2011) demonstrates that "every modern era has had a science of race." She continues:

> Scientists were instrumental in inventing the concept of biological races, in specifying their demarcations, and in justifying the social inequities between them. Scientists created the classification systems that placed human beings in distinct racial categories. Scientists elaborated the philosophies that explained why human races differ. *Scientists made race seem like a natural condition they had discovered about human beings rather than a system of governance imposed on human beings* (27, emphasis added).

Scientific racism is thus not solely a fringe framework. Indeed, scientific racism dates back at least to Linnaeus's 1758 *Systema Naturae*, a work of Enlightenment-era encyclopedization that first created the very taxonomic categories of "white," "black," "yellow," and "red" humanity (Saini, 2019; Sussman, 2014). Linnaeus and his successors reorganized theories of human difference in a manner that suited the political-economic needs of the emerging age of colonization and the epistemic sensibilities of the emerging scientific revolution (Sussman, 2014).

The newly formulated categories of race—unstable from their inception—emerged "out of the ongoing interaction between a number of factors: administrative, biological, cultural, economic, geographic, gendered, historical, lingual, phenomenological, political, psychological, religious, social" and more (Hochman, 2017, p. 62). Racial classifications proved highly adaptable according to the needs of these factors. In all cases, however, the "white" man was offered pride of place at the top of the racial hierarchy. Whiteness is itself an operation of "political, cultural, and economic structure of power consolidation" (McMaster, 2019, p. 219), which may be either "state sanctioned or extralegal" (Gilmore, 2006, p. 28). When that operation is turned toward "exploitation of group-differentiated vulnerability" (Gilmore, 2006, p. 28), then the construction of race becomes racism. When scientific discourse, or the imitation thereof,

serves as the sanctioning force which justifies that operation, then it is properly termed *scientific racism.*

The operation of race, and by extension racism, proved a highly useful justifying mechanism for 18th and 19th Century projects of colonial exploitation (Jenkins & Leroy, 2021; Morning, 2015; Robinson, 2000, 2019). And whatever the dominant or fashionable scientific discourse of a given period, it could (and would) be applied to first construct and then justify these racial hierarchies. Following the publication of *Origin of the Species*, and in the wake of its adaptation to the ideological position of social Darwinism, "many academic and those with economic, social, and political power began to endorse biologically deterministic theories of human behavior" (Sussman, 2014, p. 52). The operations of race and racism rapidly adopted the costume of evolutionary biology to rationalize both existing and newly necessary explanations for perceived racial differences (Evans, 2019; Sussman, 2014). It was Herbert Spencer who coined the concept of "survival of the fittest" (Rutledge, 1995), which became a kind of shorthand justifying gross racial and economic inequality and injustice. Spencer's sociology proposed that racial conflict was a key engine of human progress (Barder, 2019; Garrod, 2006; Rutledge, 1995).

By the end of the 19th Century "faith in the inevitable demise of weaker races" gave way to "apprehensions over the internal characteristics that may weaken the Western race" (Barder, 2019, p. 215)**.** Race could no longer passively serve as justification for dominance, exploitation, and invasion. The science of race and racism was now to adopt a more proactive mode in the form of widespread programs of eugenics, exemplified in the Nazi regime (Conroy, 2017). Following World War II, eugenics was succeeded by other hereditarian approaches. In particular, the study of IQ presented a means of gesturing toward biological differences between races (Jackson & Winston, 2020). The contemporary crown jewel of this pseudoscience is Charles Murray's *The Bell Curve*, a work "drawn from the catechism of eugenics" (Lombardo, 2002, p. 823), which leaned heavily on research supported by the Pioneer Fund, a notorious racialist organization which has been funding racist pseudoscience since the early 20th Century (Jackson, 2006). Following the completion of the Human Genome Project in 2003, racial taxonomy was quickly adapted to popular understandings of human genomics (Carter, 2007). Scientific racism assimilated this new science as its primary means of once more warranting a collection of pre-existing racial stereotypes and rationalized racial hierarchies (Morning, 2015).

The persistence of scientific racism and its role in perpetuating racist tropes and stereotypes requires the development of communicative strategies for reducing its appeal among vulnerable audiences. Attitudinal inoculation, a counter-persuasive strategy that has been shown to be effective for diminishing the efficacy of extremist propaganda, represents one promising strategy.

Attitudinal Inoculation

Based on the early work of McGuire (Mcguire, 1961; McGuire, 1964b, 1964a; McGuire & Papageorgis, 1961; Mcguire & Papageorgis, 1962; Papageorgis & McGuire, 1961), inoculation theory contends that people can build resistance to persuasion when they (a) perceive an attempt to influence their currently-held beliefs and attitudes as a threat and (b) are presented with information to counter the attempt (Braddock, 2019). This theory draws on the metaphorical parallel of the body developing resistance to a virus through inoculation delivered by a vaccine where, in turn, immunity is obtained from the delivery of a weakened form of the virus itself. Researchers have built upon McGuire's theory to construct inoculation strategies against extremist narratives, conspiracies, misinformation, and disinformation (Banas & Miller, 2013; Braddock, 2019; Maertens et al., 2021; Roozenbeek et al., 2020; van der Linden et al., 2017; Wilbur et al., n.d.). Narrative findings and statistical results from a variety of studies focused on politics (An and Pfau, 2004), health and wellness (Richards and Banas, 2017), advertising (Ivanov, 2006), public discourse (Lin and Pfau, 2007), animal rights (Nabi, 2003), and the environment provide substantial evidence that *inoculation messages effectively confer resistance to persuasion toward undesirable attitudes and ideologies*. These studies confirm previous scholarship regarding the overall effectiveness of inoculation when applied in a research framework.

Attitudinal inoculation "involves warning a message target of an impending threat to their beliefs and attitudes, and then providing that target with the tools needed to fend off those threats" (Braddock, p.113, 2020). In the first part of an inoculation message, the inoculator should communicate to its audience that not only will their beliefs and attitudes be challenged, but that they are under real threat of persuasion when the challenge is presented. This serves to motivate the target to defend against threats to their current beliefs and attitudes. Next, the inoculator delivers "weakened versions of the arguments that future persuasive attempts may contain" (ibid, pp. 116) and provides strong refutations to those arguments. This refutational component is designed to provide the individual with the ability to defend their positions against undesirable beliefs and attitudes (An and Pfau, 2004; Compton and Pfau, 2005).

Past research has demonstrated that inoculation messages elicit psychological responses that reduce the persuasiveness of messages that target audiences subsequently encounter (McGuire, 1964a; Nabi, 2003; Wood, 2007). First, inoculation can elicit *psychological reactance* against the impending persuasive threat. Per Brehm's reactance theory, when individuals perceive a threat to their volitional freedom, they are motivated to "push back" those who seek to restrict their decision-making autonomy (Brehm, 1989). So, when individuals perceive that someone is trying to persuade them, they will be motivated to reassert their autonomy by actively resisting the persuasive attempt. We predict that inoculation will induce participants to experience anger and counter-arguing when they are exposed to scientific racism propaganda.

H1a: Inoculated participants will report feeling greater anger in response to messages that promote ideas consistent with scientific racism than non-inoculated participants.

H1b: Inoculated participants will counter-argue against messages that promote ideas consistent with scientific racism than non-inoculated participants.

Given that one element of reactance -- anger -- is a negatively valenced emotion, it follows that inoculation should exert the opposite effect on positive emotions that it has on reactance. Given this, we posit that when inoculated against scientific racism propaganda, participants will experience less gratification in response to it.

H2: Inoculated participants will report feeling less gratification with messages that promote ideas consistent with scientific racism than non-inoculated participants.

Past inoculation work suggests that another effect of attitudinal inoculation is a reduction in the degree to which message targets attribute credibility to the source of the message against which they are inoculated (Piltch-Loeb et al., 2022; Roozenbeek et al., 2020). That is, when participants are inoculated against scientific racism propaganda, they should perceive the source of that propaganda to be less credible than if they had not been inoculated.

H3: Inoculated participants will perceive the sources of messages that promote ideas consistent with scientific racism to be less credible than non-inoculated participants.

H1 - H3 predict cognitive, emotional, and psychological responses to scientific racism propaganda following inoculation. However, propaganda is meant not only to arouse thoughts or feelings; it is meant to induce action. Indeed, one could argue that the ultimate test of inoculation for preventing harm is its capacity for diminishing intention to support action in service of scientific racism.

Given the predictions offered above, as well as extant research, we predict that inoculation will also reduce message targets' intentions to support the source of the scientific racism propaganda.

H4: Inoculated participants will report less intention to support groups that promote ideas consistent with scientific racism than non-inoculated participants.

Thus far, we have discussed scientific racism propaganda as if it were monolithic. However, the proliferation of communication technologies generally (and social media specifically) has facilitated the production and distribution of different kinds of messages consistent with scientific racism. In the past, vulnerable individuals might only encounter extremist ideology or culture as the result of research and pursuit, chance encounters with extremists, or strong social bonds (Sageman, 2004)**.** But this is increasingly not the case, as digital communication technology fosters the growth of extremist networks (Miller-Idriss & Hughes, 2021).

Idle curiosity about certain topics like race relations can easily lead web users to extremist propaganda (Daniels, 2018). If this content reaches socially and psychologically vulnerable individuals, then the adoption of ideas contained within the propaganda becomes a serious possibility (Ribeiro et al., 2020; Valentini et al., 2020). Despite online platforms' attempts to crack down on extremist messaging, recommendation algorithms have a history of surfacing increasingly extreme content, particularly for those most prone to desire and seek it out. This may facilitate some extremists' radicalization journeys by automated exposure to potentially damaging propaganda.

These conditions are especially concerning for scientific racism, which cloaks its racist and supremacist agenda in the language of scientific impartiality. Scientific racism does not announce itself as white supremacy. Instead, it commonly frames its racist claims as "more in sorrow than in anger" or under the cover of "human biodiversity" rhetoric that frames its racial hierarchies as naturally occurring and therefore deserving conservation.

Given the ever-growing prominence of digital interaction as the primary means with which users are exposed to scientific racism propaganda, we should consider how different online affordances might influence the persuasiveness of that propaganda, and by extension, efforts to challenge it. In this vein, we evaluated the effectiveness of inoculation for preventing persuasion by scientific racism propaganda characterized by two different factors: the medium through which it is often presented (audiovisual media vs. memes; Conway et al., 2019), and the subtlety of the messages presented in the propaganda (overt vs. subtle racist tropes).

RQ1: How does the form of scientific racism propaganda moderate the counter-persuasive effects of inoculation?

RQ2: How does the subtlety of scientific racism propaganda moderate the counter-persuasive effects of inoculation?

Methods and Materials

Participants

Data were gathered from a national, paid, opt-in online survey panel of American adults through Qualtrics Panels in December of 2020. Screening questions disqualified participants that were under the age of 18 or could not understand English (the language in which all messages were presented). Following data collection, we removed participants who completed the survey in less than 25% of the median completion time, "straight-lined" their responses (i.e., provided the same response for all questions), or failed to provide sufficient data. This resulted in a final *N* of 404 respondents. Of these respondents, 360 were inoculated against messaging that advocates for beliefs consistent with scientific racism and 44 were not inoculated. In all analyses performed for this study, assuming an alpha level of 0.05 for each.

To cultivate a set of respondents similar to populations targeted by right-wing extremist online propaganda, we instituted quotas that controlled the proportions of specific demographic categories in the sample. As a function of these quotas, the majority of our sample was comprised of white males, aged 18-35 years. A summary of the sample's characteristics is provided in Table 1.

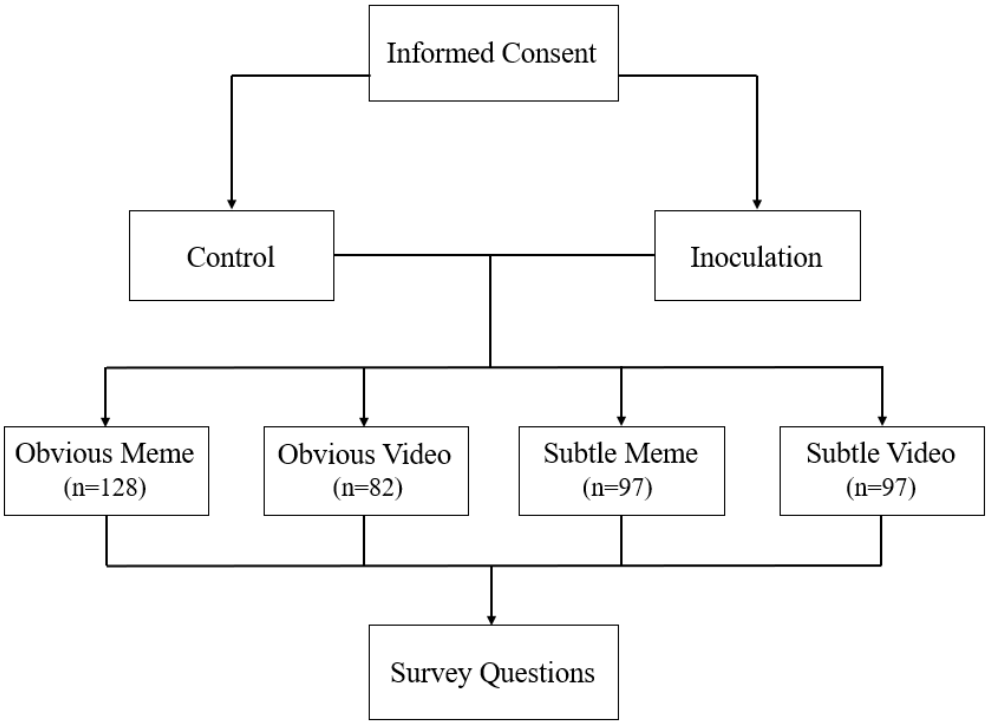
Table 1.
Sample characteristics

Attribute		Count	Proportion
Age			
	18-35 years old	297	73.5%
	36-49 years old	60	14.9%
	50-65 years old	19	4.7%
	66 years old or older	28	6.9%
Sex			
	Male	364	90.1%
	Female	37	9.2%
	Other/Did not disclose	3	0.7%
Ethnicity			
	Non-Hispanic Caucasian/White	300	74.3%
	African American/Black	62	15.3%
	Asian	17	4.2%
	Hispanic	10	2.5%
	Native American	5	1.2%
	Pacific Islander	1	0.2%
	Other/Did not disclose	9	2.2%

Design and Procedure

This study featured a 2 (inoculation vs. control) × 2 (propaganda form: video vs. meme) × 2 (propaganda subtlety: subtle vs. obvious) between-subjects experiment. Figure 1 depicts the study flow.

Figure 1. Study design.



Respondents were shown a video-based inoculation message demonstrating key narrative tropes and rhetorical techniques common to scientific racism propaganda. Respondents then were split between five conditions, one exposing them to a video that was blatant in its extremist messaging, exposing them to a video that was subtle, one exposing them to a meme that was blatant in its messaging and the fourth group exposed to a meme that was subtle in its scientific racism. These four conditions comprised 90% of all respondents, equally split among the four groups. A fifth, final group comprising 10% of the total sample was shown a control message, which offered no examples demonstrating the narratives or rhetoric of scientific racism propaganda. This control group was randomly divided into four equal groups that were respectively assigned to one of the stimulus exposure conditions (video/blatant, video/subtle, meme/blatant, meme/subtle).

Materials

Inoculation and Control Messages

Every inoculation message contained examples of scientific racism propaganda (referred to as “microdoses”), each several seconds long. A video presenter then explained each trope, its overall message, its persuasive and manipulative function, and the negative outcomes associated with accepting it as true.

The video inoculation message offered a microdose to illustrate the narrative trope "Race as Destiny." This trope points to a "story" of society, which claims that peace and prosperity come about as a consequence of a country's racial makeup. It shows a video clip with a slight, boyish white man appearing before a backdrop similar to what one would see on a news or late-night talk show-style set. He speaks to the camera in tones of disbelief and outrage: "isn't it amazing that the blacks in America...have created for themselves the same conditions in America that prevail in their ancestral homeland?" The video inoculation message then presented a more subtle clip. An older white man in a well-appointed office asks the viewer "What if, on average, people of different races don't have the same IQ?" Following this microdose, the inoculation presenter appears, explaining that both videos avoid the fallaciousness of their arguments by framing them in the form of questions. A third, final clip records a college campus debate. The same speaker as in the second clip tells the live audience that "you can't really speak the truth about race without offending somebody." Again, the inoculation presenter appears. He explains that this clip has demonstrated a rhetorical technique framing the speaker as a "dangerous truth teller," a countercultural maverick, and that holding conventionally tolerant views about race are stupid and overly obedient to authority.

The meme inoculation message offered a microdose to illustrate the same "Race as Destiny" trope presented in the video-content inoculation. The first meme microdose is a blatant example of scientific racism propaganda. In it a white woman with long red hair and freckles is juxtaposed to a black woman who wears the sort of jewelry a white American audience might associate with cultures of sub-Saharan Africa. The image is captioned: EUROPEANS AND AFRICANS: "SAME EXACT SPECIES" / THIS IS HOW MUCH WE CAN TRUST SCIENCE IN 2015." The inoculation presenter explains that respondents will now see a subtler example. In this microdose, Japan is presented as destined for a utopia of ethnic homogeneity and robot servants. The future of the West, in contrast, is shown to be defined by migrants and Islamist terrorism. A caption reads: "Be more like Japan." A third meme shows a Roman soldier, standing before a Nazi sigil, all colored neon purple and green. The inoculation presenter explains that this manipulative visual rhetoric ties a romantic, idealized notion of the past to a heroic fight for a utopian future. The fourth and final meme is a cartoon in which a crowd of identically blank cartoon faces appear before the caption "Diversity is Strength." This, the presenter explains, is an example of the "dangerous truth" trope, in which people holding conventional tolerant beliefs about race are ignorantly obedient to authority.

Scientific Racism Extremist Propaganda

After viewing the inoculation message, respondents were then shown one of four examples of scientific racism propaganda: either an unsubtle video stimulus, a subtle video stimulus, an unsubtle meme stimulus, or a subtle meme stimulus. The unsubtle video stimulus

showed a clip of an interview of influential antisemite Kevin MacDonald by neofascist broadcaster and organizer Mike Peinovich. Topics covered in the clip include MacDonald's theories of evolutionary psychology and Jewish ethnocentrism, greed, moral double standards, nepotism, etc. This clip demonstrates a trope that Jews represent a perennial problem for white societies, that Jews are more intelligent than non-Jews and that Jews use their intelligence to take advantage of non-Jews.

The subtle video stimulus showed a clip of an interview with YouTube vlogger Stefan Molyneux by YouTube vlogger Dave Rubin. On a professional-looking set, Molyneux suggests that IQ and race are causally connected, that Africans are inherently less intelligent than non-Jewish Europeans and that Jews and Asians are inherently more intelligent than both non-Jewish whites and blacks. Molyneux is positive-verging-on-manic throughout the clip. His tone is "more in sorrow than in anger," as if he were sharing an ugly truth that he wished were not true.

The unsubtle meme stimulus pictures Koko the Gorilla, an ape who learned to use basic American sign language. Next to it appears an African child with what appears to be an eye infection. A caption presents supposed similarities and differences between Koko and sub-Saharan Africans, implying that Africans are less intelligent and more violent than gorillas. In extremely unsubtle terms, it illustrates the dehumanizing rhetoric that attempts to provoke disgust to render scientific racism propaganda more persuasive.

Finally, the subtle meme stimulus shows a "Wojak"-style cartoon figure known as the "Soyjak" (Stall et al., 2022), a style common to subversive online image boards such as 4chan. In the first of three panels, the Soyjak loudly proclaims "I FUCKING LOVE SCIENCE!" In the second panel, a disembodied voice bubble calmly says, "Science says human races have different average IQs." In the third and final panel, Soyjak weeps, yelling "Racist!" This meme demonstrates the trope that any disagreement with scientific racism is evidence of ignorant obedience to the status quo, and that counterclaims to scientific racism come from a place of shameful hyper-emotionality.

Measures

Anger

To gauge participants' anger in response to scientific racism propaganda, they were presented with three items which were randomly embedded in a larger, seven-item emotion index. These three items respectively asked participants the degree to which they felt *anger*, *irritation*, and *frustration* in response to the extremist messaging. All items in the index were measured with Likert scales ranging from 1 (*none at all*) to 7 (*a great deal*). The overall score for anger was measured as the statistical mean of these three items ($\alpha = .90$).

Counter-Arguing

We asked participants how much they counter-argued against the scientific racism propaganda using a single Likert 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*). Though researchers typically avoid the use of a single-item to measure outcomes, past work has validated the use of this single item to gauge counter-arguing, given its strong correlation with traditional, open-ended counter-arguing measures (Ivanov et al., 2016).

Gratification

To measure the extent to which participants were gratified by the scientific racism propaganda to which they were exposed, they responded to two items that were randomly embedded in a larger, seven-item emotion index. Specifically, participants were asked to indicate the degree to which they felt *satisfied* and *reassured* by the propaganda. These two items were measured with Likert scales ranging from 1 (*none at all*) to 7 (*a great deal*). Given that Cronbach's alpha underestimates the true internal consistency of two-item indices, we did not use alpha as the reliability estimate for the gratification index. For two-item indices, Eisinga and his colleagues (2013) suggest a Spearman-Brown correction (ρ). Consistent with this recommendation, we found the reliability estimate of the two-item gratification index to be satisfactory (ρ = .72).

Source Credibility

Participants indicated the degree to which they attributed credibility to the author of the scientific racism propaganda by responding to six seven-point semantic differentials. Adapted from McCroskey's source credibility index (1966), the semantic differentials were anchored by the following pairs of descriptors: *trustworthy-not trustworthy*, *sincere-insincere*, *honest-dishonest*, *dependable-not dependable*, *credible-not credible*, *reliable-unreliable*. Overall score for source credibility was calculated as the mean of these six items (α = .97).

Support Intention

Participants responded to four Likert-type scales ranging from 1 (*completely disagree*) to 7 (*completely agree*) asking whether they would support the source of the scientific racism propaganda, if afforded the opportunity. More specifically, participants indicated whether they would offer the group *ideological* support (e.g., post support on social media), *financial* support (e.g., donate money to the group), *logistic* support (e.g., store weapons for the group), or *physical* support (e.g., fight for the group). The mean of the four items represented the overall score for support intention (α = .96).

Control Variables

Because of the politically charged nature of scientific racism propaganda, we controlled for several variables found to be associated with extreme political beliefs. First, our analyses included a measure of social dominance orientation which has been associated with far-right and extreme conservative belief systems (Pratto et al., 1994; Wilson & Sibley, 2013). Recent scholarship has also shown that individuals who engage in specific kinds of subversive online activity are disproportionately susceptible to persuasion by propaganda that espouses ideas consistent with scientific racism (Braddock et al., 2021). To control for this potential influence, we also included a measure of subversive online activity as a covariate in our models.

Social Dominance Orientation

Social dominance orientation (SDO) relates to an individual's tendency to support social hierarchy structures and the belief that one's in-group (e.g., race, social status) is superior to other groups. To control for the influence of SDO, we included an index consisting of 16 statements on which participants would respond to Likert-type items ranging from 1 (*completely disagree*) to 7 (*completely agree*). Examples of these statements include "some groups are simply inferior to other groups" and "sometimes other groups must be kept in their place." The SDO index demonstrated good internal consistency ($\alpha = 0.87$).

Subversive Online Activities

Recent research has demonstrated that engagement in specific kinds of online activities is significantly related to one's susceptibility to persuasion by far-right propaganda, including messaging that espouses ideas consistent with scientific racism (Braddock et al., 2021). These activities include doxing others, trolling others, using online platforms sympathetic to the far-right (i.e., "alt-tech"), using applications that anonymize one's identity, and using applications that encrypt one's communication. To control for participants' susceptibility to persuasion, we included a scale consisting of these five items as a covariate. Respondents were asked to indicate the regularity with which they participated in these activities on a scale from 1 (*never*) to 4 (*often*). This five-item scale, dubbed subversive online activity (SOA), yielded a strong reliability estimate ($\alpha = 0.89$).

Confirmatory Factor Analysis

We conducted a confirmatory factor analysis to ensure the relationship between the latent variables. Anger predicted Angry, Irritated, and Frustrated, and Counter-Arguing was represented by the one item scale for willingness to accept points. Source Credibility predicted its six-scale

index (Trustworthy, Sincere, Honest, Dependable, Reliable, Credible), and support intention predicted its four-scale index (Ideologically, Physically, Financially, Logistically). Finally, Gratification predicted Satisfaction and Reassurance. The analysis produced a strong fit to the data (CFI: 0.97, RMSEA: 0.08, $\chi^2(95)$: 313.86, $p < .001$, SRMR: 0.04).

Analyses

To gauge the effectiveness of attitudinal inoculation for preventing persuasion by scientific racism propaganda, we used R Studio to perform a series of regressions in which anger, counter-arguing, gratification, perceived credibility, and support intention respectively served as dependent variables. In all regressions, independent variables included inoculation condition (inoculated vs. not inoculated) and stimulus medium and subtlety (overt video, overt meme, subtle video, subtle meme. Finally, we included demographic variables, SDO and SOA as control variables in all models.

Results

Inoculation and Resistance to Scientific Racism Propaganda

H1a predicted a positive relationship between inoculation and anger in response to exposure to propaganda consistent with scientific racism. The results of the regression showed that there was no significant difference in anger between participants who were inoculated and those who were not. H1b predicted similar results for counter-arguing and resulted in no significant difference in willingness to counter-argue between inoculated and non-inoculated participants.

H2 predicted an inverse relationship between inoculation and gratification at viewing propaganda related to scientific racism. This hypothesis held, and participants who were inoculated were significantly less gratified (satisfied and reassured) by the messages of the stimuli ($p = 0.018$) than those who were not inoculated.

H3 predicted that inoculated participants would perceive the sources of messages that promote ideas consistent with scientific racism to be less credible than non-inoculated participants. The regression showed that those who were inoculated were significantly less likely to perceive the sources of the stimuli as credible ($p = 0.007$).

H4 predicted that inoculated participants would report less intention to support groups that promote ideas consistent with scientific racism than non-inoculated participants. There were no significant differences in support intention between participants who were inoculated and those who were not.

Moderating Roles of Propaganda Form and Propaganda Subtlety on Inoculation Efficacy

As evidenced by the respective foci of RQ1 and RQ2, one of the central goals of this article is to determine whether the form through which scientific racism propaganda is presented (i.e., meme or video) or the subtlety of the arguments in that propaganda (i.e., obvious or subtle) moderate the efficacy of inoculation messages targeting scientific racism propaganda.

Summary of Results

The data reveal that attitudinal inoculation can help to prevent the adoption of beliefs and attitudes consistent with scientific racism propaganda. However, for all outcomes for which there was an interactive effect of inoculation on propaganda-specific features, inoculation interacted with *both* the subtlety of the propaganda and the form through which it was presented. This indicates that in our data, inoculation had counter-persuasive effects, but only under certain conditions and with respect to certain variables.

Given the complexity of our findings, it may be useful to summarize inoculation's effects across our outcomes of focus, given the form and subtlety of the scientific racism propaganda being inoculated against. Table 2 summarizes these effects as present in our data. They indicate that inoculation was most effective when they served to undercut scientific racism propaganda in the form of subtle memes or obvious videos.

Table 2.
Effects of Inoculation on Persuasion via Scientific Racism Propaganda by Form and Subtlety

	Meme	Video
Subtle	Increases counter-arguing Decreases credibility attribution Decreases support intention	No significant effects
Obvious	Decreases anger ^	Decreases credibility attribution

^ Counterproductive result.

The nuances associated with these results have implications for understanding not only how inoculation can reduce persuasion by scientific racism propaganda at large, but also how counter-messaging efforts can optimally target that propaganda. In the final section of the paper, we discuss these and other issues.

Discussion

This study was intended to demonstrate whether attitudinal inoculation can diminish the persuasiveness of scientific racism propaganda. Results indicate that it can, but that its effectiveness may be largely contingent on multiple propaganda-specific factors. Specifically, the data show that inoculation's capacity for reducing the persuasive efficacy of scientific racism propaganda is moderated by the relative subtlety of the propaganda being inoculated against (subtle or obvious), as well as the medium through which the propaganda is shared (video or meme). In most cases, analyses revealed three-way interaction effects such that the counter-persuasive effects resulted from some combination of inoculation condition, propaganda form, and propaganda medium.

Though complicated, the data do indicate a pattern of results that suggest when inoculation is most effective for preventing persuasion by scientific racism propaganda. Inoculation produced the most productive counter-persuasive effects when targeting memes with subtle references to scientific racism or videos with obvious references to scientific racism. In the case of the subtle meme propaganda, inoculation increased counter-arguing against the propaganda, diminished audience perceptions of the propaganda source's credibility, and decreased intention to support the propaganda source. When a video with obvious scientific racism was inoculated against, participants attributed less credibility to the propaganda's source.

In contrast, inoculation had little to no effect on persuasion by scientific racism propaganda presented as an obvious meme or subtle video. In fact, when an obvious meme was inoculated against, participants felt *less* anger towards it.

Still, taken collectively, these results are promising indicators of the effectiveness of video-based inoculation against scientific racism propaganda.

Practical and Theoretical Implications

Our findings suggest that inoculation is an effective means of preventing persuasion by white supremacist ideas when participants are exposed to obvious videos or subtle memes. The latter finding is critically important in light of far-right extremist strategies that deliberately employ subtle language, coded references, and euphemisms to soften extreme ideas and reach mainstream audiences (e.g., using the term "re-migration" instead of deportation). This finding further suggests that at least for some people, there is a reflex against obvious forms of racism when presented in abridged formats (like memes), but they may still be vulnerable to propaganda that is subtle, coded, or softened with euphemisms.

The findings further indicate that obvious references to racist ideas in a more traditional presentation format (i.e., video) are vulnerable to neutralization by attitudinal inoculation. This may result from the media-rich nature of video-based stimuli, where audiences do not need to exert cognitive energy to understand the arguments made in the racist messages. That is, the vivid experience that obvious videos offer may heighten audience perceptions of persuasion by racist tropes, thereby amplifying inoculation's counter-persuasive effects. But this is merely one hypothesis. Regardless of the mechanisms by which inoculation was shown effective in some cases, the three-way interactions relating inoculation, propaganda subtlety, and propaganda medium demand further exploration of these dynamics.

In addition to these practical implications, our findings have theoretical implications. Although the study of inoculation as a strategy for preventing persuasion by extremist propaganda has only begun in recent years, inoculation has been tested for more than a half-century in countless other domains and has been proven effective again and again (see Banas & Rains, 2010). The current study extends our understanding of inoculation's efficacy into yet another specific area, further reinforcing its effectiveness for preventing the adoption of unwanted beliefs and attitudes.

Study Limitations and Future Research

Although this study resulted in a number of critical findings that will assist in the development of messaging intended to prevent persuasion by far-right propaganda, it was marked by some limitations that can be addressed with future research. Foremost, as with most preliminary efforts to test strategic interventions, we utilized a paid, opt-in survey platform to assist in the collection of data to evaluate the efficacy of inoculation. Although we established sample quotas to ensure that our sample was comparable to real-world populations that are targeted by scientific racism propaganda, we had no *a priori* evidence that our respondents were

likely to be organically exposed to such propaganda outside the context of the study. Now that the current study has demonstrated the effectiveness of attitudinal inoculation for preventing persuasion by scientific racism propaganda (as well as the conditions under which inoculation is optimally effective), the natural next step is to test inoculation interventions in real-world populations. To the degree possible, researchers interested in further validating inoculation as a potential strategic communication intervention should test such an intervention with real-world populations that are inordinately targeted by scientific racism propaganda.

Second, the current study tested inoculation against only one far-right extremist theme -- scientific racism. To further demonstrate the counter-persuasive effectiveness of inoculation against far-right propaganda, it is necessary to test its efficacy against propaganda defined by other far-right motifs. The authors of the current study have already begun such tests; analyses of data regarding inoculation against male supremacy propaganda are underway. However, researchers interested in further evaluating inoculation's effectiveness against far-right propaganda would benefit from investigating its effects on protecting against persuasion via still other far-right themes and ideas (e.g., the QAnon conspiracy theory). Here, too, the authors of the current study have begun testing.

Finally, although the current study includes two key variables that moderate inoculation efficacy (i.e., propaganda form and subtlety), there are several other potential moderators that might affect the inoculation-persuasion relationship. Future research in this area should identify some of these moderators, both at the message level (e.g., perceived message sensation value) and the message-recipient level (e.g., sensation seeking, behavioral inhibition and appetitive system sensitivity), that have been empirically demonstrated as affecting the persuasiveness of a message (Babad et al., 2021; Palmgreen et al., 2002; Voigt et al., 2009).

Conclusion

This study's findings support the large body of literature speaking to the efficacy of attitudinal inoculation. It also speaks to the general effectiveness of video-based inoculation against scientific racism propaganda. While more research is needed to determine the relative efficacy of different inoculation messages against different kinds of scientific racism propaganda, this study shows that the efficacy of inoculation can be particularly strong when targeting specific kinds of propaganda. This suggests the practical viability of inoculation messages against scientific racism as part of ongoing efforts to combat racism in our society, particularly given innovative propaganda strategies employed by the far-right in the digital age.

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Lit Review/Theoretical Framework

- Scientific racism
    - Approaches that characterize it as pseudoscience
    - Contra as "pseudoscience" (Roberts 2016) [connects to heteroglossia below]
        - Scientific racism as pseudoscience lets mainstream institutions, who *still* practice forms of scientific racism, off the hook.
        - Reifies science as a good, progressive institution
            - Cite Visvanathan "On the Annals of the Laboratory State" (science as vivisecting the Global South)?
    - How do we understand scientific racism? Is this concept apt?
- What is attitudinal inoculation?
    - Inoculation in Western medicine (very brief)
    - William McGuire - applying to social persuasion

        - What is persuasion? How can we conceptualize persuasion in ways that situate actors within sociopolitical and economic realities?
    - Applications of attitudinal inoculation
    - Our approach to attitudinal inoculation
        - Previous work assumes a separation between the external world and internal self.
            - Perhaps true for viruses and organisms
            - Not true for human beings and the social world: there is no such thing as "internal" beliefs and attitudes on the one hand and the "external" world of ideology and affect on the other.
                - Bakhtin and polyglossia - literary theory -> linguistic anthropological theory discusses how "speakers" are never "univocal," i.e., speaking with one singular voice. Rather, all language utterances, writing, etc. is heteroglossic: every utterance (broadly defined) is made up of multiple "voices" (broadly defined) from the social environment all at once. Of course, certain utterances index certain phenomena more than others. Context matters, all the way down.
                - Going beyond speakers (as an ableist, Euro-centric category): all ideology is social, ergo all beliefs and attitudes are social and are negotiated/reproduced <u>through</u> social interaction (broadly defined, again not just face-to-face)
                - Getting more concrete: "extreme" ideas are parroted in the "mainstream" (and arguably are in dialogue with the mainstream) all the time. Scientific racism may be fringe now, but casual scientific racism abounds in mainstream discourse. For example, how doctors treat Black people vs. white people in the US hinges on scientific racism (see Roberts 2016)
            - Inoculation as conceptualized and operationalized ignores the dynamic ways in which human beings negotiate their (ever fluid) stances vis-a-vis hegemonic ideologies and ways of being more generally.
            - Inoculation as conceptualized and operationalized assumes an Anglo-European, individualistic white subjectivity.
                - On the one hand, this is the context of our study
                - On the other hand, individualistic white subjectivity shapes far right epistemological claims. So we don't want to reproduce that
        - **Therefore, we conceptualize attitudinal inoculation as the momentary interruption of the affective/ideological circuit of which people's everyday negotiations of the social world are a part.**
            - Why affect: because sometimes ideas are not "coherent" ideological systems but rather are diffuse, felt, and cannot yet be expressed in words.
                - Stewart and affective circuits
                - Berlant (2011): affect as "shared atmosphere"
                - Williams- structures of feeling
- What are the theoretical implications of this new approach?
    - Brief teaser of how it moves the field forward (expand on in Discussion and Conclusion)