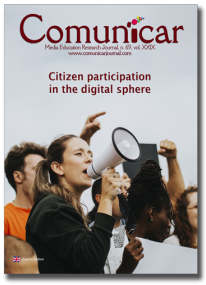
Comunicar, n. 69, v. XX, 2021 | Media Education Research Journal | ISSN: 1134-3478; e-ISSN: 1988-3478
www.comunicarjournal.com



Facing disinformation: Five methods to counter conspiracy theories amid the Covid-19 pandemic

Combatiendo la desinformación: Cinco métodos para contrarrestar las teorías de conspiración en la pandemia de Covid-19

Dr. Tianru Guan. Professor, School of Journalism and Communication, Wuhan University (China) (guantianru@hotmail.com) (https://orcid.org/0000-0002-8233-3321)
Dr. Tianyang Liu. Professor, School of Politics and Public Administration, Wuhan University (China) (tianyang.l@vip.163.com) (https://orcid.org/0000-0002-5462-5714)
Dr. Randong Yuan. Postdoc Fellow, Advanced Institute of Global and Contemporary China Studies, The Chinese University of Hong Kong, Shenzhen (China) (yuanrandong@cuhk.edu.cn) (https://orcid.org/0000-0003-1508-0536)

ABSTRACT

Among the burgeoning discussions on the argumentative styles of conspiracy theories and the related cognitive processes of their audiences, research thus far is limited in regard to developing methods and strategies that could effectively debunk conspiracy theories and reduce the harmful influences of conspiracist media exposure. The present study critically evaluates the effectiveness of five approaches to reducing conspiratorial belief, through experiments (N=607) conducted on Amazon Mechanical Turk. Our results demonstrate that the content-based methods of counter conspiracy theory can partly mitigate conspiratorial belief. Specifically, the science- and fact-focused corrections were able to effectively mitigate conspiracy beliefs, whereas media literacy and inoculation strategies did not produce significant change. More crucially, our findings illustrate that both audience-focused methods, which involve decoding the myth of conspiracy theory and re-imagining intergroup relationships, were effective in reducing the cognitive acceptance of conspiracy theory. Building on these insights, this study contributes to a systematic examination of different epistemic means to influence (or not) conspiracy beliefs -an urgent task in the face of the infodemic threat apparent both during and after the COVID-19 pandemic.

RESUMEN

Entre las crecientes discusiones sobre los estilos argumentativos de las teorías de conspiración y los procesos cognitivos relacionados de su público, los estudios hasta ahora son limitados en lo que respecta al desarrollo de métodos y estrategias que podrían desacreditar eficazmente las teorías de conspiración y reducir las influencias dañinas de la exposición a los medios de comunicación conspirativos. El presente estudio evalúa de manera crítica la efectividad de cinco enfoques para reducir la creencia en conspiraciones, a través de experimentos (N=607) realizados en Amazon Mechanical Turk. Nuestros resultados demuestran que los métodos basados en el contenido al enfrentar las teorías de la conspiración pueden mitigar parcialmente la creencia conspiratoria. Específicamente, las correcciones centradas en la ciencia y los hechos fueron capaces de mitigar eficazmente las creencias en la conspiración, mientras que las estrategias de alfabetización mediática e inoculación no produjeron cambios significativos. Más importante aún, nuestros hallazgos ilustran que ambos métodos centrados en el público, que implican decodificar el mito de la teoría de la conspiración y reimaginar las relaciones intergrupales, fueron efectivos para reducir la aceptación cognitiva de la teoría de la conspiración. Basado en estos conocimientos, este estudio contribuye a un examen sistemático de distintos medios epistemológicos para influir (o no) en las creencias conspirativas, una tarea urgente frente a la evidente amenaza infodémica, tanto durante como después de la pandemia de COVID-19.

KEYWORDS | PALABRAS CLAVE

Conspiracy theories, correction methods, COVID-19, audience, China-United States relation, media influence.
Teoría conspirativa, método de rectificación, COVID-19, audiencias, relaciones China-Estados Unidos, influencia mediática.

Received: 2021-02-16 | Reviewed: 2021-03-19 | Accepted: 2021-04-27 | Preprint: 2021-06-15 | Published: 2021-10-01
DOI https://doi.org/10.3916/C69-2021-06 | Pages: 67-78

1. Introduction

Although conspiracist narratives already existed in antiquity and the Middle Ages, the advent of a digital networked era, alongside a post-Cold War context (in which ideological and geopolitical conflicts have taken some more hidden forms) has created a new upsurge in conspiracy theories (Oliver & Wood, 2014; van-Prooijen, 2018; Drochon, 2018). The negative consequences of conspiracy theories have been widely recognized. However, research thus far is limited regarding developing methods and strategies that could effectively debunk conspiracy theories and reduce the harmful influences of conspiracist media exposure (Krekó, 2020). Source-targeting and other pre-emptive interventions focus on the supply-side of conspiracy theory, relying on governmental policies and social media companies' censorship and removal to hopefully reduce the chance that audiences will encounter conspiratorial information. Such interventions are often viewed as morally problematic, technically ineffective, and economically unfeasible.

Considering the impotence of supply-side interventions, developing effective, audience-centered methods is more important than ever (Craft et al., 2017; Samuel-Azran & Hayat, 2019). This study adopts a protectionist and interventionist approach, examining the effectiveness of a few audience-focused countermeasures in mitigating the negative effects of conspiratorial media narratives. It engages with academic efforts to theorize and measure multiple approaches to countering conspiracy theories in the COVID-19 context (e.g., Golob et al., 2021; Mora-Rodríguez & Melero-López, 2021). Notably, this study was conducted in a period of great political uncertainty concerning relations between the US and China. Under Biden's administration, the domestic need of the US for political reconciliation provides both an emotional base and a political incentive for the growth of anti-China conspiracy theories.

2. Research on conspiracy theories

Conspiracy theories are commonly viewed as "explanatory beliefs" (either speculative or evidence-based) or "worldviews" that perceive the current political and social order, or historical or future events, as an outcome of manipulation by a small group of powerful individuals (the conspirators) acting secretly for their own benefit against the greater good (Fenster, 1999; Uscinski & Parent, 2014).

In spite of early debates viewing belief in conspiracy theory as irrational, paranoid delusions (Hofstadter, 1965), or as a strong form of resistance against state crime (Simmons & Parsons, 2005), more recent publications tend to consider conspiracy theories as a rational attempt to understand social and political contexts (Jones, 2008). Conspiracy beliefs may correspond to pre-existing stances, attitudes and beliefs at the individual level, with different personality traits from social psychology (Abalakina-Paap et al., 1999), which may follow a form of "motivated collective cognition" from group-based perspectives (Krekó, 2020), and may become bound up with perceptions of deeper machinations underlying the normal pursuit of state interest in international relations (Aistrope & Bleiker, 2018). Furthermore, conspiracy theories are deeply mediated. Digital media communication not only motivates a sense of "agency panic" but creates a phenomenon of "information overload" or an "information explosion" (Buckland, 2017) that facilitates selective media exposure and the echo-chamber effect, thereby reinforcing people's preexisting conspiratorial world views (Hollander, 2018).

Cultural perspectives that view conspiratorial mindsets as "hermeneutic of suspicion" or as a kind of "political skepticism" (Husting & Orr, 2007) are still relatively marginal in the literature of conspiracy theory. A more widely accepted lens views conspiracy theories as a defensive and ultimately self-defeating manifestation of motivated social cognition, which may pose a dangerous threat to an individual's psychological health and rationality, to society and democracy, and to international relations (e.g., Oliver & Wood, 2014; van-Prooijen, 2018). More specifically, empirical research supports that exposure to conspiracy theories can: directly increase negative feelings of powerlessness, disillusionment, uncertainty, mistrust, and anomie (Jolley & Douglas, 2014); decrease individual's trust in the government and political engagements such as voting (Einstein & Glick, 2015); interfere with intergroup relations by stirring up prejudice and discrimination (Swami, 2012); fuel violence towards others (Bartlett & Miller, 2010); lead people to disengage from social norms, and move towards radicalization (Karstedt & Farrall, 2006; Lee 2020); and, during a public health emergency, produce science denial , distorting important individual medical choices and exacerbating public health crises (Mitchell, 2019).

However, the refutation of conspiracy theories is often extremely difficult. On the one hand, both authoritarian and democratic regimes have relied on conspiracy theories, fake news, or rumors to suppress truthful information for their own political ends (Mutsvairo & Bebawi, 2019). The sensational, eye-catching conspiracy narratives perfectly fulfill the logics of today's "clickbait" media economy for most online platforms. On the other hand, restriction of misinformation by big social media companies is still facing legal, moral, and political challenges. The rhetorical strategies of conspiracy theories, such as "just asking questions" and "half-true headlines" that rely on the recipient to make a conspiracy inference, are often mobilized to circumvent regulations and algorithm-based filters. The demand-side and audience-centered approaches to correcting conspiratorial mindsets (in which the target of the intervention is the recipient rather than the source of conspiracy theories) also face challenges. Krekó (2020) summarizes several obstacles to debunking conspiracy theories, such as the problems of meta-conspiracy, the familiarity backfire effect and collective motivated reasoning (Winiewski et al., 2015). Debunking efforts face greater challenges when there is growing political uncertainty brought about by political crises and unprecedented events such as the global pandemic (Golob et al., 2021; Mora-Rodríguez & Melero-López, 2021).

3. Existing efforts in debunking conspiracy theories

While completely correcting conspiracy theories may seem like an "impossible mission", an emerging array of efforts have tried to mitigate the negative consequences of conspiratorial media exposure on individuals. These endeavors consist primarily of five approaches, including: media literacy intervention, inoculation strategy, science- and fact-focused corrections, decoding the myth of conspiracy theory, and re-imagining intergroup relations. The present study empirically tests the effectiveness of these five methods at countering conspiracy theory belief in the context of COVID-19.

3.1. Media literacy interventions

The first intervention method is media literacy education. Media literacy generally refers to specific knowledge and skills that aid the critical understanding and usage of media (Jeong et al., 2012) — the ability to access, analyze, evaluate and communicate messages in a variety of forms (Aufderheide, 1993). In the past decades, media literacy education has been conducted to address a wide range of media issues, including violence, sexual content, health, advertising, stereotypes, and fear inducing content. The usefulness of media literacy intervention is equivocal and uneven. While some experiments suggest it is successful in reducing the negative effects of the media, making children less likely to accept television representations as reality, and thus decreasing their desires to be like the characters in advertisements and purchase advertised products, others found a "boomerang effect" — an increase in the harmful attitudes of individuals who participated in the intervention (Potter, 2010). In a few media literacy lessons, participants paid more attention to the violent clips and less attention to the content of the lesson.

With the rise of fake news, false information, conspiracy theory, and sensationalism along with digital technology's ever-growing role in society, media literacy has gained increasing academic and policy-level attention as a tool to empower people with a set of skills to analyze, critique, and respond to the information that appears in digital texts. Increasing numbers of journal articles and monographs (LaGarde & Hudgins 2018) address the new challenge posed by false information and emotion-first logic in today's "post-truth" society and emphasize the importance of media literacy training for vulnerable groups (Jeong et al., 2012; Jones-Jang et al., 2021). However, so far, there is little empirical evidence to show the positive role of media literacy intervention in fighting conspiratorial narratives. Media literacy intervention aims to enhance criticism by increasing knowledge of the media, awareness of the influence of the media, and the ability to assess the realism of the media's representation of reality. This study tests the idea that media literacy intervention can combat conspiracy theory belief through strategies such as skepticism and de-biasing.

3.2. Inoculation approach

The second countermeasure belongs to the "inoculation strategies", which uses a biological metaphor to describe an approach that builds resistance to persuasive messages (McGuire & Papageorgis, 1962). In medicine, resistance to a virus can be increased by exposing someone to a weakened version of the virus (a vaccine) that is strong enough to trigger a response (i.e., the production of antibodies), but not so strong as

to overwhelm the body's immune system. The social-psychological theory of inoculation follows a similar logic: presenting some weak arguments of persuasion and misinformation (e.g., containing obvious logical fallacy) in advance is expected to raise the attitudinal immune system of the person against such threats in the future. To date, numerous studies have applied inoculation theory to various topics. The most relevant to our study is the "prebunking" intervention, which draws on the psychological inoculation theory and suggests a positive effect in cultivating "mental antibodies" against fake news and misinformation regarding climate change and the 9/11 terrorist attacks (Banas & Miller, 2013). Roozenbeek and van-der-Linden (2019) developed a browser game named Bad News, in which players take on the role of fake news creators and learn about several common misinformation techniques. This game has shown consistent and significant inoculation effects, yet

there is a key issue when conducting inoculation treatment. The inoculation approach was originally developed, and is often used, in a setting aiming at protecting individuals' (positive) pre-existing viewpoint from the influence of future malicious information (Banas & Miller, 2013; Banas & Rain, 2010). The mechanism behind inoculation is also partly dependent on people's engagement in "identity-protective motivated reasoning". However, people's pre-existing conspiratorial mindsets can be widely varied, with some people tending to see the outside world through a "conspiracy lens". As such, the inoculating effects on this subpopulation of "firm conspiracy believers" can be less effective, as they may be prone to accepting any conspiracy discourse (even if it contains logical errors) and integrating it into their already vast array of conspiratorial world views.

3.3. Fact- and science-focused correction

The third intervention approach engages with studies on correction, which usually focus on science and facts, in order to avoid the "familiarity backfire effect". A few previous studies demonstrate that, sometimes, simply highlighting factual and scientific information is enough to effectively discredit disinformation, rumors and conspiracy theories. This statement may go against the prevailing notion of "post-truth", in which emotions trump all other factors. One possible explanation for science and rationality's increasing impact on shaping beliefs might be that, in the current media ecology, people are overloaded with emotional messages from various media platforms, and that as such, rational and factual argument have gained more informational value. A meta-analysis of correction and debunking studies finds that fact-based corrections can reduce but do not entirely mitigate misperceptions generated by misinformation (Walter & Tukachinsky, 2020).

Furthermore, the fact- and science-focused correction approach can be integrated with the journalistic tool of fact checking for greater effect. As a response to the spread of inaccurate information across society, fact checking has been regarded as an effective method in correcting falsehoods. In the US, PolitiFact and FactCheck.org are fact-checking initiatives that gained popularity after the 2016 U.S. elections. Fact checkers investigate the claims made in (news) stories and make an overall recommendation regarding the extent to which the message is true or false, while describing the true state of events. Many fact checkers post such corrections on social media, such as Twitter or Facebook. Some nuanced empirical studies have demonstrated corrective information presented in fact checkers to be effective at ameliorating disinformation (Chan et al., 2017).

3.4. Decoding the myth of conspiracy theory

The three debunking methods mentioned above are all content-targeted, aimed at helping people to critically understand and analyze the conspiratorial content they encounter, discrediting such information through inoculation, or simply highlighting fact and science. The fourth and fifth counter-conspiracy-theory approaches discussed here are more human-focused and are centered on the improvement of an individual's psychological condition, as well as their sentiments on specific out-groups. This study names the fourth strategy "decoding the myth of conspiracy theory", and it essentially educates people on the nature and features of conspiracy theories, attempting to cast light on the mechanisms that allow them to infiltrate people's belief systems (e.g., what is a conspiracy theory? Why do people seek conspiracy messages during political uncertainty?). Decoding the myth of conspiracy narratives aims to help individuals

better understand the information-processing of conspiracy theories and their psychological antecedents. This is expected to strengthen feelings of self-efficacy, self-understanding, and self-control, and to reduce conspiracy ideations.

While the approaches of "decoding" conspiracy narratives and increasing media literacy both encourage critical thinking in the audience, the "decoding" approach is more about helping audiences understand their own cognitive vulnerability in the face of conspiracy narratives than criticizing the processes of media content production. Moreover, both the "decoding" treatment and the science-focused correction treatment attempt to subvert the cultural familiarity of conspiracy texts' intended meaning. However, the "decoding" treatment represents a more thorough countermeasure than science-focused correction approaches. Inspired by Bjerg and Presskorn-Thygesen's (2017) study, the science-focused correction approach can be thought of as being underpinned by a true/false proposition, which does not account for the possibility of false propositions sometimes making sense due to factors such as pre-existing conspiracy convictions. The "decoding" approach can clarify the nonsensical status of these false propositions, showing that they only "make sense" as a result of misguided use of language and a biased cognitive process of information-processing.

Building on these insights, the "decoding" approach avoids false but sensical claims, by exposing the highly biased nature of conspiracy discourses that help validate a baseline that does not make sense a priori. While the science-focused correction approach can only draw on truth verification, the "decoding approach" focuses on exposing the falseness of conspiracy theory's epistemological base — regarded as "elusive epistemology" (Baden & Sharon, 2020) — that is not explained within the process of verification and validation.

3.5. Reimagining intergroup relations

The "reimagining intergroup relations" strategy is context-specific and aims to mitigate the negative influences of conspiracy narratives that target specific groups, such as African Americans, Jews, Muslims, Asians, and homosexuals. Conspiracy theories are often characterized by binaries between "natural", "just" and "good" political order and its "evil" counterpart, undermining pluralist democratic discourse and calling for an urgent eradication of the political opposition (Baden & Sharon, 2020). Facilitated by the combined effects of conspiracy theories that "construct dissent as a Manichean binary" (i.e., a cognitive structure or worldview that considers phenomena to have two opposing sides, such as good versus evil, also see Baden & Sharon, 2020) and form "motivated collective cognition", people who hold more negative feelings (distrust, anxiety) towards out-groups might be particularly vulnerable to conspiratorial discourses that allege those groups are plotting evil plans (Kofta & Sedek, 2005).

To resist this conspiratorial labelling of certain groups as evil, the approach of imaginary re-conception — an action of re-conceiving intergroup relationships — may be utilized to call into question the us/them or self/other relationship that underlies the Manichean binary understandings; raising issues of common identity may help bridge or overcome this dichotomy. It is hoped that a re-conception approach based on reimagining intergroup relationships will have positive ethico-political effects that will help move target issues away from a state of epistemic exception and back into the realm of rational deliberation. Therefore, recalling experiences of benign intergroup contact is expected to prime positive attitudes toward outgroup members, and thus, decrease the likelihood of conspiracy beliefs targeting said outgroups. Furthermore, previous studies have found that when actual contact between groups is impractical, imagining intergroup contact can effectively reduce intergroup anxiety, reduce prejudice and discrimination, and improve intergroup relations (Turner et al., 2007).

However, the utility of this imagined approach may be limited, as this treatment focuses mainly on the "Manichean binary", which is one of three elements of Baden and Sharon's (2020) conceptualized conspiracy theories proper (CTP) — an integrated account of conspiracy theory characterizing three essential corruptions of conspiratorial discourse on democratic norms (the other two are "pervasive potency" and "elusive epistemology"). As such, our fragmented, targeted treatment of the Manichean binary may ignore the intra-action between the three corruptive forces of conspiracy theory. In this study, we seek to provide an experimental examination of the impacts of methods and strategies that could

effectively debunk conspiracy theories and reduce the harmful influences of conspiracist media exposure. These five methods are either content-focused, already enacted in existing literature and adopted in debunking practice (including media literacy intervention, inoculation strategy, science- and fact-focused corrections) or audience-focused, developed in this study as a pioneering attempt (including decoding the myth of conspiracy theory, and re-imagining intergroup relations). Notably, the categorization of the five interventions into content-based and audience-based is only for heuristic purposes. In reality, overlap occurs. For example, media literacy intervention is also operated to influence the audiences' cognition. Building on these insights, we specify the following hypotheses.

- H1: The content-based methods of counter conspiracy theory can mitigate conspiratorial belief.
- H1a: Media literacy intervention can effectively reduce conspiratorial belief.
- H1b: Inoculation strategy can lead to a reduced belief in conspiracy theory.
- H1c: Science- and fact-focused corrections can effectively weaken conspiracy belief.
- H2: The audience-focused method of countering conspiracy theory can mitigate conspiratorial belief.
- H2a: Decoding the myth of conspiracy theory is an effective method of reduction in conspiracy belief.
- H2b: Re-imagining intergroup relationships can help reduce conspiracy belief.

4. Method

4.1. Case selection

The experiments tested the effectiveness of countermeasures to the cognitive effect of the "Wuhan lab" COVID-19 conspiracy theory. The "Wuhan lab" conspiracy theory represents one of the most circulated COVID-19 conspiracy theories in the US at the time the experiments were conducted. The Wuhan lab conspiracy theory claims that the coronavirus originated in a laboratory linked to China's biowarfare program. This theory was picked up by the Trump administration to deflect attention away from criticism about the handling of the outbreak.

4.2. Sample

To explore the influence of intervention approaches on people's conspiracy beliefs, we designed a survey experiment. Our participants (607 adults from the United States) were recruited from Amazon Mechanical Turk (MTurk) in October and November 2020. Participants were paid $3 for their participation. Our sample is 40% female and 78% white. The median age of the sample was 34, and the median respondent had a 4-year college degree.

4.3. Design and procedure

This study adopted a between-subject experiment design, which was adopted by Jolley and Douglas (2014) and Warner and Neville-Shepard (2014) to examine the media effect of (counter-) conspiracist messages. The survey experimental method allows us to isolate the causal impact of debunking efforts on decreasing individuals' conspiracy beliefs. Participants were randomly assigned to one of six conditions — five conditions involving counter-conspiracy theory interventions and the sixth being a control condition. Following the manipulation, participants rated their beliefs in the conspiracy theory. Participants also provided their demographic details consisting of sex, age, party identification, political orientation and highest educational qualification.

More specially, in the first debunking method (media literacy intervention), participants were asked: "For this activity, please watch the media provided. While you are watching, analyze the media. Please bear in mind the following questions: in your opinion, what are the aim and purpose of the producer of this video? What level of credibility do you think the material presented in the video has? To what extent do you think the content presented in the video is consistent with journalism's values of objectivity and neutrality?"

Then, participants were exposed to media stimulus containing conspiracy narratives. After watching the video, participants were asked to type their answers regarding the production, message, and language

of the conspiratorial media content. Following this manipulation, participants completed the dependent measures. In this experiment, the media literacy stimulus was used to strengthen the critical thinking capacity of the audience; they were strongly encouraged to reflect on the objectivity, credibility and neutrality of the conspiracy narratives.

In the second counter-conspiracy theory method (inoculation strategy), participants were asked to view a short video that contained some obvious logical loopholes and fallacies. Then, they watched a debunking statement illustrating the fallacies in the previous video. The participants were then exposed to a more persuasive video of conspiratorial content. Following this, participants completed the dependent measures.

In the third intervention approach (fact- and science-based correction), participants were asked to view a short video from the World Health Organization (WHO), which provided a scientific explanation regarding the origins and transmission method of COVID-19. After watching the video, participants completed the dependent measures.

In the fourth method (decoding conspiracy theory myth), participants were asked to view a short video like a "mini lecture" in which two social psychologists give a brief introduction to the features of conspiracy theory and why individuals tend to seek conspiratorial explanations. After the video exposure, participants completed the dependent measures.

In the fifth method (improving intergroup relations), participants were instructed to imagine interacting with a Chinese individual. Participants were asked: "Please spend the next five minutes imagining that you are talking to a Chinese person that has sat next to you on the train. You spend about thirty minutes chatting until you reach your stop and the train departs. During the conversation, you find out some interesting and unexpected things about him, please think about what those things were and list them into the textbox." Because the aim of this method is to prime participants to think of the Chinese benignly, their specific answers about the imaginary content are not included in the analysis. Following this manipulation, participants completed an evaluation of Chinese people, and completed the dependent measures.

In the control group, participants only completed the dependent measures, and were not exposed to any intervention methods, including the five counter-conspiracy theory methods described above.

4.4. Measurement (dependent variable)

The conspiracy beliefs scale measures an individual's conspiratorial belief relating to China and Chinese people with four items, on a scale of 1 (strongly disagree) to 5 (strongly agree); one items is coronavirus-focused and another three are more general. The specific items can be found in the Appendix.

5. Results

Table 1 provides some descriptive statistics on the conspiracy beliefs scores for the six groups of participants. The sample size for each group ranged from 97 to 103. The sample mean of the control group was higher than those of Groups 2-4 and only slightly lower than that of Group 1.

Table 1. Descriptive statistics of the conspiracy beliefs scale

	N	Mean	Std. Dev.	Std. Error	Minimum	Maximum
Control	101	3.302	1.088	0.108	1	5
Group 1	102	3.458	1.123	0.111	1	5
Group 2	97	3.183	1.068	0.108	1	5
Group 3	103	2.896	1.229	0.121	1	5
Group 4	102	2.833	1.094	0.108	1	4.75
Group 5	102	2.922	0.989	0.098	1	5
Total	607	3.098	1.121	0.046	1	5

To test for H1 and H2, we followed a multiple linear regression approach, with the conspiracy beliefs scale as the dependent variable and five dummy variables corresponding to the five treatment groups as the independent variables. For each dummy variable, its value was 1 for data points belonging to the treatment group represented by the dummy variable, and 0 otherwise.

Since our hypotheses focused on the five types of mitigation methods "effectiveness at reducing conspiratorial belief", a one-sided test was adopted. To mitigate the issue of multiple comparison, we

applied the Sidak correction to adjust to the significance level required for the estimated coefficient for each independent variable to be statistically significant (Sidak, 1967). The results of the test are summarized in Table 2.

Our first group of hypotheses inquired on whether content-based counter conspiracy methods can mitigate conspiratorial belief. Specifically, H1a predicted that the media literacy intervention can effectively reduce conspiratorial belief. No such effect was supported by the results, as the estimated coefficient for Group 1 was not statistically significant (Beta=0.16, SE=0.16, p=0.844).

H1b predicted that the inoculation strategy can lead to reduced belief in conspiracy theory. No such effect was supported by the results, as the estimated coefficient for Group 2 was not statistically significant (Beta=-0.12, SE=0.16, p=0.776).

H1c predicted that science- and fact-focused corrections can effectively weaken conspiracy belief. Consistent with this hypothesis, the mitigation effect was significant (Beta=-0.41, SE=0.15, p=0.004), since the p-value was less than 0.0102, the Sidak correction adjusted significance level for 5% significance level. The group that watched the video providing a scientific explanation regarding the origins and transmission method of COVID-19 showed a statistically lower level of conspiratorial belief compared to the control group.

Our second group of hypotheses queried on whether audience-focused methods of countering conspiracy theory can mitigate conspiratorial belief. Specifically, H2a predicted decoding the myth of conspiracy theory to be an effective method of reducing conspiracy belief. Consistent with this hypothesis, the mitigation effect was significant (Beta=-0.47, SE=0.16, p=0.001), since the p-value was less than 0.002, the Sidak correction adjusted significance level for 1% significance level. The group of participants that watched the video of two social psychologists explaining the features of conspiracy theory and why individuals tend to seek conspiratorial explanations showed a statistically lower level of conspiratorial belief compared to the control group.

H2b predicted that re-imagining intergroup relationships can help reduce conspiracy belief. Consistent with this hypothesis, the mitigation effect was significant (Beta=-0.38, SE=0.16, p=0.007), since the p-value was less than 0.0102, the Sidak correction adjusted significance level for 5% significance level. The group of participants that were instructed to imagine interacting with a Chinese individual obtained a statistically lower level of conspiratorial belief compared to the control group.

Table 2. Regression results for comparing treatment groups with the control group

Dependent variable: Conspiracy beliefs scale			
	Beta	**Std. Error**	**P-Value**
Group 1	0.156	0.155	0.844
Group 2	-0.119	0.157	0.776
Group 3	-0.406**	0.154	0.004
Group 4	-0.469***	0.155	0.001
Group 5	-0.380**	0.155	0.007
Constant	3.302****	0.110	<0.000

Note. *p<0.10; **p<0.05; ***p<0.01; ****p<0.001.

6. Discussion

The present study tested the causality between five counter-conspiracy theory approaches and the extent of individuals' consequent conspiratorial belief. The results partly supported our predictions, with some unexpected, yet important findings. The content-based methods of counter conspiracy theory were shown to partly mitigate conspiratorial belief. While the intervening approaches of media literacy and inoculation did not demonstrate a significant reduction of conspiracy belief, science-and fact-focused corrections were shown to be effective mitigators. Our findings also clearly illustrated both audience-focused methods to be effective reducers of conspiracy theory acceptance.

First, both media literacy intervention and inoculation approaches were ineffective at reducing audiences' beliefs in COVID-19 induced conspiracy theories. While previous research that adopted these two methods to debunk conspiracy theories and misinformed content showed mixed results, our study adds empirical evidence to the pessimistic side. The media literacy intervention and inoculation approaches'

ineffectiveness is partly due to two issues of temporality in the specific context of this experiment —media literacy intervention that helps individuals obtain skills, capacities and knowledge of criticism on media is a gradual process whose effects are cumulative incremental, and uneven. Moreover, it has been found that when conducting media literacy education, interventions with more sessions are more effective than interventions with just one (Jeong et al., 2012). Therefore, it is reasonable that a "single dose" of media literacy as a countermeasure to conspiracy theory would be less effective in the immediate setting, but may produce long-term consequence through further treatments. In addition, some argue that when identifying and discrediting misinformation in cyberspace, a more specific "information literacy" intervention might be more relevant than general "media literacy" education (Jones-Jang et al., 2021).

The inoculation method faces a different temporal challenge, in that it is essentially a "prebunking" —rather than debunking— approach that helps cultivate "mental antibodies" or, in other words, resilience against future harm brought by interaction with similar but benign conspiracy narratives. As our study is not a longitudinal survey, it is not entirely unexpected that the inoculation method did not work well in mitigating the negative effect of conspiracy theories in the short term. Not to mention that those with pre-existing conspiratorial mindsets might accept conspiracy discourses even if they contain obvious factual or logical errors. Another potential explanation for the ineffectiveness of inoculation is that our study did not include the element of "affect" into its inoculation strategy. When testing the inoculation strategy's effectiveness at inducing resistance to conspiracy theories, Banas and Miller (2013) found that affect could serve as a peripheral cue. In our case, conspiracy narratives that China was involved in secret plots regarding COVID-19 can provoke strong negative feeling towards the Chinese government, which lends those narratives appeal. In other words, the evidence of the conspiracy theories may not hold up well to scrutiny, but pre-existing bias can make the narratives "feel right" while viewed. In this vein, although the inoculation approach aims to highlight the logical flaws of weak and false arguments, this method might be undercut by feelings that defy rationality and logic.

Second, our findings suggest that science- and fact-focused corrections effectively reduce individual acceptance of conspiracy narratives. It should be noted that our survey was conducted in a period when anti-China sentiment and conspiracy theories about the pandemic had converged and culminated to an extraordinary degree: the study was conducted just days before the 2020 presidential election, which was perhaps the most polarized in contemporary US politics, combined with years of anti-China propaganda and a recent proliferation of misinformation related to COVID-19. Our results, however, went against the prevailing notion of "post-truth" in which emotions triumph over analytical thinking, suggesting a "bounce-back" phenomenon as a potential new theorization — that is, once people have long been overloaded with strong emotional messages coming from various media platforms, the informational values of rational and factual arguments rises, diminishing conspiracy theories' capacities to fan radicalized beliefs. This revived attentiveness to factual argument may thus come to override the disruptive effects of the negative emotions produced by conspiracy theories. Moreover, Cook and Lewandowsky (2011) argued that efficient correction should focus on the facts, rather than false belief, in order to avoid the misinformation becoming more familiar. Further, refutation should include an alternative explanation. These two key elements of fact- and science-focused correction were carefully embedded in our intervention.

Third, our findings demonstrated that the audience-focused, "decoding" treatment to be effective at reducing conspiracy belief, which is consistent with our predictions. The "decoding" treatment explains how pre-existing biases, beliefs, and conspiracy narratives are co-constituted and implicated with each other, so that "false but still sensical" claims do not a priori make sense regardless of their localized beliefs. This leads to audiences being less likely to accept conspiracy narratives, as substantiated in our results. Furthermore, the "decoding" treatment was developed as an integrated approach, addressing all three core components of conspiracy theories proper (CTP). Our results demonstrated that this integrated, audience-focused approach could be slightly more effective than the content-focused, science- and fact-focused corrections at reducing conspiracy beliefs. This original approach reduces the general receptivity to conspiracy theories by targeting their root cause. Another effective method belonging to this strand is to recall people's experiences of successfully controlled events, in order to strengthen self-efficacy and reduce conspiracy ideation (Krekó, 2020).

Fourth, though "decoding" treatment represents a more integrated countermeasure to conspiracy theories, our results suggest that re-imagining intergroup relationship with the Chinese in a positive light also leads to a significant reduction of conspiracy belief about COVID-19 from a "China threat" perspective. While a nationwide representative study in Poland found intergroup contact to be a significant predictor of attitudes toward Jews, it was not significantly related to belief in Jewish conspiracy theories (Winiewski et al., 2015); our study shows more promising results. Conspiracy theory belief often functions through an epistemic state of exception (Baden & Sharon, 2020; Bjerg & Presskorn-Thygesen 2017). Based on our results, the "re-imagining" approach reproduced an effect of desecuritization because the audience tended to downgrade or cease to treat the Chinese group as an existential threat to a valued referent object (Roe, 2004; Jutila, 2006). By re-imagining a casual, informal and private conversation with an outgroup member (a Chinese person) in a prosaic context (presumably on the daily train ride home or workplace) with a prescribed aim to discover something interesting, this imaginary intergroup communication helps deconstruct the epistemic exception relied upon by conspiracy narratives to render an outgroup antagonistic, thus undermining the securitization frame of the American-Chinese relationship that dominated politicized intergroup relationships during the COVID-19 pandemic.

7. Conclusion

While most studies on conspiracy theory and beliefs have focused on the cognitive mechanism of conspiracy theories, this paper looks for the solution. To this end, the present study tested the causality of five approaches of counter conspiracy theory and the resultant extent of individuals' conspiratorial belief. Our results demonstrate that the content-based methods of counter conspiracy theory can partly mitigate conspiratorial belief: while media literature and inoculation strategy did not demonstrate a significant reduction of conspiracy belief, the science-and fact-focused corrections led to a significant reduction in conspiracy beliefs. Our results also support both audience-focused interventions' effectiveness (i.e., decoding the myth of conspiracy theory and re-imagining intergroup relationship) at reducing conspiracy theory acceptance.

Last, we should address two limitations. One is that this paper explored only the immediate effects of debunking approaches on conspiracy theory belief. It is, therefore, notable that the usefulness of these approaches may fade away in the context of longitudinal survey that measures their long-term effects. The other limitation is that this study did not account for individual differences, i.e., how different personalities influence the outcome of intervention approaches in reducing conspiracy belief. A critical consideration of different individual psychologies, local cultures, group dynamics, and political systems may suggest new avenues for the study of reduction in conspiracy belief via developing multiple tests on these moderators, and their effect on the relationship between intervention approaches and conspiracy belief. Rather than measuring how subjects' belief in specific conspiracy theories is moderated by individual psychological traits and cognitive structures in a given culture and time, we might develop a more theoretically grounded scale that directly taps these factors of moderation to jointly explain how to either enhance individual resilience against conspiracist thinking or to rescue individuals from the cognitive trap of conspiratorial provocation.

Author Contribution

Idea, G.T. and L.T.; Literature review (state of the art), G.T., L.T.; Methodology, G.T., Y.R.; Data analysis, G.T., Y.R.; Results, G.T., L.T., Y.R.; Discussion and conclusions, L.T., G.T.; Writing (original draft), G.T., L.T., Y.R.; Final revisions, G.T., L.T., Y.R.; Project design and sponsorships, G.T., L.T., Y.R.

Funding Agency

This research received support from the Independent Research Fund, Wuhan University (No.2020SK020).

References

Abalakina-Paap, M., Stephan, W., Craig, T., & Gregory, W. (1999). Beliefs in conspiracies. *Political Psychology*, *20*(3), 637-647. https://doi.org/10.1111/0162-895x.00160

Aistrope, T., & Bleiker, R. (2018). Conspiracy and foreign policy. *Security Dialogue*, *49*(3), 165-182. https://doi.org/10.1177/0967010617748305

Aufderheide, P. (1993). *Media Literacy. A Report of the National Leadership Conference on Media Literacy*. [Conference] Aspen Institute, Washington, DC, United States. https://bit.ly/3y34w63

Baden, C., & Sharon, T. (2021). Blinded by the lies? Toward an integrated definition of conspiracy theories. *Communication Theory*, *31*(1), 82-106. https://doi.org/10.1093/ct/qtaa023

Banas, J., & Miller, G. (2013). Inducing resistance to conspiracy theory propaganda: Testing inoculation and metainoculation strategies. *Human Communication Research*, *39*(2), 184-207. https://doi.org/10.1111/hcre.12000

Banas, J., & Rains, S. (2010). A meta-analysis of research on inoculation theory. *Communication Monographs*, *77*(3), 281-311. https://doi.org/10.1080/03637751003758193

Bartlett, J., & Miller, C. (2010). *The Power of Unreason: Conspiracy theories, extremism and counter-terrorism*. Demos.

Bjerg, O., & Presskorn-Thygesen, T. (2017). Conspiracy theory: Truth claim or language game? *Theory, Culture & Society*, *34*(1), 137-159. https://doi.org/10.1177/0263276416657880

Buckland, M. (2017). *Information and society*. The MIT Press. https://doi.org/10.7551/mitpress/10922.001.0001

Chan, M., Jones, C., Hall-Jamieson, K., & Albarracín, D. (2017). Debunking: A meta-analysis of the psychological efficacy of messages countering misinformation. *Psychological Science*, *28*(11), 1531-1546. https://doi.org/10.1177/0956797617714579

Cook, J., & Lewandowsky, S. (2011). *The debunking handbook*. University of Queensland. https://bit.ly/3ezLFI4

Craft, S., Ashley, S., & Maksl, A. (2017). News media literacy and conspiracy theory endorsement. *Communication and the Public*, *2*, 388-401. https://doi.org/10.1177/2057047317725539

Drochon, H. (2018). Who believes in conspiracy theories in Great Britain and Europe? In *Conspiracy theories and the people who believe them* (pp. 337-346). Oxford University Press. https://doi.org/10.1093/oso/9780190844073.003.0022

Einstein, K., & Glick, D. (2015). Do I think BLS data are BS? The consequences of conspiracy theories. *Political Behavior*, *37*(3), 679-701. https://doi.org/10.1007/s11109-014-9287-z

Fenster, M. (1999). *Conspiracy Theories: Secrecy and power in American culture*. University of Minnesota Press. https://bit.ly/33yuNv4

Golob, T., Makarovi, M., & Rek, M. (2021). Meta-reflexivity for resilience against disinformation. [Meta-reflexividad para la resiliencia contra la desinformación]. *Comunicar*, *66*, 107-118. https://doi.org/10.3916/C66-2021-09

Hofstadter, R. (1965). *The paranoid style in American politics and other essays*. Alfred A. Knopf, Inc. https://bit.ly/3eBC7fJ

Hollander, B.A. (2018). Partisanship, individual differences, and news media exposure as predictors of conspiracy beliefs. *Journalism & Mass Communication Quarterly*, *95*(3), 691-713. https://doi.org/10.1177/1077699017728919

Husting, G., & Orr, M. (2007). Dangerous machinery: 'Conspiracy theorist' as a transpersonal strategy of exclusion. *Symbolic Interaction*, *30*, 127-150. https://doi.org/10.1525/si.2007.30.2.127

Jeong, S.H., Cho, H., & Hwang, Y. (2012). Media literacy interventions: A meta-analytic review. *Journal of Communication*, *62*(3), 454-472. https://doi.org/10.1111/j.1460-2466.2012.01643.x

Jolley, D., & Douglas, K. (2014). The effects of anti-vaccine conspiracy theories on vaccination intentions. *PLoS ONE*, *9*(2), e89177. https://doi.org/10.1371/journal.pone.0089177

Jones, L. (2008). A geopolitical mapping of the post-9/11 world: Exploring conspiratorial knowledge through Fahrenheit 9/11 and The Manchurian Candidate. *Journal of Media Geography*, *III*, 44-50. https://bit.ly/3f4MSWW

Jones-Jang, S.M., Mortensen, T., & Liu, J. (2021). Does media literacy help identification of fake news? Information literacy helps, but other literacies don't. *American Behavioral Scientist*, *65*(2), 371-388. https://doi.org/10.1177/0002764219869406

Jutila, M. (2006). Desecuritizing minority rights: Against determinism. *Security Dialogue*, *37*(2), 167-185. https://doi.org/10.1177/0967010606066169

Karstedt, S., & Farrall, S. (2006). The moral economy of everyday crime: Markets, consumers and citizens. *British Journal of Criminology*, *46*(6), 1011-1036. https://doi.org/10.1093/bjc/azl082

Kofta, M., & Sedek, G. (2005). Conspiracy stereotypes of Jews during systemic transformation in Poland. *International Journal of Sociology*, *35*(1), 40-64. https://doi.org/10.1080/00207659.2005.11043142

Krekó, P. (2020). Countering conspiracy theories and misinformation. In M. Butter, & P. Knight (Eds.), *Routledge Handbook of Conspiracy Theories* (pp. 242-256). Routledge. https://doi.org/10.4324/9780429452734-2_8

LaGarde, J., & Hudgins, D. (2018). *Fact vs. Fiction: Teaching critical thinking skills in the age of fake news*. International Society for Technology in Education.

Lee, B. (2020). Radicalization and Conspiracy Theories. In M. Butter, & P. Knight (Eds.), *Routledge Handbook of Conspiracy Theories*. Routledge. https://doi.org/10.4324/9780429452734-3_7

McGuire, W., & Papageorgis, D. (1962). Effectiveness of forewarning in developing resistance to persuasion. *Public Opinion Quarterly*, *26*(1), 24-24. https://doi.org/10.1086/267068

Mitchell, S. (2019). Population control, deadly vaccines, and mutant mosquitoes: The construction and circulation of Zika virus conspiracy theories online. *Canadian Journal of Communication*, *44*(2), 211-237. https://doi.org/10.22230/cjc.2019v44n2a3329

Mora-Rodríguez, A., & Melero-López, I. (2021). News consumption and risk perception of Covid-19 in Spain. [Seguimiento informativo y percepción del riesgo ante la Covid-19 en España]. *Comunicar*, *66*, 71-81. https://doi.org/10.3916/c66-2021-06

Mutsvairo, B., & Bebawi, S. (2019). Journalism educators, regulatory realities, and pedagogical predicaments of the "fake news" era: A comparative perspective on the middle east and Africa. *Journalism & Mass Communication Educator*, *74*(2), 143-157. https://doi.org/10.1177/1077695819833552

Oliver, J., & Wood, T. (2014). Conspiracy theories and the paranoid style(s) of mass opinion. *American Journal of Political Science*, *58*(4), 952-966. https://doi.org/10.1111/ajps.12084

Potter, W. (2010). The state of media literacy. *Journal of Broadcasting & Electronic Media*, *54*(4), 675-696. https://doi.org/10.1080/08838151.2011.521462

Roe, P. (2004). Securitization and minority rights: Conditions of de-securitization. *Security Dialogue*, *35*(3), 279-294. https://doi.org/10.1177/0967010604047527

Roozenbeek, J., & van der Linden, S. (2019). The fake news game: Actively inoculating against the risk of misinformation. *Journal of Risk Research*, *22*(5), 570-580. https://doi.org/10.1080/13669877.2018.1443491

Samuel-Azran, T., & Hayat, T. (2019). Online news recommendations credibility: The tie is mightier than the source. [La credibilidad de las noticias digitales: El vínculo es más impactante que la fuente]. *Comunicar*, *60*, 71-80. https://doi.org/10.3916/C60-2019-07

Sidak, Z. (1967). Rectangular confidence regions for the means of multivariate normal distributions. *Journal of the American Statistical Association*, *62*(318), 626-626. https://doi.org/10.2307/2283989

Simmons, W., & Parsons, S. (2005). Beliefs in conspiracy theories among African Americans: A comparison of elites and masses. *Social Science Quarterly*, *86*(3), 582-598. https://doi.org/10.1111/j.0038-4941.2005.00319.x

Swami, V. (2012). Social psychological origins of conspiracy theories: The case of the Jewish conspiracy theory in Malaysia. *Frontiers in Psychology*, *3*, 1-9. https://doi.org/10.3389/fpsyg.2012.00280

Turner, R., Hewstone, M., & Voci, A. (2007). Reducing explicit and implicit outgroup prejudice via direct and extended contact: The mediating role of self-disclosure and intergroup anxiety. *Journal of Personality and Social Psychology*, *93*(3), 369-388. https://doi.org/10.1037/0022-3514.93.3.369

Uscinski, J.E., & Parent, J.M. (2014). *American Conspiracy Theories*. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199351800.001.0001

van Prooijen, J., Douglas, K., & De-Inocencio, C. (2018). Connecting the dots: Illusory pattern perception predicts belief in conspiracies and the supernatural. *European Journal of Social Psychology*, *48*(3), 320-335. https://doi.org/10.1002/ejsp.2331

Walter, N., & Tukachinsky, R. (2020). A meta-analytic examination of the continued influence of misinformation in the face of correction: How powerful is it, why does it happen, and how to stop it? *Communication Research*, *47*(2), 155-177. https://doi.org/10.1177/0093650219854600

Warner, B., & Neville-Shepard, R. (2014). Echoes of a conspiracy: Birthers, truthers, and the cultivation of extremism. *Communication Quarterly*, *62*(1), 1-17. https://doi.org/10.1080/01463373.2013.822407

Winiewski, M., Soral, W., & Bilewicz, M. (2015). Conspiracy theories on the map of stereotype content: Survey and historical evidence. In M. Bilewicz, A. Cichocka, & W. Soral (Eds.), *The Psychology of Conspiracy* (pp. 23-41). Routledge.