

THE CONFLICTING CUE EFFECT: CONFUSING MESSAGES AND THE LIMITS OF ELITE INFLUENCE IN BRAZIL'S COVID- 19 VACCINATION CAMPAIGN

O Efeito das Pistas em Conflito: Mensagens Confusas e os Limites da Influência das Elites na Campanha de Vacinação contra a Covid-19 no Brasil

El efecto de la pista en conflicto: mensajes confusos y los límites de la influencia de las élites en la campaña de vacunación contra la Covid-19 en Brasil

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Abstract

How do citizens respond when political leaders and their governments send conflicting messages during a public health crisis? We conducted a survey-based information experiment with 857 unvaccinated Brazilians in March 2021, shortly after the start of the Covid-19 vaccination campaign. Participants were randomly exposed to cues about two vaccines—Coronavac and Astrazeneca—emphasizing their country of origin, regulatory approval, and federal government procurement. Results show that political preference shaped interpretation: among supporters of the then President Jair Bolsonaro, willingness to vaccinate decreased when the Chinese vaccine (which Bolsonaro had criticized) was mentioned. However, when information also included government approval and procurement, this negative effect disappeared, and responses became statistically indistinguishable from the control group—a pattern we refer to as the conflicting cue effect. Among opponents, information linked to the Bolsonaro administration triggered a backfire effect, lowering willingness to vaccinate with Astrazeneca. These findings highlight how, in contrast to models that assume consistent elite influence, real-world political communication often involves contradictory signals that produce asymmetric and sometimes unintended responses. By examining how citizens interpret these conflicting cues, the study contributes new evidence on the limits of elite influence in polarized contexts.

Palavras-chave:

*polarização
política; efeitos
da informação;
experimento
survey; hesitação
vacinal; pistas de
elites*

Resumo

Como os cidadãos respondem quando líderes políticos e seus governos transmitem mensagens contraditórias durante uma crise de saúde pública? Conduzimos um experimento informacional baseado em survey com 857 brasileiros não vacinados em março de 2021, logo após o início da campanha de vacinação contra a Covid-19. Os participantes foram expostos aleatoriamente a pistas sobre duas vacinas — Coronavac e Astrazeneca — enfatizando seu país de origem, aprovação regulatória e aquisição pelo governo federal. Os resultados mostram que a preferência política moldou a interpretação: entre apoiadores do então presidente Jair Bolsonaro, a disposição para se vacinar diminuía quando era mencionada a vacina chinesa (criticada por Bolsonaro). No entanto, quando a informação também incluía aprovação e aquisição pelo governo, esse efeito negativo desaparecia, e as respostas tornavam-se estatisticamente indistinguíveis das do grupo de controle — um padrão que denominamos efeito da pista em conflito. Entre os opositores, informações associadas ao governo Bolsonaro desencadearam um efeito reverso, reduzindo a disposição para se vacinar com a Astrazeneca. Esses achados ressaltam que, em contraste com modelos que pressupõem influência consistente das elites, a comunicação política no mundo real frequentemente envolve sinais contraditórios que produzem respostas assimétricas e, por vezes, inesperadas. Ao examinar como os cidadãos interpretam essas pistas conflitantes, o estudo oferece novas evidências sobre os limites da influência das elites em contextos polarizados.

Palabras clave:

polarización política; efectos de la información; experimento con encuestas; vacilación ante las vacunas; señales de élites

Resumen

¿Cómo responden los ciudadanos cuando los líderes políticos y sus gobiernos emiten mensajes contradictorios durante una crisis sanitaria? Llevamos a cabo un experimento informativo basado en encuestas con 857 brasileños no vacunados en marzo de 2021, poco después del inicio de la campaña de vacunación contra la Covid-19. Los participantes fueron expuestos aleatoriamente a señales sobre dos vacunas —Coronavac y Astrazeneca— que destacaban su país de origen, la aprobación regulatoria y la compra por parte del gobierno federal. Los resultados muestran que la preferencia política influyó en la interpretación: entre los partidarios del entonces presidente Jair Bolsonaro, la disposición a vacunarse disminuía cuando se mencionaba la vacuna china (criticada por Bolsonaro). Sin embargo, cuando la información también incluía la aprobación y adquisición por parte del Gobierno, ese efecto negativo desaparecía y las respuestas se volvían estadísticamente indistinguibles de las del grupo de control, un patrón que denominamos efecto de la pista en conflicto. Entre los opositores, la información vinculada al gobierno de Bolsonaro provocó un efecto *boomerang*, reduciendo la disposición a vacunarse con la Astrazeneca. Estos hallazgos subrayan que, en contraste con los modelos que asumen una influencia coherente de las élites, la comunicación política en el mundo real a menudo implica señales contradictorias que generan respuestas asimétricas y, en ocasiones, inesperadas. Al examinar cómo interpretan los ciudadanos estas señales conflictivas, el estudio aporta nuevas evidencias sobre los límites de la influencia de las élites en contextos polarizados.

1. INTRODUCTION

Political messages can serve as cognitive shortcuts that help citizens form attitudes and make decisions about public issues, especially under conditions of uncertainty (Grossman & Helpman, 1999). During a pandemic, such cues may guide individuals in protecting themselves from a new virus (Pink *et al.*, 2021)—whether by adhering to non-pharmacological measures (Gramacho *et al.*, 2024a), or by deciding whether to get vaccinated (Gramacho *et al.*, 2021b; 2024b). In Brazil, however, the informational environment during the Covid-19 pandemic was marked by a sharp contradiction. President Jair Bolsonaro openly and repeatedly criticized vaccines—particularly Coronavac, developed in China—and refused to vaccinate himself or his daughter (Gramacho *et al.*, 2024b). Yet his government ultimately authorized the procurement and distribution of millions of vaccine doses. How do citizens respond to government vaccination campaigns when official public health policy reverses course and adopts mass vaccination, despite prior public skepticism and criticism of vaccines from the country’s president? Are citizens likely to trust and adhere to the campaign following such a reversal in political messaging? Finally, do political supporters and opponents respond differently to information about the government’s involvement in the vaccination campaign?

To shed light on these questions, we conducted a survey experiment with 857 unvaccinated Brazilians in March 2021, a few weeks after the start of vaccination. This was a pivotal moment, marked by uncertainty about public adherence to vaccination and whether it would help bring an end to the most severe phase of the pandemic. To better understand how citizens respond to information about vaccines in a politically polarized environment, we designed a survey experiment with five conditions that varied whether participants received only basic information about the origin of Coronavac and Astrazeneca or additional details indicating that the vaccine had been approved by Anvisa and purchased by the Bolsonaro government. Among the unconditional effects, only one treatment produced a statistically significant result: participants who received information that Astrazeneca was approved by Anvisa and acquired by the federal government were less willing to be vaccinated compared to those in the control group, who received no information about specific vaccines or official involvement. Given the broader context of polarization, we argue that the most relevant findings come from the analysis of heterogeneous effects. Our results show that Bolsonaro supporters were less likely to accept Coronavac, but this effect disappeared when the information also included Anvisa approval and government procurement. Among Bolsonaro's opponents, however, mentioning the government support for the vaccination did not affect their intention to vaccinate with Coronavac, but reduced their willingness to vaccinate with Astrazeneca (compared with the control group), in a typical backfire effect. These findings suggest that prior political preferences may shape how citizens interpret institutional information about public health measures, particularly when partisan politics are visibly involved in health policy decisions.

In sum, our findings suggest that, during a pandemic, information about government actions—when inconsistent with prior political discourse—can elicit divergent responses shaped by political preference. Supporters of the president may adjust their attitudes in response to institutional signals, while opponents may interpret the same information with skepticism or resistance. From a theoretical perspective, our study highlights how, in contexts of heightened uncertainty and polarization, conflicting cues from political elites can shape public opinion in asymmetric and often unintended ways.

2. THEORY

Individuals often rely on low-information rationality to form opinions and make decisions in democratic and collective life, especially under conditions of uncertainty or complexity (Popkin, 1994). In such contexts, political elites, governments, and political parties serve as a central source of cues for opinion formation (Ray, 2003; Lenz, 2012; Clark, 2014; Bisgaard & Slothuus, 2018; Gramacho, 2023).

These elites influence public opinion through multiple channels—rhetoric, agenda setting, policy actions, institutional decisions, endorsements, and symbolic signals—which may take the form of direct appeals, partisan cues, or implicit signals embedded in government behavior or policy implementation. Individuals thus often rely on such elite cues as heuristics to make sense of complex political environments (Lupia and McCubbins, 1998; Druckman, 2001)—a dynamic that becomes especially pronounced during crises, when citizens seek guidance from trusted or visible authorities to navigate risk and uncertainty.

The Covid-19 health crisis presented a unique context in which political elites could activate informational shortcuts to influence public decisions on a mass scale (Barberia *et al.*, 2021). For instance, public recommendations of vaccination by politicians and governments could have spared many individuals the challenging effort of understanding the severity of the pandemic and the disease, thereby facilitating adherence to mass vaccination campaigns. Yet, recent studies testing the effects of elite cues on vaccination hesitancy report mixed results (Wallace and Wegener, 2023; Barceló *et al.*, 2023; Sylvester *et al.*, 2023; Pink *et al.*, 2021; Bokemper *et al.*, 2021).

Barceló *et al.* (2023) find that politicians in France, Germany, Spain, the United Kingdom, and the United States have little influence over citizens' intentions to vaccinate against Covid-19. In contrast, Pink *et al.* (2021) show that, in the U.S., unvaccinated Republicans are more likely to vaccinate when exposed to an endorsement by Republican party elites. For example, Wallace and Wegener (2023) find that Republicans were more likely to vaccinate against Covid-19 when exposed to rare information that Donald Trump supported the vaccine. The authors also find that Trump's support decreased the likelihood of vaccination among Democrats—a kind of indirect backfire effect. Other studies show that political discourse polarize citizens who already trust vaccines (Bokemper *et al.*, 2021), and that moderate partisans are more likely to vaccinate when exposed to pro-vaccine messages from co-partisans (Sylvester *et al.*, 2023).

In the context of political polarization individuals' reliance on cognitive shortcuts may be intensified by the increased salience of political identities and inter-group boundaries (Samuels and Zucco, 2014). In such contexts, people are more likely to adopt positions endorsed by their own group (in-group effect) and reject those associated with opposing groups (out-group effect). These responses stem less from policy evaluation and more from a psychological need to affirm group membership and differentiate from rivals. These findings raise a critical question: how do individuals respond when exposed to conflicting messages from the president and his own government?

We refer to this dynamic as a Conflicting Cue Effect—a disruption in the normal cue-taking process caused by contradictory elite signals. Rather than simply reinforcing in-group attitudes, conflicting cues can trigger confusion or resistance,

depending on the receiver's political alignment. Despite growing evidence on how partisanship shapes responses to elite cues, little is known about how individuals process contradictory signals from within the same political leadership. The next section presents the empirical context of this study and discusses the theoretical relevance of the case under analysis.

3. BACKGROUND

Former Brazilian President Jair Bolsonaro belongs to a group of government leaders who challenged science during the Covid-19 pandemic, just like Mexican President López Obrador (de la Cerda and Martínez-Gallardo, 2022) and American President Donald Trump (Rutledge, 2020). Bolsonaro maintained a denialist discourse about the severity of the global health crisis throughout all its phases (Fonseca *et al.*, 2021). In November 2020, when Brazil had 162,000 deaths from Covid-19—the second worst case in the world, behind only the United States—Bolsonaro said: “Brazilians must not be ‘sissies’ about coronavirus” and “all of us are going to die one day” (Farzan and Berger, 2020).

Many of his criticisms, however, were directed at vaccines. A few weeks before the start of vaccination in the country, he said: “I’m not going to get [the vaccine]. Some say I’m setting a bad example. Hey a-hole, oh idiot, what are you saying about the bad example, I already had the virus, I already have antibodies. Why should I get the vaccine?” (Post, 2020).

A long-time critic of Chinese presence in the Brazilian economy, Bolsonaro's preferred target was the Coronavac vaccine developed by the Chinese laboratory Sinovac Biotech. On more than one occasion, he declared mistrust of the Chinese vaccine (Beaumont and Philips, 2020) and celebrated when the Brazilian health surveillance agency (Anvisa) suspended the vaccine trial for two days to investigate the reasons for the death of one of the study participants—which turned out not to be related to the vaccine (BBC, 2020).

During the vaccine approval process by Anvisa, however, the Bolsonaro government faced mounting pressure to endorse vaccination (Philips, 2020). In contrast, the governor of São Paulo, João Doria—then a potential rival to Bolsonaro in the 2022 presidential elections—had already announced a state vaccination plan using Coronavac and initiated immunizations on January 17, 2021, shortly after the vaccine's emergency use authorization. That same day, the Ministry of Health also began the national vaccination campaign, using the same Coronavac doses initially negotiated by the São Paulo government. Following national and international health recommendations, the Ministry ultimately planned to deploy 100 million doses of Coronavac across the country (Pearson and Dube, 2021).

Another vaccine approved by Anvisa and used in the beginning of the vaccination campaign was developed by the University of Oxford, England, in consortium with the Swedish-British laboratory Astrazeneca (Jeantet and Biller, 2021). Interestingly, Bolsonaro consistently avoided direct criticism of the Astrazeneca vaccine, even while expressing skepticism toward other immunizers and aspects of the national vaccination campaign.

In this context of confusing governmental positioning and amidst the uncertainties inherent in adopting a new vaccine during a pandemic of unknown proportions to current generations, we want to know how willing supporters and opponents of Bolsonaro's government were to be vaccinated against SarsCoV-2 using the two available vaccines at that time (Coronavac and Astrazeneca). Did Bolsonaro's sympathizers increase their willingness to vaccinate following the government's decision to purchase vaccines? And what about those opposed to Bolsonaro, were they more inclined to receive the vaccine or more hesitant to do so now that the Bolsonaro government was supporting it?

From a theoretical perspective, we aim to understand how information indicating that the government adopted a national vaccination campaign—despite the president's public criticism of vaccines and vaccination—affects individuals' perceptions and decisions. As noted above, our primary interest lies not in average treatment effects, but in the heterogeneous responses among Bolsonaro's supporters and opponents. Building on the literature discussed in the previous section, we expect individuals to interpret the same information differently depending on their political alignment, particularly when the message highlights the official approval of vaccines by Anvisa and the Ministry of Health's decision to implement the vaccination campaign. Therefore, our hypotheses predict that, compared with the control group:

H1. Bolsonaro's supporters should be less likely to vaccinate against Covid-19 when the treatment mentions the Coronavac vaccine, from China;

H2. Bolsonaro's supporters should be more likely to vaccinate with Coronavac when presented with information about the government's procurement of the vaccine and its approval by Anvisa;

H3. Bolsonaro's opponents should be less likely to vaccinate when exposed to information emphasizing the federal government's procurement and Anvisa's approval of the vaccine. This effect is expected to occur regardless of the vaccine brand, applying both to Coronavac (H3.1) and Astrazeneca (H3.2).

Finally, note that we do not have expectations for unconditional effects of our treatments since our focus is on partisan cues and the Covid-19 vaccination in

Brazil was highly politicized and polarized by elite discourse, with Bolsonaro occupying center stage.

4. DATA AND METHODS

Our data come from an original survey experiment conducted in Brazil. 1031 unvaccinated participants were randomly assigned to answer a question on their intention to vaccinate against Covid-19. The control group answered a simple question on their intention to vaccinate, with no additional information, while treatment group participants answered the same question, but were informed about the origins of the vaccines available and the decision of the Bolsonaro government to purchase the vaccines. Specifically, in two of the four treatment conditions, participants were told that one of the available vaccines was the “Coronavac, from China” or the “Astrazeneca, from the University of Oxford, England.” The difference in phrasing for each vaccine reflects how they were commonly referred to in the media at the time. Our objective was not to create parallel wording across treatments, but rather to preserve the informational accuracy of each condition, given the real-world variation in how the vaccines were publicly discussed. In the two other experimental conditions, we also provided information about the vaccines and their origin, but, in addition, indicated that they had been approved by Anvisa and had “millions of doses purchased by the Jair Bolsonaro government.” To be clear, our treatment mimics Bolsonaro’s ambiguity regarding Covid-19 vaccination, as his government conducted an immunization campaign while he himself criticized vaccines.

The question wordings for each group are presented below. The dependent variable was measured using the following four response options, ranging from 1 to 4: “No chance of taking the vaccine”(1), “Little chance of taking the vaccine”(2), “Some chance of taking the vaccine”(3), and “High chance of taking the vaccine”(4). As an initial step, we present the average treatment effects (ATEs) based on this original four-point scale, showing group means and mean differences between the control and each treatment group, with Bonferroni-adjusted p-values. This allows for a more complete picture of treatment effects prior to any transformation of the outcome. Later in the paper, however, we recoded the vaccination intention variable so that the answers “Some chance” and “High chance” of taking the vaccine were coded as 1, and “Little chance” and “No chance” were coded as 0. This dichotomization simplifies the analysis and facilitates the interpretation of the heterogeneous effects that are central to our theoretical framework.

The government approval variable was coded as 1 if respondents said the government performance was either “good” or “great” and 0 otherwise. Given our hypotheses, we dropped 174 respondents who said the government’s performance

was neither good nor bad. Our control variables include gender, race, education, and marital status. Female respondents were coded as 1 and non-female respondents were coded as 0. Respondents with a college degree were coded as 1, while those without a degree were coded as 0. Black respondents were coded as 1 and respondents from other races were coded as 0. Married respondents were coded as 1 and 0 otherwise. Table 1 shows the descriptive statistics of our variables and the sample size for each experimental group.

Question-wording for experimental groups

1. Control group
“In January, the Brazilian population started the vaccination against Covid-19. When a vaccine is available to you, how likely is it that you will get vaccinated?”
 - No chance of taking the vaccine
 - Little chance of taking the vaccine
 - Some chance of taking the vaccine
 - High chance of taking the vaccine
2. Treatment groups “Coronavac” and “Astrazeneca”
“In January, the Brazilian population started the vaccination against Covid-19. One of the vaccines that is being used is **(Coronavac, from China/ Astrazeneca, from the University of Oxford, in England)**. When a vaccine is available to you, how likely is it that you will get vaccinated **(using Coronavac/Astrazeneca)**?”
3. Treatment groups “Coronavac and Government” and “Astrazeneca and Government”
“In January, the Brazilian population started the vaccination against Covid-19. One of the vaccines that is being used is **(Coronavac, from China/ Astrazeneca, from the University of Oxford, in England, which has been approved by Anvisa and the Bolsonaro government has acquired millions of doses from it)**. When a vaccine is available to you, how likely is it that you will get vaccinated **(using Coronavac/Astrazeneca)**?”

Table 1. Descriptive Statistics

	N	Mean	S.D.	Min	Max
Vaccine intention (original variable)	1031	3.410	0.889	1	4
Vaccination intention (dichotomous variable)	728	0.849	0.358	0	1
Approve	297	0.347	0.476	0	1
Control Group	180	0.213	0.409	0	1
Coronavac Group	168	0.196	0.397	0	1
Coronavac and Bolsonaro Group	157	0.183	0.387	0	1
Astrazeneca Group	172	0.201	0.401	0	1
Astrazeneca and Bolsonaro Group	180	0.21	0.408	0	1
Woman	424	0.495	0.5	0	1
Black	379	0.442	0.497	0	1
Married	426	0.497	0.5	0	1
College	438	0.511	0.5	0	1

Note: For the dichotomous variables in the table, the number of observations in each row corresponds to the observations with values equal to 1. For example, in the vaccine intention dichotomous variable, 728 respondents who said they were either likely or very likely to take the vaccine were coded as 1, and the remaining 129 were coded as 0, totaling 857 observations in our sample used for the conditional treatment effects analyses. For the estimation of average treatment effects presented in Table 2, we used the full sample of 1031 unvaccinated respondents.

5. RESULTS

We begin our analysis by presenting the average treatment effects (ATEs) of each intervention. Table 2 reports the means of the dependent variable for the control condition and each of the four treatment groups, as well as the differences in means between each treatment group and the control. The table also includes the corresponding Bonferroni-adjusted p-values for these comparisons. The dependent variable is the intention to vaccinate against Covid-19 measured in its original form, on a four-point scale, ranging from “No chance of getting vaccinated”

(1) to “High chance of getting vaccinated” (4). As expected, none of the differences between treatment and control groups reached conventional levels of statistical significance.

Table 2. Average Treatment Effects

Group	Mean (Treatment)	Mean (Control)	Difference	P-value (Bonferroni-Corrected)
Coronavac	3.43	3.48	-0.051	1.000
Coronavac + Gov.	3.40	3.48	-0.077	1.000
Astrazeneca	3.29	3.48	-0.189	0.106
Astrazeneca + Gov.	3.30	3.48	-0.185	0.098

Source: Elaborated by the authors.

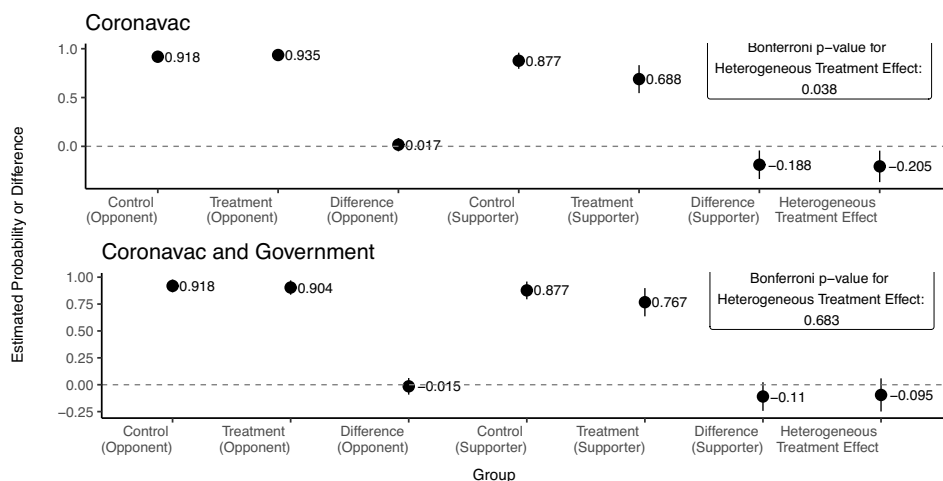
We now turn to the conditional analysis of treatment effects. For the following analyses, as mentioned in the previous section, we excluded 174 respondents who said the government’s performance was neither good nor bad, given that we did not have any hypotheses of treatment effects for them. For the dependent variable, we dichotomized the original four-point variable and coded respondents who reported either “Some chance of getting vaccinated” or “High chance of getting vaccinated” as 1 and 0 otherwise. This dichotomization simplifies both the analysis and the interpretation of results, as our primary interest lies in distinguishing between individuals who were not or only weakly inclined to vaccinate at that point and those who showed a moderate or strong inclination to do so.

Figure 1 shows the predicted probabilities obtained from two logistic regression models, which included interaction terms for treatment conditions and support for Bolsonaro’s government, as well as controls for gender, education, marital status, and race¹. First, we find that Bolsonaro supporters are less likely to vaccinate when “Coronavac, from China” is mentioned in the question, as predicted by our first hypothesis. Compared to the control group, this treatment decreases vaccination intention among Bolsonaro supporters by 18.8 percentage points. Specifically, the intention to vaccinate among Bolsonaro supporters in that treatment group is .688 while opponents of the government in that same group had a vaccination intention of .935. Our analyses include an estimate of the difference of the heterogeneous treatment effects, with Bonferroni-corrected p-values for

1. The regression table for our model is available in the appendix.

multiple comparisons. In line with our theoretical expectations, the estimated difference for the Coronavac treatment is negative (20.5 percentage points) and statistically significant (Bonferroni-corrected p -value = 0.038). We also find that—contrary to our expectations (H2)—Bolsonaro supporters were not more likely to vaccinate with Coronavac when informed that the vaccine had been approved by Anvisa and that the government had purchased millions of doses, compared to the control group. Although, the intention to vaccinate among Bolsonaro supporters in the Coronavac and Government treatment is about 11 percentage points lower than that of the control group subjects, this difference is not statistically significant (p = 0.107). The estimated difference is also not statistically significant in this case (Bonferroni-corrected p -value = 0.683). In sum, at best, mentioning the government’s purchase and Anvisa’s approval of Coronavac merely neutralized Bolsonaro supporters’ negative attitudes toward the vaccine, rather than increasing their willingness to vaccinate.

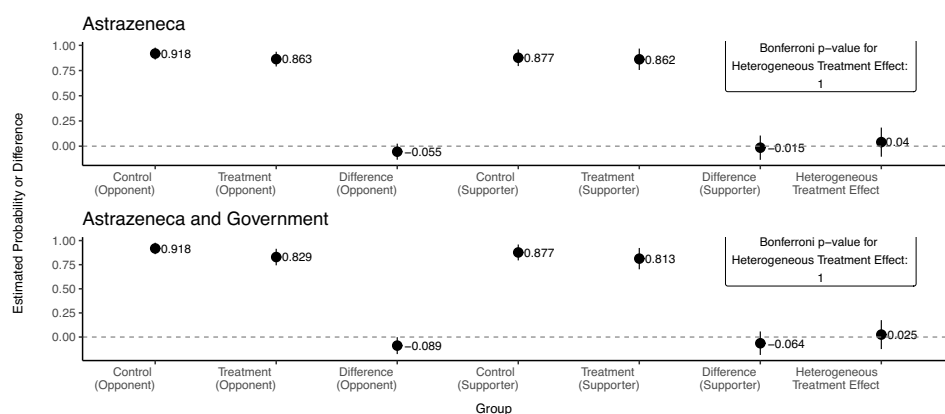
Figure 1. Conditional Predicted Probabilities of Vaccination Intention (Control x Coronavac Groups)



Results for hypothesis 3 are mixed. First, contrary to our expectations in hypothesis 3.1, we find that Bolsonaro opponents are not less likely to vaccinate with Coronavac when informed that it had been approved by Anvisa and that the government had purchased millions of doses, as shown in Figure 1. The estimated difference between treatment and control groups is around 1.5 percentage points and does not reach statistical significance (p = 0.70).

However, when the information about Anvisa’s approval and the federal government’s purchase of vaccines was associated with Astrazeneca, it reduced vaccination intentions among Bolsonaro opponents—consistent with our expectations and characteristic of a backfire effect. Figure 2 shows that this treatment significantly decreased the intention to vaccinate among Bolsonaro opponents by 8.9 percentage points ($p = 0.046$). Hypothesis 3.2 is thus supported, as opponents reacted negatively to the association between the vaccine and actions taken by the Bolsonaro government.

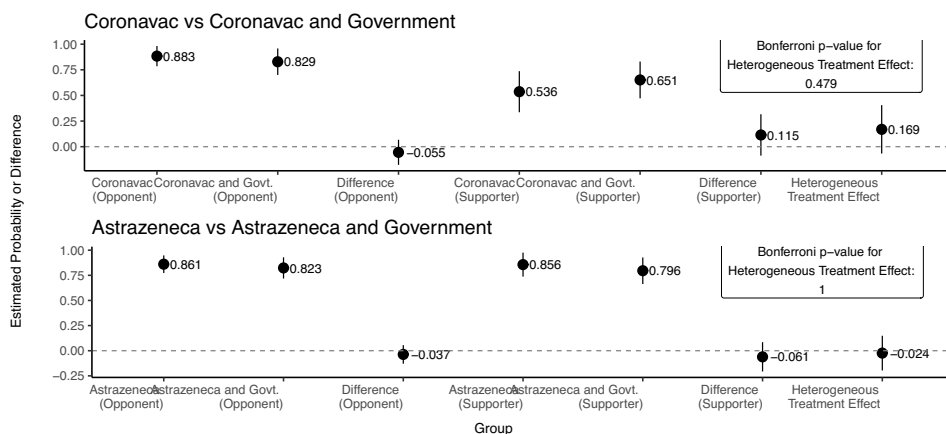
Figure 2. Conditional Predicted Probabilities of Vaccination Intention (Control x Astrazeneca Groups)



Source:

Finally, we present the results of the comparisons between the “Coronavac” and “Coronavac and Government”, as well as the “Astrazeneca” and “Astrazeneca and Government” groups, to analyze whether the mention of the approval of the vaccines by the government produced a positive effect among Bolsonaro supporters and a negative effect among his opponents on the intention to vaccinate against Covid-19. Figure 3 shows that, while the estimated effect of informing participants that the Bolsonaro government purchased Coronavac and that it was approved by Anvisa is positive among Bolsonaro supporters (11.5 percentage points), the difference is not statistically significant ($p = 0.27$). With regards to Bolsonaro opponents and the Astrazeneca vaccine, the estimated effect of the mention to the government approval of the vaccine is negative but small (3.7 percentage points) and statistically insignificant ($p = 0.43$). The estimated differences of the treatment effects for both comparisons also do not reach statistical significance (Bonferroni-corrected p -values: 0.479 and 1).

Figure 3. Conditional Predicted Probabilities of Vaccination Intention (Vaccine Groups x Vaccine and Government Endorsement Groups)



Source:

6. DISCUSSION

Our findings illustrate the risks of contradictory elite signaling in polarized contexts. This Conflicting Cue Effect highlights how incoherent messaging can undermine public health campaigns by producing asymmetric responses—mitigating hesitancy among partisan supporters while intensifying it among opponents. Most experimental studies on cue-taking, framing, and endorsement effects rely on clear, unambiguous messages to isolate the causal impact of elite communication. However, real-world political communication is often messier—particularly during periods of heightened uncertainty, such as a pandemic. In these contexts, citizens are not exposed to simple, coherent cues, but rather to contradictory or ambiguous signals. Leaders may say one thing while their governments do another, and institutional actions may implicitly endorse policies that contradict prior rhetoric. Our study captures this more complex informational environment. Rather than testing the effect of a direct endorsement, we examine how citizens interpret implicit government approval of vaccination in a context where the president had publicly criticized vaccines. The results highlight how conflicting cues can produce asymmetric effects across partisan lines and challenge the assumption that elite signaling produces predictable and uniform responses.

The Covid-19 pandemic brought a series of challenges to policymakers due to the rejection by segments of the population of measures like curfews, vaccination passports, and mandatory mask usage (Gramacho *et al.*, 2024a). Amidst the

exponential rise of deaths caused by the Covid-19 virus, populist leaders in several countries sought to undermine trust in the safety of the Covid-19 vaccines by suggesting alternative forms of treatment against the Coronavirus and fostering vaccine hesitation with conspiracy theories on the potential nefarious effects of vaccine uptake (Gramacho *et al.*, 2024b, 2021b).

In the United States, former President Donald Trump was the most prominent political figure to express doubts about the severity of the public health crisis and the necessity of mass vaccination. Conducted in June 2020, during the early months of the pandemic, an experimental study suggested that his stance had already negatively impacted the vaccine uptake intentions among Americans (Kreps *et al.*, 2020). These results align with research on informational shortcuts, which argues that, under uncertainty and complex choices, individuals often follow cues provided by trusted political leaders (Lenz, 2012).

Months later, new experimental evidence showed that the persuasive power of Trump's cues was sharply conditioned by partisanship. Bokemper *et al.* (2021) reported that, compared with a pro-vaccine appeal from Trump, an anti-vaccine message reduced Republicans' trust in a forthcoming Covid-19 vaccine and their intention to be immunized, yet produced the opposite reaction among Democrats, who became more confident in the vaccine and more willing to take it. This asymmetric pattern mirrors the classic in-group versus out-group dynamics highlighted by Samuels and Zucco (2014), in which cues from a co-partisan leader reinforce attitudes within the in-group but can backfire among political opponents.

Our own study uncovers a nearly identical political cleavage in Brazil, where extreme right-wing former president Jair Bolsonaro—frequently likened to Trump for his pandemic rhetoric—adopted a comparable anti-vaccine stance, yielding effects on supporters and opponents that echo those observed in the United States. Indeed, Bolsonaro's speeches during the Covid-19 pandemic were marked by his refusal to stimulate citizens to vaccinate. As a result, while the vast majority of Brazilians adhered to the vaccination campaign, Bolsonaro's partisans distrusted the Coronavac vaccine developed by China, as shown here and elsewhere (Gramacho *et al.*, 2021b). Moreover, studies have shown that supporters of the then president were also more hesitant to vaccinate their children against the virus (Gramacho *et al.*, 2024b).

Our results indicate that the Bolsonaro administration's eventual decision to procure vaccines and launch a national immunization campaign did little to offset its supporters' hesitancy toward the Chinese-made Coronavac. By contrast, Bolsonaro's opponents became more reluctant to accept the Astrazeneca vaccine when it was explicitly linked to a government purchase. Because the president consistently spared Astrazeneca from the explicit criticism he levelled at other manufacturers, this association may have appeared suspicious to his adversaries. Taken together, the findings suggest that, even amid a public-health emergency,

ambiguous or contradictory cues from political leaders can yield cross-cutting—and sometimes counter-productive—attitudinal shifts. The backfire effect we observe for the British-Swedish vaccine is driven chiefly by the negative response of respondents who disapprove of Bolsonaro's government.

Despite advancing our understanding of how ambiguous informational cues shape decisions under uncertainty, this study has three key limitations. First, it employs a survey experiment, which may constrain external validity. Second, the relatively small sample size limits statistical power to detect nuanced, conditional effects. Third, by the time of data collection, public discourse was already saturated with vaccine information, likely attenuating our treatment effects. This might have reduced the effects observed in our study, as issue framing moves public opinion only in low-information contexts, with the effect disappearing once the topic becomes highly salient and information-rich (Gramacho *et al.*, 2025).

Evidence suggest that Bolsonaro's speeches against social distancing during the Covid-19 pandemic had significant effects and may have led citizens to adopt risky behaviors (Ajzenman *et al.*, 2023). Still, no studies had yet empirically tested the effects of conflicting political cues on vaccine uptake in Brazil. In this paper, we sought to fill this gap in the literature with an original survey experiment that suggests that, when the president speaks against the vaccines, the government's subsequent decision to implement a vaccination campaign might produce divergent outcomes. On one hand, the new stance may slightly decrease his partisans' resistance to vaccination with a vaccine previously criticized by him. On the other, it might increase resistance among opponents to be vaccinated with a vaccine the president spared from his criticism.

In conclusion, our findings demonstrate that, in highly polarized settings, contradictory signals from a country's top political leader and its health institutions can produce asymmetric reactions: what alleviates hesitancy among partisan supporters may simultaneously deepen resistance among opponents. This underscores the critical importance of message consistency in public health campaigns—conflicting cues can undermine trust and trigger unintended backfire effects. By illuminating how conflicting elite cues drive public opinion formation, this paper contributes to broader debates on persuasion dynamics in polarized societies, showing that coherence between political discourse and institutional action is a key determinant of citizens' vaccine attitudes. Future research could probe the moderating role of individual characteristics, like levels of education or political awareness, in shaping these asymmetric responses; examine cases of intra-party divergence, where leaders from the same political family offer opposing messages; and assess whether cross-partisan expert coalitions or neutral, science-driven framing can mitigate polarization and foster more unified public confidence in vaccination efforts.

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APPENDIX

Table A. Conditional Model Regression Results

	Estimate	Std. Error	P-value	P-value (Bonferroni- corrected)
Intercept	1.936	0.402	0.000	0.000
Gov. Approval	-0.458	0.493	0.354	1.000
Coronavac	0.248	0.509	0.626	1.000
Coronavac + Gov. Endorsement	-0.184	0.486	0.705	1.000
Astrazeneca	-0.577	0.435	0.185	1.000
Astrazeneca + Gov. Endorsement	-0.841	0.424	0.048*	0.667
Woman	0.183	0.201	0.362	1.000
College	0.485	0.204	0.017*	0.243
Married	0.196	0.200	0.326	1.000
Black	-0.002	0.203	0.990	1.000
Gov. Approval x Coronavac	-1.418	0.679	0.037*	0.515
Gov. Approval x Coronavac + Gov. Endorsement	-0.587	0.666	0.378	1.000
Gov. Approval x Astrazeneca	0.443	0.691	0.521	1.000
Gov. Approval x Astrazeneca + Gov. Endorsement	0.346	0.633	0.585	1.000

Source: Elaborated by the authors. * $p < 0.05$, ** $p < 0.01$ *** $p < 0.001$.