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How the Mainstream Media Help to Spread Disinformation about Covid-19

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Articles

Introduction

In this article, we hypothesise how mainstream media coverage can promote the spread of disinformation about Covid-19. Mainstream media are often discussed as opposed to disinformation (Glasser; Benkler *et al*.). While the disinformation phenomenon is related to the intentional production and spread of misleading and false information to influence public opinion (Fallis; Benkler *et al*.), mainstream media news is expected to be based on facts and investigation and focussed on values such as authenticity, accountability, and autonomy (Hayes *et al*.). However, journalists might contribute to the spread of disinformation when they skip some stage of information processing

and reproduce false or misleading information (Himma-Kadakas). Besides, even when the purpose of the news is to correct disinformation, media coverage might contribute to its dissemination by amplifying it (Tsfati *et al*.). This could be particularly problematic in the context of social media, as users often just read headlines while scrolling through their timelines (Newman *et al*.; Ofcom). Thus, some users might share news from the mainstream media to legitimate disinformation about Covid-19. The pandemic creates a delicate context, as journalists are often pressured to produce more information and, therefore, are more susceptible to errors.

In this research, we focussed on the hypothesis that legitimate news can contribute to the spread of disinformation on social media through headlines that reinforce disinformation discourses, even though the actual piece may frame the story differently. The research questions that guide this research are: are URLs with headlines that reinforce disinformation discourses and other mainstream media links shared into the same Facebook groups? Are the headlines that support disinformation discourses shared by Facebook users to reinforce disinformation narratives?

As a case study, we look at the Brazilian disinformation context on Covid-19. The discussion about the disease in the country has been highly polarised and politically framed, often with government agents and scientists disputing the truth about facts on the disease (Araújo and Oliveira; Recuero and Soares; Recuero *et al*.). Particularly, the social media ecosystem seems to play an important role in these disputes, as Brazilian President Jair Bolsonaro and his supporters use it as a key channel to spread disinformation about the virus (Lisboa *et al*.; Soares *et al*.). We use data from public groups on Facebook collected through CrowdTangle and a combination of social network analysis and content analysis to analyse the spread and the content of URLs and posts.

Theoretical Background

Disinformation has been central to the Covid-19 "infodemic", created by the overabundance of information about the pandemic, which makes it hard for people to find reliable guidance and exacerbates the outbreak (Tangcharoensathien *et al*.). We consider disinformation as distorted, manipulated, or false information intentionally created to mislead someone (Fallis; Benkler *et al*.). Disinformation is often used to strengthen radical political ideologies (Benkler *et al*.).

Around the world, political actors politically framed the discussion about the pandemic, which created a polarised public debate about Covid-19 (Allcott *et al.*, Gruzd and Mai; Recuero and Soares). On social media, contexts of polarisation between two different political views often present opposed narratives about the same fact that dispute public attention (Soares *et al.*). This polarisation creates a suitable environment for disinformation to thrive (Benkler *et al.*)

The polarised discussions are often associated with the idea of "bubbles", as the different political groups tend to share and legitimate only discourses that are aligned with the group's ideological views. Consequently, these groups might turn into ideological bubbles (Pariser). In these cases, content shared within one group is not shared within the other and vice versa. Pariser argues that users within the bubbles are exposed exclusively to content with which they tend to agree. However, research has shown that Pariser's concept of bubbles has limitations (Bruns), as most social media users are exposed to a variety of sources of information (Guess *et al.*).

Nevertheless, polarisation might lead to different media diets and disinformation consumption (Benkler *et al.*). That is, users would have contact with different types of information, but they would choose to share certain content over others because of their political alignment (Bruns). Therefore, we understand that bubbles are created by the action of social media users who give preference to circulate (through retweets, likes, comments, or shares) content that supports their political views, including disinformation (Recuero *et al.*). Thus, bubbles are ephemeral structures (created by users' actions in the context of a particular political discussion) with permeable boundaries (users are exposed to content from the outside) in discussions on social media.

This type of ephemeral bubble might use disinformation as a tool to create a unique discourse that supports its views. However, it does not mean that actors within a "disinformation bubble" do not have access to other content, such as the news from the mainstream media. It means that the group acts to discredit and to overlap this content with an "alternative" story (Larsson). In addition, the mainstream media might disseminate false or inaccurate disinformation (Tsfati *et al.*). Particularly, we focus on inaccurate headlines that reinforce disinformation narratives, as social media users often only read news headlines (Newman *et al.*; Ofcom). This is especially problematic because a large number of social media users

are exposed to mainstream media content, while exposure to disinformation websites is heavily concentrated on only a few users (Guess *et al*.; Tsfati *et al*.). Therefore, when the mainstream media disseminate disinformation, it is more likely that a larger number of social media users will be exposed to this content and share it into ideological bubbles. Based on this discussion, we aim to understand how the mainstream media contribute to the spread of disinformation discourses about Covid-19.

Methods

This study is about how mainstream media coverage might contribute to the spread of disinformation about Covid-19 on Facebook. We propose two hypotheses, as follows: H1: When mainstream media headlines frame the information in a way that reinforces the disinformation narrative, the links go into a "disinformation bubble". H2: In these cases, Facebook users might use mainstream media coverage to legitimate disinformation narratives.

We selected three case studies based on events that created both political debate and high media coverage in Brazil. We chose them based on the hypothesis that part of the mainstream media links could have produced headlines that support disinformation discourses, as the political debate was high. The events are:

- On 24 March 2020, Brazilian President Jair Bolsonaro made a public pronouncement on live television. In the week before the pronouncement, Brazilian governors decided to follow World Health Organisation (WHO) protocols and closed non-essential business. In his speech, Bolsonaro criticised social distancing measures. The mainstream media reproduced some of his claims and claims from other public personalities, such as entrepreneurs who also said the protocols would harm the economy.
- On 8 June 2020, a WHO official said that it "seems to be rare that an asymptomatic person transmits [Covid-19] onward to a secondary individual". Part of the mainstream media reproduced the claim out of context, which could promote the misperception that both asymptomatic and pre-symptomatic persons (early stages of an illness, before the first symptoms) do not transmit Covid-19 at all.
- On 9 November 2020, Brazil's national sanitary watchdog Anvisa reported that they had halted the clinical studies on the CoronaVac vaccine, developed by the Chinese company Sinovac.

Bolsonaro often criticised CoronaVac because it was being produced in partnership with São Paulo's Butantan Institute and became the subject of a political dispute between Bolsonaro and the Governor of São Paulo, João Dória. Bolsonaro said the halt of the CoronaVac trial was "another victory for Jair Bolsonaro". Anvisa halted the trail after a "severe adverse event". The mainstream media rapidly reverberated the decision. Later, it was revealed that the incident was a death that had nothing to do with the vaccine.

Before we created our final dataset that includes links from the three events together, we explored the most shared URLs in each event. We used keywords to collect posts shared in the public groups monitored by CrowdTangle, a tool owned by Facebook that tracks publicly available posts on the platform. We collected posts in a timeframe of three days for each event to prevent the collection of links unrelated to the cases. We collected only posts containing URLs. Table 1 summarises the data collected.

Table 1: Data collected

Dates	March 24-26 2020	June 8-10 2020	November 9-11 2020
Keywords	"Covid-19" or "coronavirus" and "isolation" or "economy"	"Covid-19" or "coronavirus" and "asymptomatic"	"vaccine" and "Anvisa" or "CoronaVac"
Number of posts	4780	2060	3273

From this original dataset, we selected the 60 most shared links from each period (*n*=180). We then filtered for those which sources were mainstream media outlets (*n*=74). We used content analysis (Krippendorff) to observe which of these URLs headlines could reinforce disinformation narratives (two independent coders, Krippendorff's Alpha = 0.76). We focussed on headlines because when these links are shared on Facebook, often it is the headline that appears to other users. We considered that a headlined reinforced disinformation discourses only when it was flagged by both coders

(n=21 – some examples are provided in Table 3 in the Results section). Table 2 provides a breakdown of this analysis.

Table 2: Content analysis

Event	Mainstream media links	Headlines that support disinformation discourses	
		Number of links	Number of posts
Economy and quarantine	24	7	112
Asymptomatic	22	7	163
Vaccine trial	28	7	120
Total	74	21	395

As the number of posts that shared URLs with headlines that supported disinformation was low (n=395), we conducted another CrowdTangle search to create our final dataset. We used a sample of the links we classified to create a "balanced" dataset. Out of the 21 links with headlines that reinforced disinformation, we collected the 10 most shared in public groups monitored by CrowdTangle (this time, without any particular timeframe) (n=1346 posts). In addition, we created a "control group" with the 10 most shared links that neither of the coders considered could reinforce disinformation (n=1416 posts). The purpose of the "control group" was to identify which Facebook groups tend to share mainstream media links without headlines that reinforce disinformation narratives. Therefore, our final dataset comprises 20 links and 2762 posts.

We then used social network analysis (Wasserman and Faust) to map the spread of the 20 links. We created a bipartite network, in which nodes are (1) Facebook groups and (2) URLs; and edges represent when a post within a group includes a URL from our dataset. We applied a modularity metric (Blondel *et al*.) to identify clusters. The modularity metric allows us to identify "communities" that share the

same or similar links in the network map. Thus, it helped us to identify if there was a "bubble" that only shares the links with headlines that support disinformation (H1).

To understand if the disinformation was supporting a larger narrative shared by the groups, we explored the political alignments of each cluster (H2). We used Textometrica (Lindgreen and Palm) to create word clouds with the most frequent words in the names of the cluster groups (at least five mentions) and their connections. Finally, we also analysed the posts that shared each of the 10 links with headlines that reinforced disinformation. This also helped us to identify how the mainstream media links could legitimate disinformation narratives (H2). Out of the 1346 posts, only 373 included some message (the other 973 posts only shared the link). We used content analysis to see if these posts reinforced the disinformation (two independent coders – Krippendorff's Alpha = 0.723). There were disagreements in the categorisation of 27 posts. The two coders reviewed and discussed the classification of these posts to reach an agreement.

Results

Bubbles of information

In the graph (Figure 1), red nodes are links with headlines that support disinformation discourses, blue nodes are the other mainstream media links, and black nodes are Facebook groups. Our first finding is that groups that shared headlines that support disinformation rarely shared the other mainstream media links. Out of the 1623 groups in the network, only 174 (10.7%) shared both a headline that supports disinformation discourse, and another mainstream media link; 712 groups (43.8%) only shared headlines that support disinformation; and 739 groups (45.5%) only shared other links from the mainstream media. Therefore, users' actions created two bubbles of information.
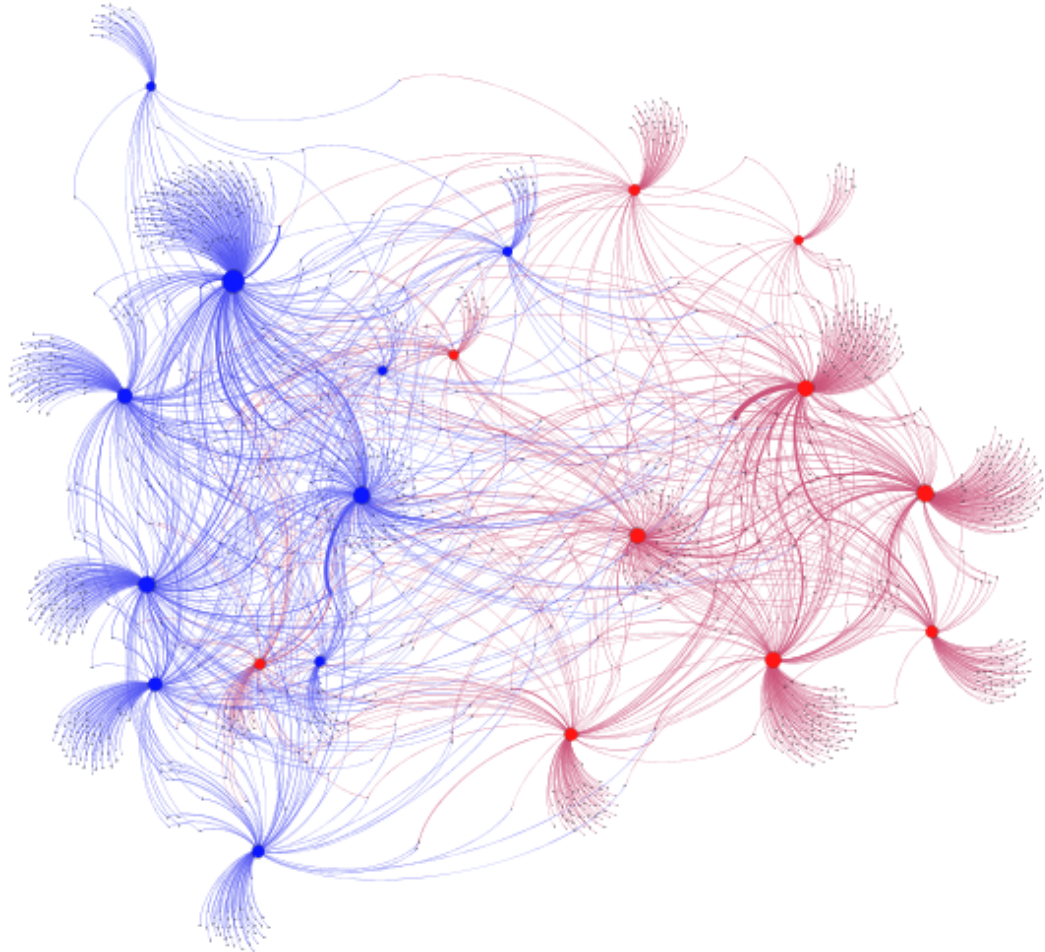
Figure 1: Network graph

The modularity metric confirmed this tendency of two "bubbles" in the network (Figure 2). The purple cluster includes seven URLs with headlines that support disinformation discourse. The green cluster includes three headlines that support disinformation discourse and the other 10 links from the mainstream media. This result partially supports H1: When mainstream media headlines frame the information in a way that reinforces the disinformation narrative, the links go into a "disinformation bubble". As we identified, most of the headlines that support disinformation discourse went into a separate "bubble", as users within the groups of this bubble did not share the other links from the mainstream media.
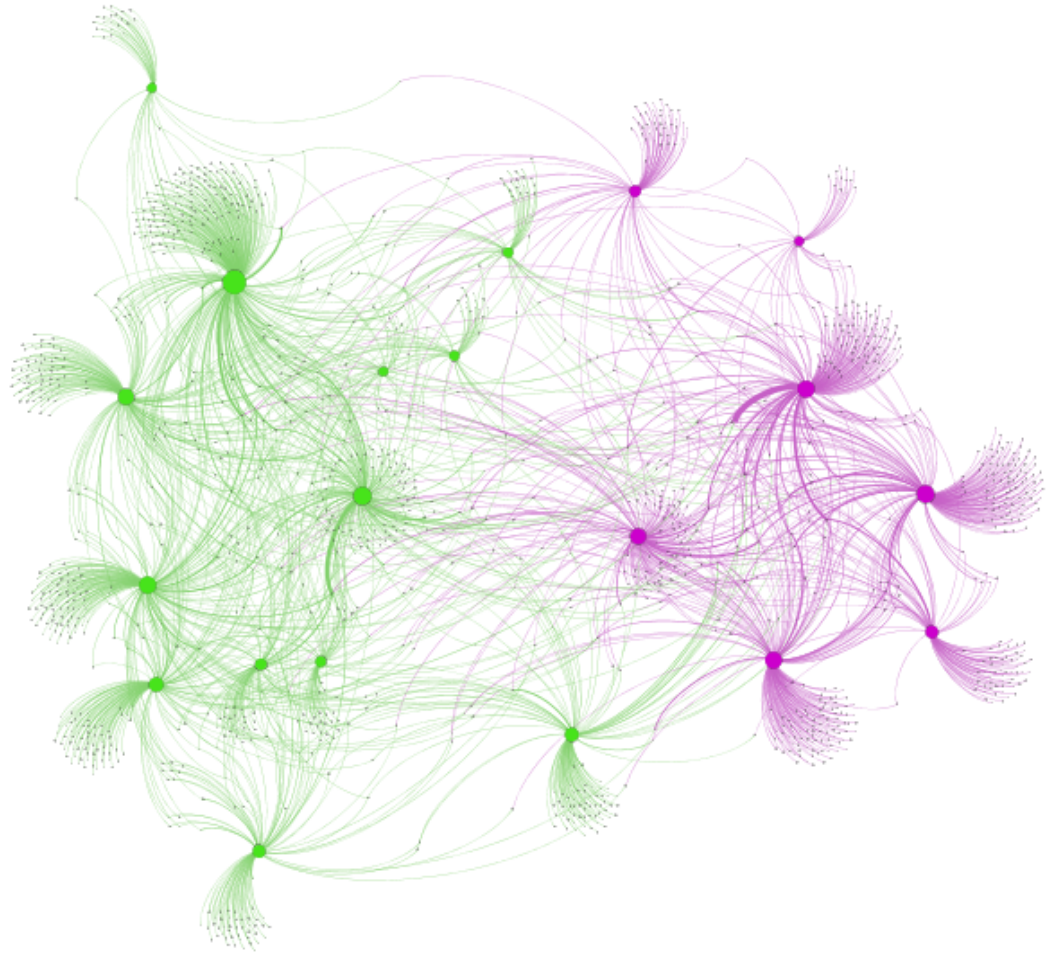
Figure 2: Network graph with modularity

This result shows that users' actions boost the creation of bubbles (Bakshy *et al*.), as they choose to share one type of content over the other. The mainstream media are the source of all the URLs we analysed. However, users from the purple cluster chose to share only links with headlines that supported disinformation discourses. This result is also related to the political framing of the discussions, as we explore below.

Disinformation and Political Discourse

We used word clouds (Lindgreen and Palm) to analyse the Facebook groups' names to explore the ideological affiliation of the bubbles. The purple bubble is strongly related to Bolsonaro and his discourse (Figure 3). Bolsonaro is the most frequent word. Other prevalent words are Brazil, patriots (both related to his nationalist discourse), right-wing, conservative, military (three words related to his conservative discourse and his support of the military dictatorship

that ruled Brazil from 1964 to 1985), President, support, and Alliance [for Brazil] (the name of his party). Some of the most active groups within the purple bubble are "Alliance for Brazil", "Bolsonaro 2022 [next presidential election]", "Bolsonaro's nation 2022", and "I am right-wing with pride".
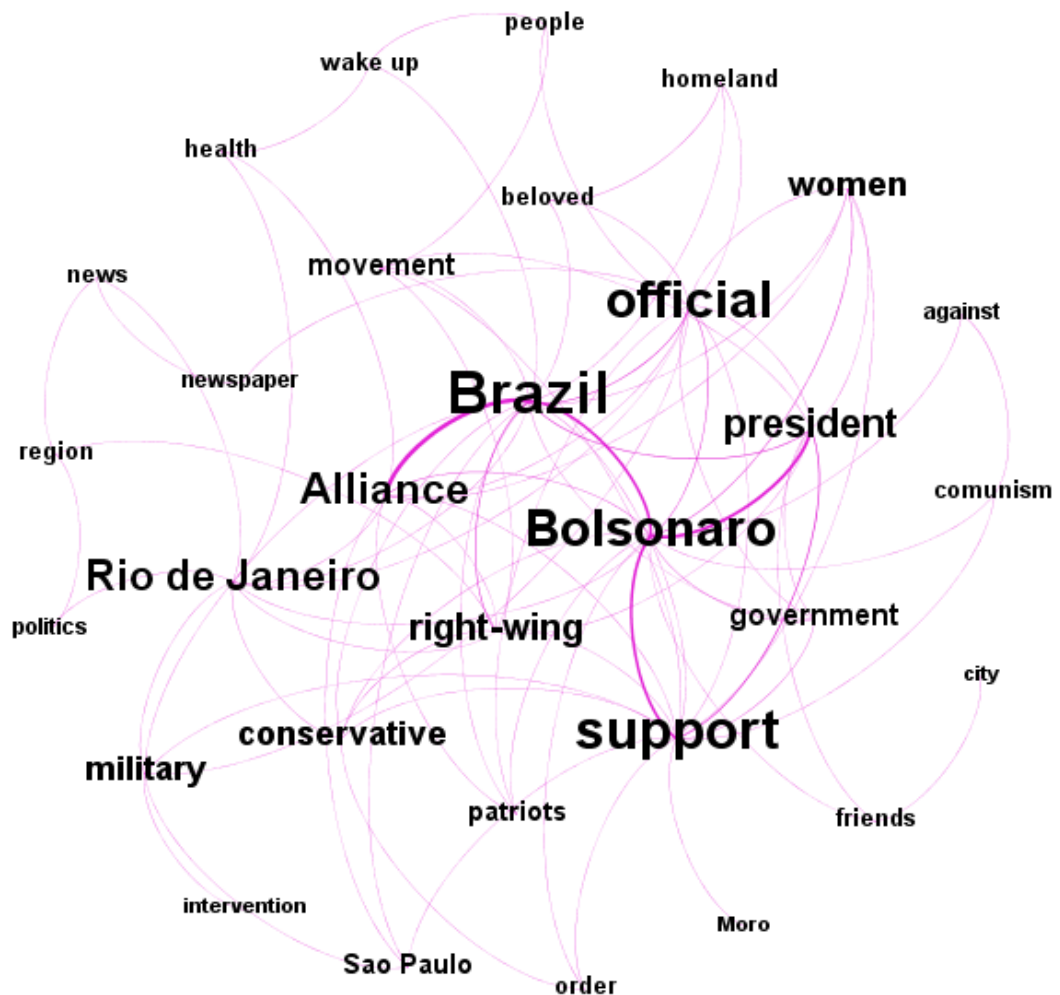

Figure 3: Purple cluster word cloud

Bolsonaro is also a central word in the green cluster word cloud (Figure 4). However, it is connected to other words such as "against" and "out", as many groups are anti-Bolsonaro. Furthermore, words such as left-wing, Workers' Party (centre-left party), Lula and Dilma Rousseff (two Workers' Party ex-presidents) show another ideological alignment in general. In addition, there are many local groups (related to locations such as Rio de Janeiro, São Paulo, Rio Grande do Sul, Minas Gerais, and others), and groups to share news (news, newspaper, radio, portal). "We are 70 per cent [anti-Bolsonaro movement]", "Union of the Left", "Lula president", and "Anti-Bolsonaro" are some of the most active groups within the green cluster.
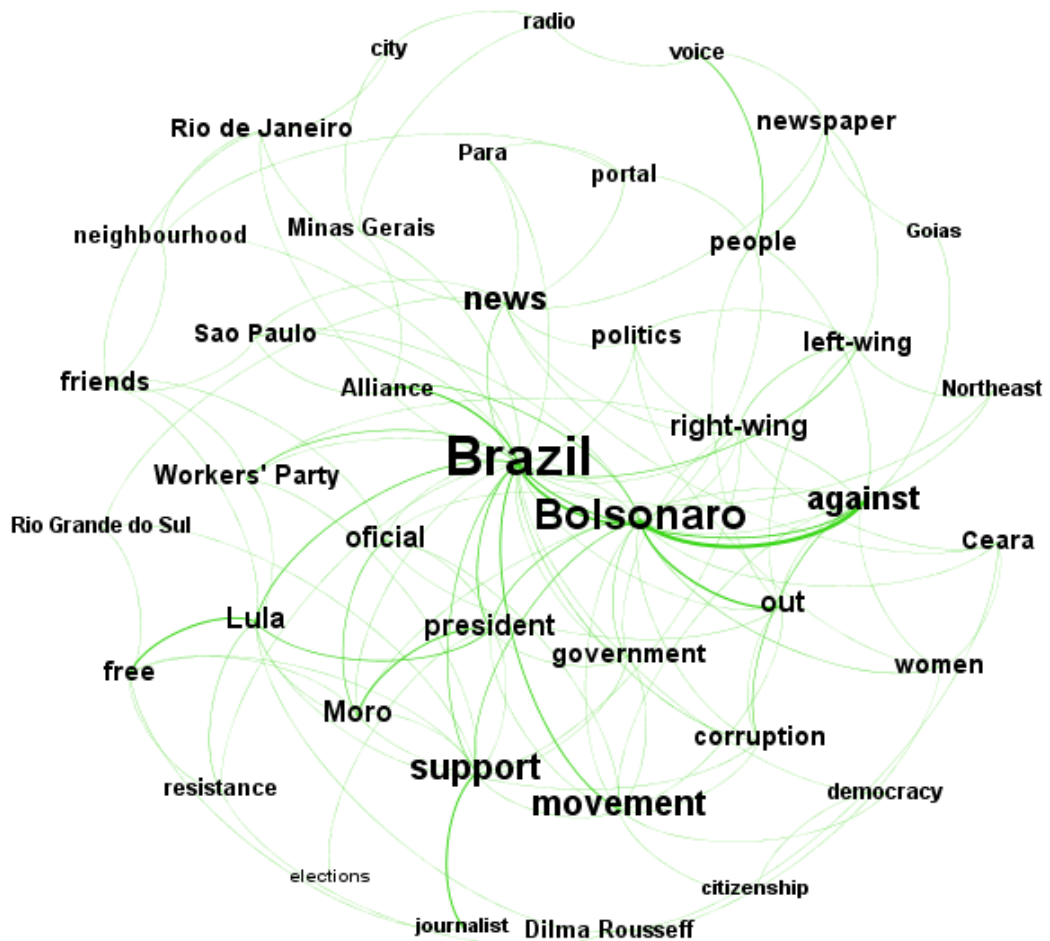
Figure 4: Green cluster word cloud

Then, we analysed how users shared the mainstream media links with headlines that support disinformation discourses. In total, we found that 81.8% of the messages in the posts that shared these links also reproduced disinformation narratives. The frequency was higher (86.2%) when considering only posts that shared one of the seven links from the purple cluster (based on the modularity metric). Consequently, it was lower (64%) in the messages that shared one of the other three links.

The messages often showed support for Bolsonaro; criticised other political and health authorities (the WHO, São Paulo Governor João Dória, and others), China, and the "leftists" (all opposition to Bolsonaro); claimed that quarantine and social distancing measures were unnecessary; and framed vaccines as dangerous. We provide some examples of headlines and posts in Table 3 (we selected the most-shared URL for each event to illustrate). This result supports H2 as we found that users shared mainstream media headlines that reinforce disinformation discourse to legitimate the disinformation

narrative; and that it was more prevalent in the purple bubble.

Table 3: Examples of headlines and posts

Headline	Post
"Unemployment is a crisis much worse than coronavirus", says Bolsonaro	Go to social media to support the President. Unemployment kills. More than any virus... hunger, depression, despair and everything
	UNEMPLOYMENT, THE DEPUTIES CHAMBER, THE SENATE AND THE SUPREME COURT KILL MORE THAN COVID19
Asymptomatic patients do not boost coronavirus, says WHO	QUARANTINE IS FAKE #StayHome, the lie of the century!
	THIS GOES TO THE PUPPETS OF THE COMMUNIST PARTIES THE AND FUNERARY MEDIA
Anvisa halts Coronavac vaccine trial after "serious adverse event"	[The event] is adverse and serious, so the vaccine killed the person by covid
	And Doria [Governor of São Paulo and political adversary of Bolsonaro] wants to force you to take this shit

This result shows that mainstream media headlines that support disinformation narratives may be used to reinforce disinformation discourses when shared on Facebook, making journalists potential agents of disinformation (Himma-Kadakas; Tsfati *et al*.). In particular, the credibility of mainstream news is used to support an opposing

discourse, that is, a disinformation discourse. This is especially problematic in the context of Covid-19 because the mainstream media end up fuelling the infodemic (Tangcharoensathien *et al*.) by sharing inaccurate information or reverberating false claims from political actors.

Conclusion

In this article, we analysed how the mainstream media contribute to the spread of disinformation about Covid-19. In particular, we looked at how links from the mainstream media with headlines that support disinformation discourse spread on Facebook, compared to other links from the mainstream media. Two research questions guided this study: Are URLs with headlines that reinforce disinformation discourses and other mainstream media links shared into the same Facebook groups? Are the headlines that support disinformation discourses shared by Facebook users to reinforce disinformation narratives?

We identified that (1) some Facebook groups only shared links with headlines that support disinformation narratives. This created a "disinformation bubble". In this bubble, (2) Facebook users shared mainstream media links to reinforce disinformation – in particular, pro-Bolsonaro disinformation, as many of these groups had a pro-Bolsonaro alignment. In these cases, the mainstream media contributed to the spread of disinformation. Consequently, journalists ought to take extra care when producing news, especially headlines, which will be the most visible part of the stories on social media.

This study has limitations. We analysed only a sample of links (*n*=20) based on three events in Brazil. Other events and other political contexts might result in different outcomes. Furthermore, we used CrowdTangle for data collection. CrowdTangle only provides information about public posts in groups monitored by the tool. Therefore, our result does not represent the entire Facebook.

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