FOI MEMO
Projekt/Project
Strategisk utveckling terrorism och extremism

Sidnr/Page no
1 (12)

Projektnummer/Project no
A112042

FoT-område
Inget FoT-område

Handläggare/Our reference
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Datum/Date
2020-05-07

Memo nummer/Number
FOI Memo 7098

Information pollution during health-related crises

A case study of the Swedish information environment during the coronavirus crisis

Titel/Title
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Memo nummer/Number
FOI Memo 7098

Introduction

In a time prior to the internet being ubiquitous in the public sphere, legacy media had a gatekeeper role in most western democracies that was effective at providing accurate and reliable information to the general public. During that era, television networks, newspapers, and radio channels filtered out narratives that, for example, were intended to mislead or went against stated government advice. Now, however, these once effective institutions compete against a multitude of information sources available to the public via the internet from actors with various intents. As a consequence, the signal-to-noise ratio for accurate and reliable information has been significantly degraded, leading to an information environment where dis- and misinformation flourish. Such an environment can be especially disruptive during times of global or national health crises as the general public attempts to seek accurate information on which to base their decision making.

With the explosive spread of the coronavirus (SARS-CoV-2/COVID-19**)** around the globe, this brief will look at the 'how' and 'why' of dis- and misinformation production during a health-related crisis. It will provide a short academic overview of how dis- and misinformation spreads during a health-related crisis and summarise what previous research has found to be the main drivers behind dis- and misinformation production. The brief will then provide a sample of the dis- and misinformation cases related to the coronavirus, which were referenced in Swedish media between 23-31 March 2020. In the discussion section, these cases will be compared to what was previously known about the drivers and intentions of dis- and misinformation producers. Given that the information environment in the coronavirus crisis is developing rapidly, the goal of this brief is to provide a timely contribution to the understanding of dis- and misinformation in a public health crisis. For the purposes of this study we define disinformation to be "deceptive information that has a deliberate intent" (Lee, 2019) and misinformation as "deceptive information without a deliberate intent" (ibid).

Health-related dis- and misinformation on social media

Health-related dis- and misinformation on social media can be problematic since it potentially can affect people's behaviour negatively by limiting preventative behaviours or effective treatments (Bode & Vraga 2018: 1132; Lee 2019: 1). The extensive use of social media has increased concerns regarding health misinformation since the establishment of isolated communities online and the absence of gatekeepers can spread and increase misinformation (Bode & Vraga 2018: 1132). Disinformation or misinformation related to health often go viral in the midst of panic when people try to make sense of unexpected and unfamiliar events. During crises, anxiety seems to be a key facilitator of the dissemination of dis- and misinformation since people consume and spread it to reduce their uncertainty levels (Lee 2019: 2). Additionally, the public is increasingly reliant on information shared through social media channels, the credibility and truth value of which are often hard to discern (Fraga-Lamas & Fernandez-Carame, 2020). When looking for information during epidemics, people are often looking for information on the severity and probability of infection (Gesser-Edelsburg, et.al., 2018). When looking through massive amounts of information, they often rely on a mental shortcut. This shortcut could lead to so-called confirmation biases, which means that people risk searching for information simply to confirm what they already believe to be true (Lee 2019: 8).

Dis- and misinformation on social media is especially evident during crises when people have less time to make decisions, when an event has potentially grave consequences, and when the situation is uncertain. Social media is often the main source for people to obtain vital information about a crisis, and the purpose of the platforms is therefore not only to connect with other people but also to provide needed information (Lee 2019: 9). There are many cases in which a crisis has been plagued by a massive spread of disinformation. Examples include the Ebola outbreak in 2014 (Lee 2019:9), the Zika Virus outbreak in 2015-2016 (Wood, 2018:485), a measles outbreak in 2015 and the H1N1 outbreak in 2009 (Gesser-Edelsburg, et.al., 2018:2-3). When there is limited access to knowledge and a situation is characterized by a high degree of uncertainty, people tend to search for information to decrease their own uncertainty in an attempt to make sense of the situation. There is a risk that this behaviour contributes to the spread of disinformation or misinformation as people attempt to relieve their own uncertainty (Lee 2019:10).

Drivers of disinformation and misinformation

Assessing intent behind the spread of false information is extremely difficult. Therefore, intent is a difficult, and often questionable tool when assessing what type of engagement that should be regarded as acceptable and who is a legitimate actor in the information environment. Questions are raised regarding how motives can be measured and how they may be achieved (Wanless & Pamment, 2019). Prior research has attempted to develop work models to understand the full spectrum of motivations, both commercial and political (see Ong & Cabanes, 2018). Inspired by these, we have identified three main models based on the stated intent of actors behind the spread of dis- and misinformation.

Commercial purposes model

According to Bay and Fredheim (2019) commercial manipulation appears to be the main driving force behind social media manipulation, and more than 90% of purchased social media engagements are used for commercial purposes (Bay & Fredheim 2019: 3). Instagram seems to be the platform with the highest rates of bought manipulation on commercial influencer accounts. Some of the studied influencers were manipulating their engagement and reach statistics (Bay & Fredheim 2019: 22-23). According to this research, commercial manipulation appears to be the main driving force behind social media manipulation (Bay & Fredheim 2019: 30). Moreover, influencers[1] are increasingly engaging in dis- and misinformation activities (Marwick & Stewart, 2017, Bayer et. al, 2019, Ong & Cabanes, 2018). Influencers have the potential to amplify information online and make otherwise

[1] Influencers are defined as individuals holding an outsized influence among other online actors (Marwick & Stewart, 2017: 20)

fringe information mainstream (ibid). There is, however, a lack of research regarding the commercial motivations of influencers as most research on the topic has specifically studied influencers engaging in the spread of dis- and misinformation for political rather than commercial goals (see e.g. Tucker et. al, 2018, Bayer et. al, 2019, Marwick & Stewart, 2017). Lastly, Loukas et. al (2020) suggests that social media platforms are an attractive tool for commercially driven actors with criminal intents, such as phishing attempts and account takeovers, to reach out to a maximum number of potential victims. When using disinformation as a bait to retrieve valuable information from the receiver, the information has to be believable enough to yield results (Petratos & Gleni, 2006).

Political purposes model

Disinformation campaigns can be launched by political actors for the purpose of controlling and influencing domestic political narratives (Diamond et. al, 2016: 3-4). Recent examples include a study by King (2017) showing how the Chinese government intervenes on social media platforms to control online discussions about domestic political issues. Furthermore, Ong & Cabanes' (2018, 2019) study how political disinformation campaigns are becoming "entrenched" into the national political system of the Philippines (2018: p. 5), where all sides of the political spectrum are heavily engaged in the usage of fake accounts, employing "click armies" as well as recruiting social media influencers in order to reach domestic political goals (2019). Recent events, such as the Russian meddling in the 2016 U.S presidential election[2], implies that authoritarian states are practising disinformation strategies beyond their own borders with the aim of undermining democratic norms (Diamond 2016 et.al. al: 9). By challenging the dominant narratives of an event (such as a crisis), disinformation is often planted with the intention to distort and obfuscate; enabling the public to question information and statements from official authorities and media sources, while the actor strengthens their own political ideology at the expense of democratic states' (Lim, 2020: 13).

"For the lulz" purposes model

Another form of disinformation production occurs when politically-motivated and computer savvy actors align to mess with the system of information production for fun (Morgan, 2018; Tucker, et al., 2018). Such instances of disinformation are often born on message boards like 4chan and 8chan and are then propagated further with the help of social media bots in hopes that they will be picked up by the mainstream media (Morgan, 2018). In other words, these actors attempt to trick mainstream media outlets into covering their fabricated stories (Tucker, et al., 2018). An example of this occurred prior to the 2016 US election when US mainstream media outlets ran with a story originating from 4chan that brought into question the health of democratic candidate Hilary Clinton (Morgan, 2018).

Disinformation and misinformation relating to the corona-virus in Sweden

The following section presents selected dis- and misinformation cases relating to the coronavirus in Sweden during March 2020. The cases have been collected from media reports identifying instances of dis- and misinformation which have occurred on traditional and social media. The purpose of presenting the cases in this brief is to illustrate and connect the coronavirus specific cases to research regarding dis- and misinformation during health-related crises.

Selection of cases

We have identified 11 cases of dis- and misinformation regarding the coronavirus targeting Swedish audiences. The search was conducted by querying Google's search engine with a pre-established list

[2] See e.g. *Director of National Intelligence*. 2017. Assessing Russian Activities and Intentions in Recent US Elections. Available at: https://www.dni.gov/files/documents/ICA_2017_01.pdf.

of keywords[3] targeting mediums where prior research indicated false information could be found. This search was limited to dis- and misinformation cases that have been reported by Swedish media sources and relate to Sweden in some way. The case selection period occurred between 23 - 31 March, 2020. From the identified sources, we decided to further and narrow the selection of those sources that contained enough in-depth information about the respective case(s) and could thus contribute meaningfully to the study. The results from the media article searches are by no means an exhaustive or comprehensive representation of the media coverage in Sweden at the time of the search period, but rather, they represent a sample of some of the more well documented cases that occurred during that timeframe. Furthermore, a potential limitation in our methodology is a heavy reliance on secondary sources, especially media sources, as this will coat the analysis with a certain degree of unavoidable bias. The table below displays the cases identified in the first round of selection. The table is followed by a more in-depth description of six selected cases.

Table:

Examples	**Platform**	**Model**
Fake text using the coronavirus in an attempt to fraudulently influence people to donate money to fake ”research”.[4]	SMS	Commercial purposes model
A phone call where a man called and claimed he was from the Public Health Authority and wanted access to an individual’s bank identification in an attempt to defraud the man.[5]	Telephone	Commercial purposes model
Emails targeting both private and business users. These include emails relating to cures, conspiracy theories, false news articles, and false announcements by key institutional authorities. [6]	E-mail	Commercial purposes model
Fake email attempts to obtain personal information by claiming that there is a cure that scientists are not willing to share with the public.	E-mail	Commercial purposes model
False information about the coronavirus falsely naming individuals in Ängelholm and claiming that they are spreading the coronavirus.[7]	Snapchat	For the lulz model
Swedish influencers spreading inaccurate information about the coronavirus on Instagram.[8]	Instagram	Commercial purposes model
Users on Facebook are encouraged to drink harmful fluids to protect themselves against the Coronavirus.[9]	Facebook	Commercial purposes model
Businesses on Facebook recommend their unverified products to protect against, or treat, the Coronavirus, e.g., by drinking Colloidal Silver.[10]	Facebook	Commercial purposes model
Information on Facebook claiming that there is a connection between the Coronavirus and 5G networks.[11]	Facebook	Political purposes model
Far right extremist and Nazi conspiracies regarding the origin of the Coronavirus on Twitter.[12]	Twitter	Political purposes model

[3] Keywords: “Facebook”, “Twitter”, “Instagram”, “email”, “text messages” or “SMS”, “telephone”, “Whatsapp”, “Snapchat”, “Youtube”, “blogs”, “Social media” in combination with “disinformation” or “misinformation”
[4] https://www.svt.se/nyheter/lokalt/stockholm/bedragare-utnyttjar-virusoro
[5] https://www.svt.se/nyheter/inrikes/elisabeths-mamma-lurades-av-coronabedragare-skulle-komma-forbi-i-rymddrakt
[6] https://www.svd.se/kriminella-utnyttjar-radsla-for-coronaviruset
[7] https://www.vhia.se/2020/03/12/falsk-information-sprids-om-sars-cov-2-i-angelholm/
[8] https://www.expressen.se/noje/qs/kritik-mot-svenska-influencers-efter-inlagg-om-corona/
[9] https://www.svt.se/nyheter/inrikes/corona-bluffarna-i-sociala-medier-utmaning-att-ta-bort
[10] https://www.expressen.se/noje/qs/kritik-mot-svenska-influencers-efter-inlagg-om-corona/
[11] https://www.dagensmedia.se/medier/digitalt/plattformar-vidtar-atgarder-for-att-minska-corona-desinformation/
[12] https://expo.se/2020/03/hogerextrema-reaktioner-coronaviruset

Chinese news outlets questioning Sweden's adherence to human rights in their efforts to counteract the Coronavirus crisis.[13]	Twitter	Political purposes model

Disinformation and misinformation through traditional channels

The anonymity offered through traditional channels (such as text messages, telephone and emails) have enabled actors to take advantage of, and use this anonymity to fraudulently trick the public (Petratos & Gleni, 2006). Several countries, including Sweden, depend on a Public Warning System (PWS) that incorporate traditional technologies to spread important messages from authorities to the public (Vivier, et.al., 2019). The Swedish authorities use text messages and voice messages as a complement to traditional channels, templates that require no response (Krisinformation, 2019). Therefore, the public may consider an alleged text message or call from authorities as genuine and act accordingly to the instructions in such a message. The spread of dis- and misinformation can harm society when authorities have to dedicate resources to providing the public with new correct information to disprove the incorrect information (Petratos and Gleni, 2006).

Fraud purposes

During the spread of the coronavirus, several cases of fraudulent messages have occurred. Text messages have been sent out to individuals in Sweden encouraging them to send an email to receive information about the Coronavirus. When emailing the stated address, the victim receives an email and is encouraged to donate money to coronavirus related research (Sehlin & Langert, 2020). The fake text claimed fraudulently to have been sent by Karolinska Institutet in Sweden. Karolinska Institutet is encouraging people who receive fraudulent text messages impersonating Karolinska Institutet to immediately report the text messages to the police (Sehlin & Langert, 2020). Similar incidents have been reported in Norway (Brækhus,2020, Fosse, 2020).

Attempts to fraudulently trick people have not only occurred through text messages; one victim received a phone call from a person claiming to be from the Public Health Agency of Sweden. The caller claimed that the victim had been found through contact tracing and was therefore suspected to be infected with the coronavirus. During the call, the individual claimed that men would be arriving with "spacesuits" in order to test the victim, and face guards and gloves would be sent to her home. But before they could send anything to the victim, they claimed that they had to confirm her identity through Bank-ID. The caller appeared trustworthy and convincing and provided a phone number to increase their trustworthiness (Lindqvist, 2020).

Disinformation and misinformation through social media

During crises, the use of social media increases and channels like Facebook and Twitter are commonly used to spread information (Andersson, 2014). These channels have proven to be a complement to traditional channels since social media provides a fast way to spread information, enable warnings, give advice and answer questions (Andersson 2014: 9). In Sweden, a large majority of internet users (83 percent) also use social media (Svenskarna och Internet, 2019). Dis- and misinformation on social media risk having a severe negative impact, especially during crises, since a lot of information flourishes and the number of readers is high. Therefore, there is a need for the population to be extra critical towards information shared on social media in times of crisis (Krisinformation, 2018). During the coronavirus crisis, dis- and misinformation targeting Sweden and Swedish authorities have been occurring on social media platforms (MSB 2020).

[13] https://www.expressen.se/nyheter/propagandan-mot-sverige-kina-vill-inte-sta-till-svars-/

Commercial misinformation purposes

Swedish media are reporting that influencers have tried to profit financially through advertisements and misinformation regarding naturopathic drugs related to the coronavirus, mainly through Instagram and blogs (Demirian, 2020). Such actions have gained criticism for trying to capitalize on people's worry and fear during the crisis (Demirian, 2020). Björn Olsen, professor of infectious diseases at Uppsala University, is deeply critical towards the advertisement strategies of a number of Swedish influencers, calling them unethical (Bäsén, Anderberg & Syrén 2020).

Furthermore, Swedish media have reported on several attempts by small businesses, private traders and influencers to sell health-related products allegedly boosting the immune system to help prevent customers from being infected by the coronavirus (Bäsén, Anderberg & Syrén 2020, Ewald, 2020). Facebook, blogs and other platforms have been used to promote and advertise products such as colloidal silver, fish oil, intravenously injected vitamin-C and bicarbonate. Olsén says there is no scientific evidence that these products will have a positive effect on your health (Bäsén, Anderberg & Syrén 2020). Furthermore, encouraging posts about how people can prevent themselves from getting infected have been present on Facebook. The country manager of Facebook for Sweden states, "...like encouragement to drink different things that could be harmful, or information not to seek medical care, these things should definitely not occur" [own translation] (Norén, 2020). These efforts are similar to the ones promoting their own businesses, but also provide advice that has been dangerous. For example, misinformation started circulating on Facebook whereby people were encouraged to drink pure liquor to kill the virus, which is suspected to have resulted in 44 deaths (Norén, 2020). Misinformation has also been circulating on Facebook claiming that you can kill the coronavirus by using a sauna or using a hairdryer to blow hot air into your throat (Norén, 2020).

Political purposes

The chief editor for Global Times, a newspaper under the influence of the Chinese communist party according to NATO (Lim, 2020: 11), tweeted that "Sweden will not test people with mild symptoms", and in the same tweet they questioned Sweden's adherence to human rights (Baas, 2020). The tweet came after the same newspaper published an editorial criticising Sweden for "capitulating" to the coronavirus, which gained widespread attention by Swedish newspapers (*Dagens Nyheter*, *Expressen* and *Aftonbladet)*. The tweet was regarded by Expressen as "propaganda", linking the statement to strained diplomatic relations between China and Sweden (Baas, 2020).

Discussion

In the following section, our cases will be analysed and compared to previous research regarding dis- and misinformation during health-related crises in relation to the existing work models. Similarities and differences with existing research will be highlighted in order to further the understanding of the dynamics in the Swedish context during the referenced timeframe, and how it compares to previous research.

According to previous research, health-related dis- and misinformation often goes viral during unexpected times (Lee 2019: 2). Our cases support this with regard to several news articles reporting on, and referring to, various dis- and misinformation cases. Similarly to previous health related crises like the Ebola outbreak and the Zika virus outbreak where a massive spread of dis- and misinformation occurred (Lee 2019:9, Wood, 2018:485), the same pattern can be identified in Sweden during the ongoing coronavirus epidemic.

Previous research suggested/concluded that misinformation regarding health issues can potentially impact effective treatments and preventative behaviour (Bode & Vraga 2018: 1132). Some mis-information identified in this brief relate to treatments and preventative behaviour, such as the identified ads for naturopathic drugs, which claimed to help prevent the virus together with other alternative medications. Such misleading statements could impact individuals' views of treatments and preventions against the coronavirus, which in turn could lead to serious consequences. The cases

presented in this brief also suggests that fraudulent activity connected to the ongoing crisis, as well as political statements discrediting Sweden's handling of the crisis, are occurring. Loukas et. al (2020) writes that

> "by the time a piece of misinformation on the Coronavirus has been fact-checked and debunked, it has already achieved its aim: It has deceived people into forming an opinion, making a decision, or causing damage to an organization or group of people" (p. 1).

Because the public might be exceptionally vulnerable to deceptive behavior during health-related crises (Wura Jacobs et. al, 2017: p. 1-2), the extensive spread of dis- and misinformation during the corona crisis can potentially have grave consequences in Sweden.

Furthermore, and as noted by Bay & Fredheim (2019), media manipulation driven by commercial interests is a common phenomenon on social media platforms (22-23). The results from our media searches indicate that dis- and misinformation producers with commercially driven interests were prevalent in the Swedish media reporting - six out of twelve reports selected for this study being of a commercial character. We also noted that social media influencers were particularly prevalent as commercially driven producers of dis- and misinformation, which accords with previous research suggesting that influencers recruited for political gains are a well-used tool in disinformation campaigns (Marwick & Stewart, 2017, Bayer et. al, 2019, Ong & Cabanes, 2018, Tucker et. al, 2018). One important aspect to highlight, however, is that the influencers referred to in this study were driven by financial rather than political interests. Despite the Swedish influencer's motives being of a financial character, the spread of dis- and misinformation has the capacity to transcend into the political sphere, enabling false information to compete with information from the authorities (Häyrynen, 2020). In addition, other cases indicate a criminal intent by using disinformation about the current crisis for commercial gains. Based on the literature review done for this study, we conclude that research linking fraud to disinformation is largely under-explored.

As described above, the spread of dis- and misinformation with political purposes might be attributed to both external and internal political actors. Competing political parties within the state may produce narratives using fake accounts or employing "fake news factories" in order to control the narratives. This may in turn undermine the democratic process in order to control the political narrative and control political campaigns (Ong and Cabanes, 2019). In addition, external political purposes have also been prevalent in previous research. State sanctioned disinformation campaigns are used to weaken democratic principles and limit the influence of democratic institutions (Diamond, 2016). Our media search only identified one instance internal political dis- and misinformation campaigns attempting to influence the political narrative about the virus. However, this case did not provide enough information in order to be studied more thoroughly. Furthermore, there was only one case that could be attributed to external political purposes. This is interesting since many other cases of disinformation campaigns are predominantly for political purposes, whether internal or external. Hence, in the current health-related crisis in Sweden, there is little evidence in Swedish media to suggest that there are politically motivated dis- and misinformation campaigns. However, the covert nature of state-sanctioned disinformation campaigns represents an ever-present challenge to identify the actor behind a campaign, limiting the ability to attribute responsibility for foreign disinformation attempts (Bayer et. al, 2019: 21).

Conclusion

In this brief we have examined previous research on dis- and misinformation, with a particular focus on the models used by producers and the role it plays in a health-related crisis. We then compared these findings to a selection of 11 cases of coronavirus-related dis- and misinformation covered by the Swedish press between 23-31 March, 2020. While we expected to see a broad cross-section of models being used, our findings indicate that the majority of cases could be considered commercially driven. Within that majority, some cases were clearly fraud related, such as malicious actors attempting to impersonate Swedish authorities, while others were related to online influencers who wittingly or

unwittingly participated in false information dissemination. In a normal information environment, influencers making money from corporate partnerships in return for advertising products or services to their followers may not seem dangerous as consumers are not pressured to buy what is on offer. However, our findings indicate that this may change in a health-related crisis information environment, as followers turn to their influencers as trusted sources of information and advice, which in turn makes them increasingly susceptible to all promotional material, harmful or harmless, that the influencer produces.

While we did find one case concerning the producing of false information for internal political purposes, this case did not offer enough information to be studied more thoroughly. However, the reason for this might be that evidence for this category requires, in most cases, thorough investigatory techniques and long periods of time committed to discovery. Why the commercial model was prominent in media reports remains speculative. It could be that commercially driven aspects are what the general public reacts to the most or, as discussed above are the easiest to identify. With the search period of the study being positioned at a relatively early stage of the pandemic, it cannot be ruled out that evidence of this missing model may appear at some later stage. Finally, while our study focused specifically on the situation in Sweden, future research could pursue similar studies in other countries to provide situational assessments of other information environments.

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