SIMONA DE ROSA*

THE IMPACT OF DISINFORMATION DURING
THE COVID-19 PANDEMIC: THE ROLE OF LANGUAGE USED
FOR SPREADING FAKE NEWS

1. Introduction. – As claimed by several scholars, among others by Edwards *et al.* (2021), the magnitude of disinformation and its effects is causing significant concern. One of the major challenges of the current information ecosystem is the rapid spread of fake news through digital media (Tandoc *et al.*, 2019; Fletcher *et al.*, 2018). This statement opens the debate on the fact that information spreading on social media can be easily manipulated and distorted creating ad-hoc disinformation effects. The seriousness of the problem has been evident during the pandemic of Covid-19. Indeed, a specific term was created referring to the massive amount of information about the pandemic: infodemic. The results of the infodemic, as stated by several authors (Carey *et al.*, 2022), has been that disinformation about Covid-19 contributed to seriously confuse and scare people about the virus and related measures to fight its spread. Confusion and uncertainty are also connected to the language and terminology used to report about the topic. As reported by Vargas (2021) "one of the most relevant form of expressing emotion is the use of a language, this is mostly associated with sentiment and perception (Berry *et al.*, 1997; Lindquist, 2017)". As demonstrated in the scientific literature, disinformation spread is strongly associated with the use of emotional language. In particular, several studies put the attention on the use of words and terminologies related to strong emotions such as anger and mistrust (Osmundsen *et al.*, 2021; Weeks and Garrett, 2019). According to scholars, this is one of the reasons why disinformation spreads faster and wider than trusted information (Vosoughi *et al.*, 2018).

2. Methodology. – As reported by Ortony *et al.* (2015) writing can determine how others perceive feelings. As stated by Vargas (2021) "Because writing and individual words carry a certain level of emotion, researchers have attempted to characterize the sentiment of an individual through word analysis (Ortony *et al.*, 1990; Taboada *et al.*, 2011)". Assessing emotion or sentiment from a piece of writing comprises a research area known as sentiment analysis (Cambria *et al.*, 2013; Liu, 2012; Nazir *et al.*, 2020). Research studies in this area focus on methods that extract sentiments automatically from a text. Using algorithms, researchers have driven the investigations toward two fields: lexicon analysis and machine learning. Thanks to several studies applying sentiment analysis it is possible to state that the spread of false and misleading information about Covid-19 on social media has intensified (Brennen *et al.*, 2020). "This potentially stokes public anxiety, which might further escalate into collective panic or other negative collective behaviors that health organizations want to avoid" (Charquero-Ballester *et al.*, 2021). Also Medford *et al.* (2020) state that sentiment analysis applied to fake news on Covid-19 spreading on Twitter show that within the range of negative sentiments, the most expressed was fear. Another study, Li *et al.* (2020) pre-published their findings about sentiments in Twitter and Weibo communication about Covid-19. They distinguish six main emotions: sadness, anger, disgust, worry, happiness, and surprise. In this case the most intense sentiment was worry, followed by sadness and anger. So, what we learned from literature review is that the use of emotional languages most probably allows disinformation to spread faster by causing fear and worry to the readers. However, the current paper intends to address another point which cannot be observed through sentiment analysis and automated analysis, namely, how such a negative emotional language has had an impact on people? Or, in another way round, what is the impact of disinformation about Covid-19 on people? Has the pandemic changed the way in which citizens consume information? To reply to these questions, a semi-structured questionnaire was distributed. A questionnaire was selected as a preferred method due to the following reasons: first, because methods implying face-to-face contacts (e.g. focus groups or interviews) were not possible due to social distancing rules applied during the pandemic. Second, the questionnaire was preferred to phone interviews or other tools, considering that during the emergency people were spending their time in isolation using digital

devices and internet connection. The survey was conducted using an online system for data collection, making the survey available for any device capable of surfing the Internet. In line with the GDPR provisions, no private or sensible data was collected and the survey was structured to be fully anonymous. The survey contained 26 questions, most of them were structured as multiple choice or Likert scale. Out of the 26, four questions allowed to reply with open comments. The survey was designed for people living in Italy or using Italian information channels. For this reason, it was conducted in Italian. The survey was launched on March 31st and closed on April 16th 2020.

3. Results. – We collected a total of 1611 respondents, 63% are women, 37% men. Looking at the geographical distribution, 40% of the participants were from Southern Italy and the islands, 33% from the Centre of Italy and 27% from the North of Italy. In terms of age, replies collected span from minors of 18 to more than 80 but most of the respondents are in the ages between 36 and 65. We asked the respondents to select which was the main source of information they used during the Covid-19 emergency. Most of the preferences were given to official sources (38%) and broadcasters (31%), followed by social media (20%) and, finally, newspapers (11%). In addition, we asked to assess what were the most reliable information channels used during the Covid-19 emergency. In this case, 72% state that the most reliable sources of information were provided by the scientific *community* and by official broadcasting of the Italian government and the National Civil Protection Agency. To better understand how the information sent out by Italian public institutions was perceived, we asked about the importance of the role of the institutions (for example: Prime Minister, Government, Civil Protection Agency) in communicating directly to citizens what was happening and in providing information on how to deal with the Covid-19 emergency. Out of the 1611 respondents, more than 81% agreed that information from institutions was very relevant or important. In order to understand if respondents relied also on information that was not necessarily coming from official sources, we asked to assess the reliability of the information received via WhatsApp[1] and Facebook. In relation to WhatsApp, out of the total of the respondents, 76% selected the lowest values of the likert scale "little" or "nothing"; 12% selected "a lot" and "enough" and 12% stated that they do not receive information via WhatsApp. The 12% showing more reliability on the information via WhatsApp was then asked if the information via WhatsApp influenced their behaviours. Out of the total, 5% selected "a lot", 44% "enough", 37% "little" and 14% "nothing". We then asked to the 49% replying that the information influenced "a lot" or "enough" how they have been influenced. The majority of people replied that they were scared and alarmed by the received information. We also asked to assess the reliability of information on Facebook. 23% selected "a lot" and "enough". This shows a small increase on the reliability of Facebook compared to WhatsApp. We asked, then, if the current emergency changed how respondents dealt with information. 50% replied no, 49% replied yes and 1% did not reply. Then, we asked to the ones that stated that the emergency had changed their attitudes, in which way it had changed. Results show that 89% stated that they became more aware about the importance of verified information due to the emergency. Only 11% stated that they were still confused and exposed to the perils of disinformation.

4. Conclusions. – According to literature review on disinformation it is possible to say that fake news scared people by causing anxiety and fear also due to the emotional language and contents used. However, according to our case study, the reaction to the spread of disinformation was to increase the attention in looking for verified information as well as changing usual practices in accessing information. In particular, 49% of the respondents stated that they had changed their relationship with the information during Covid-19 putting more attention in understanding if the source was trusted and verified or not. It is also interesting to notice that institutional sources of information and the information shared by the scientific *community* have been selected as preferred sources of information. On the other hand, information shared via social media such as WhatsApp and Facebook is considered, by most of the respondents, as not trustable. This led also Italian media to adapt their service, as also noticed by Reuters "Because of the severity of the Covid-19 pandemic, Italian media increased the space given to the news, and both television and online news outlets have seen a significant increase in audience reach" (Digital News Report, 2021). Most of the respondents agreed on the need for more information from the scientific *community* and from institutions but they also claimed for a

---

[1] We decided to insert this question as in Italy it is very frequent to receive information on Covid-19 directly on this application.

better control of the platforms on circulating unverified information. This suggests that even if respondents assigned high importance to trusted information, they also asked for better regulating the information shared via social media and digital platforms. To conclude, our assumption is that the use of a specific terminology associated with strong and negative emotions scare people. Results show that the emergency increased the awareness about the importance of verified information. However, the qualitative analysis suggests a couple of relevant elements. First, even if disinformation is shared and reaches thousands of people on social media, the real impacts on people are low because most of the social media *users* do not believe in that kind of information. This implies a small impact on their choices in real life. Second, by applying a qualitative analysis there emerged a facet that is difficult to understand from social media analysis. This is the level of trust of official sources of information. Results show that people inform themselves on the pandemic using, above all, official channels used by authoritative institutions and through broadcasters. Social media, even if they appear among the channels used to be informed, are not the primary source of information on the pandemic. Such results seem to confirm what has been observed by the Osservatorio MSA-Covid-19 of CNR-IRPPS[2] which also appraises the high level of trust for authoritative sources such as the national governments, the civil protection agency and the scientific *community*. Taking into account all collected data, results show how people, in difficult times and when talking about health issues, are more aware about the importance of correct and trustable information and less inclined to believe to non-verified information. The analysis suggests also that participants are careful about the challenges presented by the digital platforms. However, we can conclude that information from public institutions, relying on trustful and verified information, is the most important channel of communication and information for the respondents and they would also like to be more informed through these channels, above all during exceptional events such as a pandemic.

BIBLIOGRAFIA

Berry D.S., Pennebaker J.W., Mueller J.S., Hiller W.S. (1997). Linguistic bases of social perception. *Personality and Social Psychology Bulletin*, 23(5): 526-537.

Brennen J.S., Simon F.M., Howard P.N., Nielsen R.K. (2020). *Types, Sources, and Claims of Covid-19 Misinformation*. Doctoral dissertation, University of Oxford.

Cambria E., Schuller B., Xia Y., Havasi C. (2013). New avenues in opinion mining and sentiment analysis. *IEEE Intelligent systems*, 28(2): 15-21.

Carey J.M., Guess A.M., Loewen P.J., Merkley E., Nyhan B., Phillips J.B., Reifler J. (2022). The ephemeral effects of fact-checks on Covid-19 misperceptions in the United States, Great Britain and Canada. *Nature Human Behaviour*, 1-8.

Charquero-Ballester M., Walter J.G., Nissen I.A., Bechmann A. (2021). Different types of Covid-19 misinformation have different emotional valence on Twitter. *Big Data & Society*, 8(2). sagepub.com (ultimo accesso maggio 2022).

De Cock Buning M. (2018). *A multi-dimensional approach to disinformation: Report of the independent High level Group on fake news and online disinformation.* Bruxelles: Publications Office of the European Union.

Edwards L. Stoilova M., Anstead N., Fry A., El-Halaby G., Smith M. (2021). *Rapid Evidence Assessment on Online Misinformation and Media Literacy: Final Report for Ofcom*. www.ofcom.org.uk (ultimo accesso maggio 2022).

European External Action Service (2020). *Disinformation on the Corona Virus. Information Environment Assessment.*

Fletcher R., Cornia A., Graves L., Nielsen R.K. (2018). Measuring the reach of "fake news" and online disinformation in Europe. *Australasian Policing*, 10(2): 25-33.

Kumar S., Shah N. (2018). *False Information on Web and Social Media: A Survey*. NY: Cornell University

Lazer D.M., Baum M.A., Benkler Y., Berinsky A.J., Greenhill K.M., Menczer F., Metzger M.J., Nyhan B., Pennycook G., Rothschild D., Schudson M. (2018). The science of fake news. *Science*, 359(6380): 1094-1096.

Li X., Zhou M., Wu J. (2020). *Analyzing Covid-19 on Online Social Media: Trends, Sentiments and Emotions*. ArXiv:2005.14464 [Cs]. http://arxiv.org/abs/2005.14464.

Lindquist K.A. (2017). The role of language in emotion: existing evidence and future directions. *Curr. Opin. Psychol.*, 17: 135-139.

Liu B. (2012). *Sentiment Analysis and Opinion Mining*. San Rafael: Morgan & Claypoo.

---

[2] Information is available at https://www.cnr.it/it/focus/068-23/osservatorio-mutamenti-sociali-in-atto-covid19-msa-covid19.

Medford R.J., Saleh S.N., Sumarsono A., Perl T.M., Lehmann C.U. (2020). An "infodemic": Leveraging high-volume Twitter data to understand early public sentiment for the coronavirus disease 2019 outbreak. In: *Open Forum Infectious Diseases*, 7(7). US: Oxford University Press.

Nazir A., Rao Y., Wu L., Sun L. (2020). Issues and challenges of aspect-based sentiment analysis: A comprehensive survey. *IEEE, Transactions on Affective Computing*. IEEE Journals & Magazine | IEEE Xplore (ultimo accesso maggio 2022).

Newman N., Fletcher R., Schulz A., Andi S., Robertson C.T., Nielsen R.K. (2021). *Reuters Institute Digital News Report 2021*. Oxford: Reuters Institute for the Study of Journalism.

Ortony A., Clore G.L., Collins A. (1990). *The Cognitive Structure of Emotions*. Cambridge: Cambridge University Press.

Osmundsen M., Bor A., Vahlstrup P.B., Bechmann A., Petersen M.B. (2021). Partisan polarization is the primary psychological motivation behind political fake news sharing on Twitter. *American Political Science Review*, 115(3): 999-1015.

Nielsen R.K., Fletcher R., Cornia A., Graves L. (2018). *Measuring the Reach of "Fake News" and Online Disinformation in Europe*. https://ora.ox.ac.uk/objects/uuid:08627294-b4dc-4b69-b525- (ultimo accesso maggio 2022).

Taboada M., Brooke J., Tofiloski M., Voll K., Stede M. (2011). Lexicon-based methods for sentiment analysis. *Computational linguistics*, 37(2): 267-307.

Tandoc Jr E.C., Lim D., Ling R. (2020). Diffusion of disinformation: How social media users respond to fake news and why. *Journalism*, 21(3): 381-398.

Vargas A.N., Maier A., Vallim M.B., Banda J.M., Preciado V.M. (2021). Negative perception of the Covid-19 pandemic is dropping: Evidence from Twitter posts. *Frontiers in Psychology*, 12: 4067. frontiersin.org (ultimo accesso maggio 2022).

Vosoughi S., Roy D., Aral S. (2018). The spread of true and false news online. *Science*, 359(6380): 1146-1151.

Weeks B.E., Garrett R.K. (2018). Emotional characteristics of social media and political misperceptions. *Journalism & Truth in an Age of Social Media*, 236-250.

SUMMARY: As claimed by several scholars, the magnitude of disinformation and its effects is causing concern. One of the major challenges of the current information ecosystem is the spread of fake news through digital media. The problem has been evident during the pandemic of Covid-19. Disinformation about Covid-19 contributed to confuse and scare people about the virus also due to the emotional language used. The current paper intends to address the following questions: how has such a negative emotional language impacted people? Has the pandemic changed the way in which citizens consume information? The paper investigates those questions through a quali-quantitative analysis based on a semi-structured questionnaire circulated in Italy during the Covid-19 crisis.

RIASSUNTO: *L'impatto della disinformazione durante la pandemia di Covid-19: il ruolo del linguaggio utilizzato per diffondere fake news*. Come affermato da diversi studiosi, il tema della disinformazione sta destando notevole preoccupazione. Una delle sfide dell'ecosistema dell'informazione è la rapida diffusione di notizie false attraverso i media digitali. La gravità del problema è emersa anche durante la pandemia di Covid-19. La disinformazione sul Covid-19 ha contribuito a spaventare le persone anche a causa del linguaggio emotivo utilizzato per diffondere le notizie false. Il paper affronta le seguenti domande: in che modo il linguaggio emotivo negativo ha un impatto sulle persone? La pandemia ha cambiato il modo in cui i cittadini consumano le informazioni? Il paper indaga queste domande attraverso un'analisi quali-quantitativa basata su un questionario semistrutturato diffuso in Italia durante la pandemia di Covid-19.

Keywords: sentiment analysis, disinformation, Covid-19
Parole chiave: sentiment analysis, disinformazione, Covid-19

*T6 Ecosystems, Roma; *s.derosa@t-6.it*