

A review of the psychosocial and criminological factors underlying COVID-19 conspiracy theories

Matthew J. Groicher | Ignazio Grattagliano | Pasqua Loconsole | Rosita Maglie

OPEN ACCESS

Double blind peer review

How to cite this article: Groicher M.J. et alii (2022). A review of the psychosocial and criminological factors underlying covid-19 conspiracy theories. *Rassegna Italiana di Criminologia*, XVI, 3, 189-200. <https://doi.org/10.7347/RIC-032022-p189>

Corresponding Author: Ignazio Grattagliano
email ignazio.grattagliano@uniba.it

Copyright: © 2022 Author(s). This is an open access, peer-reviewed article published by Pensa Multimedia and distributed under the terms of the Creative Commons Attribution 4.0 International, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. *Rassegna Italiana di Criminologia* is the official journal of Italian Society of Criminology.

Received: 07.03.2022

Accepted: 05.09.2022

Published: 22.12.2022

Pensa MultiMedia
ISSN 1121-1717 (print)
ISSN 2240-8053 (on line)
[doi10.7347/RIC-032022-p189](https://doi.org/10.7347/RIC-032022-p189)

Abstract

Conspiracy theories and misinformation are becoming increasingly pervasive in recent years and have been spreading at an astounding rate during the COVID-19 pandemic, leading to a range of problems, including non-adherence to safety protocols, refusal to be vaccinated and disregard for public safety. The uncontrollable spread of dubious information has been dubbed an infodemic and is facilitated by social media and the internet. The belief in, and diffusion of conspiracy theories is linked to various factors familiar to the psychological and criminological fields. Key among these factors is a trait known as conspiratorial thinking. In order to combat this phenomenon, it is essential that we understand how and why conspiracy theories spread and what makes people prone to believing in them. This literature review aims to highlight the principal research into the identifying characteristics of conspiracy theories, as well as the psycho-social and criminological factors that sustain them. It also explores the effects that conspiracy belief can have on people and groups. It then delves into the role of social media in the diffusion of conspiracy theories during the pandemic. Finally, it illustrates the main strategies that have been used to counter misinformation and conspiracy theories and suggests some areas where further research is required.

Keywords: Conspiracy theories, conspiratorial thinking, COVID-19, infodemic, misinformation

Matthew J. Groicher, University of Bari Aldo Moro, Italy, Department of psychology and communication education sciences | Ignazio Grattagliano, University of Bari Aldo Moro, Italy Department of psychology and communication education sciences | Pasqua Loconsole, Director of the libraries of the medical-veterinary center -University of Bari "Aldo Moro" Italy | Rosita Maglie, University of Bari Aldo Moro, Italy, Department of psychology and communication education sciences

A review of the psychosocial and criminological factors underlying covid-19 conspiracy theories

1. Introduction

During the COVID-19 pandemic, conspiracy theories have spread at an alarming rate. These theories include that pharmaceutical companies are encouraging the spread of COVID-19 for profit (Levinsson, Miconi, Li, Frounfelker, & Rousseau, 2021), that 5G cell towers somehow cause COVID-19 (Jolley & Paterson, 2020), or that the virus is actually a laboratory-created bioweapon (McCarthy, Murphy, Sargeant, & Williamson, 2021). As the disease spreads across the globe, it has been stated that we face not one, but two pandemics: the coronavirus pandemic itself, and an infodemic; the “overabundance of information – some accurate, some not – that spreads alongside a disease outbreak” (WHO, 2021). The abuse of technology to spread false or deliberately misleading information is creating new forms of “collective violence” and “collective victimization” (Laera, et al., 2022). Nearly 6,000 people were hospitalized and approximately 800 died at the beginning of 2020 due to COVID-19 misinformation (Islam, et al., 2020). Furthermore, belief in conspiracy theories and misinformation has led to consequences such as vaccine hesitancy and refusal, refusal to adhere to government mandated safety precautions, protests, discrimination and stigma, consumption of harmful substances, and even the burning of cell towers (McCarthy, Murphy, Sargeant, & Williamson, 2021). To add to the confusion, both American and European intelligence reports have found evidence that foreign governments, Russia and China in particular, purposefully spread disinformation regarding COVID-19 (Grimes D. R., 2021). Research indicates that those who believe in COVID-19 conspiracy theories are up to four times less likely to intend to be vaccinated against the disease than those who disbelieved in these theories, as well as being less supportive of policies aimed at reducing the spread (Earnshaw, et al., 2020). Since much of the hope for an end to the current pandemic depends on a successful and widespread vaccination program, this is a potentially disastrous effect of conspiracy theories, as belief in them could impede the administration of vaccines. These findings make it abundantly clear that the spread of misinformation and conspiracy theories is not a victimless phenomenon, and that strategies to help prevent this spread are increasingly necessary. In order to do this, it is vital that we understand how and why these theories form as well as how they spread. Consequently, the objectives of this article are as follows: (1) to present a broad perspective on the topic of COVID-19 conspiracy theories, their formation and spread, and their consequences; (2) to provide an overview of the

principal research into the psychosocial and criminological mechanisms that sustain conspiratorial thinking; (3) to present a summary of the prominent strategies for addressing the problem posed by conspiracy theories. It is the hope of the researchers that this overview can provide insight into this phenomenon and stimulate discussion and thought on the subject.

2. Materials and Methods

A review of the literature was conducted, following the framework outlined by Green et al. (2006) of narrative reviews, based on the questions: “What does existing research indicate as the principal psychosocial and criminological factors associated with the formation and spread of conspiracy theories concerning COVID-19? What impact do conspiracy theories have on behaviour and compliance with health recommendations? What is the role of social media in the spread of conspiracy theories? What are the principal strategies indicated by the existing literature for managing the effects of conspiracy theories?”.

2.2 Search Strategy and Sources

The Discovery Service for the University of Bari was the principal database searched, beginning on 11 May 2021, and ending 19 May 2021. The following keywords were used: (conspiratorial thinking) AND (covid-19 OR coronavirus) AND (psychological factors OR causes OR influences). The papers were identified by searching the titles, abstracts and keywords. Only papers written in English were considered. Other criteria included full papers only, as well as those more recent than 2000. Additional research articles were acquired by examining the reference lists of the relevant papers. Papers were excluded if they didn't focus on psychological and/or criminological factors related to COVID-19 and conspiratorial thinking. Finally, duplicate articles, editorials, reports and journalistic news articles were also excluded. After the first round of revisions, and in order to update the references used, a further search was performed using the same database. However, additional search terms were included, and the temporal range was extended to include more recent publications (2022).

Topic	References
Sources used to provide a definition of conspiracy theories	<ul style="list-style-type: none"> • European Commission. (2021). Identifying Conspiracy Theories. Taken from European Commission: https://ec.europa.eu/info/identifying-conspiracy-theories_en. Last accessed on 11/05/2021. • Lewandowsky, S. & Cook, J. (2020). The Conspiracy Theory Handbook. George Mason University Center for Climate Change Communication.
Articles on psychological factors and conspiratorial thinking	<ul style="list-style-type: none"> • Brashier, N. M. & Schacter, D. L. (2020). Aging in an era of fake news. <i>Current Directions in Psychological Science</i>, 29(3): 316–323. • Douglas, K. M., Sutton, R. M. & Cichočka, A. (2017). The Psychology of Conspiracy Theories. <i>Current Directions in Psychological Science</i>, 26(6): 538-542. • Earnshaw, A. V., Eaton, L. A., Kalichman, S. C., Brousseau, N. M., Hill, E. C. & Fox, A. B. (2020). COVID-19 conspiracy beliefs, health behaviors, and policy support. <i>Translational Behavioral Medicine</i>, 10(4): 850-856, doi: 10.1093/tbm/ibaa090. • Einstein, K. & Glick, D. (2015). Do I think BLS data are BS? The consequences of conspiracy theories. <i>Political Behavior</i>, 37(3): 679–701. • Fazio, L. K., Brashier, N. M., Payne, B. K. & March, E. J. (2015). Knowledge Does Not Protect Against Illusory Truth. <i>Journal of Experimental Psychology: General</i>, 144 (5): 993–1002. • Grzesiak-Feldman, M. (2013). The effect of high-anxiety situations on conspiracy thinking. <i>Current Psychology</i>, 32(1): 100-118. • Hetlich, N., Beutel, M., Ernst, M., Schliessler, C., Kampling, H., Kruse, J. & Braehler, E. (2022). Conspiracy endorsement and its associations with personality functioning, anxiety, loneliness, and sociodemographic characteristics during the COVID-19 pandemic in a representative sample of the German population. <i>PLoS ONE</i>, 17(1), 1-15. 10.1371/journal.pone.0263301. • Kim, S. & Kim, S. (2021). Searching for General Model of Conspiracy Theories and Its Implication for Public Health Policy: Analysis of the Impacts of Political, Psychological, Structural Factors on Conspiracy Beliefs about the COVID-19 Pandemic. <i>International Journal of Environmental Research & Public Health</i>, 18(1), 266-294. https://doi.org/10.3390/ijerph18010266. • Klein, O. & Nera, K. (2020). Social Psychology of Conspiracy Theories. In M. B. Knight, <i>Routledge Handbook of Conspiracy Theories</i> (p. 121-134). London: Routledge, Taylor & Francis Group. • Lantian, A., Wood, M. & Gjoneska, B. (2020). Personality traits, cognitive styles and worldviews associated with beliefs in conspiracy theories. In M. Butter & P. Knight, <i>Routledge Handbook of Conspiracy Theories</i> (p. 155-167). London: Routledge, Taylor & Francis Group. • Lewandowsky, S., Oberauer, K. & Gignac, G. E. (2013). NASA faked the moon landing - Therefore, (climate) science is a hoax: An anatomy of the motivated rejection of science. <i>Psychological Science</i>, 24(5): 622-633. • Norris, P. & Epstein, S. (2011). An experiential thinking style: its facets and relations with objective and subjective criterion measures. <i>Journal of Personality</i>, 79(5), 1043–1080. • Nurse, M., Ross, R., Isler, O. & Rooy, D. (2022). Analytic thinking predicts accuracy ratings and willingness to share COVID-19 misinformation in Australia. <i>Memory & Cognition</i>, 50(2): 425-434. doi: 10.3758/s13421-021-01219-5. • Scherer, L. D. & Pennycook, G. (2020). Who Is Susceptible to Online Health Misinformation? <i>AJPH Perspectives</i>, 110 (S3), Available at https://doi.org/10.2105/AJPH.2020.305908.
Articles on criminological factors and conspiratorial thinking	<ul style="list-style-type: none"> • Brashier, N. M. & Schacter, D. L. (2020). Aging in an era of fake news. <i>Current Directions in Psychological Science</i>, 29(3): 316–323. • Douglas, K. M. (2021). Are conspiracy theories harmless? <i>The Spanish Journal of Psychology</i>, 24 (13): 1-7. • Grimes, D. R. (2021). Medical disinformation and the unviable nature of COVID-19 conspiracy theories. <i>PLoS ONE</i>, 16(3): e0245900. https://doi.org/10.1371/journal.pone.0245900. • Jolley, D., Meleady, R. & Douglas, K. M. (2020). Exposure to intergroup conspiracy theories promotes prejudice which spreads across groups. <i>British Journal of Psychology</i>, 111(1): 17-35. doi: 10.1111/bjop.12385. • Laera D, Colucci M, Bottalico M, Franco T, Grattagliano I, Violante M, Volpe G, Taurino A (2022). Who believes Fake News? Psychological and criminological aspects of the protagonists of the post-truth era. <i>Rassegna Italiana di Criminologia</i>, 16(1), 12-23. https://doi10.7347/RIC-012022-p12 • Levinson, A., Miconi, D., Li, Z., Frounfelker, R. & Rousseau, C. (2021). Conspiracy Theories, Psychological Distress, and Sympathy for Violent Radicalization in Young Adults during the COVID-19 Pandemic: A Cross-Sectional Study. <i>International Journal of Environmental Research and Public Health</i>, 18(15): 7846. https://doi.org/10.3390/ijerph18157846. • McCarthy, M., Murphy, K., Sargeant, E. & Williamson, H. (2021). Examining the relationship between conspiracy theories and COVID-19 vaccine hesitancy: A mediating role for perceived health threats, trust, and anomie? <i>Analyses of Social Issues and Public Policy</i>, 22(1): 106–129. DOI: 10.1111/asap.12291. • Šrol, J., Čavojská, V. & Mikušková, E. (2022). Finding Someone to Blame: The Link Between COVID-19 Conspiracy Beliefs, Prejudice, Support for Violence, and Other Negative Social Outcomes. <i>Frontiers in Psychology</i>, 12: 726076. DOI: 10.3389/fpsyg.2021.726076.

<p>Articles on psychosocial factors and conspiratorial thinking</p>	<ul style="list-style-type: none"> • Brashier, N. M. & Schacter, D. L. (2020). Aging in an era of fake news. <i>Current Directions in Psychological Science</i>, 29(3), 316–323. • Grimes, D. R. (2020). Health disinformation & social media: The crucial role of information hygiene in mitigating conspiracy theory and infodemics. <i>EMBO Reports</i>, 21(11): DOI: 10.15252/embr.202051819. • Hughes, J., Efstratiou, A., Komer, S., Baxter, L., Vasiljevic, M. & Leite, A. (2022). The impact of risk perceptions and belief in conspiracy theories on COVID-19 pandemic-related behaviors. <i>PLoS One</i>, 17(2), e0263716. https://doi.org/10.1371/journal.pone.0263716. • Islam, M. S., Sarkar, T., Khan, S. H., Mostofa Kamal, A., Hasan, S. M., Kabir, A., Yeasmin, D., Islam, M. A., Chowdhury, K. I., Anwar, K. S., Chughtai, A. A. & Seale, H. (2020). COVID-19–Related Infodemic and Its Impact on Public Health: A Global Social Media Analysis. <i>The American Journal of Tropical Medicine and Hygiene</i>, 103(4), 1621-1629. • Jolley, D. & Douglas, K. M. (2014). The social consequences of conspiracism: Exposure to conspiracy theories decreases the intention to engage in politics and to reduce one's carbon footprint. <i>British Journal of Psychology</i>, 105(1): 35-56. doi: 10.1111/bjop.12018. • Jolley, D. & Paterson, J. (2020). Pylons ablaze: Examining the role of 5G COVID-19 conspiracy beliefs and support for violence. <i>British Journal of Social Psychology</i>, 59(3): 628–640. DOI:10.1111/bjso.12394 • Kahan, D. M., Braman, D., Cohen, G. L., Gastil, J. & Slovic, P. (2010). Who Fears the HPV Vaccine, Who Doesn't, and Why? An Experimental Study of the Mechanisms of Cultural Cognition. <i>Law and Human Behavior</i>, 34(6): 501–516. • McCarthy, M., Murphy, K., Sargeant, E. & Williamson, H. (2021). Examining the relationship between conspiracy theories and COVID-19 vaccine hesitancy: A mediating role for perceived health threats, trust, and anomie? <i>Analyses of Social Issues and Public Policy</i>, 22(1): 106–129. DOI: 10.1111/asap.12291. • Oleksy, T., Wnuk, A., Maison, D. & Łyś, A. (2020). Content matters. Different predictors and social consequences of general and government-related conspiracy theories on COVID-19. <i>Personality and Individual Differences</i>, 168, https://doi.org/10.1016/j.paid.2020.110289. • Pennycook, G. & Rand, D. G. (2019). Lazy, not biased: susceptibility to partisan fake news is better explained by lack of reasoning than by motivated reasoning. <i>Cognition</i>, 188, 39–50. doi: 10.1016/j.cognition.2018.06.011. • Uscinski JE, Enders AM, Klofstad C, Seelig M, Funchion J, Everett C, Wutchy S, Premaratne K & Murthi M (2020). Why do people believe COVID-19 conspiracy theories? Harvard Kennedy School (HKS) Misinformation Review. DOI: https://doi.org/10.37016/mr-2020-015. • Uscinski, J., & Parent, J. (2014). <i>American Conspiracy Theories</i>. Oxford: Oxford University Press • Van Prooijen, J., Klein, O. & Đorđević, J. M. (2020). Social-cognitive processes underlying belief in conspiracy theories. In M. B. Knight, <i>Routledge Handbook of Conspiracy Theories</i> (p. 168-180). London: Routledge, Taylor & Francis Group. • Van Prooijen, J. & Acker, M. (2015). The influence of control on belief in conspiracy theories: Conceptual and applied extensions. <i>Applied Cognitive Psychology</i>, 29(5): 753–761. https://doi.org/10.1002/acp.3161. • Van Prooijen, J. & Van Vugt, M. (2018). Conspiracy theories: evolved functions and psychological mechanisms. <i>Perspectives on Psychological Science</i>, 13(6), 770–88.
<p>Articles on techniques and strategies for dealing with conspiracy theories and misinformation</p>	<ul style="list-style-type: none"> • Jolley, D. & Douglas, K. M. (2017). Prevention is better than cure: Addressing anti-vaccine conspiracy theories. <i>Journal of Applied Social Psychology</i>, 47, 459–469. DOI: 10.1111/jasp.12453. • Pennycook, G., McPhetres, J., Zhang, Y., Lu, J. G. & Rand, D. G. (2020). Fighting COVID-19 misinformation on social media: experimental evidence for a scalable accuracy-nudge intervention. <i>Psychological Science</i>, 31(7), 770–780. • Potter, W. J. (2013). Review of Literature on Media Literacy. <i>Sociology Compass</i>, 7(6): 417–435. DOI: 10.1111/soc4.12041. • Van der Linden, S., Leiserowitz, A., Rosenthal, S. & Maibach, E. (2017). Inoculating the public against misinformation about climate change. <i>Global Challenges</i>, 1(2): 1600008. https://doi.org/10.1002/gch2.201600008
<p>Articles on covid-19 conspiracy theories and social media</p>	<ul style="list-style-type: none"> • Ahmed, W., Vidal-Alaball, J., Downing, J. & López Seguí, F. (2020). COVID-19 and the 5G Conspiracy Theory: Social Network Analysis of Twitter Data. <i>Journal of medical Internet research</i>, 22(5): 1438-8871. • Brashier, N. M. & Schacter, D. L. (2020). Aging in an era of fake news. <i>Current Directions in Psychological Science</i>, 29(3): 316–323. • Caballero, E. G. (2020). Social network analysis, social big data and conspiracy theories. In Taylor & Routledge, <i>Routledge Handbook of Conspiracy Theories</i> (p. 135-148). London: Butter, M. & Knight, P. • Del Vittorio, M., Bessi, A., Zollo, F., Petroni, F., Scala, A., Caldarelli, G., Stanley, H. & Quattrociocci, W. (2016). The spreading of misinformation online. <i>Proceedings of the National Academy of Sciences of the United States of America</i>, 113(3): 554-559. • Groicher, M. & Maglie, R. B. (Forthcoming). COVID-19: Exploring linguistic indicators of conspiratorial thinking in the media. • Innes, H. & Innes, M. (2021). De-platforming disinformation: conspiracy theories and their control. <i>Information, Communication and Society</i>, DOI: 10.1080/1369118X.2021.1994631.

	<ul style="list-style-type: none"> • Joseph A, Fernandez V, Kritzman S, Eaddy I, Cook O, Lambros S, Jara Silva CE, Arguelles D, Abraham C, Dorgham N, Gilbert ZA, Chacko L, Hirpara RJ, Mayi BS, Jacobs R (2022). COVID-19 Misinformation on Social Media: A Scoping Review. <i>Cureus</i>, 14(4), e24601. DOI: 10.7759/cureus.24601. • Leal, H. (2020). Networked Disinformation and the Lifecycle of Online Conspiracy Theories. In M. Butter & P. Knight, <i>Routledge Handbook of Conspiracy Theories</i> (p. 518-532). London: Routledge, Taylor & Francis Group. • PEW Research Center. (2019, October 2). Americans Are Wary of the Role Social Media Sites Play in Delivering the News. Taken from PEW Research Center: https://www.journalism.org/2019/10/02/americans-are-wary-of-the-role-social-media-sites-play-in-delivering-the-news/ . Last accessed on 11/05/2021. • Quinn, E. K., Fazel, S. S. & Peters, C. E. (2020). The Instagram Infodemic: Cobranding of Conspiracy Theories, Coronavirus Disease 2019 and Authority-Questioning Beliefs. <i>Cyberpsychology, Behavior, and Social Networking</i>, 24(8): 573-577. DOI: 10.1089/cyber.2020.0663. • Roozenbeek, J. & van der Linden, S. (2019). Fake news game confers psychological resistance against online misinformation. <i>Palgrave Communications</i>, 5(12), 1–10. • WHO (2021). Fighting misinformation in the time of COVID-19, one click at a time. Taken from World Health Organization: https://www.who.int/news-room/feature-stories/detail/fighting-misinformation-in-the-time-of-covid-19-one-click-at-a-time. Last accessed on 11/05/2021. • Yüce, M., Adalı, E. & Kanmaz, B. (2021). An analysis of YouTube videos as educational resources for dental practitioners to prevent the spread of COVID-19. <i>Irish Journal of Medical Science</i>, 190(1): 19–26. doi: 10.1007/s11845-020-02312-5.
Sources providing a description of vaccine hesitancy	<ul style="list-style-type: none"> • WHO (2019). Ten threats to global health in 2019. Taken from World Health Organization: https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019. Last accessed on 11/05/2021.
Methodological reference	<ul style="list-style-type: none"> • Green, B., Johnson, C. & Adams, A. (2006). Writing narrative literature reviews for peer-reviewed journals: secrets of the trade. <i>Journal of Chiropractic Medicine</i>, 3(5): 101-117.

Table 1. Literature tracking sheet.

2.3 Presentation of Results

The narrative overview was carried out by breaking down the review questions into the following concepts: (1) conspiracy theories and conspiratorial thinking during the COVID-19 pandemic; (2) factors contributing to conspiratorial thinking; (3) consequences of conspiratorial thinking; (4) the role of social media; (5) strategies to counter conspiracy theories.

3. Discussion of Findings

3.1 Conspiracy theories and Conspiratorial thinking

The European Commission (2021) defines a conspiracy theory as “the belief that certain events or situations are secretly manipulated behind the scenes by powerful forces with negative intent.” While real conspiracies do exist, such as the Watergate scandal, or the unlawful collection of data by the National Security Agency (NSA) in the United States, later revealed by whistleblower Edward Snowden, many of the so-called conspiracies people believe in fall under the category of conspiracy theories. Whereas true conspiracies are based in fact and tend to be revealed by investigations, whistleblowers, or internal documents, conspiracy theories are not typically supported by evidence that can withstand a thorough investigation. In fact, a key feature of conspiracy theories is that they tend to spread despite not having solid evidence to support them (Lewandowsky & Cook, 2020). Conspiracy theories have several factors in common: an alleged secret

plot, a group of conspirators, ‘evidence’ that seems to support the theory, they falsely suggest that there are no coincidences and that everything is connected, they divide the world into good and bad, and they tend to scapegoat people and groups (European Commission, 2021).

A key factor that has been found to predict COVID-19 conspiracy beliefs is conspiratorial thinking, or the tendency to accept conspiratorial explanations for major events (Lantian, Wood, & Gjoneska, 2020). This characteristic, also referred to as conspiracy mentality (McCarthy, Murphy, Sargeant, & Williamson, 2021), has been the object of psychological research for decades and its existence is supported empirically. While it is seen as a single variable, individual differences can contribute to inter-individual variance of this factor. In other words, people tend to believe in conspiracy theories in varying degrees based on their level of conspiratorial thinking (Lantian, Wood, & Gjoneska, 2020). This is supported by research showing that people who believe in one conspiracy theory have a strong tendency to believe others are true, even when those theories are not directly related (Klein & Nera, 2020).

This type of thinking is characterised by certain traits, which have been outlined by Stephan Lewandowsky and John Cook (2020), and can be summarised in the acronym CONSPIR. Conspiracy theorists can believe in multiple Contradictory ideas at the same time, due to their intense commitment to disbelieving the official account, regardless of whether or not their belief system is incoherent. In the context of Covid-19, research has proven this characteristic, indicating strong intercorrelations between contradictory conspiracy beliefs (McCarthy,

Murphy, Sargeant, & Williamson, 2021). They also maintain Overriding Suspicion and skepticism towards the official account of events. This suspicion causes them to disregard and deny any ideas that go against their beliefs, considering them a part of the conspiracy. They tend to believe that there is Nefarious Intent behind the motivations of presumed conspirators, and to hold onto the idea that Something Must Be Wrong even when their more specific theories become untenable. Conspiracy theorists often present themselves as Persecuted Victims as well as courageous heroes, both targeted by, and fighting against the perpetrators of the conspiracy. Immunity to Evidence is the sixth characteristic, and conspiratorial thinkers tend to believe that all contradictory evidence must be part of the conspiracy. Stronger evidence against the perceived conspiracy merely indicates a stronger desire to remain undiscovered by the imagined perpetrators. Finally, they tend to Re-interpret Random events as being connected to the conspiracy. These characteristics help make the conspiracy theory extremely resilient to disproving, as any evidence to the contrary is seen as further evidence that the conspiracy exists, while the conspiratorial thinker interprets unrelated events in a way that supports their beliefs (Lewandowsky & Cook, 2020).

3.1.1 Factors that contribute to conspiratorial thinking

Various criminological and psychosocial factors interact at several levels to contribute to, and exacerbate conspiratorial thinking as well as the spread of conspiracy theories. Conspiracy beliefs have been shown to be linked to extremist and radicalized groups, as they provide reinforcement of existing ideologies and promote extremist intentions, especially in people with low self-control and weaker morality. These groups tend to feel powerless or marginalized, unable to exert sociopolitical control through normal means, and therefore turn to violent political actions, physical attacks, and destruction of property to reassert a form of political control (Šrol, Čavojová, & Mikušková, 2022). The Covid-19 pandemic has created a situation that further increases support for this type of violent radicalization by accentuating systemic racism and socio-economic disparities (Levinsson, Miconi, Li, Frounfelker, & Rousseau, 2021). This support for violent action is evident in events such as the attacks on 5G phone masts carried out by believers in conspiracy theories linking 5G to Coronavirus, and illegal and violent protests against Covid-19 regulations and vaccines (Douglas K., 2021). But this instrumentalization of conspiracy theories goes further than radical groups looking to exert political control. In fact, it has been shown that governments and political leaders from various nations have taken advantage of the viral nature of conspiratorial thinking to promote their own agendas (Levinsson, Miconi, Li, Frounfelker, & Rousseau, 2021).

Conspiracy theories have also been associated with a mental state known as anomie. This perception that the

social fabric of society is deteriorating, and moral standards are eroding has been shown to increase self-interested or antisocial behavior and decrease altruistic behavior and trust in others. In addition, it has proven to predict conspiracy beliefs and to be exacerbated by those beliefs in turn (McCarthy, Murphy, Sargeant, & Williamson, 2021). This antisocial behavior has been found to assume a wide range of forms, from a willingness to conspire, to prejudicial views of other groups, to intentions to engage in violent acts (Douglas K., 2021).

Douglas et al. (2017) identify three key psychological motives that may cause people to be drawn to conspiracy theories: epistemic, existential, and social motives. Epistemic motives refer to the desire to causally explain events, in order to understand the world around us. These motives can include curiosity when there is a lack of information, reducing uncertainty, or giving some sort of meaning to seemingly random events, as well as defending beliefs from disconfirmation. Conspiracy theories are particularly effective in this last motive, as even the most irrefutable evidence that goes against conspiracy theorists' beliefs can simply be considered part of the conspiracy, allowing people to hold onto their worldview (Lewandowsky, Oberauer, & Gignac, 2013). Interestingly, research indicates that persuasive cases for conspiracy theories may actually increase uncertainty in some cases (Jolley & Douglas, 2014). Van Prooijen, Klein, & Đorđević (2020), however, suggest an important distinction between anxious uncertainty (uncertainty as an anxious emotional experience) and cognitive uncertainty (uncertainty due to a lack of information). Anxious uncertainty is usually generated following threatening and consequential events, and has been found to be an important driver of conspiracy beliefs, whereas cognitive uncertainty does not have the same effect (Van Prooijen, Klein, & Đorđević, 2020). Furthermore, anxiety itself is highly predictive of conspiratorial thinking (Hettich, et al., 2022). It seems fair to say, then, that the COVID-19 pandemic has created an ideal environment for the spread of conspiracy theories.

Existential motives represent the need to feel safe, secure, and able to exert control over one's environment. People have been found to be more likely to turn to conspiracy theories when they are anxious (Grzesiak-Feldman, 2013) or when they feel like they lack control (Van Prooijen & Acker, 2015; Olesky, Wnuk, Maison, & Łyś, 2020). Conspiratorial 'explanations' offer believers a false sense of control and agency and are especially likely in situations of crisis and uncertainty, such as the COVID-19 pandemic (European Commission, 2021). Interestingly, it appears that conspiratorial thinking may not eliminate the perception of risk entirely, rather those who believe in conspiracy theories seem to perceive the risk to health as lower than the risks the pandemic poses to the economy and freedom (Hughes, et al., 2022).

Social motives, such as the desire to belong and to maintain a positive image of the self and in-group, can also influence conspiracy beliefs. When this positive image

is threatened, conspiracy theories may assist people in defending it by identifying a menacing out-group that is to blame for current problems (Douglas, Sutton, & Cichocka, 2017). This creates a simpler, more concrete target for the conspiracy theorists to combat. This effect is evident in a study by Olesky et al. (2020) which found that the belief that hidden groups use pandemics for their own purposes was related to increased acceptance of xenophobic policies.

The way people evaluate information is considered another factor that influences belief in conspiracy theories. The term cognitive style refers to relatively stable ways in which people obtain and process information. These styles can include biases, heuristics, attitudes, motives, and other beliefs. One of the primary distinctions in cognitive styles is intuitive (or System 1) versus analytical (or System 2) thought processes (Lantian, Wood, & Gjoneska, 2020). Whereas analytical thinking is relatively slow and requires conscious effort and a focus on details, intuitive thinking is quick, effortless, and considers information from a more general perspective (Norris & Epstein, 2011). While we all use both styles based on the situation, certain people tend to rely on one style more than the other. An intuitive thinking style has been found to predict belief in various topics, including pseudoscience and conspiracy theories, while analytic thinking is negatively associated with belief in conspiracy theories. This may be because analytical thinkers tend to consider the details which may make conspiracy theories seem less plausible, details which are often overlooked by more intuitive thinkers (Lantian, Wood, & Gjoneska, 2020). For example, Pennycook and Rand (2019) found that people with a more analytical cognitive style were better at distinguishing between factual and false news content than those with a more intuitive style. More importantly, this effect occurred even when the news headlines were consistent with the participants' political ideology. It would seem, therefore, that a predisposition to rational thinking may render people less susceptible to misinformation, even when this information corresponds with their existing belief structure. More recently, an analytical cognitive style assisted participants in recognizing COVID-19 misinformation (Pennycook et al., 2020), and was found to have a negative impact on conspiratorial beliefs (Kim & Kim, 2021) as well as the sharing of COVID-19 misinformation (Nurse et al., 2022).

Heuristics, or 'mental shortcuts', are a prominent feature of intuitive thinking that people use when evaluating risk and uncertainty. They provide rough estimates based on the most relevant (or seemingly relevant) information (Lantian, Wood, & Gjoneska, 2020). Since surprising or shocking information is generally easier to recall, people with a tendency towards a more intuitive thinking style may be more easily influenced by this type of information, without critically examining the information or its source (Bangertner, Wagner-Egger, & Delouée, 2020).

A second mechanism that may affect the belief in conspiratorial theories and misinformation is the illusory truth

effect. In this phenomenon, people tend to rate statements they have encountered frequently as more truthful. The repetition of statements makes them easier to process and comprehend, which leads people to the sometimes-erroneous conclusion that the information is more truthful. Interestingly, this effect may be present even when people have prior knowledge of the truth, causing them to evaluate as truthful statements they know to be false (Fazio, Brashier, Payne, & March, 2015).

People tend to assimilate information in a way that is biased towards confirming their preexisting beliefs (Scherer & Pennycook, 2020). Therefore, when presented with balanced arguments, people of different belief systems tend to polarize, not converge, as they assimilate only the information that corresponds to their worldviews (Kahan, Braman, Cohen, Gastil, & Slovic, 2010). This results in the same information being perceived in different ways. By only considering and processing information that confirms their views, conspiracy theorists remain cemented in their positions.

The source of the information is also relevant. When people are presented with conflicting points of view, they will generally consider information that originates from a source within a group they consider themselves part of as more reliable (Benegal & Scruggs, 2018). Since the internet has made it much easier to form large groups of people with similar points of view, conspiratorial thinkers can more easily access sources of information that correspond with their outlooks.

Other traits of conspiratorial thinkers indicated by the existing literature include illusory pattern perception, or the tendency to perceive causal relationships that do not truly exist, and an overactive sense of agency perception, which is the tendency to perceive others' actions as intentional and purposeful when they are not (Van Prooijen, Klein, & Đorđević, 2020). Through these mechanisms, conspiratorial thinkers may be more susceptible to inferring connections between random, unrelated events, as well as assuming that random or accidental actions were in fact planned by individuals with nefarious intentions. Consequently, the likelihood of perceiving a conspiracy where one does not exist increases.

Given that the mechanisms discussed are characteristic of intuitive, emotional thinking, how is it, then, that many conspiracy theories are so elaborately organized? It has been proposed that many of these theories may begin as an intuitive reaction to distressing, confusing events, which people then attempt to justify using motivated analytic thinking, embracing evidence that supports their view and dismissing evidence to the contrary. This type of motivated reasoning applies analytical thinking to support the conspiracy theory, which was originally formed through intuitive processes. Believers may make incorrect inferences based on correct scientific facts, or carefully select only the parts of these facts that seem to support their beliefs. This, accompanied by in-group communication with similar-minded individuals, allows for the formation of an elaborate theory that can seem well-grounded in ev-

idence. To explain in simpler terms, “when assessing conspiracy theories, people often do not act like independent scientists or judges, but as lawyers motivated to defend their case” (Van Prooijen, Klein, & Đorđević, 2020).

3.2 Consequences of conspiratorial thinking and misinformation

It has been suggested that our tendency to believe in conspiracy theories may have evolved as a defense mechanism against hostile groups with malicious intentions, allowing our ancestors to recognize potential threats based on intuitive feelings towards those groups (Van Prooijen & Van Vugt, 2018). By this logic, the formation of a conspiracy theory based on instinctive reactions is not inherently wrong. This is how true conspiracies are uncovered, and those who instinctually disbelieve every conspiracy theory may be making the same error in logic as those who believe all of them, falling prey to motivated reasoning to justify their disbelief. The true danger of conspiratorial thinking occurs when we do not impartially and objectively evaluate all the evidence that proves – or disproves – a particular theory (Van Prooijen, Klein, & Đorđević, 2020).

Despite its possibly adaptive origins, conspiracy belief has been found to have many negative effects, such as increased feelings of powerlessness, disillusionment, mistrust, and anomie (Jolley & Douglas, 2014). It has also been shown to increase political apathy (Uscinski & Parent, 2014) and reduce trust in government institutions, including those not connected to conspiratorial accusations (Einstein & Glick, 2015; McCarthy, Murphy, Sargeant, & Williamson, 2021), as well as increasing the likelihood of engaging in counter-normative behavior (Jolley, Meleady, & Douglas, 2020) and decreasing the probability of engaging in protective health behaviors including those related to Covid-19 (McCarthy, Murphy, Sargeant, & Williamson, 2021). Furthermore, conspiracy theories can cause intergroup difficulties and increase stigma towards certain groups of people, stigma which can then spread to other outgroups, including those unrelated to the original theory (Jolley, Meleady, & Douglas, 2020). It has even been shown that conspiracy theories can accelerate the process of radicalization by strengthening the “othering” of outgroups (Bartlett & Miller, 2010). The danger of conspiracy theories for intergroup relations is evidenced by the alarming increase in hate crimes and violence against individuals who identify as Asian due to the association of the virus with China (Levinsson, Miconi, Li, Frounfelker, & Rousseau, 2021).

In the medical field, belief in conspiracy theories and misinformation has led to a “dark renaissance” of vaccine-preventable illness, caused by erroneous beliefs that the diseases do not truly exist, or that vaccines are dangerous. This is evidenced, for example, by the fact that in 2000, Measles was declared eradicated in the United States, while 2020 saw record outbreaks across the country. Meanwhile, Europe, which only recorded 5,273 cases of

Measles in 2016, saw 84,462 cases in 2018 (Grimes D., 2020). This is an unacceptable increase in an era where such diseases are preventable. The World Health Organization (WHO) itself listed Vaccine Hesitancy as one of the top ten health risks that faced the world in 2019 (WHO, 2019). This hesitancy has of course come to the forefront during the COVID-19 pandemic, which has seen large-scale protests against vaccines, as well as the emergence of various conspiracy theories.

3.3 The Role of Social Media

Social media and the internet have played an important role in the spread of information – and disinformation – during the COVID-19 pandemic. The most commonly (ab)used platforms include Twitter, YouTube, and Facebook (Yüce, Adalı, & Kanmaz, 2021). In fact, in the last quarter of 2020, Facebook was forced to adapt its policies to confront an explosion in accounts publishing information that was deemed a risk for public safety. More than 100 networks were removed from the site due to their engagement in what has been called “coordinated inauthentic behavior designed to manipulate public opinion”, and other networks have adopted similar policies (Innes & Innes, 2021). One study evaluating videos on YouTube that expressed information on reducing Covid-19 spread in dental offices found that less than 4% of these were of high quality, while 25% contained non-factual or misleading information (Yüce, Adalı, & Kanmaz, 2021).

Current mass media, such as Facebook, Twitter, and Instagram present users with the opportunity to access a wide variety of opinions and information, but they can also provide a platform that amplifies rumors and other misinformation, including conspiracy theories (Del Vittorio, et al., 2016). Social media places users directly in contact with information producers in a context that is not intermediated by any reliable authority, which increases the risk of spreading misinformation (Caballero, 2020). Although many people consider themselves aware of the potential for poor quality news on social media sites, many continue to obtain news from such sites, with over half of Americans reporting they get news from social media (PEW Research Center, 2019). Studies have shown that those who trust information from social media tend to also believe in conspiracy theories (Earnshaw, et al., 2020). It has also been found that people who are driven by self-promotion and entertainment, as well as those with deficient self-regulative abilities are more likely to then share information of dubious origin (Joseph, et al., 2022). Research into the presentation of COVID-19 on social media has shown that it is frequently associated with general attitudes of mistrust and beliefs that question authority, potentially contributing to the mistrust of the government and mainstream media (Quinn, Fazel, & Peters, 2020). These conspiratorial beliefs in turn were associated with reduced engagement in health-protective behaviors (Joseph, et al., 2022).

The mechanisms of social media can be especially effective in spreading conspiracy theories when the previously discussed heuristic mechanisms and intuitive thinking are considered. A common sight on social media is polarized communication networks, which form a sort of closed system in which interaction occurs between users with similar points of view. Consequently, most of the information shared reinforces the preexisting ideologies inside these networks (Leal, 2020). Therefore, people who support conspiracy theories frequently find themselves in a sort of echo chamber, where the same information is repeated often and presented in an emotionally activating manner that makes it easier to recall by sources that seem to share similar points of view to those of the readers.

One of the principal problems presented by social media is the pervasiveness of the messages. In fact, even when messages regarding COVID-19 conspiracies are posted with the intention of rejecting or condemning these conspiracies, the messages seem to have the opposite of the desired effect, causing the information to spread even further (Ahmed, Vidal-Alaball, Downing, & López Seguí, 2020). The more attention is drawn towards these messages, the faster they spread, recalling the adage, “any publicity is good publicity”. Even the complete disabling of accounts associated with the dissemination of harmful or false information appears to be ineffective in the long run, as the perceived violation of free speech may actually serve to strengthen the follower base of the removed thought leaders. These leaders can then find ways to either continue their activities on the same platform by using false accounts, or by simply shifting to other platforms that may lack the same level of content control (Innes & Innes, 2021).

People’s susceptibility to misinformation, especially online misinformation, can be affected by diverse factors. One such factor, particularly relevant to this field, is explained by the so-called deficit hypothesis, which sustains that people who believe misinformation lack the knowledge or literacy necessary to discriminate between fact and fiction (Scherer & Pennycook, 2020). For instance, older adults tend to share misinformation more frequently than younger adults because they have lower media literacy, making them less able to identify reliable online sources (Brashier & Schacter, 2020). In this day and age, it is clear that media and digital education is vital to assist people in determining what constitutes a reliable source of information.

Media literacy is a concept that has become increasingly important in recent years, one that, however, has yet to receive a widely accepted definition. What most authors seem to agree upon is that a media literate person has the necessary skills and competencies to evaluate and assign meaning to media messages. Media literacy effectively allows an individual to transition from a passive consumer of media to an active one who can use the media as a tool to achieve their own goals while avoiding potentially negative consequences. It is a skill set that must be developed constantly, as the format of media and their

messages is constantly evolving (Potter, 2013). In the context of the COVID-19 pandemic, attempts have been made to increase social media users’ ability to evaluate messages by tagging misinformation as contrary to advice of public health officials, or by providing a message that gives users an “accuracy nudge” by reminding them that some information may be misleading (Pennycook et al., 2020; Joseph, et al., 2022).

3.4 Combatting conspiracy theories

In the ongoing battle against the spread of misinformation and conspiracy theories, three main categories of techniques have been identified. The first of these categories, prebunking techniques, aims to intervene before conspiracy theories can take root. Jolley and Douglas (2017) found that exposure to accurate information made people less likely to be influenced by conspiracy theories presented to them successively, while the presentation of this information after exposure to conspiracy theories did not have the same effect. They refer to this method as a sort of “inoculation”, similar to the functioning of a vaccine against an illness, that provides people with a defense against conspiracy theories. The central idea is to warn people beforehand that the things they read may contain misinformation, encouraging them to think critically about it. This method was found to be more effective than simply providing people with correct facts, without informing them about potential misinformation (Van der Linden et al., 2017). An example of this type of strategy is the online game, *Bad News*, created by van der Linden (Roozenbeek & van der Linden, 2019), which allows people to simulate the use of misinformation techniques to build followers on an imaginary website. This game was found to effectively inoculate players to common misinformation techniques. Pennycook et al. (2020) also found that a simple reminder to consider the accuracy of information was enough to cause a significant increase in truth discernment, as well as decreasing the likelihood of sharing misinformation. Additionally, by making readers aware of common characteristics of conspiratorial messages, it may be possible to put them on guard when these traits are recognized (Groicher & Maglie, Forthcoming).

Instead of targeting the types of misinformation that lead people to believe in conspiracy theories, the second category of techniques, preventative strategies, focuses on reducing the motives that drive conspiratorial thinking (Uscinski, et al., 2020). There appears to be a lack of research, however, into what exactly these types of strategies might look like. Epistemic motives that push us to seek causal explanations for events are particularly potent in large-scale situations where there is a lack of available information (Douglas, Sutton, & Cichocka, 2017). It stands to reason that strategies aimed at maintaining transparency and keeping people informed could have positive effects on this motive. Existential motives, which respond to people’s need to feel safe, secure, and in control of their envi-

ronment, are particularly prevalent in groups where people feel powerless and anxious (Douglas, Sutton, & Cichocka, 2017). Consequently, strategies that empower people and groups may serve to make those people less vulnerable to conspiracy theories. Finally, social motives such as belonging to and maintaining a positive image of an in-group are especially relevant in groups with low social status or those who feel threatened (Douglas, Sutton, & Cichocka, 2017). In this case, strategies that improve the group image and favor relations between groups could decrease the appeal of conspiracy theories as a defensive reaction against the disadvantaged position a group may find itself in. In summary, by reducing uncertainty, increasing perceived control, and promoting a positive group- and self-image, the effects of a predisposition towards conspiratorial thinking could be mitigated.

Corrective strategies, also known as “debunking” techniques, intervene after a conspiracy theory has already taken root, with the goal of correcting erroneous beliefs. They have been found to be less effective than the other types of strategies, and while exposure to anti-conspiracy arguments may be able to decrease belief in those theories, they appear to have limited effects on people’s actual behavior (Jolley & Douglas, 2017). Corrective strategies are also hindered by the characteristics of conspiratorial thinking which cause believers to deny any information provided by authority figures that goes counter to their worldview (Uscinski, et al., 2020). However, it has been hypothesized that corrective messages may be able to bypass this resistance to contradictory information if they originate from sources that are part of the conspiracy theorist’s ingroup or political party (Benegal & Scruggs, 2018). A potential strategy, therefore, could be to seek out party leaders and media personalities with whom the target population identifies who can transmit corrective information. Another possibility could be to make anti-conspiratorial arguments more interesting, including more details as opposed to merely presenting the facts that refute the conspiracy theory. This may allow them to better compete with the novel, controversial nature of conspiracy theories that makes them so attractive (Jolley & Douglas, 2017). It has been suggested that social media may be able to help in this effort, rather than only being part of the problem, since it can provide a platform for the dissemination of correct information. In the case of COVID-19, this could be information regarding vaccines, for example. It is vital that this type of message be understandable, balanced so as to address the concerns of the target audience, and delivered by trusted health providers (McCarthy, Murphy, Sargeant, & Williamson, 2021).

4. Conclusions

In this literature review we have presented the prevalent literature on conspiracy theories and their role in the COVID-19 pandemic, as well as the factors that predis-

pose people to be vulnerable to them, and the adverse consequences they can have on society. The uncertainty and fear generated by the pandemic has created an ideal environment for the spread of conspiracy theories and it is abundantly clear that, in order to better protect the population from occurrences such as this, it is necessary for people to have correct information and to cooperate. Conspiracy theories and misinformation make it difficult to distinguish between reliable and unreliable information and cause some people to distrust those who are trying to mitigate the effects of the pandemic. We have also discussed the role of social media in the spread of conspiracy theories, having become the principal setting in which we share ideas and information. This incredible resource, however, carries with it the risk of putting users in contact with too much information without the necessary tools to effectively use it. Finally, we have indicated three broad categories of strategies that are being used to combat conspiracy theories and misinformation, in the hope that more techniques can be identified. It is vital that effective interventions are implemented to slow the spread of conspiracy theories and assist people to more ably navigate the massive quantities of information that are now available without falling prey to misinformation.

References

- Ahmed, W., Vidal-Alaball, J., Downing, J. & López Seguí, F. (2020). COVID-19 and the 5G Conspiracy Theory: Social Network Analysis of Twitter Data. *Journal of medical Internet research*, 22(5), 1438-8871.
- Bangerter, A., Wagner-Egger, P. & Delouvé, S. (2020). How conspiracy theories spread. In M. Butter, & P. Knight, *Routledge Handbook of Conspiracy Theories* (p. 206-218). London: Routledge.
- Bartlett, J. & Miller, C. (2010). *The power of unreason: conspiracy theories, extremism and counter-terrorism*. London: Demos.
- Benegal, S. D. & Scruggs, L. A. (2018). Correcting misinformation about climate change: the impact of partisanship in an experimental setting. *Climatic change*, 148(1), 61-80. doi:10.1007/s10584-018-2192-4.
- Brashier, N. M. & Schacter, D. L. (2020). Aging in an era of fake news. *Current Directions in Psychological Science*, 29(3), 316-323.
- Caballero, E. G. (2020). Social network analysis, social big data and conspiracy theories. In Taylor & Routledge, *Routledge Handbook of Conspiracy Theories* (p. 135-148). London: Butter, M. & Knight, P.
- Del Vittorio, M., Bessi, A., Zollo, F., Petroni, F., Scala, A., Caldarelli, G., Stanley, H. & Quattrociocchi, W. (2016). The spreading of misinformation online. *Proceedings of the National Academy of Sciences of the United States of America*, 113(3), 554-559.
- Douglas, K. M. (2021). Are conspiracy theories harmless? *The Spanish Journal of Psychology*, 24 (13), 1-7.
- Douglas, K. M., Sutton, R. M. & Cichocka, A. (2017). The Psychology of Conspiracy Theories. *Current Directions in Psychological Science*, 26(6): 538-542.
- Earnshaw, A. V., Eaton, L. A., Kalichman, S. C., Brousseau, N. M., Hill, E. C. & Fox, A. B. (2020). COVID-19 conspiracy beliefs, health behaviors, and policy support. *Translational*

- Behavioral Medicine*, 10(4): 850-856, doi: 10.1093/tbm/ibaa090.
- Einstein, K. & Glick, D. (2015). Do I think BLS data are BS? The consequences of conspiracy theories. *Political Behavior*, 37(3): 679–701.
- European Commission. (2021). Identifying Conspiracy Theories. *Taken from European Commission*: https://ec.europa.eu/info/identifying-conspiracy-theories_en. Last accessed on 11/05/2021.
- Fazio, L. K., Brashier, N. M., Payne, B. K. & March, E. J. (2015). Knowledge Does Not Protect Against Illusory Truth. *Journal of Experimental Psychology: General*, 144 (5), 993–1002.
- Green, B., Johnson, C. & Adams, A. (2006). Writing narrative literature reviews for peer-reviewed journals: secrets of the trade. *Journal of Chiropractic Medicine*, 3(5): 101-117.
- Grimes, D. R. (2020). Health disinformation & social media: The crucial role of information hygiene in mitigating conspiracy theory and infodemics. *EMBO Reports*, 21(11): DOI: 10.15252/embr.202051819.
- Grimes, D. R. (2021). Medical disinformation and the unviable nature of COVID-19 conspiracy theories. *PLoS ONE*, 16(3): e0245900. <https://doi.org/10.1371/journal.pone.0245900>.
- Groicher, M. & Maglie, R. B. (Forthcoming). *COVID-19: Exploring linguistic indicators of conspiratorial thinking in the media*.
- Grzesiak-Feldman, M. (2013). The effect of high-anxiety situations on conspiracy thinking. *Current Psychology*, 32(1): 100-118.
- Hettich, N., Beutel, M., Ernst, M., Schliessler, C., Kampling, H., Kruse, J. & Braehler, E. (2022). Conspiracy endorsement and its associations with personality functioning, anxiety, loneliness, and sociodemographic characteristics during the COVID-19 pandemic in a representative sample of the German population. *PLoS ONE*, 17(1), 1-15. 10.1371/journal.pone.0263301.
- Hughes, J., Efstratiou, A., Komer, S., Baxter, L., Vasiljevic, M. & Leite, A. (2022). The impact of risk perceptions and belief in conspiracy theories on COVID-19 pandemic-related behaviors. *PLoS One*, 17(2), e0263716. <https://doi.org/10.1371/journal.pone.0263716>.
- Innes, H. & Innes, M. (2021). De-platforming disinformation: conspiracy theories and their control. *Information, Communication and Society*, DOI: 10.1080/1369118X-2021.1994631.
- Islam, M. S., Sarkar, T., Khan, S. H., Mostofa Kamal, A., Hasan, S. M., Kabir, A., Yeasmin, D., Islam, M. A., Chowdhury, K. I., Anwar, K. S., Chughtai, A. A. & Seale, H. (2020). COVID-19–Related Infodemic and Its Impact on Public Health: A Global Social Media Analysis. *The American Journal of Tropical Medicine and Hygiene*, 103(4), 1621-1629.
- Jolley, D. & Douglas, K. M. (2014). The social consequences of conspiracism: Exposure to conspiracy theories decreases the intention to engage in politics and to reduce one's carbon footprint. *British Journal of Psychology*, 105(1): 35-56. doi: 10.1111/bjop.12018.
- Jolley, D. & Douglas, K. M. (2017). Prevention is better than cure: Addressing anti-vaccine conspiracy theories. *Journal of Applied Social Psychology*, 47, 459-469. DOI: 10.1111/jasp.12453.
- Jolley, D. & Paterson, J. (2020). Pylons ablaze: Examining the role of 5G COVID-19 conspiracy beliefs and support for violence. *British Journal of Social Psychology*, 59(3): 628-640. DOI:10.1111/bjso.12394.
- Jolley, D., Meleady, R. & Douglas, K. M. (2020). Exposure to intergroup conspiracy theories promotes prejudice which spreads across groups. *British Journal of Psychology*, 111(1): 17-35. doi: 10.1111/bjop.12385.
- Joseph A., Fernandez V., Kritzman S., Eaddy I., Cook O., Lambros S., Jara Silva C.E., Arguelles D., Abraham C., Dorgham N., Gilbert Z.A., Chacko L., Hirpara R.J., Mayi B.S., Jacobs R. (2022). COVID-19 Misinformation on Social Media: A Scoping Review. *Cureus*, 14(4), e24601. DOI 10.7759/cureus.24601.
- Kahan, D. M., Braman, D., Cohen, G. L., Gastil, J. & Slovic, P. (2010). Who Fears the HPV Vaccine, Who Doesn't, and Why? An Experimental Study of the Mechanisms of Cultural Cognition. *Law and Human Behavior*, 34(6): 501–516.
- Kim, S. & Kim, S. (2021). Searching for General Model of Conspiracy Theories and Its Implication for Public Health Policy: Analysis of the Impacts of Political, Psychological, Structural Factors on Conspiracy Beliefs about the COVID-19 Pandemic. *International Journal of Environmental Research & Public Health*, 18(1), 266-294. <https://doi.org/10.3390/ijerph18010266>.
- Klein, O. & Nera, K. (2020). Social Psychology of Conspiracy Theories. In M. B. Knight, *Routledge Handbook of Conspiracy Theories* (p. 121-134). London: Routledge, Taylor & Francis Group.
- Laera D., Colucci M., Bottalico M., Franco T., Grattagliano I., Violante M., Volpe G., Taurino A. (2022). Who believes Fake News? Psychological and criminological aspects of the protagonists of the post-truth era. *Rassegna Italiana di Criminologia*, 16(1), 12-23. <https://doi.org/10.7347/RIC-012022-p12>
- Lantian, A., Wood, M. & Gjoneska, B. (2020). Personality traits, cognitive styles and worldviews associated with beliefs in conspiracy theories. In M. Butter & P. Knight, *Routledge Handbook of Conspiracy Theories* (p. 155-167). London: Routledge, Taylor & Francis Group.
- Leal, H. (2020). Networked Disinformation and the Lifecycle of Online Conspiracy Theories. In M. Butter & P. Knight, *Routledge Handbook of Conspiracy Theories* (p. 518-532). London: Routledge, Taylor & Francis Group.
- Levinson, A., Miconi, D., Li, Z., Frounfelker, R. & Rousseau, C. (2021). Conspiracy Theories, Psychological Distress, and Sympathy for Violent Radicalization in Young Adults during the COVID-19 Pandemic: A Cross-Sectional Study. *International Journal of Environmental Research and Public Health*, 18(15): 7846. <https://doi.org/10.3390/ijerph181-57846>.
- Lewandowsky, S. & Cook, J. (2020). *The Conspiracy Theory Handbook*. George Mason University Center for Climate Change Communication.
- Lewandowsky, S., Oberauer, K. & Gignac, G. E. (2013). NASA faked the moon landing - Therefore, (climate) science is a hoax: An anatomy of the motivated rejection of science. *Psychological Science*, 24(5): 622-633.
- McCarthy, M., Murphy, K., Sargeant, E. & Williamson, H. (2021). Examining the relationship between conspiracy theories and COVID-19 vaccine hesitancy: A mediating role for perceived health threats, trust, and anomie? *Analyses of Social Issues and Public Policy*, 22(1): 106–129. DOI: 10.1111/asap.12291.
- Norris, P. & Epstein, S. (2011). An experiential thinking style: its facets and relations with objective and subjective criterion measures. *Journal of Personality*, 79(5), 1043–1080.
- Nurse, M., Ross, R., Isler, O. & Rooy, D. (2022). Analytic thinking predicts accuracy ratings and willingness to share

- COVID-19 misinformation in Australia. *Memory & Cognition*, 50(2): 425-434. doi: 10.3758/s13421-021-01219-5.
- Oleksy, T., Wnuk, A., Maison, D. & Ły, A. (2020). Content matters. Different predictors and social consequences of general and government-related conspiracy theories on COVID-19. *Personality and Individual Differences*, 168, https://doi.org/10.1016/j.paid.2020.110289.
- Pennycook, G. & Rand, D. G. (2019). Lazy, not biased: susceptibility to partisan fake news is better explained by lack of reasoning than by motivated reasoning. *Cognition*, 188, 39-50. doi: 10.1016/j.cognition.2018.06.011.
- Pennycook, G., McPhetres, J., Zhang, Y., Lu, J. G. & Rand, D. G. (2020). Fighting COVID-19 misinformation on social media: experimental evidence for a scalable accuracy-nudge intervention. *Psychological Science*, 31(7), 770-780.
- PEW Research Center. (2019, October 2). *Americans Are Wary of the Role Social Media Sites Play in Delivering the News*. Taken from PEW Research Center: https://www.journalism.org/2019/10/02/americans-are-wary-of-the-role-social-media-sites-play-in-delivering-the-news/. Last accessed on 11/05/2021.
- Potter, W. J. (2013). Review of Literature on Media Literacy. *Sociology Compass*, 7(6): 417-435. DOI: 10.1111/soc4.12041.
- Quinn, E. K., Fazel, S. S. & Peters, C. E. (2020). The Instagram Infodemic: Cobranding of Conspiracy Theories, Coronavirus Disease 2019 and Authority-Questioning Beliefs. *Cyberpsychology, Behavior, and Social Networking*, 24(8): 573-577. DOI: 10.1089/cyber.2020.0663.
- Roozenbeek, J. & van der Linden, S. (2019). Fake news game confers psychological resistance against online misinformation. *Palgrave Communications*, 5(12), 1-10.
- Scherer, L. D. & Pennycook, G. (2020). Who Is Susceptible to Online Health Misinformation? *AJPH Perspectives*, 110 (S3), Available at https://doi.org/10.2105/AJPH.2020.305908.
- Šrol, J., Čavojská, V. & Mikušková, E. (2022). Finding Someone to Blame: The Link Between COVID-19 Conspiracy Beliefs, Prejudice, Support for Violence, and Other Negative Social Outcomes. *Frontiers in Psychology*, 12: 726076. DOI: 10.3389/fpsyg.2021.726076.
- Uscinski J.E., Enders A.M., Klofstad C., Seelig M., Funchion J., Everett C., Wutchy S., Premaratne K. & Murthi M. (2020). Why do people believe COVID-19 conspiracy theories? *Harvard Kennedy School (HKS) Misinformation Review*. DOI: https://doi.org/10.37016/mr-2020-015.
- Uscinski, J., & Parent, J. (2014). *American Conspiracy Theories*. Oxford: Oxford University Press.
- Van der Linden, S., Leiserowitz, A., Rosenthal, S. & Maibach, E. (2017). Inoculating the public against misinformation about climate change. *Global Challenges*, 1(2): 1600008. https://doi.org/10.1002/gch2.201600008
- Van Prooijen, J., Klein, O. & Đorđević, J. M. (2020). Social-cognitive processes underlying belief in conspiracy theories. In M. B. Knight, *Routledge Handbook of Conspiracy Theories* (p. 168-180). London: Routledge, Taylor & Francis Group.
- Van Prooijen, J. & Acker, M. (2015). The influence of control on belief in conspiracy theories: Conceptual and applied extensions. *Applied Cognitive Psychology*, 29(5): 753-761. https://doi.org/10.1002/acp.3161
- Van Prooijen, J. & Van Vugt, M. (2018). Conspiracy theories: evolved functions and psychological mechanisms. *Perspectives on Psychological Science*, 13(6), 770-88.
- WHO (2019). Ten threats to global health in 2019. *Taken from World Health Organization*: https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019. Last accessed on 11/05/2021.
- WHO (2021). *Fighting misinformation in the time of COVID-19, one click at a time*. Taken from World Health Organization: https://www.who.int/news-room/feature-stories/detail/fighting-misinformation-in-the-time-of-covid-19-one-click-at-a-time. Last accessed on 11/05/2021.
- Yüce, M., Adalı, E. & Kanmaz, B. (2021). An analysis of YouTube videos as educational resources for dental practitioners to prevent the spread of COVID-19. *Irish Journal of Medical Science*, 190(1): 19-26. doi: 10.1007/s11845-020-02312-5.