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COVID-19 conspiracy theories and the psychology of belief

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In this article we explore the phenomenon of COVID-19 conspiracy theories and why they have captured the popular imagination over the course of the pandemic. Indeed, far from benign internet curiosities, COVID-19 conspiracy theories have serious detrimental consequences reaching far beyond those who profess them – we will specially examine their effect on COVID-19 vaccination. Yet despite their harm, such beliefs prove appealing and enduring because of the mixture of understanding, safety and belonging that they claim to offer in uncertain times. Furthermore, they have the potential to widen pre-existing health inequalities amongst already disenfranchised groups. Finally, we look at what is being done to counter such misinformation.

KEY WORDS: COVID-19, public health, health inequalities, health psychology, health policy.

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INTRODUCTION

Conspiracy theories that reject the standard explanation for an event, instead implicating the actions of a covert and often powerful group, have notably filtered into the mainstream during the course of the COVID-19 pandemic. A significant proportion of the population who seem to have thus far trusted official information are suddenly choosing to express doubts regarding the origins of the COVID-19 virus and the motives behind the COVID-19 vaccine, with wide-reaching consequences for the entire population. In this article we will examine the literature on the consequences for COVID-19 health protective behaviours and specially COVID-19 vaccination once individuals begin to subscribe to COVID-19 conspiracy theories, why individuals may choose to believe in conspiracy theories generally and COVID-19 vaccine conspiracy theories more specifically and, finally, what the government can do to counter such COVID-19 vaccine conspiracy theories.

WHY ARE COVID-19 CONSPIRACY THEORIES IMPORTANT?

Understanding this issue is important in the current climate. Early research into COVID-19 conspiracies has

shown that the belief that COVID-19 is a hoax is negatively correlated with COVID-19 health-protective behaviours, thus reducing compliance with social distancing measures and vaccine uptake. Those who believe COVID-19 was maliciously unleashed upon the world are more likely to engage in hoarding behaviour [1]. Misinformation that has gained considerable traction through the pandemic include the false beliefs that COVID-19 vaccines contain 'microchips' that can track and control individuals, that the vaccines can alter an individual's DNA, that COVID-19 vaccines can cause infertility or death, that pharmaceutical companies have falsified the results of clinical trials and that the vaccines contain ingredients not acceptable to various faith groups. Whilst baseless, these myths have contributed towards vaccine hesitancy across the world [2]. COVID-19 conspiracy theories are also being used by extremists to divide communities and incite hatred [3]. Thus, whilst these beliefs may seem like harmless eccentricities spilling over from the internet into the real world, they have serious consequences for far more people than just those who hold them [1].

WHO IS DRAWN TO CONSPIRACY THEORIES?

Whilst the internet can be a nexus for misinformation and has certainly received considerable media coverage in the discussion regarding vaccine hesitancy, conspiracy theories long predate the internet. The internet may provide a vector for the spread of COVID-19 conspiracy theories, but it fails to explain why such ideas are appealing and enduring. In an attempt to begin to understand why COVID-19 conspiracy theories are being posted, propagated and shared by many people, we consider the available evidence on who is more likely to believe in conspiracy theories and the factors at play in the psychology of belief for these individuals.

Research into conspiracy theories prior to the pandemic had already demonstrated that belief in conspiracy theories is positively associated with intuitive rather than analytic thinking. As a result, education is negatively correlated with conspiratorial belief as better educated individuals have higher analytical skills and are less likely to attribute agency and intentionality where it does not exist. Similarly, confirmation bias has been demonstrated to play a role in conspiratorial belief [4]. It has also been observed that illusory pattern perception plays a role in conspiracy theories, as individuals seek to make sense of uncertainty and attribute meaning to a series of unrelated stimuli. An illustration of this phenomena is the fact that gamblers have been shown to be more likely to detect patterns in random stimuli than non-gamblers [5].

Whilst the above highlights factors that are at play in conspiratorial belief more generally, there are factors specific to the COVID-19 pandemic that increase the likelihood of conspiratorial belief. It has been observed that belief in conspiracy theories strengthens in times of crisis, particularly whenever the consequences of events are significant and yet the explanation is paradoxically mundane. It has been demonstrated that anxiety-provoking societal crisis events such as terrorism, natural disasters, or war have all been correlated with conspiracy theories [6]. So, it is perhaps not surprising, given the depths of the crisis we have faced since the pandemic began in early 2020, that some have looked for answers beyond that of a novel virus arising by chance.

Various individual and group characteristics have been positively correlated with conspiratorial belief. It has been shown that those who feel disenfranchised due to lower social status, whether from income or race, are more likely to believe in conspiracy theories [7]. A fundamental aspect of conspiracy theories is mistrust in the official narrative and evidence, and these theories are most frequently believed by the members of society who already mistrust respective social and political systems [7]. Additionally, conspiracy theories can provide an explanation of a group's low status, typically that dominant groups are conspiring against them. However, such theories often draw on historical injustices which serve to provide a degree of validity. One need only read of the

Tuskegee Study, where 128 African-Americans died as a result of being denied treatment for syphilis, to understand why marginalised communities may have reservations when accessing health care [8]. Even Pfizer, the first pharmaceutical company to deliver a COVID-19 vaccine, may carry different connotations to a whole generation of doctors and patients in Nigeria, where it was tainted through its involvement in a controversial drug trial during a meningitis outbreak in the 1990s [9]. Thus it needs to be recognised that structural and institutional discrimination contributes to COVID-19 vaccine hesitancy.

We know that COVID-19 has exacerbated inequalities across several domains of life and affected communities living in more deprived areas harder. This may have pushed more members of society into a position of mistrust of the government, and already disenfranchised members of society even further away from the establishment and towards conspiracy theories, making them less likely to comply with infection control guidance and accept vaccinations, placing them further at risk from COVID-19. Disturbingly, COVID-19 conspiracy theories are galvanizing the inequalities exacerbated by the virus itself. Past research into the demographic factors that predict belief in conspiracy theories has shown that lower income, unemployment, and a weaker social network are all positively correlated with conspiratorial belief, as are feelings of anxiety, worry and a sense of powerlessness [6]. Indeed, even something as mundane as boredom has been implicated in predicting such beliefs [10]. The repeated COVID lockdowns and the devastating financial and social repercussions arising from them have provided a fertile breeding ground for conspiratorial beliefs, which will only grow as the pandemic continues, perversely hampering measures to mitigate the situation as it worsens.

The above highlights that there is evidence that COVID-19 conspiratorial belief is positively correlated with various individual and group characteristics and this may have a role in identifying how to more effectively target efforts to counter COVID-19 misinformation. However, it is important to note that such individual or group traits should not be construed as causative in and of themselves, as the reasons why individuals adhere to particular beliefs are multifactorial and complex.

WHAT DO CONSPIRACY THEORIES OFFER THAT IS SO ATTRACTIVE?

Evidence suggests that belief in one conspiracy theory is a strong predictor of belief in another, even if the theories are contradictory. Seemingly opposing conspiracy theories may provide a degree of overlap in their reinforcement of a higher-order world view, generally the nefarious activities of powerful groups. Indeed, individuals who believe in one conspiracy theory are more willing to accept a novel, seemingly unrelated conspiracy

theory, on the basis that it is likely to further reinforce this world view. This has led to the concept of a ‘conspiracy mindset’, a tendency to believe in conspiracy theories, which suggests an underlying psychological predisposition [4].

The literature suggests that reduced analytical reasoning is predictive of conspiracy beliefs [7]. This is interesting in light of research on delusion-promoting reasoning biases that affect an individual’s approach towards analysing and assimilating evidence related to their beliefs. There is a notable parallel between conspiracy theories and delusions, which DSM-5 defines as ‘fixed beliefs that are not amenable to change in light of conflicting evidence’ [11]. Perhaps where some experts have suggested that delusions occupy an extreme position on a normal–pathological belief continuum, we could place conspiracy theories in a slightly less extreme position along that same continuum. It has been suggested that delusions arise due to biases in information processing, for example as a consequence of self-serving bias, where the affected individual is likely to attribute favourable outcomes to self and unfavourable outcomes to external circumstances. These biases have a defensive function, such as protecting the individual against feelings of low self-esteem. Even without the need to explain low status, individuals have a psychological desire to feel unique, both at a personal and group level; believing that one is in possession of rare, important knowledge can serve to boost self-esteem. Perhaps similar information-processing biases are affecting the ability of the most downtrodden and aggrieved members of society when they take in information about COVID-19, partly as a way of making sense of the crisis which they are experiencing. Just as psychological defence mechanisms are a method by which our unconscious mind manipulates reality in order to spare us the overwhelming anxiety or distress that would otherwise arise from having to deal with a threat, so too conspiracy theories represent the result of an equivalent defence mechanism of the mind, providing subscribers with a degree of compensatory safety in the uncertain milieu in which they find themselves [12].

A recent review distilled the psychological factors driving the popularity of conspiracy theories into three categories: an attempt to satisfy a search for understanding, a desire for safety, and aspects of social belonging [12]. We have learnt much about COVID-19 to date, yet some questions regarding its genesis seem unlikely to ever be answered satisfactorily. Conspiracy theories stand ready to plug gaps in our understanding, offering seemingly comforting and comprehensive certainty to those who seek it. Indeed, even those theories that stand in outright defiance of the mainstream narrative offer a degree of perceived control to those who feel that they are rejecting the official account by embracing alternative explanations. Conspiracy theories have long allowed

for a *bête noire* to be scapegoated, allowing for simple answers and defensive absolution of personal responsibility. COVID-19 has been no different in this regard and has therefore been exploited as a vector for promotion of extremist ideologies [3].

WHAT IS BEING DONE TO ADDRESS COVID-19 VACCINE CONSPIRACY THEORIES?

Since the pandemic began, it has been clear that COVID-19 conspiracy theories present a significant public health risk and so governments have been attempting to tackle them on a number of different fronts. Such is the potential risk to public health that vaccine misinformation poses that The Centers for Disease Control and Prevention publishes a biweekly report on vaccine confidence within the United States that tracks emerging trends in vaccine misinformation, the aim being that if promptly identified such misinformation may be more rapidly and effectively countered in order to increase public confidence in vaccination [13]. Vaccine hesitancy can negatively affect a nation’s labour, education and technological sector competitiveness in a global market [14]. Such is the potential risk that vaccine misinformation poses to national governments, some countries have tasked national security organisations in addition to public health agencies with monitoring and helping to counter vaccine misinformation [15]. Given the prominence of social media in the spread of COVID-19 misinformation, one strategy has been to work with the major technology companies such as Facebook, Twitter and Google to collaborate on ways to more effectively removing context flagged as COVID-19 misinformation and also to help them disseminate official information from public health authorities regarding COVID-19 on their platforms. This builds upon work that long predates the pandemic whereby legislators have been attempting to get technology companies to take responsibility for online harms which may arise from their platforms [2]. Despite the considerable attention that social media has garnered in the debate regarding COVID-19, there are many other vectors by which misinformation is disseminated, and so the UK government has allocated funds to both the National Health Service and local councils to tackle COVID-19 misinformation. This additional funding has allowed for accurate vaccine information to be provided to individuals via campaigns that have taken the form of print, online, telephone and in person engagement [2]. Given that vaccine misinformation has spread at different rates amongst different groups, another strategy that may help to reach certain groups more effectively has been campaigns involving individuals from these respective groups [2]. Heider posited in Balance Theory that we base our perception of a novel entity on its relationship with those that we already hold views on, in an attempt to achieve psychological balance [16]. This part of the government’s counter-strategy thus

involves trying to get more trusted messengers than itself, such as religious and community leaders, to disseminate the message on its behalf. Early evidence suggests that some of these more targeted campaigns have been successful in increasing vaccination rates amongst ethnic minorities that previously had lower rates of vaccination compared to the general population [17]. However, a recent report on countering vaccine misinformation by the European Centre for Disease Prevention and Control highlighted the fact that, at the international level, strategies to counter vaccine misinformation vary considerably and that little monitoring and evaluation of their effectiveness is being carried out, thus there is potential for further work to ensure effective allocation of resources in the efforts to tackle vaccine misinformation [15].

CONCLUSIONS

Conspiracy theories have endured throughout history, and so it perhaps came as no surprise that the COVID-19 pandemic spawned many more. However, such beliefs have resulted in the spread of misinformation related to COVID-19 leading to a reduction in compliance with health protective measures and increases in vaccine hesitancy, thus hampering the ability of governments to tackle the pandemic. Yet despite their harm, these beliefs have proven appealing and enduring because of the mixture of understanding, safety and belonging that they claim to offer in uncertain times. Furthermore, such beliefs have the potential to widen pre-existing health inequalities amongst already disenfranchised groups. It seems like much else the pandemic has brought to light; conspiracy theories are interwoven with inequality. There is however much governments can and have been doing to monitor, delegitimise and counter the misinformation that COVID-19 conspiracy theories spread. Indeed, understanding the misinformation present within the public realm and the factors that may predispose individuals to believing such misinformation has allowed governments to undertake more nuanced campaigns to tackle the spread of COVID-19 misinformation generally and COVID-19 vaccine misinformation specifically.

DISCLOSURE

The authors report no conflict of interest.

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AUTHORS' CONTRIBUTIONS

DM i MW prepared the concept of the article. AS analysed data and prepared the first draft of the article. Both authors were involved in developing the concept of the article, researching the literature, contributed to the final version of the publication and approved the final manuscript.