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DO YOU TRUST THE RUMOURS? EXAMINING THE DETERMINANTS OF HEALTH-RELATED MISINFORMATION IN INDIA

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DEPARTMENT OF PSYCHOLOGY

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in India

Abstract

Rumors, conspiracies, and health-related misinformation have gone hand-in-hand with the global COVID-19 pandemic and made accessing reliable and accurate information difficult. Against this background, the present study examined the different psychosocial predictors of believing in conspiratorial information related to general health in India. Indian participants (N = 826) responded to measures related to conspiratorial thinking, trust, moral emotions, political ideology, bullshit receptivity, and belief in conspiratorial information in an online survey. Exploratory and confirmatory factor analyses were used to determine the validity of the instruments used with an Indian sample. Results revealed that lower socioeconomic status, lower trust in political institutions, greater negative moral emotions, greater conspiratorial thinking, and right-leaning political ideology predicted beliefs in health-related conspiratorial information. In highlighting these potential psychosocial determinants of conspiratorial beliefs, we can move towards combating conspiracies effectively and develop necessary interventions for the same. Future work can focus on those areas and assess the moderating effects of political ideology on conspiratorial beliefs in India.

Keywords: bullshit receptivity, conspiratorial thinking, health misinformation, political ideology, trust

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1. Introduction

The meteoric rise of the Internet, followed by social media, has brought about strong changes in the way information is communicated and presented to the masses. These have become the most popular resources to obtain health-related information and self-diagnose by investigating one's condition with the information available online (Swire-Thompson & Lazer, 2019). The variety of takes on the same topic coupled with the inappropriate and inaccurate use of such media has fueled rumors, propaganda, conspiracies, and misinformation, particularly regarding healthcare in the wake of the COVID-19 pandemic. The vast number of sources, accurate or not, makes it harder for individuals to find reliable information when needed. This adds to the promotion of mistrust in science, questioning the credibility of medical sources for health information, and believing in a false model of the functioning of scientific research and practice (Southwell et al., 2019).

Health misinformation can be better understood as "a health-related claim of fact that is currently false due to lack of scientific evidence" (Chou et al., 2018, p. 2417). Circulation of such misinformation could lead to dire consequences in terms of an individual's quality of life and even risk of mortality (Swire-Thompson & Lazer, 2019). The spread of such conspiracies and obtaining information outside the realms of the formal healthcare system are not a new occurrence. Edward Jenner's discovery of the smallpox vaccine in the 18th century made people question if it might make them grow horns or even kill them (Dube et al., 2015). Thus, it is imperative to understand the factors that could have an impact on people's beliefs in conspiracies related to health information to help develop effective interventions to combat the rise and spread of conspiratorial information.

1.1 Conspiratorial Information and Thinking

Conspiracy theories are explanatory beliefs about the cause or concealment of an event from the public, which are attributed to secretive and malevolent plots by a group of actors (van Prooijen & Douglas, 2018). Research has suggested that a tendency toward conspiracy thinking may cause people who believe in some conspiracy theories to believe in others, even if they are unrelated (Brotherton et al., 2013). However, due to the limitations of this monological explanation, such as the assumption of conspiracy theories being mutually supportive (Franks et al., 2017), literature suggests other contributory factors that offer more convincing justifications. Douglas et al. (2016) propose that people may endorse such beliefs as they seem to satisfy some psychological motives namely epistemic (e.g., the desire to satisfy curiosity and avoid uncertainty), existential (desire for control and security), and social (desires to maintain a positive view of the self or ingroup). A review of previous literature regarding conspiracy beliefs also show powerlessness, pattern recognition, and anxiety-induced illusions of control as important mechanisms playing a role in the prevalence of conspiracy theories (Andrade, 2020). Furthermore, demographic factors such as gender, education, income, marital and employment status, and political ideology also affect conspiracy beliefs (Uscinski & Parent, 2014; van Prooijen et al., 2015).

The endorsement of conspiracies has been shown to have significant consequences on health by influencing the likelihood of engaging in certain preventative health behaviors and endorsing risky health choices. A meta-analysis on this relationship highlighted the initial weak, but prevalent, association of conspiracy beliefs with reluctance in adhering to preventive health-measures during the COVID-19 pandemic, which steadily increased as the pandemic progressed (Bierwiaczonek et al., 2022). Moreover, conspiracy theories tend to be more prevalent in times of societal crisis (van Prooijen & Douglas, 2017), especially during previous health epidemics of Ebola, Zika, and H1N1

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(Leonard & Philippe, 2021). For example, Badrinathan and Chauchard (2021) reported that more than 75% of an Indian sample believed COVID-19 to be a Chinese biowarfare weapon. Belief in conspiracies was also seen to be associated with less social distancing efforts and a lack of adherence to recommended health-protective behaviors such as wearing a mask (Bierwiaczonek et al., 2020; Allington et al., 2021). This follows suit beyond country borders as well; for instance in Pakistan, efforts to eradicate polio are met with a persistent conspiracy theory that the polio vaccine aims to sterilize Muslims (Andrade & Hussain, 2018). Similarly, conspiracy beliefs about birth control being a form of genocide against African Americans are associated with negative attitudes toward contraception (Thorburn Bird & Bogart, 2003). People who believe in medical conspiracy theories are also less likely to trust medical professionals and more likely to believe in alternative medicines (Galliford & Furnham, 2017; Oliver & Wood, 2014). The vast amount of circulating rumors and conspiracies have the propensity to build public distrust in preventive health-behaviors, especially with regard to vaccine uptake (Islam et al., 2021). All these issues culminate in increased difficulty to fact-check misinformation and immunize individuals against health-related conspiracies and conspiratorial thinking. Although the endorsement of various health-related conspiracy beliefs predicting relevant health behaviors has been previously studied, there is a dearth of literature in non-Western countries. Moreover, such beliefs could stem from multiple other underexplored factors like moral emotions, social and institutional trust, political ideology, conspiratorial thinking, bullshit receptivity, and source of information.

1.2 Moral Emotions

Moral emotions tend to motivate individuals to do good and avoid doing bad (Tangney et al., 2007) and are mainly linked to the welfare or interests of associated persons or society as a whole

(Haidt, 2003). Past work cites the impact of emotions on decision-making (Lerner & Keltner, 2001; Schwarz, 2012), where findings indicated the role of negative emotions in increasing skepticism, while positive mood has been seen to increase gullibility and lessen the likelihood of detecting deception. This shows that individuals with greater negative moods were more likely to engage in analytic thinking, thus making them more skeptical of fake news, while the opposite was true for individuals with more positive moods (Forgas, 2019). A recent study from India also highlighted that moral emotions, both positive and negative, were robust predictors of willingness to get vaccinated, thereby drawing attention towards the pivotal role of moral emotions in preventive health behaviors (Tagat & Kapoor, 2023). Thus, emotions have contributed to faulty risk perception (Sjöberg, 2007) and decision-making (Naqvi et al., 2006), especially in relation to preventative health behaviors in the context of the pandemic (Ticku et al., 2021).

1.3 Institutional Trust

In the domain of medicine and public health, the role of trust is recognized as central to the legitimacy of the healthcare system (Gilson, 2003), with individuals believing that healthcare providers and sources always act in the best interests of people and not take advantage of their vulnerabilities (Hall et al., 2002). The COVID-19 pandemic put a lot of social strain on civil society to disseminate accurate health-related information and avoid misinformation and conspiracies that are wrought throughout social media (Algan et al., 2021). Timonen (2020) found that individuals who were appreciative of and informed about scientific knowledge and methods were more likely to accept speeches by scientists and medical practitioners, effectively discern between explanation and

misinformation, and comply with health-related interventions. This was found to further increase

institutional trust, specifically among journalists, medical charities, and academic scientists.

The main baton of delivering health information, however, resides with the government,

especially during health crises (Kalichman et al., 2021). Trust in these public authorities has

unfortunately eroded in recent years (Meredith et al., 2007), which has widely been attributed to the

spread of misinformation and disinformation through multiple channels. Furthermore, mistrust

towards government representatives and authorities has been considered central to the spread of

conspiracy theories (Leonard & Philippe, 2021). In order to improve public adherence to health

interventions and services without disruption, it is essential to establish trust in appropriate authorities

that are uniquely situated to provide accurate health-related information (Kalichman et al., 2021).

1.4 Political Ideology

Political ideology refers to a "set of beliefs about the proper order of society and how it can be

achieved" (Erikson & Tedin, 2003, p. 64). It reflects in the way people conduct themselves in society,

becoming an integral part of shaping their social identity (Huddy et al., 2015). A recent study

conducted during the COVID-19 pandemic highlighted that greater concern for the virus and

compliance with preventative measures were shown by those supporting the democrats and liberals as

opposed to the republicans and conservatives (van Holm et al., 2020).

Similarly, Epley and Gilovich (2016) found that partisanship plays a sizable role in influencing

people's reasoning strategies, while Tappin et al. (2017) reported that belief regarding specific news

indicates desirability bias. Havey (2020) also underscores that political polarization influenced

conservatives to condone misinformation from their political leadership, regard the same information

as high quality, and criticize others that oppose it. Interestingly, van Prooijen and colleagues (2015)

suggested a strong association between political extremism and belief in conspiracy theories due to a highly structured thinking style that allows individuals to make sense of various societal problems and find potential simple political solutions for them. Pennycook and Rand (2021) also highlighted the role of political motivations in the failure to discern between true and false news sparking further conspiracies and misinformation. This provides a rather worrying outlook for healthcare and health-related news, especially in India, where recent research has shown that support for the right-wing populist Bharatiya Janata Party (BJP) and high religiosity correlate with vulnerability to misinformation regarding COVID-19 (Badrinathan & Chauchard, 2021). However, Iyengar et al. (2022) studied psychological inoculation against fake news in India by replicating an online game, where participants played a misinformation tycoon. They found that individuals leaning more towards authoritarianism considered misinformation using the techniques of impersonation, conspiracy, and discrediting as highly reliable. Yet, once taught how to identify correct information, particularly when a post contains impersonation, misinformation was judged as less reliable.

1.5 Bullshit Receptivity

Bullshit has been defined as something that is created with the aim to impress while disregarding any concern for the truth (Frankfurt, 1986). Lies, while untrue, require knowledge about the truth followed by its manipulation whereas, for bullshit, the truth is quite irrelevant. People may tolerate bullshit better and consider it to be profound but the majority are fairly confident in their ability to recognize it (Frankfurt, 1986).

Pennycook et al. (2015) studied a specific type of bullshit known as pseudo-profound bullshit and the factors that contribute to accepting it as true. Pseudo-profound bullshit (hereinafter –

bullshit), an extreme on the spectrum of bullshit, refers to a grammatically and syntactically correct sentence made up of random buzzwords from a database (e.g., "Wholeness quiets infinite phenomena"; Pennycook et al., 2015). Owing to the sentence structure and correctness, these statements appear to communicate something and imply the truth despite not actually containing it.

Bullshit receptivity is positively associated with a tendency to fall for fake news and share it on social media, and negatively associated with the ability to differentiate between fake and real news (Pennycook & Rand, 2020). Limited literature has assessed the role of bullshit receptivity in the context of COVID-19 (Salvi et al., 2021) but little remains known about its associations with health-related misinformation as a whole.

1.6 Source of Information

The selection of an information source depends upon features of the source (such as its utility) and individual-level factors related to the user (such as demographics, illness experience, needs, and beliefs; Han et al., 2010; Purvis et al., 2021). Traditional sources include mass media (television news channels, newspapers, magazines, and radio), interpersonal sources (physicians, family, and friends), books, and other published literature (Zhang, 2014). Healthcare workers, especially physicians, are consistently the most trusted and important sources of health information with varying rankings across studies (Oedekoven et al., 2019). Trust in and selection of health-related websites has been attributed to discerning the content's accuracy (agreement with existing evidence), readability, completeness ("proportion of priori-defined elements covered by the website"; Eysenbach et al., 2002, p. 5), and design (visual appeal and layout; Eysenbach et al., 2002). Unwarranted labeling of credible sources as providers of fake news by political parties could also exacerbate the amount of media distrust among partisans (Michael & Breaux, 2021). Moreover, online platforms often lack peer

reviews, fact-checks, and regulations followed by mainstream media (Kouzy et al., 2020). A majority

of adults, however, still use the internet and various other social networking sites to derive health and

healthcare-related information (Li et al., 2020). During the COVID-19 pandemic, about a quarter of

YouTube's most viewed English-language videos contained misinformation (Li et al., 2020).

Evidently, misinformation is present aplenty and can influence people's behaviors including

compliance with curative or preventative interventions that reduce risk of illness and other lifestyle

changes (Meredith et al., 2007; Vinck et al., 2019). Given the influence of health information-seeking

and source credibility on health behavior, it is crucial to explore its association with health

misinformation.

1.7 The Present Study

Prior scholarship has suggested relationships between beliefs in health-related conspiratorial

information and conspiratorial thinking (Kroke & Ruthig, 2022), political ideology (van Prooijen et al.,

2015), bullshit receptivity (Pennycook et al., 2015), moral emotions (Ticku et al., 2021) and trust in

institutions (Kalichman et al., 2021). Specific to the Indian context, Tagat and Kapoor (2023) found

that moral emotions like gratitude, role model effects, and trust in others were associated with

COVID-19 vaccine uptake – a topic that has been associated with various rumors and conspiracy

theories in the Indian subcontinent (Islam et al., 2022). We aim to illuminate the aforementioned

relationships in India given its: large population density, lower literacy, disparities in wealth and

healthcare accessibility, and preferences for alternative medicines and home remedies (Mallick, 2021).

Therefore, through our selection of variables, we aimed to replicate effects found in the West as well

as identify unique associates with beliefs in health-related conspiratorial information in India.

Thus, the following hypothesis was pre-registered[1]: Conspiratorial thinking, moral emotions, social and institutional trust, political ideology, and bullshit receptivity will significantly predict belief in conspiratorial information related to health (H1).

2. Methods

2.1 Participants

The present study recruited a sample of Indian participants online via multi-site entry. That is, the study link was posted on social media platforms, as well as on various Facebook and WhatsApp groups. Participants could choose to take the survey in either English or Hindi. A study conducted by van Prooijen et al. (Study 3; 2022) found that political ideology was related to belief in conspiracy theories (partial r^2 = .0289) along with conspiracy mentality, perceived news credibility, and bullshit receptivity. Accordingly, we computed a power analysis on G*Power (ver. 3.1.9.7) using a power of 0.95, and an alpha value of 0.05, to estimate approximately 708 participants. We aimed to recruit a sample of 850 participants after considering attrition. The study received ethical clearance from the [MASKED FOR REVIEW] Institutional Review Board (#077-021).

The study consisted of a total sample of 826 participants (men = 61.26%, women = 37.05%, other = 1.7%; M_{age} = 27.34, SD = 6.79, age range:18-71) out of which about 98% of participants answered the survey in English, whereas the rest answered the survey in Hindi. About 56% of the sample were employed, 17% were self-employed, 25% were unemployed, homemakers, or retired, and

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[1] https://osf.io/7dm5j?view_only=8571f430ae21497b8eceabdf7d93872e. Deviations from the preregistration: In the final analysis, an exploratory factor analysis was not conducted on sources of health-related information as it was not measured on a linear scale. Instead the frequency of users for every source were listed in a bar plot. Sources of information were not included in the regression analysis as they were treated as a frequency variable.

less than 2% were students. Invalid responses were discarded based on nationality (not Indian), age

(below 18 years), and not passing at least two of the three attention checks.

2.2 Measures

2.2.1 Conspiratorial Thinking

The Conspiracy Mentality Scale (Bruder et al., 2013) is a 12-item scale that assesses the

general propensity to endorse conspiracy theories (α = 0.86). It is measured on a 7-point Likert scale

(1 = Strongly Disagree to 7 = Strongly Agree). Some sample items include "There are secret

organizations that have great influence on political decisions" and "There are certain political circles

with secret agendas that are very influential."

2.2.2 Belief in Conspiratorial Information about General Health

This self-developed tool evaluated beliefs in conspiratorial information regarding general

health. The conspiracies were collated and adapted from various sources (for example, Shapiro et al.,

2016; Oliver & Wood, 2014; Brotherton et al., 2013; Badrinathan & Chauchard, 2021; Bode & Vraga,

2015; Araz & Harlak, 2006). This was measured through items such as "Pharmaceutical companies

cover up the dangers of vaccines" and "Immunizing children is harmful and this fact is covered up."

Participants indicated whether they believed the information on a 3 point scale (1 = No, 2 = Maybe, 3 =

Yes), with higher scores indicating higher belief in the misinformation. Cronbach's alpha indicated

good internal consistency, α = 0.82.

2.2.3 Moral Emotions

Based on Haidt's (2003) theory of moral emotions, a self-developed tool was created wherein

participants were asked to rate statements for each moral emotion related to the spread of

conspiratorial information on an 11-point Likert scale (0 = Not at all to 11 = Extremely; adapted from

Ticku et al., 2021). Moral emotions were measured through items such as "Contempt towards other people who spread health-related conspiracies", "Disgust towards other people who spread health-related conspiracies", and "Gratitude towards those who do not spread health-related conspiracies." Cronbach's alpha indicated high internal consistency, α = 0.96. The measure assesses two kinds of emotions: positive (α = 0.9) and negative (α = 0.94).

2.2.4 Trust in Institutions

Based on the survey executed by the Winton Centre for Risk and Evidence Communication at the University of Cambridge (University of Cambridge, 2020 as cited in Newhagen & Bucy, 2020) and by the Centre for Regional Political Economy (2019), questions measured along a 5-point Likert scale (1 = Cannot be trusted to 5 = Can be trusted completely) were used to assess trust in social (α = 0.73) and scientific institutes (α = 0.85). Items aimed at measuring trust in different government bodies (state government, central government, and municipal corporations, to name a few) were an addition to the original scale items related to trust (people in your family, strangers, medical doctors and nurses, to name a few), and had a reliability of α = 0.81. Cronbach's alpha for the measure indicated high internal consistency, α = 0.92.

2.2.5 Political Ideology

The political ideology scale (Puthillam et al., 2021) is a 34-item scale that measures political ideology among Indians measured on a 7-point Likert scale (1 = Strongly Disagree to 7 = Strongly Agree). It has three factors: purity-based cultural norms (α = 0.86) obedience to hierarchical authority (α = 0.96), and economic ideology (α = 0.83) measured on a point Likert scale. Cronbach's alpha indicated high internal consistency, α = 0.91. Some sample items were: "LGBTQ+ individuals should

not be allowed to have children" and "I think reservations should strictly be based on economic grounds."

2.2.6 Bullshit Receptivity

The measure assesses individuals' receptivity to pseudo-profound statements through items such as "Wholeness quiets infinite phenomena" and "Good health imparts reality to subtle creativity.". This is a 10-item scale developed by Pennycook et al. (2015) measured on a 5-point Likert scale. Cronbach's alpha for the measure indicated high internal consistency, α = 0.9.

2.2.7 Source of Information

To determine the primary source for healthcare information from several common informational sources (e.g., WhatsApp, newspapers, magazines) among Indians.

2.3 Procedure

After consenting to participate in the study, participants' demographic details and responses to self-report questionnaires were recorded. Finally, participants were thanked and debriefed about the study.

3. Results

RStudio software version 2022.07.2 was used for data analysis (R Core Team, 2021). Exploratory and confirmatory factor analyses were computed to assess the construct validity of the scales used with Indian participants (see Appendix and Supplementary Materials). An Item Response Theory analysis (IRT) was also computed for the belief in conspiratorial thinking scale as it comprised an accuracy-based assessment. The Moral Emotions Scale was disaggregated into two subscales

based on valence (positive and negative moral emotions) in line with prior work (Ticku et al., 2021) for interpretive accuracy in the regression analysis. Additionally, linear hierarchical regression analyses were computed to understand the predictors of belief in health-related conspiracies while controlling for demographics (H1).

Table 1 displays sample descriptives and the zero-order correlations for all variables, including demographics and the subcomponents of scales. Figure 1 displays the frequency of sources of information used by the participants, with newspapers being the largest sources of health-related information (55.21%), followed by television news (54.48%). Blogs (35.47%) and peer-reviewed journal articles (36.44%) were the least used sources of attaining health-related information. An increased belief in health-related conspiratorial information was associated with low socio-economic status, high educational qualifications, employed individuals, right-leaning political ideology, especially obedience to right-leaning hierarchical authority, higher positive and negative moral emotions, greater trust in social, scientific, and political institutions, greater conspiratorial thinking and higher bullshit receptivity.

Table 2 displays results from hierarchical regressions that predicted belief in health-related conspiracies (BCI). The variables were added to the model in the following order: age and socio-economic status (Step 1), political ideology (Step 2), moral emotions (Step 3), trust in institutions (Step 4), conspiratorial thinking (Step 5), and bullshit receptivity (Step 6). For overall BCI, 8.9% of the variance was explained by age and socio-economic status, $F(2, 823) = 41.76$, $p < .001$. Specifically, those with lower socio-economic status were more likely to have higher BCI. The addition of political ideology improved the explained variance to 19.1%, $F(3, 822) = 66.09$, $p < .001$, $\Delta R^2 = .102$. In Step 3, moral emotions were added and the model explained 29.1% of the variance in BCI, $F(4, 821) = 85.65$, $p < .001$, $\Delta R^2 = .10$. In addition to lower socio-economic status and a right-leaning political ideology,

higher moral emotions were associated with increased BCI. Next, the addition of trust in institutions marginally increased the explained variance to 29.2%, $F(5, 820) = 69.04$, $p < .001$, $\Delta R^2 = .001$. Adding conspiratorial thinking increased explained variance to 48.73%, $F(6, 819) = 131.7$, $p < .001$, $\Delta R^2 = .195$. In the final model (Step 6), bullshit receptivity was added and the model explained 48.81% of the variance in BCI scores, $F(7, 818) = 113.4$, $p < .001$, $\Delta R^2 = .001$; however, like the previous models, age along with bullshit receptivity were not significant predictors. In sum, a lower socio-economic status, right-leaning political ideology, higher moral emotions, lower trust in institutions, and higher conspiratorial thinking contributed towards an increase in BCI.

Another hierarchical regression analysis was computed (Table 3) to predict BCI using the subcomponents of measures; age and socio-economic status (Step 1), political ideology subscales of purity-based cultural norms, obedience to hierarchical authority, economic ideology (Step 2), positive moral emotions, negative moral emotions (Step 3), trust in social and scientific institutions, trust in political institutions (Step 4), conspiratorial thinking (Step 5), and bullshit receptivity (Step 6). Age and socio-economic status explained 8.9% of the variance in BCI, $F(2, 823) = 41.76$, $p < .001$. Specifically, those with a lower socio-economic status were more likely to have increased BCI; age was not a significant predictor. The addition of political ideology related to purity-based cultural norms, obedience to hierarchical authority, and economic ideology improved the explained variance to 24.02%, $F(5, 820) = 53.15$, $p < .001$, $\Delta R^2 = .151$. Here, along with socioeconomic status, only obedience to right-leaning hierarchical authority was associated with an increased BCI. Next, positive and negative moral emotions explained 29.41% of the variance in BCI scores, $F(7, 818) = 50.11$, $p < .001$, $\Delta R^2 = .054$. Precisely, in addition to earlier predictors, higher positive and negative moral emotions were associated with a significant increase in BCI. In Step 4, trust in social and scientific institutions

and trust in political institutions explained a variance of 30.86%, $F(9, 816) = 41.92$, $p < .001$, $\Delta R^2 = .015$. According to this model, a lower socio-economic status, obedience to right-leaning hierarchical authority, higher positive and negative moral emotions, and lower trust in political institutions were all associated with increased BCI. In Step 5, the addition of conspiratorial thinking explained 49.74% of the variance, $F(10, 815) = 82.64$, $p < .001$, $\Delta R^2 = .188$, but obedience to right-leaning hierarchical authority and moral emotions reached non-significance. Last (Step 6), bullshit receptivity was added, and the model explained 49.8% of the variance in BCI scores, $F(11, 814) = 75.35$, $p < .001$, $\Delta R^2 = .001$. However, bullshit receptivity was not a significant predictor. In sum, a lower socio-economic status, higher negative moral emotions, lower trust in political institutions, and higher conspiratorial thinking were all significantly associated with increased BCI, while age, political ideology, positive moral emotions, and bullshit receptivity were not significant predictors.

4. Discussion

The current study sought to investigate how psychosocial determinants influenced people's beliefs in health-related conspiratorial information (BCI). Overall, the findings indicated that lower socioeconomic status, higher negative moral emotions, lower trust in political institutions, and higher conspiratorial thinking significantly explained higher BCI. Across various models, right-leaning political ideology also explained greater beliefs in health-related conspiratorial information.

4.1 Sociodemographics

The inverse relationship between socio-economic status and BCI is in line with past research that suggests a negative correlation between the two (Douglas et al., 2016; Uscinski & Parent, 2014). Similar to Mao et al. (2020), this finding also extends cross-cultural consistency in the influence of

socioeconomic status on BCI, and echoes van Prooijen and Douglas' (2018) perspective of conspiracy theories being universal and existing across times, cultures, and social settings. Thus, those from the lower end of the socioeconomic strata were more likely to believe in and embrace conspiracy theories. This finding suggests that more intervention strategies, such as building critical thinking skills, should be directed toward this section of the population (Mao et al., 2020).

4.2 Affect-Related Factors

4.2.1 Moral Emotions

The condemning moral emotions of contempt, anger, and disgust, and the self-conscious moral emotions of shame, embarrassment, and guilt predicted an increase in BCI. This ties with the findings of Tagat & Kapoor (2023), citing the influence of negative emotions such as contempt along with positive emotions in predicting preventive health behaviors during the pandemic. Although extant literature suggests that negative mood states tend to increase skepticism with the reverse being true for positive moods (Forgas, 2019), there exists an overemphasis on the role of anxiety (Grzesiak-Feldman, 2013), uncertainty (van Prooijen & Jostmann, 2013), and control (van Prooijen & Douglas, 2017) with limited focus on its interplay with health-related conspiracies (Šrol et al., 2021). Further, individuals who are prone to endorse more generic conspiracies and pseudo-scientific beliefs tend to experience greater negative affect, thereby contributing to the higher endorsement of and belief in health-related conspiracy theories (Šrol et al., 2021). These findings show that negative affect can influence scrutiny and belief in health-related conspiracies and play an important role in how we respond to information, particularly in the context of health.

4.2.2 Trust

In general, lower trust in institutions explained greater BCI. Further, as lower trust in political parties specifically predicted higher BCI, our findings are consistent with previous research on the negative associations between mistrust in political institutions and beliefs in health-related and general conspiracies (Freeman et al., 2020; Mari et al., 2021; Šrol et al., 2021). Moreover, this mistrust in an Indian context may partially be explained by certain representatives of the government endorsing alternate health treatments such as drinking cow urine to treat COVID-19 and adding lemon juice with hot water to improve immunity (Sharma, 2022).[2] This is not surprising as general health mandates come from institutions such as the government and scientists. From a healthcare perspective, trust in relevant sources is vital in overcoming situations like the pandemic, and building on institutional trust can serve as a protective factor against belief in health-related conspiracies (Mousoulidou et al., 2023).

4.3 Socio-Cognitive Factors

4.3.1 Political Ideology

With respect to political ideology, individuals who held right-leaning views harbored greater BCI. This is in alignment with previous research that suggests associations between BCI and conservatism (Galliford & Furnham, 2017; van Prooijen et al., 2015) and right-wing authoritarianism (RWA, Bruder et al., 2013; Iyengar et al., 2022). RWA includes attitudes characterized by submission to authorities, aggression towards others, and acceptance of social conventions and norms (Altemeyer, 1996). As obedience to hierarchical authority includes positive discrimination,

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[2] Contrary to existing literature, zero-order correlations suggested higher trust being associated with higher BCI. However, as higher trust moderately correlates with right-leaning PI, the association between trust and BCI may be a spurious one with potential moderation effects of a right-leaning PI.

traditionalism, and obedience to authority, it shares some similarities with RWA. However, political ideology was no longer a predictor of BCI when the three factors of purity-based cultural norms, obedience to hierarchical authority, and economic ideology were considered. Nonetheless, when political ideology was added to the model, obedience to hierarchical authority was predictive of BCI but became nonsignificant after accounting for conspiratorial thinking. Along with furthering the role of RWA-related political attitudes, this suggests that although some factors of political ideology can influence BCI, they are unlikely to be strong predictors in the presence of conspiratorial thinking. Specifically, in India, political ideology may be predictive of BCI due to the nature of some conspiracies appealing to or furthering right-wing ideologies. These include beliefs in homemade remedies to increase immunity to COVID-19 (Sharma, 2022), concerns about the side effects of vaccines (Chandani et al., 2021), and incorrectly blaming religious gatherings as super-spreader events (Sharma, 2022).

4.3.2 Conspiratorial Thinking

Our findings reiterate past work that supports a conspiratorial mindset, suggesting that people who endorse some conspiracies tend to validate multiple other conspiracies (Brotherton et al., 2013; Bruder et al., 2013). As such conspiratorial beliefs tend to be unchanging in nature (Kroke & Ruthig, 2022) and can affect health behaviors, this finding has serious implications including reduced support for health-protective behaviors (Allington et al., 2021; Bierwiaczonek et al., 2020; Uscinski et al., 2020), non-compliance with public health guidelines and policies (Pummerer et al., 2022), reduced risk perceptions (Hughes et al., 2022), and increased use of alternative medicine (Oliver & Wood, 2014).

4.3.3 Bullshit Receptivity

Past research suggests that an inability to discern between meaningful and meaningless content increases the likelihood of BCI, including information related to COVID-19 (Pennycook et al., 2015; Pennycook & Rand, 2020; Pennycook et al., 2022). Interestingly, we did not find evidence for the same. This indicates that although bullshit receptivity canbe a predictor of belief in generic conspiracy theories, its effect on health-related conspiracy theories may be limited. The reasons for this are twofold. First, as Pisl et al. (2021) suggest, this may be because the sociopolitical climate may be more influential on health-related conspiracy beliefs than one's susceptibility to bullshit and ability to identify inaccurate or false information. Second, as the current study and the one by Pisl et al. (2021) obtained data from India and Czechia, it may potentially hint at underlying cultural differences in bullshit receptivity when compared to the United States.

5. Conclusion

The widespread nature of health-related conspiracies, particularly during the COVID-19 pandemic, has made it imperative to understand the factors that influence and related beliefs in conspiratorial information. Previous studies (Pennycook & Rand, 2021; van Prooijen et al., 2015) on conspiratorial beliefs were primarily rooted in country-specific political and/or culturally specific events in the West with limited generalization in non-WEIRD societies. By determining the various psychosocial factors that influence beliefs in conspiratorial information, the present study paves the way towards combating conspiracies and developing interventions to tackle the same. Relatedly, we also acknowledged and explored the probable influence of political ideology on these beliefs in a politically diverse country like India.

However, our study was not without limitations. First, the study sample was recruited online and represented only a digitally literate sample. Future studies can include a sample of low digital literacy for wider representation. Second, our measurement of belief in conspiratorial information on a 3-point scale could have constrained the latitude of responses. The use of a 5-point or 7-point Likert scale could better capture the extent of conspiratorial beliefs and provide more nuanced findings in future work. Lastly, while the current study emphasized how conspiratorial thinking regarding general conspiracies predicts belief in health-related conspiracies, we also found other contributory factors such as political ideology and trust in institutions offering justifications for beliefs in health-related misinformation, thereby critiquing the monological theory (Bruder et al., 2013; Franks et al., 2017; Miller, 2020).

Results showed that several factors are associated with whether an individual believes in health-related conspiracy theories in India. Knowledge of these psychosocial determinants can help develop culturally relevant and contextualized training material to promote critical thinking and media literacy. Moreover, as analytical thinkers may be less susceptible to believing conspiracy theories (Swami et al., 2014), subsequent work could explore an intervention-based approach to develop critical thinking skills that may help people discern true from false health-related information. Future studies can also investigate the potential moderating effects of political ideology on belief in health-related conspiratorial information and extend our finding of trust in social, scientific, and political institutions having positive correlations with belief in health-related conspiratorial information, while also exploring the notions of the monological theory.

In sum, the present study provides preliminary evidence for factors that can explain beliefs in health-related misinformation in India, a few of which do not coincide with past work with Western samples.

References

Algan, Y., Cohen, D., Davoine, E., Foucault, M., & Stantcheva, S. (2021). Trust in scientists in times of pandemic: Panel evidence from 12 countries. *Proceedings of the National Academy of Sciences*, *118*(40). https://doi.org/10.1073/pnas.2108576118

Allington, D., Duffy, B., Wessely, S., Dhavan, N., & Rubin, J. (2021). Health-protective behaviour, social media usage and conspiracy belief during the COVID-19 public health emergency. *Psychological Medicine*, *51*(10), 1763–1769. https://doi.org/10.1017/S003329172000224X

Altemeyer, B. (1996). *The authoritarian specter*. Cambridge, MA: Harvard University Press.

Andrade, G. E., & Hussain, A. (2018). Polio in Pakistan: Political, sociological, and epidemiological factors. *Cureus*, *10*(10), e3502. https://doi.org/10.7759/cureus.3502

Andrade, G. (2020). Medical conspiracy theories: cognitive science and implications for ethics. *Medicine, Health Care and Philosophy*, *23*(3), 505–518. https://doi.org/10.1007/s11019-020-09951-6

Badrinathan, S., & Chauchard, S. (2021). *Religious messaging against COVID-19 misinformation: experimental evidence from India*. [Unpublished manuscript]. https://sumitrabadrinathan.github.io/Assets/paper-covid.pdf

Bierwiaczonek, K., Kunst, J., & Pich, O. (2020). Belief in COVID-19 conspiracy theories reduces

social distancing over time. *Applied Psychology Health and Well-Being, 12*(4), 1270-1285.

https://doi.org/10.1111/aphw.12223

Bierwiaczonek, K., Gundersen, A. S., & Kunst, J. R. (2022). The role of conspiracy beliefs for COVID-

19 health responses: A meta-analysis. *Current Opinion in Psychology, 46*, 101346.

https://doi.org/10.1016/j.copsyc.2022.101346

Bode, L., & Vraga, E. K. (2015). In related news, that was wrong: The correction of misinformation

through related stories functionality in social media. *Journal of Communication, 65*(4), 619-

638. https://doi.org/10.1111/jcom.12166

Brotherton, R., French, C., & Pickering, A. (2013). Measuring belief in conspiracy theories: The

generic conspiracist beliefs scale. *Frontiers in Psychology, 4*.

https://doi.org/10.3389/fpsyg.2013.00279

Bruder, M., Haffke, P., Neave, N., Nouripanah, N., & Imhoff, R. (2013). Measuring individual

differences in generic beliefs in conspiracy theories across cultures: Conspiracy Mentality

Questionnaire. *Frontiers in Psychology, 4*, 225. https://doi.org/10.3389/fpsyg.2013.00225

Centre for Regional Political Economy. (2019). *Politics and society between elections.*

https://azimpremjiuniversity.edu.in/publications/2019/report/politics-and-society-2019

Chandani, S., Jani, D., Sahu, P. K., Kataria, U., Suryawanshi, S., Khubchandani, J., Thorat, S.,

Chitlange, S., & Sharma, D. (2021). COVID-19 vaccination hesitancy in India: State of the

nation and priorities for research. *Brain, Behavior, & Immunity-Health, 18*, 100375.

https://doi.org/10.1016/j.bbih.2021.100375

Chou, W., Oh, A., & Klein, W. (2018). Addressing health-related misinformation on social media. *JAMA*, *320*(23), 2417-2418. https://doi.org/10.1001/jama.2018.16865

Douglas, K. M., Sutton, R. M., Callan, M. J., Dawtry, R. J., & Harvey, A. J. (2016). Someone is pulling the strings: Hypersensitive agency detection and belief in conspiracy theories. Thinking & Reasoning, 22(1), 57–77. https://doi.org/10.1080/13546783.2015.1051586

Dube, E., Vivion, M., & MacDonald, N. E. (2015). Vaccine hesitancy, vaccine refusal and the anti-vaccine movement: Influence, impact and implications. *Expert Review of Vaccines*, *14*(1), 99–117. https://doi.org/10.1586/14760584.2015.964212

Epley, N., & Gilovich, T. (2016). The mechanics of motivated reasoning. *Journal of Economic Perspectives*, *30*(3), 133–140. https://doi.org/10.1257/jep.30.3.133

Erikson, R. S., & Tedin, K. L. (2003). *American Public Opinion*. 6th ed New York: Longman. https://doi.org/10.4324/9781351034746

Eysenbach, G., Powell, J., Kuss, O., & Sa, E.-R. (2002). Empirical studies assessing the quality of health information for consumers on the world wide web: A systematic review. *JAMA*, *287*(20), 2691–2700. https://doi.org/10.1001/jama.287.20.2691

Forgas, J. P. (2019). Happy believers and sad skeptics? Affective influences on gullibility. *Current Directions in Psychological Science*, *28*(3), 306–313. https://doi.org/10.1177/0963721419834543

Frankfurt, H. (1986). On bullshit. *Raritan Quarterly Review*, *6*(2), 81–100. https://www2.csudh.edu/ccauthen/576f12/frankfurt__harry_-_on_bullshit.pdf

Franks, B., Bangerter, A., Bauer, M. W., Hall, M., & Noort, M. C. (2017). Beyond "monologicality"? Exploring conspiracist worldviews. *Frontiers in Psychology, 8*, 861. https://doi.org/10.3389/fpsyg.2017.00861

Freeman, D., Waite, F., Rosebrock, L., Petit, A., Causier, C., East, A., Jenner, L., Teale, A. L., Carr, L., Mulhall, S., Bold, E., & Lambe, S. (2020). Coronavirus conspiracy beliefs, mistrust, and compliance with government guidelines in England. Psychological Medicine, 1–13. https://doi.org/10.1017/s0033291720001890

Galliford, N., & Furnham, A. (2017). Individual difference factors and beliefs in medical and political conspiracy theories. *Scandinavian Journal of Psychology, 58*(5), 422–428. https://doi.org/10.1111/sjop.12382

Gilson, L. (2003). Trust and the development of health care as a social institution. *Social Science & Medicine*, *56*(7), 1453–1468. https://doi.org/10.1016/s0277-9536(02)00142-9

Grzesiak-Feldman, M. (2013). The effect of high-anxiety situations on conspiracy thinking. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues, 32*(1), 100–118. https://doi.org/10.1007/s12144-013-9165-6

Haidt, J. (2003). Elevation and the positive psychology of morality. In C. L. M. Keyes & J. Haidt (Eds.) *Flourishing: Positive psychology and the life well-lived*. Washington DC: American Psychological Association. (pp. 275-289). https://psycnet.apa.org/doi/10.1037/10594-012

Hall, M. A., Camacho, F., Dugan, E., & Balkrishnan, R. (2002). Trust in the medical profession: Conceptual and measurement issues. *Health Services Research*, *37*(5), 1419–1439. https://doi.org/10.1111/1475-6773.01070

Han, J. Y., Wise, M., Kim, E., Pingree, R., Hawkins, R. P., Pingree, S., McTavish, F., & Gustafson, D. H. (2010). Factors associated with use of interactive cancer communication system: An application of the comprehensive model of information seeking. *Journal of Computer-Mediated Communication*, *15*(3), 367–388. https://doi.org/10.1111/j.1083-6101.2010.01508.x

Havey, N. F. (2020). Partisan public health: How does political ideology influence support for

COVID-19 related misinformation? *Journal of Computational Social Science*, *3*(2), 319–342.

https://doi.org/10.1007/s42001-020-00089-2

Huddy, L., Mason, L., & Aarøe, L. (2015). Expressive partisanship: Campaign involvement, political

emotion, and partisan identity. *American Political Science Review*, *109*(1), 1–17.

https://doi.org/10.1017/s0003055414000604

Hughes, J. P., Efstratiou, A., Komer, S. R., Baxter, L. A., Vasiljevic, M., & Leite, A. C. (2022). The

impact of risk perceptions and belief in conspiracy theories on COVID-19 pandemic-related

behaviours. *PloS one, 17*(2). https://doi.org/10.1371/journal.pone.0263716

Islam, M. S., Kamal, A. H. M., Kabir, A., Southern, D. L., Khan, S. H., Hasan, S. M., ... & Seale, H.

(2021). COVID-19 vaccine rumors and conspiracy theories: The need for cognitive

inoculation against misinformation to improve vaccine adherence. PloS one, 16(5), e0251605.

https://doi.org/10.1371/journal.pone.0251605

Iyengar, A., Gupta, P., & Priya, N. (2022). Inoculation against conspiracy theories: A consumer side

approach to India's fake news problem. *Applied Cognitive Psychology*.

https://doi.org/10.1002/acp.3995

Kalichman, S. C., Shkembi, B., Kalichman, M. O., & Eaton, L. A. (2021). Trust in health information

sources and its associations with COVID-19 disruptions to social relationships and health

services among people living with HIV. *BMC Public Health*, *21*(1).

https://doi.org/10.1186/s12889-021-10856-z

Kouzy, R., Abi Jaoude, J., Kraitem, A., El Alam, M. B., Karam, B., Adib, E., Zarka, J., Traboulsi, C.,

　　Akl, E. W., & Baddour, K. (2020). Coronavirus goes viral: Quantifying the COVID-19

　　misinformation epidemic on Twitter. *Cureus*, *12*(3), e7255. https://doi.org/10.7759/cureus.7255

Kroke, A. M., & Ruthig, J. C. (2022). Conspiracy beliefs and the impact on health behaviors. *Applied*

　　Psychology: Health and Well-Being, 14(1), 311-328. https://doi.org/10.1111/aphw.12304

Lerner, J. S., & Keltner, D. (2001). Fear, anger, and risk. *Journal of Personality and Social Psychology*,

　　81(1), 146–159. https://doi.org/10.1037/0022-3514.81.1.146

Leonard, M., & Philippe, F. L. (2021). Conspiracy Theories: A Public Health Concern and How to

　　Address It. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.682931

Li, H. O.-Y., Bailey, A., Huynh, D., & Chan, J. (2020). YouTube as a source of information on

　　COVID-19: A pandemic of misinformation? *BMJ Global Health*, *5*(5), e002604.

　　https://doi.org/10.1136/bmjgh-2020-002604

Mallick,A. (2021). COVID-19: Excessive consumption of 'kadha' and possible side effects for more

　　health. *The Quint*. https://fit.thequint.com/fit-webqoof/side-effects-of-having-too-much-

　　kadha-for-treating-covid-19#read-more

Mao, J. Y., Yang, S. L., & Guo, Y. Y. (2020). Are individuals from lower social classes more

　　susceptible to conspiracy theories? An explanation from the compensatory control theory.

　　Asian Journal of Social Psychology, 23(4), 372-383. https://doi.org/10.1111/ajsp.12417

Mari, S., Gil de Zúñiga, H., Suerdem, A., Hanke, K., Brown, G., Vilar, R., Boer, D., & Bilewicz, M.

　　(2021). Conspiracy theories and institutional trust: Examining the role of uncertainty

　　avoidance and active social media use. *Political Psychology, 43*(2), 277–296.

　　https://doi.org/10.1111/pops.12754

Meredith, L. S., Eisenman, D. P., Rhodes, H., Ryan, G., & Long, A. (2007). Trust influences response to public health messages during a bioterrorist event. *Journal of Health Communication*, *12*(3), 217–232. https://doi.org/10.1080/10810730701265978

Michael, R. B., & Breaux, B. O. (2021). The relationship between political affiliation and beliefs about sources of "fake news". *Cognitive Research: Principles and Implications*, *6*(1). https://doi.org/10.1186/s41235-021-00278-1

Miller, J. M. (2020). Do COVID-19 conspiracy theory beliefs form a monological belief system?. *Canadian Journal of Political Science. Revue Canadienne De Science Politique*, 1–8. https://doi.org/10.1017/S0008423920000517

Mousoulidou, M., Christodoulou, A., Siakalli, M., & Argyrides, M. (2023). The Role of Conspiracy Theories, Perceived Risk, and Trust in Science on COVID-19 Vaccination Decisiveness: Evidence from Cyprus. *International journal of environmental research and public health*, *20*(4), 2898. https://doi.org/10.3390/ijerph20042898

Naqvi, N., Shiv, B., & Bechara, A. (2006). The role of emotion in decision making: A cognitive neuroscience perspective. *Current Directions in Psychological Science*, *15*(5), 260–264. https://doi.org/10.1111/j.1467-8721.2006.00448.x

Newhagen, J., & Bucy, E. (2020). Overcoming resistance to COVID-19 vaccine adoption: How affective dispositions shape views of science and medicine. *Harvard Kennedy School (HKS) Misinformation Review, 1*(6). https://doi.org/10.37016/mr-2020-44

Oedekoven, M., Herrmann, W. J., Ernsting, C., Schnitzer, S., Kanzler, M., Kuhlmey, A., & Gellert, P. (2019). Patients' health literacy in relation to the preference for a general practitioner as the

source of health information. *BMC Family Practice*, *20*(1), 94. https://doi.org/10.1186/s12875-019-0975-y

Oliver, J. E., & Wood, T. (2014). Medical conspiracy theories and health behaviors in the United States. *JAMA Internal Medicine*, *174*(5), 817–818. https://doi.org/10.1001/JAMAINTERNMED.2014.190

Panda, T. K., Panda, T., & Mishra, K. (2013). Does emotional appeal work in advertising? The rationality behind using emotional appeal to create favorable brand attitude. *IUP Journal of Brand Management*, *10*(2), 7. https://www.questia.com/library/journal/1P3-3077185471/does-emotional-appeal-work-in-advertising-the-rationality

Pennycook, G., Cheyne, J., Barr, N., Koehler, D., & Fugelsang, J. (2015). On the reception and detection of pseudo-profound bullshit. *Judgment and Decision Making*, *10*, 549–563. https://doi.org/10.1017/S1930297500006999

Pennycook, G., McPhetres, J., Bago, B., & Rand, D. G. (2022). Beliefs about COVID-19 in Canada, the United Kingdom, and the United States: A novel test of political polarization and motivated reasoning. *Personality and Social Psychology Bulletin, 48*(5), 750-765. https://doi.org/10.1177/01461672211023652

Pennycook, G., & Rand, D. G. (2020). Who falls for fake news? The roles of bullshit receptivity, overclaiming, familiarity, and analytic thinking. *Journal of Personality*, *88*(2), 185–200. https://doi.org/10.1111/jopy.12476

Pennycook, G., & Rand, D. G. (2021). The psychology of fake news. *Trends in Cognitive Sciences*, *25*(5), 388–402. https://doi.org/10.1016/j.tics.2021.02.007

Pisl, V., Volavka, J., Chvojkova, E., Cechova, K., Kavalirova, G., & Vevera, J. (2021). Dissociation, cognitive reflection and health literacy have a modest effect on belief in conspiracy theories about COVID-19. *International Journal of Environmental Research and Public Health, 18*(10), 5065. https://doi.org/10.3390/ijerph18105065

Pummerer, L., Böhm, R., Lilleholt, L., Winter, K., Zettler, I., & Sassenberg, K. (2022). Conspiracy theories and their societal effects during the COVID-19 pandemic. *Social Psychological and Personality Science, 13*(1), 49–59. https://doi.org/10.1177/19485506211000217

Purvis, R. S., Willis, D. E., Moore, R., Bogulski, C., & McElfish, P. A. (2021). Perceptions of adult Arkansans regarding trusted sources of information about the COVID-19 pandemic. *BMC Public Health*, *21*(1), 2306. https://doi.org/10.1186/s12889-021-12385-1

Puthillam, A., Kapoor, H., & Karandikar, S. (2021, February 17). Beyond left and right: A scale to measure political ideology in India. https://doi.org/10.31234/osf.io/fg387

R Core Team (2021). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/

Salvi, C., Iannello, P., Cancer, A., McClay, M., Rago, S., Dunsmoor, J. E., & Antonietti, A. (2021). Going viral: How fear, socio-cognitive polarization and problem-solving influence fake news detection and proliferation during COVID-19 pandemic. *Frontiers in Communication*, *5*. https://www.frontiersin.org/articles/10.3389/fcomm.2020.562588

Schwarz, N. (2012). Feelings-as-information theory. *Handbook of Theories of Social Psychology: Volume 1*, 289–308. https://doi.org/10.4135/9781446249215.n15

Shapiro, G. K., Holding, A., Perez, S., Amsel, R., & Rosberger, Z. (2016). Validation of the vaccine

conspiracy beliefs scale. *Papillomavirus Research, 2*, 167-172.

https://doi.org/10.1016/j.pvr.2016.09.001

Sharma, A. (2022). India's Floating Disinformation during the COVID-19 Pandemic. *Journal of Media

Ethics, 37*(2), 145-147. https://doi.org/10.1080/23736992.2022.2056038

Sjöberg, L. (2007). Emotions and risk perception. *Risk Management*, *9*(4), 223–237.

https://doi.org/10.1057/palgrave.rm.8250038

Smith, C. (2017). First, do no harm: Institutional betrayal and trust in health care organizations. *Journal

of Multidisciplinary Healthcare*, *10*, 133–144. https://doi.org/10.2147/jmdh.s125885

Somera, L. P., Lee, H.-R., Badowski, G., & Cassel, K. (2016). Health information seeking, source trust,

and culture: A comparative analysis of health information trends and needs between Guam

and the United States. *Journal of Health Communication*, *21*(4), 469–478.

https://doi.org/10.1080/10810730.2015.1095822

Southwell, B., Niederdeppe, J., Cappella, J., Gaysynsky, A., Kelley, D., Oh, A., Peterson, E., & Chou,

W. (2019). Misinformation as a misunderstood challenge to public health. *American Journal of

Preventive Medicine*, *57*(2), 282-285. https://doi.org/10.1016/J.AMEPRE.2019.03.009

Šrol, J., Ballová Mikušková, E., & Čavojová, V. (2021). When we are worried, what are we thinking?

Anxiety, lack of control, and conspiracy beliefs amidst the COVID-19 pandemic. *Applied

Cognitive Psychology, 35*(3), 720-729. https://doi.org/10.1002/acp.3798

Suarez-Lledo, V., & Alvarez-Galvez, J. (2021). Prevalence of health misinformation on social media:

Systematic review. *Journal of Medical Internet Research*, *23*(1). https://doi.org/10.2196/17187

Sui, Y., & Zhang, B. (2021). Determinants of the perceived credibility of rebuttals concerning health

misinformation. *International Journal of Environmental Research and Public Health*, *18*, 1345.

https://doi.org/10.3390/ijerph18031345

Swami, V., Voracek, M., Stieger, S., Tran, U. S., & Furnham, A. (2014). Analytic thinking reduces

belief in conspiracy theories. *Cognition,* 133, 572-585.

https://doi.org/10.1016/j.cognition.2014.08.006

Swire-Thompson, B., & Lazer, D. (2019). Public health and online misinformation: Challenges and

recommendations. *Annual Review of Public Health*, *41*, 433-451.

https://doi.org/10.1146/annurev-publhealth-040119-094127

Tagat, A., & Kapoor, H. (2023). We're very grateful: moral emotions, role models, and trust predict

vaccine uptake intent in India. Behavioural Public Policy, June 2021, 1–22.

https://doi.org/10.1017/bpp.2023.12

Tangney, J. P., Stuewig, J., & Mashek, D. J. (2007). Moral emotions and moral behavior. *Annual

Review of Psychology*, *58*(1), 345–372.

https://doi.org/10.1146/annurev.psych.56.091103.070145

Tappin, B. M., van der Leer, L., & McKay, R. T. (2017). The heart trumps the head: Desirability bias in

political belief revision. *Journal of Experimental Psychology: General*, *146*(8), 1143–1149.

https://doi.org/10.1037/xge0000298

Thorburn Bird, S., & Bogart, L. M. (2003). Birth control conspiracy beliefs, perceived discrimination,

and contraception among African Americans: An exploratory study. *Journal of Health

Psychology*, *8*(2), 263–276. https://doi.org/10.1177/1359105303008002669

Ticku, A., Puthillam, A., & Kapoor, H. (2021, August 4). How risky is it to not wear a mask? Moral emotions increase preventative health behaviours during the COVID-19 pandemic in India. https://doi.org/10.31234/osf.io/vtxuk

Timonen, J. (2020, June 25). Why is science education important? *JYUnity blog.* Retrieved from: https://jyunity.fi/en/thinkers/why-is-science-education-important/

Uscinski, J. E., & Parent, J. M. (2014). *American conspiracy theories*. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199351800.001.0001

Uscinski, J. E., Enders, A. M., Klofstad, C., Seelig, M., Funchion, J., Everett, C., & Murthi, M. (2020). Why do people believe COVID-19 conspiracy theories? *Harvard Kennedy School (HKS) Misinformation Review, 1*(3), 1–12. https://doi.org/10.37016/mr-2020-015

Uzzi, B. (1996). The sources and consequences of embeddedness for the economic performance of organizations: The network effect. *American Sociological Review, 61*(4), 674. https://doi.org/10.2307/2096399

van Holm, E. J., Monaghan, J., Shahar, D. C., Messina, J., & Surprenant, C. (2020). The impact of political ideology on concern and behavior during COVID-19. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3573224

Van Prooijen, J., Rodrigues, T. C., Bunzel, C., Georgescu, O. M., Komáromy, D., & Krouwel, A. (2022). Populist gullibility: Conspiracy theories, news credibility, bullshit receptivity, and paranormal belief. *Political Psychology, 43*(6), 1061–1079. https://doi.org/10.1111/pops.12802

van Prooijen, J. W., Amodio DM, Boot A, Eerland A, Etienne T, Krouwel, A. P. M, Onderco M, Verkoeijen P, Zwaan RA (2022). A longitudinal analysis of conspiracy beliefs and COVID-19 health responses. *Psychological Medicine* 1–8. https://doi.org/10.1017/S0033291722002938

van Prooijen, J. W., & Douglas, K. M. (2018). Belief in conspiracy theories: Basic principles of an

emerging research domain. *European Journal of Social Psychology*, *48*(7), 897–897.

https://doi.org/10.1002/EJSP.2530

van Prooijen, J. W., & Douglas, K. M. (2017). Conspiracy theories as part of history: The role of

societal crisis situations. *Memory Studies*, *10*(3), 323–333.

https://doi.org/10.1177/1750698017701615

van Prooijen, J. W., & Jostmann, N. B. (2013). Belief in conspiracy theories: The influence of

uncertainty and perceived morality. *European Journal of Social Psychology, 43*(1), 109-115.

https://doi.org/10.1002/ejsp.1922

van Prooijen, J. W., Krouwel, A. P. M., & Pollet, T. V. (2015). Political extremism predicts belief in

conspiracy theories. *Social Psychological and Personality Science*, *6*(5), 570–578.

https://doi.org/10.1177/1948550614567356

Vinck, P., Pham, P. N., Bindu, K. K., Bedford, J., & Nilles, E. J. (2019). Institutional trust and

misinformation in the response to the 2018–19 Ebola outbreak in North Kivu, DR Congo: A

population-based survey. *The Lancet Infectious Diseases*, *19*(5), 529–536.

https://doi.org/10.1016/s1473-3099(19)30063-5

Zhang, Y. (2014). Beyond quality and accessibility: Source selection in consumer health information

searching. *Journal of the Association for Information Science and Technology*, *65*(5), 911–927.

https://doi.org/10.1002/asi.23023

Tables

Table 1.

Sample Descriptives and Correlations

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Age	27.42	6.79																	
2. Gender	1.38	0.48	-.07																
3. Socioeconomic Status	6.89	1.58	.08*	.03															
4. Education	5.75	1.27	.17**	.00	.01														
5. Employment	0.83	0.38	.12**	-.14**	.07*	.12**													
6. Political Ideology (PI)	149.67	29.55	-.02	-.14**	-.15**	-.03	.18**												
7. PI Purity Subscale	46.21	15.95	-.04	-.11**	.03	-.23**	.17**	.73**											
8. PI Obedience Subscale	81.59	20.62	.00	-.12**	-.23**	.12**	.14**	.86**	.29**										
9. PI Economic Subscale	21.88	2.62	-.04	.06	.02	.11**	-.06	.05	-.15**	.06									
10. Moral Emotions (ME)	73.87	23.88	-.02	-.07	-.30**	.20**	.12**	.55**	.06	.75**	-.01								
11. Positive ME	30.12	9.66	-.01	-.04	-.27**	.22**	.10**	.46**	.00	.65**	.11**	.92**							
12. Negative ME	43.74	15.43	-.03	-.08*	-.30**	.18**	.12**	.57**	.09**	.75**	-.09*	.97**	.80**						

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Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
13. Trust	62.10	13.32	-.13**	-.12**	-.14**	.01	.09**	.57**	.45**	.46**	.04	.35**	.30**	.34**					
14. Trust General Subscale	51.48	11.14	-.14**	-.11**	-.14**	.01	.09*	.55**	.44**	.44**	.06	.34**	.31**	.34**	.99**				
15. Trust Political Subscale	10.62	3.03	-.06	-.10**	-.08*	.00	.09*	.49**	.40**	.40**	-.03	.26**	.20**	.28**	.77**	.65**			
16. Belief in Conspiratorial Information	25.66	5.24	-.00	-.06	-.33**	.20**	.09*	.37**	.07*	.46**	.09*	.54**	.50**	.52**	.22**	.24**	.09*		
17. Conspiratorial Thinking	58.91	11.70	-.06	-.02	-.21**	.13**	.04	.43**	.11**	.51**	.11**	.54**	.50**	.51**	.31**	.31**	.23**	.66**	
18. Bullshit Receptivity	40.00	7.40	.14**	-.05	.17**	.09**	.04	.49**	.14**	.56**	.27**	.50**	.53**	.45**	.48**	.48**	.35**	.42**	.50**

*Note. M and SD are used to represent mean and standard deviation, respectively. *p<.05, **p<.01, ***p<.001*

Table 2.

Hierarchical regressions between scale totals and belief in conspiratorial information

Variable	B	CI for B		SE B	β	R^2	ΔR^2
		LL	UL				
Step 1						0.089	
Age	0.012	-0.04	0.064	0.026	0.015		
Socio-economic Status	-1.02***	-1.238	-0.8	0.112	-0.304***		
Step 2						0.191	0.102
Age	0.01	-0.039	0.059	0.025	0.013		
Socio-economic Status	-0.909***	-1.117	-0.702	0.106	-0.272***		
Political Ideology	0.056***	0.045	0.067	0.005	0.321***		
Step 3						0.291	0.10
Age	0.009	-0.037	0.054	0.023	0.011		
Socio-economic Status	-0.642***	-0.843	-0.442	0.102	-0.192***		
Political Ideology	0.019**	0.007	0.032	0.006	0.112**		
Moral Emotions	0.086***	0.071	0.102	0.008	0.392***		
Step 4						0.292	0.001
Age	0.004	-0.042	0.05	0.023	0.005		
Socio-economic Status	-0.648***	-0.849	-0.448	0.102	-0.194***		
Political Ideology	0.024***	0.011	0.038	0.007	0.139***		
Moral Emotions	0.087***	0.071	0.103	0.008	0.394***		
Trust in Institutions	-0.021	-0.049	0.007	0.014	-0.052		
Step 5						0.487	0.195
Age	0.017	-0.022	0.057	0.02	0.022		
Socio-economic Status	-0.544***	-0.714	-0.373	0.087	-0.162***		
Political Ideology	0.014*	0.002	0.026	0.006	0.079*		
Moral Emotions	0.041***	0.027	0.055	0.007	0.187***		
Trust in Institutions	-0.031*	-0.055	-0.007	0.012	-0.078*		

Conspiratorial Thinking	0.233***	0.207	0.259	0.013	0.517***		
Step 6						0.488	0.001
Age	0.02	-0.019	0.059	0.02	0.026		
Socio-economic Status	-0.544***	-0.714	-0.373	0.087	-0.162***		
Political Ideology	0.013*	0.001	0.025	0.006	0.074*		
Moral Emotions	0.039***	0.024	0.053	0.007	0.176***		
Trust in Institutions	-0.036**	-0.06	-0.011	0.012	-0.09**		
Conspiratorial Thinking	0.227***	0.2	0.254	0.014	0.505***		
Bullshit Receptivity	0.035	-0.012	0.081	0.024	0.048		

*Note: *p<.05, **p<.01, ***p<.001*

Table 3.

Hierarchical regressions between sub-scales and belief in conspiratorial information

Variable	B	CI for B		SE B	β	R^2	ΔR^2
		LL	UL				
Step 1						0.089	
Age	0.012	-0.04	0.064	0.026	0.015		
Socio-economic Status	-1.019***	-1.238	-0.8	0.112	-0.304***		
Step 2						0.24	0.151
Age	-0.0004	-0.048	0.047	0.024	-0.0005		
Socio-economic Status	-0.771***	-0.975	-0.566	0.104	-0.23***		
Political Ideology – Purity	-0.013	-0.035	0.008	0.011	-0.041		
Political Ideology – Obedience	0.101***	0.085	0.118	0.008	0.405***		
Political Ideology - Economic Ideology	0.064	-0.057	0.185	0.062	0.032		
Step 3						0.294	0.054
Age	0.007	-0.038	0.053	0.023	0.009		
Socio-economic Status	-0.637***	-0.837	-0.437	0.102	-0.19***		
Political Ideology – Purity	0.008	-0.013	0.029	0.011	0.025		

Political Ideology – Obedience	0.032**	0.008	0.056	0.012	0.129**		
Political Ideology - Economic ideology	0.111	-0.012	0.236	0.063	0.056		
Positive Moral Emotions	0.102***	0.046	0.158	0.028	0.186***		
Negative Moral Emotions	0.065**	0.025	0.106	0.021	0.192**		
Step 4						0.309	0.015
Age	0.007	-0.039	0.053	0.023	0.009		
Socio-economic Status	-0.635***	-0.833	-0.436	0.101	-0.189***		
Political Ideology – Purity	0.016	-0.007	0.039	0.012	0.047		
Political Ideology – Obedience	0.039**	0.015	0.064	0.012	0.158**		
Political Ideology - Economic ideology	0.104	-0.019	0.228	0.063	0.052		
Positive Moral Emotions	0.095***	0.04	0.151	0.028	0.174***		
Negative Moral Emotions	0.067**	0.027	0.108	0.021	0.198**		
Trust in Social/Scientific Institutions	0.038	-0.001	0.078	0.02	0.081		
Trust in Political Institutions	-0.302***	-0.439	-0.165	0.069	-0.172***		
Step 5						0.497	0.188
Age	0.022	-0.017	0.061	0.019	0.027		
Socio-economic Status	-0.538***	-0.708	-0.369	0.086	-0.161***		
Political Ideology – Purity	0.018	-0.002	0.037	0.009	0.053		
Political Ideology – Obedience	0.015	-0.005	0.036	0.011	0.06		
Political Ideology - Economic ideology	0.045	-0.061	0.151	0.054	0.022		
Positive Moral Emotions	0.039	-0.008	0.087	0.024	0.072		
Negative Moral Emotions	0.042*	0.007	0.076	0.017	0.123*		
Trust in Social/Scientific Institutions	0.021	-0.012	0.055	0.017	0.044		
Trust in Political Institutions	-0.288***	-0.404	-0.171	0.059	-0.164***		
Conspiratorial Thinking	0.23***	0.205	0.256	0.013	0.511***		
Step 6						0.498	0.001
Age	0.025	-0.014	0.064	0.02	0.031		
Socio-economic Status	-0.054***	-0.708	-0.369	0.086	-0.161***		
Political Ideology – Purity	0.018	-0.001	0.038	0.009	0.055		
Political Ideology – Obedience	0.012	-0.009	0.033	0.011	0.047		

Political Ideology - Economic ideology	0.029	-0.078	0.138	0.055	0.015
Positive Moral Emotions	0.033	-0.016	0.081	0.025	0.059
Negative Moral Emotions	0.044*	0.009	0.079	0.018	0.13*
Trust in Social/Scientific Institutions	0.016	-0.018	0.05	0.017	0.034
Trust in Political Institutions	-0.292***	-0.409	-0.175	0.059	-0.166***
Conspiratorial Thinking	0.226***	0.199	0.253	0.013	0.502***
Bullshit Receptivity	0.033	-0.017	0.083	0.025	0.046

*Note: *p<.05, **p<.01, ***p<.001*

Figures

Figure 1.

Frequency of users for various sources of health-related information.

Sources of Information
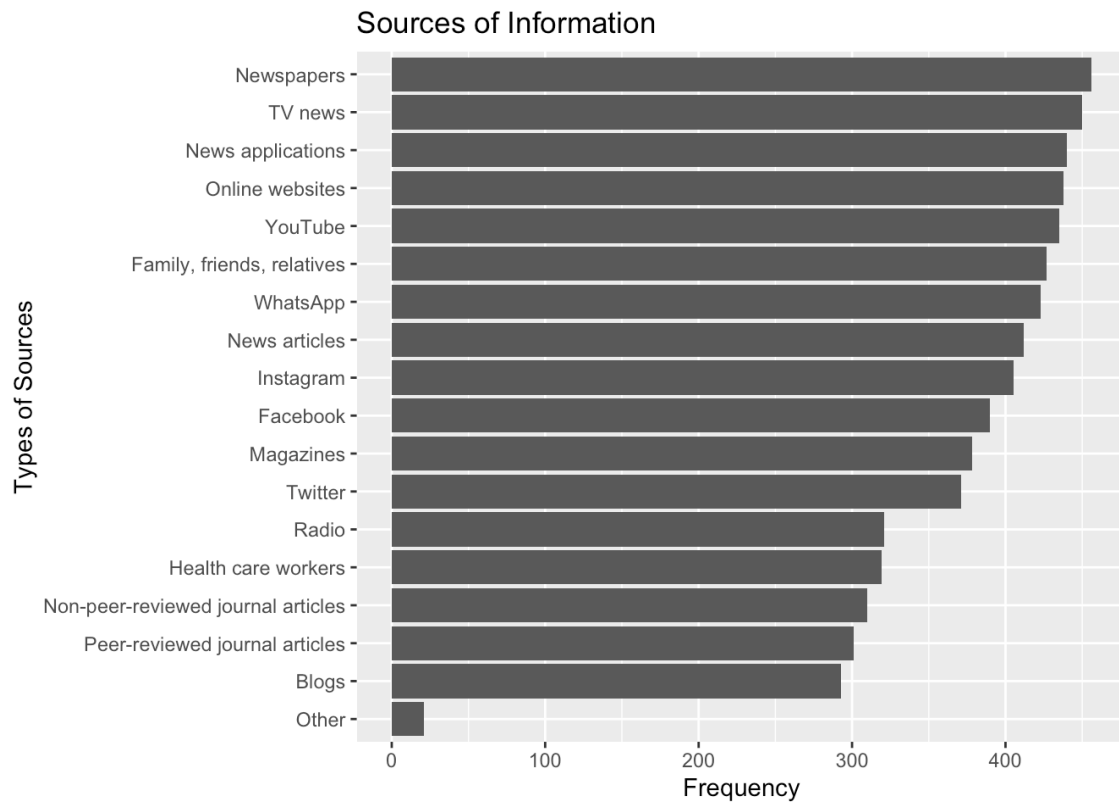
Supplementary Table 1.
Two-Factor EFA Solutions for Trust in Institutions Scale

	Factor 1	Factor 2	h2	u2	com
People in your family	**.12**	.37	.20	.80	1.2
People in your neighborhood	**.69**	.13	.58	.42	1.1
People you work or study with	**.61**	.10	.44	.56	1.1
People who speak a different language from you	**.85**	-.06	.67	.33	1.0
Strangers	**.40**	-.53	.22	.78	1.8
Immigrants	**.90**	-.23	.65	.35	1.1
Medical doctors and nurses	.01	**.85**	.73	.27	1.0
Scientists	.00	**.86**	.73	.27	1.0
Journalists	.55	**.33**	.60	.40	1.6
Scientific knowledge	-.08	**.91**	.76	.24	1.0
Government officials	**.84**	.02	.72	.28	1.0
Prime minister	**.83**	.02	.71	.29	1.0
Parliament	**.85**	-.01	.72	.28	1.0
State assembly	**.88**	-.01	.76	.24	1.0
Gram panchayat	**.90**	-.07	.75	.25	1.0
Political party at national level	**.33**	.43	.44	.56	1.9
Political party at state level	**.65**	.12	.53	.47	1.1
Political party at local level	**.67**	.00	.45	.55	1.0

Note. h2 = communality, u2 = residual variance, com = indicator of cross-loading

Supplementary Table 2.

Three-Factor EFA Solutions for Trust in Institutions Scale

	Trust in Social Institutions	Trust in Scientific Institutions	Trust in Political Institutions	h2	u2	com
People in your family	**.25**	.06	.69	.58	.42	1.3
People in your neighborhood	**.75**	-.02	.33	.68	.32	1.4
People you work or study with	**.68**	-.07	.36	.57	.43	1.5
People who speak a different language from you	**.85**	-.06	.01	.67	.33	1.0
Strangers	**.28**	-.24	-.66	.50	.50	1.7
Immigrants	**.93**	-.28	.06	.67	.33	1.2
Medical doctors and nurses	-.03	**.85**	.14	.74	.26	1.1
Scientists	-.05	**.88**	.11	.75	.25	1.0
Journalists	.55	**.30**	.12	.60	.40	1.7
Scientific knowledge	-.14	**.94**	.10	.79	.21	1.1
Government officials	.83	.03	**.00**	.72	.28	1.0
Prime minister	.81	.05	**-.05**	.71	.29	1.0
Parliament	.85	.01	**-.01**	.72	.28	1.0
State assembly	.86	.03	**-.06**	.76	.24	1.0
Gram panchayat	.89	-.05	**-.03**	.75	.25	1.0
Political party at national level	.23	.60	**-.25**	.59	.41	1.7
Political party at state level	.60	.24	**-.18**	.58	.42	1.5
Political party at local level	.60	.15	**-.26**	.52	.48	1.5

Note. h2 = communality, u2 = residual variance, com = indicator of cross-loading

Supplementary Table 3.

Two and Three-Factor CFA Fit Indices for Trust in Institutions Scale

	Estimation	N	χ^2	df	χ^2/df	CFI	TLI	RMSEA	SRMR
2-Factor	ML	206	575.633***	134	4.29	0.817	0.792	0.126	0.118
	MLR	206	433.658***	134	3.24	0.825	0.801	0.104	0.118
	DWLS	206	255.775***	134	1.91	0.975	0.971	0.067	0.098
	WLSMV	206	373.358***	134	2.79	0.779	0.748	0.093	0.098
3-Factor	ML	206	543.575***	132	4.12	0.83	0.803	0.123	0.115
	MLR	206	409.523***	132	3.1	0.838	0.813	0.101	0.115
	DWLS	206	239.435***	132	1.81	0.978	0.974	0.063	0.095
	WLSMV	206	371.040***	132	2.81	0.779	0.744	0.094	0.095

Note. ***p<.001, CFI = Comparative Fit Index, TLI = Tucker Lewis Index, RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual

Supplementary Table 4.

One-Factor EFA Solutions for Moral Emotions Scale

	Factor 1	h2	u2	com
Contempt towards other people who spread health-related conspiracies.	.87	.76	.24	1
Anger towards other people who spread health-related conspiracies.	.89	.79	.21	1
Disgust towards other people who spread health-related conspiracies.	.84	.71	.29	1
Shame for spreading health-related conspiracies.	.84	.71	.29	1
Embarrassment for spreading health-related conspiracies.	.81	.66	.34	1
Guilt for spreading health-related conspiracies.	.83	.69	.31	1
Gratitude towards those who do not spread health-related conspiracies.	.81	.66	.34	1
Awe towards those who do not spread health-related conspiracies.	.83	.70	.30	1
Compassion towards those who do not spread health-related conspiracies.	.83	.68	.32	1
Pride for not spreading health-related conspiracies.	.84	.71	.29	1

Note. h2 = communality, u2 = residual variance, com = indicator of cross-loading

Supplementary Table 5.
Two-Factor EFA Solutions for Moral Emotions Scale

	Negative Emotions	Positive Emotions	h2	u2	com
Contempt towards other people who spread health-related conspiracies.	**.75**	.17	.78	.22	1.1
Anger towards other people who spread health-related conspiracies.	**.63**	.31	.79	.21	1.5
Disgust towards other people who spread health-related conspiracies.	**.74**	.14	.73	.27	1.1
Shame for spreading health-related conspiracies.	**.02**	.92	.87	.13	1.0
Embarrassment for spreading health-related conspiracies.	**-.05**	.95	.84	.16	1.0
Guilt for spreading health-related conspiracies.	**-.02**	.95	.86	.14	1.0
Gratitude towards those who do not spread health-related conspiracies.	1.03	**-.19**	.80	.20	1.1
Awe towards those who do not spread health-related conspiracies.	.74	**.13**	.72	.28	1.1
Compassion towards those who do not spread health-related conspiracies.	.99	**-.14**	.80	.20	1.0
Pride for not spreading health-related conspiracies.	.63	**.26**	.71	.29	1.3

Note. h2 = communality, u2 = residual variance, com = indicator of cross-loading

Supplementary Table 6.

One and Two-Factor CFA Fit Indices for Moral Emotions Scale

	Estimation	*N*	χ^2	df	χ^2/df	CFI	TLI	RMSEA	SRMR
1-Factor	ML	190	182.574***	35	5.22	0.911	0.885	0.149	0.044
	MLR	190	80.712***	35	2.31	0.934	0.915	0.083	0.044
	DWLS	190	11.492	35	0.33	1	1.014	0	0.044
	WLSMV	190	50.119**	35	1.43	0.971	0.963	0.048	0.044
2-Factor	ML	190	162.341***	34	4.77	0.922	0.897	0.141	0.043
	MLR	190	70.858***	34	2.08	0.947	0.929	0.076	0.043
	DWLS	190	10.207	34	0.3	1	1.015	0	0.042
	WLSMV	190	46.381*	34	1.36	0.976	0.969	0.044	0.042

Note. *p<.05, **p<.01, ***p<.001, CFI = Comparative Fit Index, TLI = Tucker Lewis Index, RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual

Supplementary Table 7.

Three-Factor CFA Fit Indices for Political Ideology Scale

	Estimation	*N*	χ2	df	χ2/df	CFI	TLI	RMSEA	SRMR
3-Factor	ML	206	2668.409***	524	5.09	0.685	0.662	0.141	0.171
	MLR	206	1980.973***	524	3.78	0.687	0.665	0.116	0.171
	DWLS	206	2028.619***	524	3.87	0.883	0.875	0.118	0.146
	WLSMV	206	2061.869***	524	3.93	0.000	-0.122	0.120	0.146

Note. ***p<.001, CFI = Comparative Fit Index, TLI = Tucker Lewis Index, RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual

Supplementary Table 8.

One-Factor CFA Fit Indices for Conspiratorial Thinking Scale

	Estimation	*N*	χ^2	df	χ^2/df	CFI	TLI	RMSEA	SRMR
1-Factor	ML	206	208.227***	54	3.86	0.901	0.879	0.118	0.07
	MLR	206	155.719***	54	2.88	0.904	0.883	0.096	0.07
	DWLS	206	44.47	54	0.82	1	1.005	0	0.07
	WLSMV	206	143.322***	54	2.65	0.822	0.782	0.09	0.07

Note. ***$p<.001$, CFI = Comparative Fit Index, TLI = Tucker Lewis Index, RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual

Supplementary Table 9.

One-Factor CFA Fit Indices for Bullshit Receptivity Scale

	Estimation	*N*	χ2	df	χ2/df	CFI	TLI	RMSEA	SRMR
1-Factor	ML	206	55.397*	35	1.58	0.979	0.973	0.053	0.035
	MLR	206	39.097	35	1.18	0.994	0.992	0.024	0.035
	DWLS	206	8.757	35	0.25	1	1.024	0	0.035
	WLSMV	206	38.075	35	1.09	0.992	0.99	0.021	0.035

Note. CFI = Comparative Fit Index, TLI = Tucker Lewis Index, RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual

Supplementary Table 10.

One-Factor EFA Solutions for Belief in Conspiratorial Information Scale

	Factor 1	h2	u2	com
Pharmaceutical companies cover up the dangers of vaccines.	.39	.153	0.85	1
Immunizing children is harmful and this fact is covered up.	.19	.035	.97	1
Cures for certain deadly and common diseases exist, but are being deliberately withheld.	.68	.464	.54	1
Progress towards a cure for cancer, AIDS, and other diseases is deliberately being hindered.	.69	.478	.52	1
Health officials know that cell phones cause cancer but are doing nothing to stop it because large corporations won't let them.	.65	.425	.57	1
Experiments involving new drugs or technologies are routinely carried out on the public without their knowledge or consent.	.70	.483	.52	1
Some viruses and/or diseases which many people are infected with are created in laboratories as bio-weapons.	.67	.454	.55	1
A lot of information about diseases and treatments is withheld from the public.	.35	.124	.88	1
Big Pharma companies benefit by discrediting Ayurveda, Homeopathic and Unani Medicines.	.69	.473	.53	1
Face masks create problems like increasing CO_2 intake, leading to brain damage.	.60	.356	.64	1
Agribusinesses have suppressed data showing that genetically modified foods give you cancer.	.68	.456	.54	1
Lakhs of people died after taking allopathic medicines during the pandemic. If patients have an illness that cannot be cured by western medicines, they must be directed to alternative treatments.	.69	.472	.53	1

Note. h2 = communality, u2 = residual variance, com = indicator of cross-loading

Appendix: Factor Analysis

1. Trust in Institutions[3]

The factor structure of the Trust in Institutions scale was assessed through exploratory and confirmatory factor analyses (EFA, CFA). EFA with principal components analysis and oblique rotation (promax) were computed using R. Table S1 displays the two-factor EFA model in which Factor 1 comprised 14 items and explained 71% of the variance. Factor 2 comprised 4 items and explained 29% of the variance. In the three-factor model (Table S2), Factor 1, labeled "Trust in Social Institutions", comprised 6 items and explained 62% of the variance. Factor 2, labeled "Trust in Scientific Institutions", comprised 4 items and explained 26% of the variance. Last, Factor 3, labeled "Trust in Political Institutions", comprised 8 items and explained 12% of the variance. Although the 3-factor solution seemed less optimal, from a theoretical point of view, distinguishing trust in social institutions from trust in political institutions was important. Further, reliability analyses indicated that all the subscales had good internal consistency, which are as follows: (a) Trust in Social Institutions: α = 0.73; (b) Trust in Scientific Institutions: α = 0.85; (c) Trust in Political Institutions: α = 0.81.

As mentioned, a CFA was also computed using R to confirm the factor structure of the Trust in Institutions scale. As the data was not normally distributed, Shapiro-Wilk statistic = 0.93, p < .001, in addition to ML (maximum likelihood) estimation and DWLS (diagonally weighted least squares) was used to estimate parameters. Further, robust variants of both estimation methods [robust maximum likelihood (MLR) and weighted least squared–means and variances adjusted (WLSMV), respectively] were also computed (see also DiStefano & Morgan, 2014). To determine

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[3] The scale items of the Trust scale, Moral emotions scale and the sources of information were all updated to suit the current study. Political institutions and authorities were added in the trust scale, "other people who spread health-related conspiracies" were added to all items of the Moral Emotions scale, and sources of information was updated to include health-care workers.

the optimal fit, the root mean square error of approximation (RMSEA) was used, for which values

below 0.8 indicate a good fit, along with standardized root mean square residual (SRMR), for

which values below 0.9 indicate a good fit, comparative fit index (CFI) and the Tucker-Lewis

Index (TFI), both for which values above 0.9 indicate adequate fitness. Table S3 highlights the fit

indices for all estimations, suggesting that the three factor models showed marginally better

absolute and incremental fit compared to the two factor models.

2. Moral Emotions

Exploratory and confirmatory factor analyses (EFA, CFA) were used to assess the factor

structure of the Moral Emotions scale. The EFA were computed using principal components and

oblique rotation (promax) in R. Table S4 shows the one- factor EFA model wherein Factor 1

comprised 10 items and explained 71% of the variance. In the two- factor model, as seen in Table

S5, Factor 1 was labeled "Negative Emotions", comprising 6 items and explaining 60% of the

variance. Factor 2, labeled "Positive Emotions", comprised 4 items and explained 40% of the

variance. Although the 2-factor model seems less optimal than a 1-factor model, a theoretical

distinction was necessary to be established between positive and negative moral emotions. A

reliability analysis indicated that both the subscales had very good internal consistency: (a)

Negative Emotions: α = 0.94; (b) Positive Emotions: α = 0.9.

As mentioned, CFA was also computed using R to confirm the factor structure of the

Moral Emotions scale. As the data was not normally distributed, Shapiro-Wilk statistic = 0.89, p <

.001, ML, DWLS and their robust variants were used to estimate parameters. The cutoffs for

absolute and incremental fit were the same as above. However, the Moral Emotions scale was

disaggregated into two subscales based on valence (positive and negative moral emotions) in line

with prior work of Ticku et al. (2021). Table S6 shows the fit indices for all estimations and

indicates that the two factor models showed better absolute and incremental fit as compared to the one factor models.

3. Political Ideology

As the EFA structure for the Political Ideology scale was previously established by the authors (Puthillam et al., 2021), CFA was directly computed using R to confirm the factor structure. As the data was not normally distributed, Shapiro-Wilk statistic = 0.94, $p < .001$, ML, DWLS, and their robust variants were used to estimate parameters. The cutoffs for absolute and incremental fit were the same as above. The standard values (Table S7) indicated better fit, especially for the DWLS estimator, for the three-factor structure of the political ideology scale.

4. Conspiratorial Thinking

As the EFA structure for the Conspiratorial Thinking scale was previously established by the authors (Bruder et al., 2013), CFA was directly computed using R to confirm the factor structure. As the data was not normally distributed, Shapiro-Wilk statistic = 0.91, $p < .001$, ML, DWLS, and their robust variants were used to estimate parameters. The cutoffs for absolute and incremental fit were the same as above. These values indicated (Table S8) that the model had a good absolute and incremental fit, thus confirming the one factor structure of the Conspiratorial Thinking scale.

5. Bullshit Receptivity

As the EFA structure for the Conspiratorial Thinking scale was previously established by the authors (Pennycook et al., 2015), CFA was directly computed using R to confirm the factor structure. As the data was not normally distributed, Shapiro-Wilk statistic = 0.95, $p < .001$, ML,

DWLS, and their robust variants were used to estimate parameters. The cutoffs for absolute and incremental fit were the same as above. Table S9 highlights the fit indices for all estimations and indicates that the model has a very good absolute and incremental fit which confirmed the one factor structure of the Bullshit Receptivity scale.

6. Belief in Conspiratorial Information

To determine the factor structure of the Belief in Conspiratorial Information scale, EFA was computed on R, as seen in Table S10. The EFA was computed using principal components and oblique rotation (promax). The scale comprised 12 items which explained 36% of the variance. Reliability analysis indicated a good internal consistency: α = 0.82.

An Item Response Theory Analysis was computed to confirm the factor structure of the BCI scale. All the items showed very high levels of discrimination, especially: "Cures for certain deadly and common diseases exist, but are being deliberately withheld" (2.37), "Progress towards a cure for cancer, AIDS, and other diseases is deliberately being hindered" (2.49), "Experiments involving new drugs or technologies are routinely carried out on the public without their knowledge or consent" (2.37), "Big Pharma companies benefit by discrediting Ayurveda, Homeopathic and Unani Medicines" (2.04), "Agribusinesses have suppressed data showing that genetically modified foods give you cancer" (2.15), "Lakhs of people died after taking allopathic medicines during the pandemic. If patients have an illness that cannot be cured by western medicines, they must be directed to alternative treatments" (2.04).

References

Bruder, M., Haffke, P., Neave, N., Nouripanah, N., & Imhoff, R. (2013). Measuring individual

differences in generic beliefs in conspiracy theories across cultures: Conspiracy Mentality

Questionnaire. *Frontiers in Psychology, 4*, 225. https://doi.org/10.3389/fpsyg.2013.00225

DiStefano, C., & Morgan, G. B. (2014). A comparison of diagonal weighted least squares robust

estimation techniques for ordinal data. *Structural Equation Modeling, 21*(3), 425–438.

https://psycnet.apa.org/doi/10.1080/10705511.2014.915373

Pennycook, G., Cheyne, J., Barr, N., Koehler, D., & Fugelsang, J. (2015). On the reception and

detection of pseudo-profound bullshit. *Judgment and Decision Making, 10*, 549–563.

https://doi.org/10.1017/S1930297500006999

Puthillam, A., Kapoor, H., & Karandikar, S. (2021, February 17). Beyond left and right: A scale to

measure political ideology in India. https://doi.org/10.31234/osf.io/fg387

Ticku, A., Puthillam, A., & Kapoor, H. (2021, August 4). How risky is it to not wear a mask?

Moral emotions increase preventative health behaviours during the COVID-19 pandemic

in India. https://doi.org/10.31234/osf.io/vtxuk