

Fake News during Covid-19 Outbreak: Differentiating Audience's Age regarding Prior Exposure, Emotion, Susceptibility, Practice, and Forwarding Behaviour

Betina Abraham & Megha Mandalaparthi

All India Institute of Medical Sciences, New Delhi, India

Abstract

This study aimed to explore the differences across age groups regarding factors (prior exposure, susceptibility, emotions, practice, and forwarding behavior) involved in COVID-19 (initial phase) related to fake news. Young adults (18-29 years), middle-aged adults (30-49 years), and older adults (50 years above) participated in the study by filling in a (news clip assisted) questionnaire. The data collected were subjected to statistical analysis using the Kruskal Wallis test, carried out for susceptibility and practice factors. Results revealed that no significant differences existed among the age groups for susceptibility to fake news and their corresponding practice behavior in response to false news. As for the factor of prior exposure, false news seemed to be more widespread than true news. Indifference, disgust, and surprise were observed to be the powerful emotions expressed in response to news across the different age groups. Forwarding behaviors across the different age groups were found to be more or less similar.

Keywords: Media, age, COVID-19, fake news, pandemic, audience, behavior

Introduction

According to the World Health Organization (2010), a pandemic is “the worldwide spread of a new disease.” The most recent pandemic and the focus of interest in the present paper is the Coronavirus (COVID-19). Coronaviruses comprise a large family of viruses that are known to cause illnesses among humans and animals. In the former, the viruses can cause respiratory infections, ranging from the common cold to Severe Acute Respiratory Syndrome (SARS). The most recently discovered Coronavirus has been termed COVID-19. Its outbreak began in Wuhan, China, in December 2019 and has spread worldwide at an alarming rate (WHO, 2020), leading to containment measures in many countries. The media and news have a significant role in ensuring that people are aware of limiting the spread and raising awareness.

In India, a nationwide lockdown was clamped on 24th March 2020 by the Government. What was meant to be a 21-day lockdown kept extending as the initial phase of the pandemic kept worsening? With no cure in sight at that time, the panic and anxiety in people went on escalating.

Correspondence to: Betina Abraham, Department of Psychiatry, All India Institute of Medical Sciences, New Delhi-110029, India.

Fake News and its Transmission

In this day and era of globalization, the physical distances of miles have been brought down to our fingertips. With the use of technology, news travels faster and spreads rapidly across the globe. However, it has its flipside; wherein, it marginalizes the technological savant, as the ease of usage may not be the same across different age groups (“Digital and Social Media Landscape in India,” n.d.). Moreover, there is always the looming threat of the news being conveyed to be twisted as it passes on from one person to the next, giving rise to fake news. Additionally, with the eye-catching and memorable snippets of the news headlines shared across the media, the main message can be lost (Xiang et al., 2017).

In the purview of the present paper, the researchers have used the understanding of Lazer et al. (2018) on fake news as any information that mimics news media content in form but not in the organizational process. Fake news may overlap with presiding information as unintentional misinformation or intentional disinformation designed to deceive the general population. Fake news can range from being just a satire, a parody, a clickbait, a rumor, an advertisement, manipulation, or fabrication, to being propaganda with a political agenda insight (Zhou & Zafarani, 2020; Tandoc Jr, Lim, & Ling, 2018). Fake news masks and molds itself to appear like actual news, making itself appear par with credible information online.

A recent research study has revealed that fake news spreads more rapidly and vastly compared to accurate news and that individuals were more likely to forward novel fake news in contrast to true news (Vosoughi, Roy, & Aral, 2018). Multiple ‘supposed’ health experts and alternative medicine practitioners have advocated for medicines, potions, and stories, among other things, as methods of strengthening the immune system (Caulfield, 2020). For example, In India, it is interesting that some unverified news, such as cow urine’s role in combating the Coronavirus, was spread by some of the politicians and celebrities on social media platforms (Mohan, 2020). Forwarding behavior is likely to contribute to the self-maintenance of fake news within the larger social ecosystem. The persistence and the attached apparent believability of fake news can be understood in light of the theory of the validity effect (Boehm, 1994), which corresponds to increased believability of fake news, just because of the increased frequency of its appearance; which often takes place due to the echo chamber effect (Jamieson & Cappella, 2008), which creates zones for sharing and discovering, similar and consonant information through the algorithms, within social media. Emotional reactions are also known to vary, with fake news giving rise to disgust, fear, and surprise, while actual news stimulates sadness, joy, and trust (Vosoughi, Roy, & Aral, 2018).

Misinformation about the virus has spread all over social media. It ranges from the marketing of fake “cures” such as spraying or introducing bleach into one’s body (World Health Organization, 2021), to consuming neat alcohol, which has resulted in hundreds of Iranians dying from poisoning (Trew, 2020), to fake conspiracy theories such as the virus being bioengineered in a lab in Wuhan (Andersen et al., 2020; Cohen, 2020), or that 5G network aggravates the virus symptoms (BBC News, 2020).

According to a report by Factly and the Internet and Mobile Association of India (IAMAI), individuals under the age of 20 years and above the age of 50, along with new internet users, could be more likely to fall prey to fake news. The report also pointed out that the major platforms for distributing non-verified and false information in India are Whatsapp, Facebook, and Twitter (“Old and young Indians most susceptible to fake news,” 2019). Whatsapp seems to be the significant medium of misinformation in India, with Purohit (2020) noting that India is the “biggest market for Whatsapp,” and Farooq (2017)

observing that Whatsapp has become a propaganda tool in the country and is a top choice for the spread of fake news. The bandwagon effect can be used to explain such behaviour. This effect refers to wanting to join the crowd, a phenomenon wherein individuals do something primarily because others do it (Leibenstein, 1950). In the context of fake news, it can be understood as people believing in certain news because others around them believe in it too.

There are various possible factors involved in an individual's susceptibility to fake news. For example, reflexive open-mindedness, also known as having a general tendency to be overly accepting of weak claims (Pennycook, Cheyne, Barr, Koehler, & Fugelsang, 2015; Pennycook & Rand, 2019), confirmation bias, or the tendency to accept information that reflects existing beliefs (Guess, Nagler, & Tucker, 2019), having an inherent truth bias (Van Swol, 2014), falling prey to the illusory truth effect- repeated exposure to rumors increasing susceptibility (Pennycook, Cannon, & Rand 2018) to such an extent that the knowledge base regarding the topic at hand also renders useless (Fazio, Brashier, Payne, & Marsh, 2015). Attentional bias is also a concept that is involved in the susceptibility to fake news. It refers to the tendency of individuals to focus on certain aspects and not on others (MacLeod, Mathews, & Tata, 1986).

Age and Fake News

Regarding age, the factor of interest in the present paper, some studies suggest that older individuals (65 years plus) lack skills determine the authenticity of online news (Loos & Nijenhuis, 2020) due to reasons such as age and memory issues regarding complex (mis)information, and digital media literacy (Guess, Nagler, & Tucker, 2019). In contrast, other studies have found that media using individuals in the age group of 15-30 have a higher risk to be exposed to and believe in fake news (Wineburg, McGrew, Breakstone, & Ortega, 2016) as they have a high level of trust in social media, which is a large distributor of fake news (Manalu, Pradekso, & Setyabudi, 2018).

COVID-19 in the News

Because of a health emergency, such as the one (COVID-19) the world is still undergoing, an overarching effort was put into campaigning about health practices such as hand washing, social distancing, and basic hygiene maintenance. Such measures are taken to stem the disease spread. However, alongside the communication efforts made by verified and experienced health professionals, a wide range of COVID-19 centered rumors and fake news spread across the system. The healthcare system's fake news can range from being a rumor to being clickbait, aimed at inciting curiosity through sensational titles. Propagandas may also surface wherein political agendas are intertwined with the community's health, as with COVID-19 and the discourse around the role of China (Zee News Bureau, 2020), within the same.

Few studies look into the impact of fake news within the healthcare system, and none was looking at its effect within an epidemic or pandemic situation. Sommariva, Vamos, Mantzarlis, Đào, and Martinez (2018) reported that health-related fake news was three times more likely to be shared than verified stories. Research also enlisted the rumors around the 2016 Zika virus outbreak, which ranged from it being a conspiracy against the public to the spread being associated with the use of pesticides (Sommariva et al., 2018). Similar hearsay regarding the COVID is rife, with theories indicating it to be a bioweapon (Rothschild, 2020) while others claim it to be arising from the consumption of non-vegetarian food ("Coronavirus and the Deadly Meat Trade," 2020).

In the backdrop of fake news around Coronavirus, the Indian Government has asked social media firms to control the spread of fake news relating to Coronavirus. Social media platforms have been asked to start campaigns to raise awareness, remove misinformation, and promote genuine, authentic information (Mandavia, 2020). India has launched a chatbot on WhatsApp to help curb fake news surrounding the Coronavirus (“India launches Whatsapp Chatbot,” 2020).

As can be understood, there has been a lot of research on fake news and even in the context of age and fake news. However, one observes that most of the past literature focuses on Western political fake news. There doesn't seem to be much research on health crisis-related fake news, much less on the age differences of such, especially in the Indian context. This is the gap that the present paper seeks to fill.

The research aimed to study age differences (young adults, middle-aged adults, and older adults) in the different factors related to written fake news regarding the initial phase of the COVID-19 pandemic that was faced by all. Within the purview of the present study, written news refers to any piece of printed or published information about the pandemic, which is in virtual circulation across the Indian population. It includes news articles derived from social networking mediums like Twitter, Whatsapp, Facebook, LinkedIn, and leading news and healthcare agencies.

The present study looked into various fake news, including rumors like: “Don't eat non-veg which creates viruses”; “Coronavirus Cure? China says new treatment on Nurses successful”; Claims such as “Coronavirus stays in the throat for four days,” to name a few, are in circulation. Such news has the potential to misguide people and can be potentially detrimental in the context of a health emergency. It can also incite terror and make people indulge in specific (un)safe practices hoping for a cure. Thus, it becomes all the more essential to study the topic at hand in greater detail. A certain age group(s) of the more susceptible and vulnerable population concerning fake news can be identified, and necessary interventions for them can be formulated. The objectives of the study are as follows:

To study whether there exist any age differences about prior exposure and susceptibility to fake COVID-19 related news.

To examine whether there are any age differences in the practice of information given in fake COVID-19 news.

To study whether there are any age differences in the emotions felt upon reading fake COVID-19 news.

To find out whether there are any age differences in the context of forwarding fake COVID-19 news.

Methodology

Sample

The study consisted of 139 participants divided into three age groups: young adults (18-29 years; $M=23.16$, $SD=2.80$), middle-aged adults (30-49 years; $M=35.83$, $SD=4.89$), and older adults (50 years and older; $M=60.1$, $SD=7.48$). All three age groups had a majority of female participants (young: 69.62%, middle: 83.33%, old: 66.67%). The social class that all three age groups observed a majority was middle (young: 93.67%, middle: 76.67%, old: 86.67%). A significant chunk of participants from all age groups had at least a postgraduate degree (young: 48.10%, middle: 43.44%, old: 66.67%). As for the level of comfort with technology, the young group (67.09%) and middle-aged group (56.67%) saw a majority in the category of ‘extremely comfortable,’ whereas the older group had a majority in the ‘moderately comfortable’ category (73.33%). The majority of all three age groups responded in the

affirmative to spend more time watching the news since the onset of the pandemic (young: 59.49%, middle: 63.33%, old: 60%).

Tools

The primary tool was a two-part questionnaire constructed by the researchers. The first part consisted of demographic details and some other questions to understand the participants' familiarity with technology. The second part of the questionnaire consisted of nine screenshot images of Indian news headlines about COVID-19. Out of these, six were images of false news, and three were distractors- images of actual news. Each image was followed by five questions relating to whether the participants had come across that piece of news before (prior exposure), the degree to which they agreed with the information provided in the news (susceptibility and truth detection), their likelihood of utilizing/practicing the given information in their daily lives (behavioral impact), the primary emotion they felt upon reading the news, and whether they would forward the news to other individuals.

Procedure

The questionnaire constructed was shared in the form of a Google link. The participants were reached out through an online medium. The researchers received more responses from young adults (n=79) as compared to middle-aged (n=30) and older adults (n=30). After data collection, the same was carefully reviewed to remove duplicate responses. It was statistically analyzed using the Kruskal-Wallis Test (due to the skewed distribution of participants). The test was used to observe whether there existed significant differences among the three age groups regarding (i) susceptibility to fake news and (ii) successful detection of actual news (albeit they were used as distractors, they were too analyzed). The test was also used to see whether significant differences existed among the three age groups in practicing/utilizing the news information.

Results

This section discusses the results for prior exposure to news, susceptibility, the practice of given information, emotional expression, and forwarding behavior.

Prior Exposure

The study looked into the factor of prior exposure to the news to find out how widespread the false news was within the society. It was observed that 42.78% old, 41.11% middle, and 39.24% young adult age group admitted to coming across the false news clippings while 46.11% old and 47.22% middle and 51.90% of the young adult age groups responded negatively. Moreover, it was observed that, concerning false news, more participants resorted to 'Maybe' with 11.11% old, 11.67% middle, and 8.86% younger adults responding with the same. However, in the context of actual news, 52.22% old, 55.55% middle, and 57.38% young adult age groups were not previously exposed to the real news clippings in contrast to the 40% of the older, 36.67% of the middle-aged, and 35.02% of the young adults who claimed having come across the genuine news clippings, used in the study.

Susceptibility

Regarding the susceptibility to fake news, the age group with the highest mean score is the older adults (M=13.9, SD=4.24), followed by middle-aged adults (M=13.8, SD=4.67) and

young adults ($M=12.81$, $SD=3.83$). The range for scores for this category is 6-30, with a higher score indicating higher susceptibility to fake news. For the successful detection of actual news, the group having the highest mean score is the middle-aged group ($M=10.43$, $SD=3.06$) followed by the older adult group ($M=9.4$, $SD=3.23$) and, finally, the younger group ($M=9.80$, $SD=2.27$). The range of scores for this category is 3-15, with a higher score indicating higher success in detecting accurate news.

Kruskal Wallis test, which is the non-parametric alternative to ANOVA, was conducted to observe whether there was a significant difference across the three age groups on the factor of susceptibility to fake news. The statistical analysis revealed no significant difference $H(2) = 1.248$, $p = 0.536$ across the three age groups, on the factor of susceptibility to fake news. Furthermore, statistical analysis of the difference across the old, middle, and young adults on the factor of detection of accurate news using the Kruskal Wallis test revealed no significant difference $H(2) = 2.799$, $p = 0.247$, as well.

Practice

In the context of the practice of information given in fake news, it was observed that the age group with the highest mean score was the older adults ($M=13.33$, $SD=4.63$), followed by the younger ($M=12.23$, $SD=3.92$) and middle-aged adults ($M=12.23$, $SD=5.20$) who obtained the same mean scores. The range for scores for this category is 6-30, with a higher score indicating a greater likelihood of practicing the information shared within the fake news. Regarding the practice of information given in true news, it was observed that the age group obtaining the highest mean score was again the older adults ($M=12.07$, $SD=2.41$), followed by the middle-aged adults ($M=11.90$, $SD=2.62$), and the young adults ($M=11.53$, $SD=2.41$). The range of scores for this category is 3-15, indicating a greater likelihood of practicing information shared within true news.

Statistical analysis of the Kruskal Wallis test was conducted across the three age groups' participants to study how the practices and behavior differed as a factor of trustworthy news and false news, respectively. The statistical analysis for false news revealed no significant differences in the practices and behavior of the three age groups, $H(2) = 0.928$, $p = 0.629$. Similarly, in actual news, no significant differences were observed in the practice behavior of the three age groups, $H(2) = 1.338$, $p = 0.512$.

Emotional Expression

The study looked into the powerful emotions experienced by the participants regarding fake news and actual news. For the former, it was observed that the majority, i.e., 46.67% old, 27.22% middle, and 27.43% young adults, felt indifferent to the news across all three age groups. The surprise was the second most commonly expressed emotion in response to fake news, wherein 14.44% older, 7.2% middle, and 13.92% young adults responded to surprise in response to fake news. 5.56% old, 14.44% middle, and 13.50% young adults admitted to being disgusted in response to the fake news displayed to them within the questionnaire. Fear, amusement, and anger were expressed by a sizable proportion of the participants, with 5.56% old, 8.89% middle, and 11.60% young adults being amused because of the false news presented to them. In contrast, 4.44% old, 9.44% middle, and 10.34% young adults experienced fear due to fake news. Anger was a dominant emotion among the middle (10%) and young (9.44%) compared to older adults, of whom only 4.44% expressed anger. Comparatively, more middle-aged adults (12.78%) expressed sadness than 8.89% and 8.84% of young and old adults, respectively. In the miscellaneous category, participants reported feelings such as confusion, disappointment, irritation, suspicion, relief (young), hope, careful (middle), and comfort, satisfaction (old).

A similar observation was made for the authentic news, with 47.78% old, 46.67% middle, and 51.04% young adults expressing indifference to the actual news displayed. 14.44% of senior and middle-aged adults each, and 10.97% of young adults expressed surprise. In contrast, 2.22% old and 5.56% middle, and 8.02% young adults reported being amused. Emotions of disgust and anger were more common 2.22% of aging, 5.56% of middle and 6.33% of young adults expressing disgust; while 2.22% of old, 4.44% of middle and 4.64% of young adults were observed to be angry in response to certain accurate news. Some participants, precisely, 7.78% old, 4.44% middle, and 6.33% young adults, reported fear. Sadness was reported by 7.78% of the aging study population, 8.89% of the middle-aged adults, and 3.80% of young adults. A tiny proportion of old persons (2.22%), while more of the middle (5.56%) and young (8.02%) expressed happiness in response to actual news. The miscellaneous responses for accurate news were relief, feeling more aware (young); inquisitive, annoyance, worry (middle); comfort, suspicion, stupid, untrusting (old) for each of the age groups.

Forwarding Behavior

For the factor of forwarding news, it was observed that in the case of false news, the majority of the participants across the three age groups, with 72.99% old, 71.11% middle and 68.89% of young adults, stated that they would not forward the (fake) news further. On the contrary, only 16.67% of the young, 21.67% of the middle-aged, and 22.22% of the older study population reported that they would forward the (fake) news to their contacts if given a chance. The remaining participants responding with a 'Maybe' were: young (10.34%), middle (7.22%), and old (8.89%).

Moreover, in the context of actual forwarding news, most participants of the three age groups, with 56.96% young, 61.11% middle, and 60% old-aged, refused to forward the (accurate) news further. Whereas only 22.79% young, 24.44% middle and young-aged participants claimed that they would forward the news further. A relatively more number, comprising 20.24% young, 14.44% middle, and 15.56% older adults, were unsure about furthering the news.

Discussion

The study aimed to explore the differences across age groups regarding factors (prior exposure, susceptibility, emotions, practice, and forwarding behavior) involved in the fake news related to the initial phase of COVID-19. Fake news is known to spread like wildfire. However, the spread has remained unchecked in terms of its impact within the healthcare system. The way people from different cohorts are impacted by the same remains largely unexplored. The study gathered the data from three age groups (N=139), namely, young adults (18-29 years; n=79), middle-aged adults (30-49 years; n=30), and older adults (>50 years; n=30).

The study briefly looked into the change in news consumption because of the current pandemic; it was observed that most participants, irrespective of their age, spent more time following the news than they previously did (pre-pandemic). This observed increase in news within a pandemic situation indicates the higher dependence of news in such a crucial time. Also, it hints towards the need to monitor and control the news that surfaces at such times. The study also explored the reported comfort with technology, wherein most participants belonging to the old age group were only moderately comfortable.

The following sections discuss the findings related to prior exposure, susceptibility, the practice of given information, emotional expression, and forwarding behavior. We

also decided to study the responses to the actual news, which were initially kept as distractors. They, too, have been included in the discussion of each factor.

Prior Exposure

Regarding prior exposure to the news headlines presented in the questionnaire, the percentage values of the responses did not vary much among the three age groups (refer to Results). However, for both fake and true news, it was observed that the young group has less exposure to it (this group had a higher percentage of answering 'no' to the question of having come across it before as compared to the other two groups) than the middle-aged and older groups. "Incidental news" consumption could be a reason (Boczkowski, Mitchelstein, & Matassi, 2017) along with youth preferring breaking news and entertainment-related news (Kaufhold, 2010), and general news "snacking" or "grazing" behavior observed on smartphones (Molyneux, 2018). Interestingly, all three age groups showed a higher percentage of exposure to fake news than real news. This observation suggests that fake news spreads much faster than accurate news (Vosoughi, Roy, & Aral, 2018).

Susceptibility

As any news features within the social dynamic, its truth value becomes a factor of interest, especially regarding a health emergency of COVID-19. The present study looks into how the ability to differentiate between real and fake news on COVID-19 varies as a factor of age. As visible from results regarding susceptibility to fake news about COVID-19, no significant differences were found among the three age groups ($H = 1.248$, $df = 2$, $p = 0.536$). All age groups successfully detected the majority of false news as false and thus displayed a low level of susceptibility to false news. In contrast to our results, studies have shown that older people are more likely to fall victim to online scams (Lee, 2018) and have a higher vulnerability to misinformation as compared to other age groups ("Covid 19: Older Adults", 2020).

Again, regarding successful detection of actual news, no significant differences were found among the three age groups ($H(2) = 2.799$, $p = 0.247$). Most participants across the three age groups successfully detected the distractors for their truth value. A point of interest noted was that all age groups could detect false news as false than actual news. Contrastingly, a source reveals that younger and older-aged individuals tend to be more gullible (easily duped) than middle-aged individuals. The reason for different results in our sample could probably be attributed to the sample size, culture, and individual differences ("Why older people are more gullible," 2012). A cautious and careful approach towards the incoming news, which is constantly in the headlines, being in the context of the pandemic, which has hijacked almost all of the mainstream media, alongside the numerous campaigns, calling for vigilant at the end of consumers of news, intertwined with the specific cultural and educational context of the participating individuals could be a plausible explanation of the result witnessed in the present study. Moreover, news in the context of a health emergency is likely to be perceived with more caution because of the very personal impact it has the potential to bring about, in contrast to a distant piece of news, be it political, entertainment, or sports which is unlikely to have a direct impact on personal wellbeing.

Practice

Often, news entails information that might impact the behaviors that people practice in their daily lives. Thus it becomes essential that these practices are adjudged concerning the truth value of the news that suggests the same. As can be observed from the results, no significant differences were found among the three age groups $H(2) = 0.928, p = 0.629$, regarding the practice of information given in fake news about COVID-19. It seemed that participants across the three age groups were less likely to practice the information given in fake news. This could be because they recognized fake news as false, as can be observed from their lower susceptibility to fake news (discussed in the previous section).

Regarding the practice of information concerning actual news, no significant differences were found among the three age groups; $H(2) = 1.338, p = 0.512$. In contrast, several researchers have shown that older people are more likely to consume fake news than their younger counterparts (e.g., Hinkle, 2020). It seemed that participants across the three age groups were more likely to practice the information given false news. This could be because of their ability to detect news as credible (discussed in the previous section). However, the impact on the practice of information presented within the news remains largely unexplored, especially regarding a health emergency.

Emotional Expression

Different news posts give rise to varying emotions, ranging from happiness to sadness (Giachanou, Rosso, Mele, & Crestani, 2018). The present study attempted to look into the emotional impact that COVID-19 related fake news reports have on people from different age groups. The participants had to choose from different emotions, which consisted of the six basic emotions given by Ekman (1999): happy, sad, surprised, disgusted, angry, and fearful. Additionally, we kept indifference, amusement, and a space to write a response that did not fit into the given categories. The emotions expressed by the participants were observed to be a response to the context of the news presented, apart from their expected credibility of being either true or false.

As can be seen from the results, indifference was still the significant response across older people (46.67%), a lower percentage of middle-aged (27.22%), and young adults (27.43%) reported feeling indifferent in the context of fake news. Secondary to indifference, the surprise was the prominently expressed emotion amongst the older (14.44%) and the younger (13.92%) study population, while relatively more middle-aged adults (14.44%) were disgusted. Moreover, the powerful emotions expressed in response to fake news included disgust, sadness, amusement, and surprise towards the information displayed. This can also be seen in the work of Pennycook, Martel, and Rand (2019), which stated that fake news often provokes immediate emotional reactions such as anger, sadness, fear, and disgust. Given that the emotional responses expressed herein were resultant of the context of the news presented, adjoined to the expected credibility of the same, a range of people expressed amusement. In contrast, few others reported anger and disgust to the news that had made it into circulation. Such differential and somewhat intense emotional reactions resulting from the news that could be potentially fake make the study of emotional responses towards circulation worthwhile.

On the contrary, more than 45% of people across different age groups reported being indifferent to actual news regarding COVID-19. Second to indifference, the surprise was the most expressed emotion in response to real news, with 14.44% of the middle and older-aged population and relatively fewer younger adults (10.97%) being surprised in response to actual news.

Forwarding Behavior

News, irrespective of whether true or false, has to reach the masses to have a diffused impact; here is when forwarding behaviors become a cause for concern. This study tried to understand the forwarding behavior of different age groups about COVID-19 news. Regarding fake news, the younger group had the highest percentage of individuals stating that they would *not* forward the news (72.99%), followed by middle-aged (71.11%) and older adults (68.89%). Multiple sources support the notion that older people are the ones who are most likely to forward fake news for various reasons such as concern for those close to them, cognitive decline, among others (Khidhir, 2019; Newton, 2019; Chokshi, 2019). The validity effect (Boehm, 1994), which involves trusting information after repeated exposure to it, can also be a reason for doing so.

For real news, the middle-aged group had the highest percentage of individuals stating they would *not* forward the news (61.11%). Despite the majority of 61.11% stating that they would not forward the actual news, a sizeable proportion of the participants admitted that they would forward the piece of news if given a chance. 24.44% of participants, each from the middle-aged and older-aged groups, were at the higher end of saying they would forward the news. This finding points to the fact that a chunk of middle-aged and older individuals, besides just having a habit of forwarding fake news, might have an overall tendency to forward any news that comes their way, irrespective of their assumed legitimacy and credibility. The same can also be explained through the bandwagon effect (Leibenstein, 1950).

Individuals who have grown up with technology, i.e., younger people, might refrain from sharing messages without checking for authenticity, whereas others are too eager to forward information ("In India," 2020). This claim might support the findings suggesting that familiarity with technology (more common among the youth) seems to be a factor in forwarding behavior.

Conclusion

This research aimed to study age differences in five factors regarding prior exposure, susceptibility, practice, emotional response, and forwarding behavior in response to COVID-19 related fake news within the first few months of the spread of the virus in India. The study observed no significant differences among the three age groups for the factors of susceptibility and practice. Lack of a substantial difference in susceptibility and could be understood as a consequence of heightened caution towards health-related news amidst a pandemic intertwined with the specific cultural and educational context of the participants of this particular study. For the factors of prior exposure and forwarding behavior, it was found that the percentage of respondents responding in the affirmative were quite close to each other. Though no significant differences were found across the different age groups about prior exposure, a trend towards higher exposure to fake news was observed. The majority of the participants denied forwarding news irrespective of its perceived truthfulness or falsity. However, a relatively more minor yet sizable proportion of older and middle-aged adults were observed to tend to forward news irrespective of perceived credibility, much in line with the bandwagon effect. As for the emotional response, indifference was the primary emotion expressed in response to fake news across the three age groups. Other frequent emotional reactions to fake news included disgust, sadness, amusement, and surprise towards the information displayed. The emotions expressed were observed to be a product of the context and content of the news presented and the

feeling arising from the credibility of news. In this case, too, the compromising percentages of emotions across the three age groups were relatively similar.

The lack of significant age differences in our study could be seen in the light of the sheer novelty of the situation during the initial phase of the Coronavirus being a pandemic of great intensity, which might have affected all age groups in a similar manner. A point of interest observed was that we took online news for this study. The subtle variations that were noticed seemed to be connected to familiarity and comfort with technology, with the probability of middle-aged and older groups not being as comfortable as the younger groups.

However, besides our main focus of age differences, though no significant statistical differences were found in the susceptibility to fake news and the successful detection of true news, it was observed that participants within this particular study were, for the most part, able to detect the fake news as false, though successfully, the truth detection was relatively unsuccessful, in the context of the present pandemic. Moreover, the study results revealed that most people across the three different age groups were cautious about the forwarding of news that appeared false. This contrasts with the various research studies that have pointed towards the rapid spread and gullible consumption of fake news. A plausible explanation for the same could be in the context of our participants, the majority of whom happened to be technologically savant and highly educated, which might have brought in an aspect of more remarkable ability to fact check and an accentuated critical thinking leading to lower susceptibility to fake news contributing towards the lower impact on the corresponding practice and behavior.

Based on this, our suggestions for future researchers would be to explore a more representative population set. Moreover, cross-cultural studies could be carried out to witness how transmission of fake news varies in times of a pandemic across the different affected areas. Further, emotional response to specific kinds of news in the time of a pandemic remains unexplored mainly. It exudes a gap in the literature, which could be explored in greater detail.

With the initial phase of the Coronavirus pandemic finally receding in the country and the vaccine's arrival, there is now fake information regarding the vaccine's effectiveness and related side effects. The cycle of misleading information continues, and its impact on the audiences could be a point of further study.

Limitations: The present study came with its own set of limitations. Firstly, the number of participants in each age group was skewed, with the young adults being the most in number (n=79). Secondly, most participants were well-educated and held a Bachelor's degree or higher, thus not being very representative of the entire population. Lastly, the news articles put to the test were of different types (remedies, statements, information), and a single aspect, for example, the spread of home remedy-based myths, biomedical facts around health crisis, political propaganda arising from health emergencies, and the like could be studied in greater detail. Such kind of behaviour studies can be conducted in other infections or diseases. Further, certain comparative studies can be executed to understand the differential behaviour among the audiences.

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References

- Andersen, K. G., Rambaut, A., Lipkin, W. I., Holmes, E. C., and Garry, R. F. (2020). The proximal origin of SARS-CoV-2. *Nature Medicine*, 26, 450–452. doi: 10.1038/s41591-020-0820-9
- BBC News (2020, April 21). Ofcom: Covid-19 5G Theories are “Most Common” Misinformation. *BBC*. Retrieved from <https://www.bbc.co.uk/news/technology-52370616>
- Boczkowski, P., Mitchelstein, E., & Matassi, M. (2017, January). Incidental news: How young people consume news on social media. In *Proceedings of the 50th Hawaii international conference on system sciences* (pp.1785-1792). Hawaii.
- Boehm, L. E. (1994). The validity effect: A search for mediating variables. *Personality and Social Psychology Bulletin*, 20(3), 285-293. doi: 10.1177/0146167294203006
- Caulfield, T. (2020, April 27). Pseudoscience and COVID-19-we’ve had enough already. *Nature*. Retrieved from <https://www.nature.com/articles/d41586-020-01266-z>
- Chokshi, N. (2019, January 10). Older People Shared Fake News on Facebook More Than Others in 2016 Race, Study Says. *The New York Times*. Retrieved from <https://www.nytimes.com/2019/01/10/us/politics/facebook-fake-news-2016-election.html>
- Cohen, J. (2020, February 19). Scientists “Strongly Condemn” Rumors and Conspiracy theories about Origin of Coronavirus Outbreak. *Science Magazine*. *Science*. Retrieved from <https://www.sciencemag.org/news/2020/02/scientists-strongly-condemn-rumors-and-conspiracy-theories-about-origin-Coronavirus>
- Coronavirus and the Deadly Meat Trade. (2020, March 26). *PETA*. Retrieved from <https://www.peta.org.uk/blog/Coronavirus/>
- Covid-19: Older adults and the risks of misinformation. (2020, March 13). *BMJ Opinion*. Retrieved from <https://blogs.bmj.com/bmj/2020/03/13/covid-19-older-adults-and-the-risks-of-misinformation>
- Digital and Social Media Landscape in India.(n.d.). *Sannams4*. Retrieved from <https://sannams4.com/digital-and-social-media-landscape-in-india/>
- Ekman, P. (1999). Basic emotions. In T. Dalgleish & T. Power (Eds.), *Handbook of cognition and emotion* (pp. 45-60). New York: Wiley
- Farooq, G. (2017). Politics of Fake News: how WhatsApp became a potent propaganda tool in India. *Media Watch*, 9(1), 106-117. doi: 10.15655/mw/2018/v9i1/49279
- Fazio, L. K., Brashier, N. M., Payne, B. K., & Marsh, E. J. (2015). Knowledge does not protect against illusory truth. *Journal of Experimental Psychology: General*, 144(5), 993. doi: 10.1037/xge0000098
- Giachanou, A., Rosso, P., Mele, I., & Crestani, F. (2018, June 15). Emotional influence prediction of news posts. Retrieved from <https://aaai.org/ocs/index.php/ICWSM/ICWSM18/paper/view/17863>
- Guess, A., Nagler, J., & Tucker, J. (2019). Less than you think: Prevalence and predictors of fake news dissemination on Facebook. *Science advances*, 5(1), eaau4586. doi: 10.1126/sciadv.aau4586
- Hinkle, N. (2020, January 21). Consumption of fake news on social media related to age of user. *The Collegian*. Retrieved from <https://tucollegian.org/consumption-of-fake-news-on-social-media-related-to-age-of-user/>
- In India, Fake WhatsApp Forwards on Coronavirus are Spreading Faster Than the Disease. (2020, March 6). *MSN*. Retrieved from <https://www.msn.com/en-in/news/other/in-india-fake-whatsapp-forwards-on-Coronavirus-are-spreading-faster-than-the-disease/ar-BB100FaO>
- India Launches WhatsApp Chatbot To Curb Fake News On Coronavirus. (2020, March 21). *Bloomberg Quint*. Retrieved from <https://www.bloombergquint.com/Coronavirus-outbreak/india-launches-whatsapp-chatbot-to-curb-fake-news-on-Coronavirus>
- Jamieson, K. H., & Cappella, J. N. (2008). *Echo chamber: Rush Limbaugh and the conservative media establishment*. Oxford: Oxford University Press.

- Kaufhold, K. (2010). Journalists Show Unified Optimism about Young Adults' News Consumption. *Newspaper Research Journal*, 31(2), 63–68. doi:10.1177/073953291003100206
- Khidhir, S. (2019, December 5). Elderly are biggest spreaders of fake news. *The Asean Post*. Retrieved from <https://theaseanpost.com/article/elderly-are-biggest-spreaders-fake-news>
- Lazer, D. M., Baum, M. A., Benkler, Y., Berinsky, A. J., Greenhill, K. M., Menczer, F., ... & Zittrain, J. L. (2018). The science of fake news. *Science*, 359(6380), 1094-1096. doi:10.1126/science.aao2998
- Lee, N. M. (2018). Fake news, phishing, and fraud: a call for research on digital media literacy education beyond the classroom. *Communication Education*, 67(4), 460–466. doi:10.1080/03634523.2018.1503313
- Leibenstein, H. (1950). Bandwagon, snob, and Veblen effects in the theory of consumers' demand. *The quarterly journal of economics*, 64(2), 183-207. doi:10.2307/1882692
- Loos, E., & Nijenhuis, J. (2020, July). Consuming Fake News: A Matter of Age? The perception of political fake news stories in Facebook ads. In *International Conference on Human-Computer Interaction* (pp. 69-88). Cham: Springer.
- MacLeod, C., Mathews, A., & Tata, P. (1986). Attentional bias in emotional disorders. *Journal of Abnormal Psychology*, 95(1), 15. doi:10.1037/0021-843X.95.1.15
- Manalu, R., Pradekso, T., & Setyabudi, D. (2018). Understanding the Tendency of Media Users to Consume Fake News. *Jurnal Ilmu Komunikasi*, 15(1), 1-16. doi:10.24002/jik.v15i1.1322
- Mandavia, M. (2020, March 20). Indian government asks social media firms to control Coronavirus fake news. *The Economic Times*. Retrieved from <https://economictimes.indiatimes.com/tech/internet/indian-government-asks-social-media-firms-to-control-Coronavirus-fake-news/articleshow/74734697.cms?from=mdr>
- Ministry of Health and Family Welfare. (n.d.). *Minding our minds during the COVID-19*. [PDF File]. Retrieved from <https://www.mohfw.gov.in/pdf/MindingourmindsduringCoronaeditedat.pdf>
- Mohan, R (2020, March 24) Coronavirus: fake news keeping pace with spread of COVID-19 in India. *The Straits Times*. Retrieved from <https://www.straitstimes.com/asia/south-asia/Coronavirus-fake-news-keeping-pace-with-spread-of-covid-19-in-india>
- Molyneux, L. (2018). Mobile news consumption: A habit of snacking. *Digital Journalism*, 6(5), 634-650. doi:10.1080/21670811.2017.1334567
- Newton, C. (2019, January 10). The good news about elderly people sharing so much fake news. *The Verge*. Retrieved from <https://www.theverge.com/2019/1/10/18176162/fake-news-old-people-nyu-study-silver-lining>
- Old and young Indians most susceptible to fake news. (2019, February 22). *The Week*. Retrieved from <https://www.theweek.in/news/sci-tech/2019/02/22/Old-and-young-Indians-most-susceptible-to-fake-news.html>
- Pennycook, G., & Rand, D. G. (2019). Who falls for fake news? The roles of bullshit receptivity, overclaiming, familiarity, and analytic thinking. *Journal of personality*, 88(2). doi:10.1111/jopy.12476
- Pennycook, G., Cannon, T. D., & Rand, D. G. (2018). Prior exposure increases perceived accuracy of fake news. *Journal of Experimental Psychology: General*, 147(12), 1865-1880. doi:10.1037/xge0000465
- Pennycook, G., Cheyne, J. A., Barr, N., Koehler, D. J., & Fugelsang, J. A. (2015). On the reception and detection of pseudo-profound bullshit. *Judgment and Decision making*, 10(6), 549-563.
- Pennycook, G., Martel, C., & Rand, D. (2019, September 12). Knowing how fake news preys on your emotions can help you spot it. *CBC*. Retrieved from <https://www.cbc.ca/news/canada/saskatchewan/analysis-fake-news-appeals-to-emotion-1.5274207>

- Purohit, K. (2020, March 10). Misinformation, fake news spark India Coronavirus fears. *Aljazeera*. Retrieved from <https://www.aljazeera.com/news/2020/03/misinformation-fake-news-spark-india-Coronavirus-fears-200309051731540.html>
- Rothschild, M. (2020, March 25). Why the Coronavirus bioweapon theory persists. *Daily dot*. Retrieved from <https://www.dailydot.com/irl/Coronavirus-bioweapon-conspiracy-theory/>
- Sommariva, S., Vamos, C., Mantzaris, A., Dào, L. U. L., & Martinez, T. D. (2018). Spreading the (fake) news: exploring health messages on social media and the implications for health professionals using a case study. *American Journal of Health Education, 49*(4), 246-255. doi:10.1080/19325037.2018.1473178
- Tandoc Jr, E. C., Lim, Z. W., & Ling, R. (2018). Defining “fake news” A typology of scholarly definitions. *Digital Journalism, 6*(2), 137-153. doi:10.1080/21670811.2017.1360143
- Trew, B. (2020, February 27). Coronavirus: Hundreds dead in Iran from drinking methanol amid fake reports it cures disease. *Independent*. Retrieved from <https://www.independent.co.uk/news/world/middle-east/iran-Coronavirus-methanol-drink-curedeaths-fake-a9429956.html>
- Van Swol, L. (2014). Truth Bias. In T. Levine (Ed.), *Encyclopedia of Deception* (Vol. 1, pp. 904-906). Thousand Oaks, California: SAGE Publications.
- Vosoughi, S., Roy, D., & Aral, S. (2018). The spread of true and fake news online. *Science, 359*(6380), 1146-1151. doi:10.1126/science.aap9559
- Why older people are more gullible. (2012, August 27). *Health24*. Retrieved from <https://www.health24.com/Mental-Health/Brain/News/Why-older-people-are-more-gullible-20130210>
- Wineburg, S., McGrew, S., Breakstone, J., & Ortega, T. (2016). Evaluating information: The cornerstone of civic online reasoning. *Stanford Digital Repository*.
- World Health Organization (2021, March 26). *Coronavirus disease (COVID-19) advice for the public: Mythbusters*. Retrieved from <https://www.who.int/emergencies/diseases/novel-Coronavirus-2019/advice-for-public/myth-busters>
- World health organization. (2010, February 24). *What is a pandemic?*. Retrieved from https://www.who.int/csr/disease/swineflu/frequently_asked_questions/pandemic/en/
- World Health Organization. (2020, April 17). *Q&A on Coronaviruses (COVID-19)*. Retrieved from <https://www.who.int/news-room/q-a-detail/q-a-Coronaviruses>
- Xiang, D., Kontos, C., Veloudaki, A., Baka, A., Karnaki, P., & Linos, A. (2017). Risk Communication in Times of an Epidemic or Pandemic. *Asset Paper Series, 5*, 1-14.
- Zee News Bureau. (2020, March 27). How China misled and fooled the world on Coronavirus COVID-19 pandemic. *Zee News*. Retrieved from <https://zeenews.india.com/world/how-china-misled-and-fooled-the-world-on-Coronavirus-covid-19-pandemic-2271999.html>
- Zhou, X., & Zafarani, R. (2020). A Survey of Fake News: Fundamental Theories, Detection Methods, and Opportunities. *ACM Computing Surveys (CSUR)*. doi: 10.1145/3395046

Betina Abraham is currently working as a Research Assistant in Project MATE in the Department of Psychiatry at All India Institute of Medical Sciences (AIIMS), New Delhi, India. She has a special interest in cognitive and developmental psychology and exploring how various environmental phenomena impact an individual’s affect, behavior, and cognition.

Megha Mandalaparthy is currently working as a Research Assistant in Project MATE in the Department of Psychiatry at All India Institute of Medical Sciences (AIIMS), New Delhi, India. Her research interests lie in mental health, childhood trauma, and electronic media’s influences on the mind.