Age Differences in the Spread of Misinformation Online

Ifeoma Adaji
The University of British Columbia, Okanagan Campus, BC, Canada
Ifeoma.adaji@ubc.ca

Abstract. Research in the area of misinformation online has identified various factors as the reason why people spread misinformation online such as availability of technology, entertainment, ignorance, to pass time, altruism etc. However, how these factors differ from one age group to another is not known. Research also suggests that people of different generations or age groups behave differently and are influenced differently. While people of each age range will have differences among them, they will likely behave similarly compared to people of other age groups. Therefore, in determining why people spread misinformation online, it is important to investigate any differences based on the age groups of online users. This will ensure that interventions designed to curb the spread of misinformation can be tailored to people based on their age. To contribute to research in the area of determining why people of different age ranges spread misinformation online, we surveyed 113 social media users of varying age groups. Our results show that the younger participants between 18 and 34 years are more likely to spread misinformation due to the availability of technology, entertainment, the need to pass time, the fear of missing out, peer pressure and trust in people online.

Keywords: Misinformation, Social Media, Online, Age, Demographics, Generation, Tailoring, Personalization.

1. Introduction

The number of social media users has steadily increased over the last few years with studies projecting steady growth over the next ten years[1]. Social media or social networking sites are often referred to as platforms that encourage communication between users and non-users in the form of user-generated content (Dijck & Poell, 2017) Examples include "non-traditional" social media platforms such as the comment section of e-commerce platforms and news sites. Social networking sites are a part of our daily lives and a lot of information is generated, consumed and shared there daily. Nowadays, social networking sites are accessed for decisions such as what hotel to stay at, (yelp.com), what recipes to try out (allrecipes.com), what products to buy (Amazon.com reviews), and answers to specific computer science questions (stackoverflow.com). Social networking sites are also used to describe experiences with a product or service. In addition, social media sites are a source of advice and recommendations in the form of comments on posts. This makes social media a rich source of information for service providers to get feedback about their products or services. Therefore, any misinformation presented on social media can have very damaging effects on users if it is consumed and spread. Misinformation is information that is wrong or misleading that is presented as a fact irrespective of if the intent is to deceive people (Dijck & Poell, 2017). Health misinformation can lead to public health issues such as undermining the uptake of vaccines or non-compliance with public health guidelines (van der Linden, 2022). Misinformation about a business can have financial consequences on the business (Petratos, 2021). Misinformation can affect one's credibility (Zhang et al., 2018) can lead to violence against them (Banaji et al., 2019) and can lead to cyberbullying (Beheshti & Large, 2013). Thus, it is important to understand why misinformation is spread to curb its spread.

Various factors have been identified as being responsible for the spread of misinformation. These include the availability of technology (V Balakrishnan et al., 2021), for entertainment (Islam et al., 2020), ignorance (Froehlich, 2017), (V Balakrishnan et al., 2021), to pass time (Apuke & Omar, 2021), altruism (Hiaeshutter-Rice et al., 2021), the fear of missing out (Ebardo et al., 2020), peer pressure (Ebardo et al., 2020), and trust of online people (Cheng & Chen, 2021). However, the differences in the effect of these factors among people of various age groups are unclear. Not everyone who uses social media is within the same age range. Research suggests that while most social media users are between 18 and 29 years, people of other age groups actively use social media too (Pew Research, 2021). Research also indicates that there has been a steady increase in the use of social media in all age groups (Pew Research, 2021). Since social media is being used by people of different ages, and because people of different age groups/ranges are influenced differently (Adaji & Vassileva, 2017), it is important to investigate if the factors that influence the spread of misinformation are different for people of different age groups. This will ensure that any interventions developed to curb the spread of misinformation are effectively tailored to groups of similar individuals.

[1] https://www.pewresearch.org/internet/fact-sheet/social-media/

To contribute to research in this area, we investigated the factors that influence people to share misinformation online and explored differences between various age groups. In particular, we aim to answer the research question:

RQ: Are there any significant differences in the factors that motivate the spread of misinformation online for different age groups?

To answer this research question, we explored the factors: *availability of technology*, *entertainment, ignorance, to pass time, altruism, the fear of missing out, peer pressure*, and *trust of online people/sources* in 113 people of different age groups. Our results suggest that compared to older social media users, younger social media users between the ages of 18 and 34 were more likely to spread misinformation because of the availability of technology, entertainment, to pass time, for the fear of missing out, because of peer pressure and because they trust online sources.

This study contributes to the area of user modelling and personalization by identifying the behaviour of different age groups regarding the spread of misinformation. This information can be used to develop personalized interventions to curb the spread of misinformation. For example, our results indicate that compared to older users, younger social media users will likely spread misinformation to pass time. Interventions in the form of notifications to read an e-book or use an app to learn a new language can be suggested to younger social media users after they have been online for a certain period so they can pass time using other means instead of spreading misinformation.

2. Related Work

The study of the spread of misinformation online is an active research area, particularly over the last two years. Since people rely on online information for many decisions, it has become a very important research area. Different studies have been carried out to understand the spread of misinformation in various sectors. Petratos (Petratos, 2021) investigated the consequences of misleading information on businesses and analyzed various misleading information types and their associated risks to businesses. The author also investigated the impact of misleading information in the healthcare sector, media, financial markets and elections. Zhang et al. (Zhang et al., 2018) studied the detection and response to misinformation in news articles. They developed indicators for article credibility from within an article's text and from external sources or an article's metadata.

Several researchers have explored the factors that motivate people to spread misinformation online. Metzger et al. (Metzger et al., 2021) concluded that factors such as entertainment, sarcasm and education influence people to share misinformation. Ebardo et al. (Ebardo et al., 2020) identified peer pressure and the fear of missing out as factors that motivate the spread of misinformation online. Balakrishnan et al. (V Balakrishnan et al., 2021) identified six factors: the availability of technology, a form of entertainment, ignorance, to pass time, altruism, and the fear of missing out. We adopted these factors in this study because they were identified using various social and psychological models and theories including the Socio-Cultural Psychological Technology model (Vimala Balakrishnan, 2017), the Uses and Gratification theory (Palmgreen & Rayburn, 1978), and the Self-Determination theory (Deci & Ryan, 2012). In addition, these factors overlap with those identified by other researchers (Ebardo et al., 2020), (Metzger et al., 2021). In addition to these six factors, in this study, we investigated peer pressure and trust of people online because these factors have been identified as common factors that influence people to spread misinformation online (Ebardo et al., 2020).

To the best of our knowledge, no one has explored how these factors differ among people of different age groups. Research suggests that people of various age groups behave differently and thus are motivated differently (Orji et al., 2015). For example, research suggests that older generations use social media less than younger generations (Auxier & Anderson, 2021) and that older adults for whom social media is their main source of information have lower social trust in information (Chun Wong et al., 2021). In addition, research suggests that younger adults have a higher fear of missing out compared to older adults (Rozgonjuk et al., 2021). Furthermore, research indicates that the frequency of use of social media decreases with age (Auxier & Anderson, 2021). All these are indicators that the motivating factors to spread misinformation could be different for people of different age groups. Therefore, it is important to understand how age differences impact how people are motivated to spread misinformation online. This will ensure that interventions to curb the spread of misinformation are effectively tailored to various age groups to increase their efficacy.

3. Research Methodology

To determine why people of different ages spread misinformation online, we surveyed social media users. We adopted the previously validated scale of Balakrishnan et al. (V Balakrishnan et al., 2021) which measures the constructs *availability, entertainment, ignorance, passing time, altruism*, and *fear of missing out*. All items were measured on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). Peer pressure was measured using the scale of (Santor et al., 2000) while trust of people online was measured using the scale of (Przemysław & Strzelecki, 2022).

We recruited participants to complete the study from Amazon's Mechanical Turk (MT). MT allows one to recruit a diverse set of participants and is an accepted method of recruiting participants (Buhrmester et al., 2015). We had 117 responses, however, only 113 participants completed the survey, thus four responses were excluded. Table 1 shows the demographics of the participants. Overall, most participants were between 35 and 44 years old. Of all the social media platforms listed, most participants reported using Facebook and reported being college graduates. The study was approved by the Research Ethics Board of our university.

For all items, we computed the mean response of participants for each factor. To compare responses by participants based on their ages, we grouped participants into four age groups as shown in Table 1 based on the ages of the respondents. We then carried out a one-way ANOVA to determine if there are significant differences between the age groups for each of the factors we are measuring: availability/effort, entertainment, ignorance, passing time, altruism, and fear of missing out. One-way ANOVA can be used to measure to determine if there are differences between independent groups and where any differences lie (Laerd, 2015). In our study, the age groups are independent since no one can belong to more than one age group. To determine where the significant differences were between the age groups, we carried out a Tukey's Honest Significant Difference (HSD) post hoc test. We did not carry out a Structural Equation Modeling (SEM) because we are still collecting data and the results of a SEM will likely change when the data points increase significantly. We plan to do this in the future after the final data collection.

Table 1. Demographics of participants

Demographics	Value	Frequency
Age ranges	18-34	26%
	35-44	41%
	45-54	12%
	55-74	22%

4. Results

As shown in Figure 1, *altruism* had the highest mean while fear of missing out (FOMO) and altruism had the lowest mean scores.

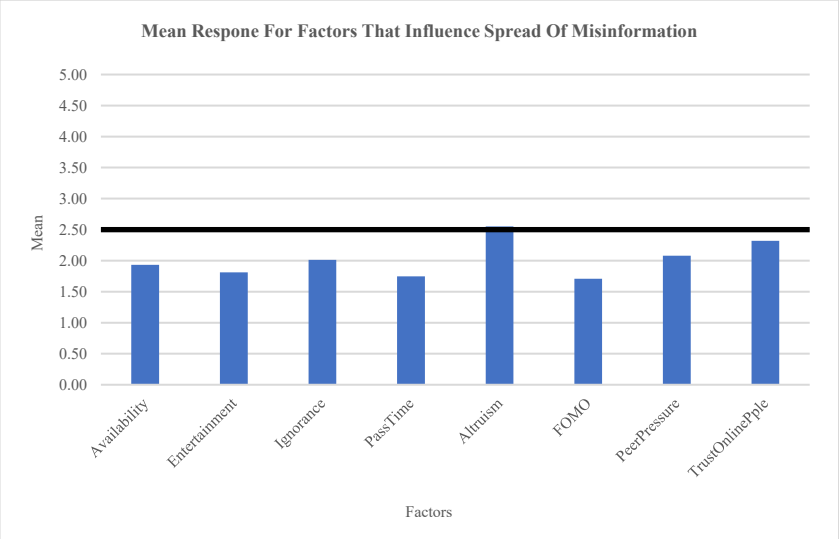

Figure. 1. Mean of factors

Figure 2 shows the eight factors for the four age groups. Altruism had the highest average for all age groups except for participants between 45 -54 years. This group scored highest in online trust.

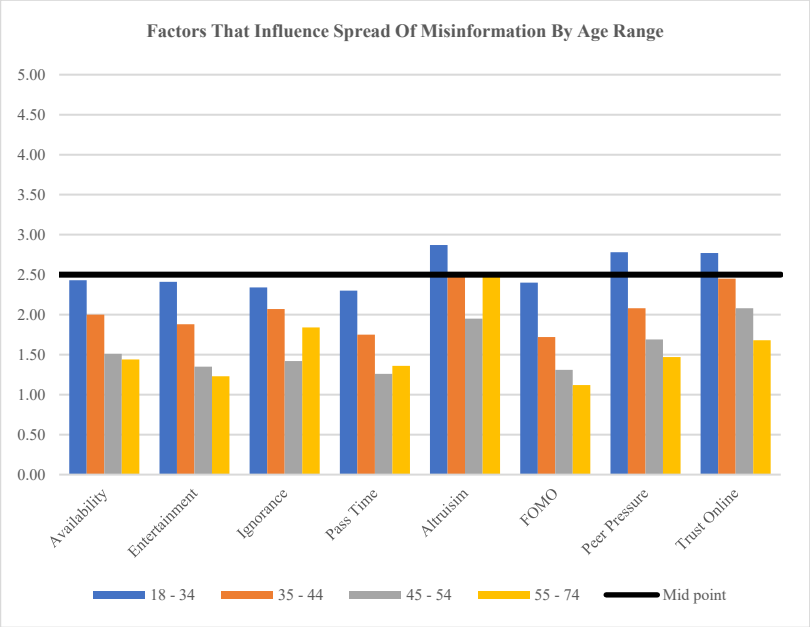

Figure. 2. Mean of factors grouped by age of participants.

We carried out a one-way ANOVA to identify significant differences between the age groups for each of the factors. The results are presented in the following sections and are summarized in Table 2.

4.1 Availability of Technology

The *availability of technology* as a reason for spreading misinformation was statistically significantly different between age groups, $F(3, 109) = 3.44$, $p \approx 0.019$. A Tukey post-hoc test revealed that the availability of technology was significantly different ($p \approx 0.021$) between people of age groups 55 – 74 years (mean = 1.44) and those in the age range 18 – 34 years (mean = 2.43). There were no significant differences between other age groups. This suggests that on average, participants within the age range 55 – 74 years were significantly less likely to spread misinformation due to the availability of technology compared to those within the age range 18 – 34 years.

4.2 Entertainment

The result of the one-way ANOVA showed that e*ntertainment* was statistically significantly different between some age groups, $F(3, 109) = 6.55$, $p \approx 0.00041$. A Tukey post-hoc test revealed that the entertainment was significantly different ($p \approx 0.016$) between people of age groups 45 – 54 years (mean = 1.35) and those in the age range 18 – 34 years (mean = 2.41). There was also a statistically significant difference ($p \approx 0.00046$) between age groups 55 – 74 years (mean = 1.23) and 18 – 34 years (mean = 2.41). There were no significant differences between other age groups. This suggests that on average, participants within the age ranges 45 – 54 years and 55 – 74 years were significantly less likely to spread misinformation as a form of entertainment compared to those within the age range 18 – 34 years.

4.3 Ignorance

There were no statistically significant differences between age groups $F(3, 109) = 2.05$, $p \approx 0.11$ with ignorance as a reason for spreading misinformation. Thus, no Tukey post-hoc test was performed.

4.4 Pass Time

A one-way ANOVA indicated that there were significant differences $F(3, 109) = 4.15$, $p \approx 0.00795$ among the different age groups regarding *passing time* as a reason for the spread of misinformation. A Tukey post-hoc test indicated that there was a significant difference ($p \approx 0.032$) between age groups 45 – 54 years (mean = 1.26) and

18 – 34 years (mean = 2.30). There was also a significant difference ($p \approx 0.014$) between the age groups 55 – 74 years (mean = 1.36) and 18 – 34 years (mean = 2.30). This suggests that people in age groups 45 – 54 years and 55 – 74 years are significantly less likely to spread misinformation just to pass time compared to those in the age group 18 – 34 years.

4.5 Altruism

There were no statistically significant differences between age groups $F(3, 109) = 1.35$, $p \approx 0.26$ with altruism as a reason for spreading misinformation. We, therefore, did not conduct a Tukey post-hoc test.

4.6 Fear of Missing Out

Regarding the fear of missing out as a reason for the spread of misinformation, there were significant differences among the different age groups as indicated by a one-way ANOVA $F(3, 109) = 6.57$, $p \approx 0.0004$. These differences as indicated by a Tukey post-hoc test ($p \approx 0.022$) were between the age groups 45 – 54 years (mean = 1.31) and 18 – 34 years (mean = 2.38). There was also a significant difference ($p \approx 0.0003$) between the age groups 55 – 74 years (mean = 1.12) and 18 – 34 years. This suggests that people in age groups 45 – 54 years and 55 – 74 years are less likely to spread misinformation because of the fear of missing out compared to those between the ages of 18 – 34 years.

4.7 Peer Pressure

Peer pressure as a reason to spread misinformation was also statistically significant between age groups $F(3, 109) = 6.93$, $p \approx 0.000258$. A Tukey post-hoc test indicated that the differences were between people in three age groups. There was a significant difference ($p \approx 0.043$) between people of age groups 35 – 44 years (mean = 2.08) and 18 – 34 years (mean = 2.78), and also between 45 – 54 years (mean = 1.69) and those in the age range 18 – 34 years ($p \approx 0.02$). Furthermore, there was a significant difference ($p \approx 0.0002$) between age groups 55 – 74 years (mean = 1.47) and 18 – 34 years. There were no significant differences between other age groups. This suggests that people between the ages of 35 and 74 were less likely to spread misinformation because of the fear of missing out compared to those between 18 and 34 years.

4.8 Trust Online

A one-way ANOVA indicated that trust in people online as a reason for spreading misinformation was statistically significantly different between some age groups $F(3, 109) = 6.93$, $p \approx 0.00841$. A post-hoc test revealed that there was a significant difference ($p \approx 0.0063$) between age groups 55 – 74 years (mean = 1.68) and 18 – 34 years (mean = 2.77), and also between 55 – 74 years and those in the age range 35 – 44 (mean = 2.45).

Table 2. Summary of age groups with significant differences between them

Factors	Between Age groups	P-values
Availability of Technology	55 – 74 and 18 – 34	0.0214513
Entertainment	45 – 54 and 18 – 34	0.0162626
	55 – 74 and 18 – 34	0.0004601
Ignorance	None	
Pass time	45 – 54 and 18 – 34	0.0320460
	55 – 74 and 18 – 34	0.0144472
Altruism	None	
Fear of missing out	45 – 54 and 18 – 34	0.0216566
	55 – 74 and 18 – 34	0.0003159
Peer pressure	35 – 44 and 18 – 34	0.0431741
	45 – 54 and 18 – 34	0.0206604
	55 – 74 and 18 – 34	0.0001857

Trust online	55 – 74 and 18 – 34	0.0063019
	55 – 74 and 35 – 44	0.0531188

5. Discussion

As shown in our results, for most of the factors, there were significant differences in age groups, particularly between the youngest age group, 18 to 34 years and the oldest age group, 55 to 74 years, and also between the youngest age group 18 to 34 years and between 45 to 54 years, with older adults being less likely to be influenced by the factors compared to younger adults. These results are in line with existing research that suggests that older adults are less likely susceptible to social influence than younger adults (Foulkes et al., 2018). All but one of the eight factors we investigated are social influence factors, thus it is not surprising that the behaviours of older adults and younger adults will differ significantly. Our results are also in line with existing research that suggests that compared to older people, younger ones have a higher fear of missing out (Rozgonjuk et al., 2021). Thus, it is not surprising that our results indicate that younger adults are more likely to spread misinformation because of the fear of missing out compared to older adults. In addition, our results also support existing research that suggests that older generations use social media less than younger generations (Auxier & Anderson, 2021) and that older adults for whom social media is their main source of information have lower social trust in information (Chun Wong et al., 2021). This makes it unlikely that the older generation will spread misinformation online due to trust in people.

The non-social influence factor, availability of technology, also differed significantly between older participants (55 – 74 years) and younger ones (18 – 34 years) with the younger participants being more likely to spread misinformation due to the availability of technology. This result is also not surprising since research (Czaja et al., 2006) suggests that older adults are less likely to use technology compared to younger adults. Therefore, it is unlikely that older adults will be more inclined to spread misinformation because of the availability of technology compared to younger adults.

In addition to the questions on the eight factors, we also asked participants the open-ended question: *What do you think the government can do to prevent or stop the spread of misinformation online?* As shown in Figure 3, our results indicate that about 44% of participants aged 55 to 74 years said the government can do nothing to prevent the spread of misinformation.

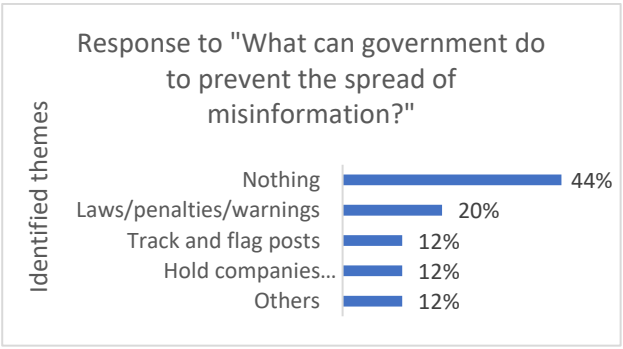

Fig. 3. Older participants, 55 – 74 years.

On the other hand, as shown in Figure 4, 42% of the younger population aged 18 to 34 years said the government can come up with laws, penalties or some form of warnings/sanctions against people who spread misinformation.

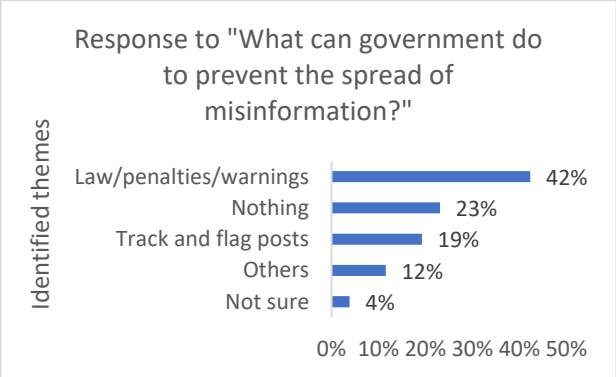

Fig. 4. Younger participants, 18 – 34 years.

These results show how people of different age groups differ about topics such as the spread of misinformation online. This suggests that when interventions are being developed to curb the spread of misinformation, these interventions should be tailored to people based on their age groups to result in a higher efficacy of such interventions. This is in line with ongoing research that suggests that when tailored to individuals or groups of similar individuals using factors such as age, interventions such as persuasive technologies are more effective in bringing about a change in behaviour or attitude (Orji et al., 2015).

Our study has some limitations. First, the number of participants that took part in our study is limited. The recruitment of participants is still ongoing. In the future, we plan to repeat the study when we have a substantially high number of participants. We are however confident that our results will be similar to those presented here because of existing research that supports our findings. A second limitation is that we did not have an equal number of participants in each age group. We are making efforts to ensure that we have similar numbers of people as we continue to recruit more participants.

We are still collecting data. In the future, we will repeat the study with more participants. In addition to repeating this study, we will look at the effects of differences in the demographics of our participants. For example, we will investigate any differences in our results based on gender, level of education, frequency of social media use and type of social media frequently used. These can guide in the development of personalized interventions to curb the spread and consumption of misinformation.

6. Conclusion

Several factors such as the availability of technology, entertainment, ignorance, need to pass time, altruism, peer pressure, trust in people online, and fear of missing out have been identified as being responsible for the spread of misinformation online. Because people of different age groups behave differently, it is important to study how these factors differ from one age group to another. Therefore, in determining why people spread misinformation online, it is important to investigate any differences in these factors based on the age groups of online users. This is important to determine how interventions designed to curb the spread of misinformation can be tailored to online users. To contribute to research in this area, we present the preliminary results of a study of 113 social media users of different age groups where we investigate differences in these factors between the different age groups. Our results indicate that the younger generation aged between 18 – 34 years are more likely to spread misinformation due to the availability of technology, entertainment, the need to pass time, the fear of missing out, peer pressure and trust in people online. We are still in the process of collecting data. In the future, we plan to repeat this study on a larger scale.

References

Adaji, I., & Vassileva, J. (2017). The Impact of Age, Gender and Level of Education on the Persuasiveness of Influence Strategies in E-commerce. *Adjunct Proceedings of the 12th International Conference on Persuasive Technology, April 2017*, 10.

Apuke, O. D., & Omar, B. (2021). Fake news and COVID-19: modelling the predictors of fake news sharing among social media users. *Telematics and Informatics*, *56*, 101475. https://doi.org/10.1016/J.TELE.2020.101475

Auxier, B., & Anderson, M. (2021). Social media use in 2021. In *pewresearch.org* (Vol. 7).

Balakrishnan, V, Kee, K., & Rahim, H. (2021). To share or not to share–The underlying motives of sharing fake news amidst the COVID-19 pandemic in Malaysia. *Technology in Society*, *66*, 101676.

Balakrishnan, Vimala. (2017). Unraveling the underlying factors SCulPT-ing cyberbullying behaviours among Malaysian young adults. *Computers in Human Behavior*, *75*, 194–205. https://doi.org/10.1016/J.CHB.2017.04.062

Banaji, S., Ramnath, B., Agarwal, A., Nihal, P., & Pravin, M. S. (2019). *WhatsApp vigilantes: An exploration of citizen reception and circulation of WhatsApp misinformation linked to mob violence in India*.

Beheshti, J., & Large, A. (2013). *The information behavior of a new generation: Children and teens in the 21st century*. The Scarecrow Press Inc.

Buhrmester, M., Kwang, T., & Gosling, S. D. (2015). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality data? *Methodological Issues and Strategies in Clinical Research (4th Ed.).*, 133–139. https://doi.org/10.1037/14805-009

Cheng, Y., & Chen, Z. F. (2021). Encountering misinformation online: antecedents of trust and distrust and their impact on the intensity of Facebook use. *Online Information Review*, *45*(2), 372–388. https://doi.org/10.1108/OIR-04-2020-0130/FULL/HTML

Chun Wong, F. H., Liu, T., Yi Leung, D. K., Zhang, A. Y., Hong Au, W. S., Kwok, W. W., Shum, A. K. Y., Yan Wong, G. H., & Lum, T. Y. S. (2021). Consuming Information Related to COVID-19 on Social Media Among Older Adults and Its Association With Anxiety, Social Trust in Information, and COVID-Safe Behaviors: Cross-sectional Telephone Survey. *Journal of Medical Internet Research*, *23*(2). https://doi.org/10.2196/26570

Czaja, S. J., Charness, N., Fisk, A. D., Hertzog, C., Nair, S. N., Rogers, W. A., & Sharit, J. (2006). Factors Predicting the Use of Technology: Findings From the Center for Research and Education on Aging and Technology Enhancement (CREATE). *Psychology and Aging*, *21*(2), 333. https://doi.org/10.1037/0882-7974.21.2.333

Deci, E. L., & Ryan, R. M. (2012). Self-determination theory. *Handbook of Theories of Social Psychology, Vol. 1*, 416–436. https://doi.org/10.4135/9781446249215.n21

Dijck, J. Van, & Poell, T. (2017). Social media platforms and education. *In The SAGE Handbook of Social Media*, 579–591.

Ebardo, R., De La Cuesta, J., Catedrilla Jypzie, & Wibowo, S. (2020). Peer Influence, Risk Propensity and Fear of Missing Out in Sharing Misinformation on Social Media during the COVID-19 Pandemic. *Proceedings of the 28th International Conference on Computers in Education*.

Foulkes, L., Leung, J., & Fuhrmann, D. (2018). Age differences in the prosocial influence effect. *Developmental Science*, *21*(6). https://doi.org/10.1111/desc.12666

Froehlich, T. J. (2017). A Not-So-Brief Account of Current Information Ethics: The Ethics of Ignorance, Missing Information, Misinformation, Disinformation and Other Forms of Deception. *BiD*, *39*.

Hiaeshutter-Rice, D., Chinn, S., & Chen, K. (2021). Platform Effects on Alternative Influencer Content: Understanding How Audiences and Channels Shape Misinformation Online. *Frontiers in Political Science*, *3*, 53. https://doi.org/10.3389/FPOS.2021.642394/BIBTEX

Islam, A. K. M. N., Laato, S., Talukder, S., & Sutinen, E. (2020). Misinformation sharing and social media fatigue during COVID-19: An affordance and cognitive load perspective. *Technological Forecasting and Social Change*, *159*(120201). https://doi.org/10.1016/J.TECHFORE.2020.120201

Laerd. (2015). *One-way ANOVA using SPSS Statistics." Statistical tutorials and software guides*.

Metzger, M. J., Flanagin, A. J., Mena, P., Jiang, S., & Wilson, C. (2021). From dark to light: The many shades of sharing misinformation online. *Media and Communication*, *9*(1), 134–143. https://doi.org/10.17645/mac.v9i1.3409

Orji, R., Mandryk, R., & Vassileva, J. (2015). Gender, age, and responsiveness to Cialdini's persuasion strategies. *Proceedings of International Conference on Persuasive Technology*, 147–159.

Palmgreen, P., & Rayburn, J. D. (1978). *Uses and Gratifications and Exposure to Public Television: A Discrepancy Approach.*

Petratos, P. N. (2021). Misinformation, disinformation, and fake news: Cyber risks to business. *Business Horizons*, *64*(6), 763–774. https://doi.org/10.1016/J.BUSHOR.2021.07.012

Pew Research. (2021). *Social Media Fact Sheet*.

Przemysław, M., & Strzelecki, A. (2022). Trust, Media Credibility, Social Ties, and the Intention to Share towards Information Verification in an Age of Fake News. *Behavioral Sciences*, *12*(2), 51. https://doi.org/10.3390/bs12020051

Rozgonjuk, D., Sindermann, C., Elhai, J. D., & Montag, C. (2021). Individual differences in Fear of Missing Out (FoMO): Age, gender, and the Big Five personality trait domains, facets, and items. *Personality and Individual Differences*, *171*, 110546. https://doi.org/10.1016/J.PAID.2020.110546

Santor, D. A., Messervey, D., & Kusumakar, V. (2000). Measuring peer pressure, popularity, and conformity in adolescent boys and girls: Predicting school performance, sexual attitudes, and substance abuse. *Journal of Youth and Adolescence*, *29*(2), 163–182. https://doi.org/10.1023/A:1005152515264

van der Linden, S. (2022). Misinformation: susceptibility, spread, and interventions to immunize the public. *Nature Medicine*, *28*(3), 460–467. https://doi.org/10.1038/s41591-022-01713-6

Zhang, A. X., Ranganathan, A., Metz, S. E., Appling, S., Sehat, C. M., Gilmore, N., Adams, N. B., Vincent, E., Lee, J. 8, Robbins, M., Bice, E., Hawke, S., Karger, D., Mina, A. X., Sehat, C.-N. M., & Lee, J.-N. (2018). A Structured Response to Misinformation: Defining and Annotating Credibility Indicators in News Articles. *International World Wide Web Conference*, 10. https://doi.org/10.1145/3184558.3188731