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SINGAPOREANS' SUSCEPTIBILITY TO FALSE INFORMATION

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SINGAPOREANS' SUSCEPTIBILITY TO FALSE INFORMATION

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Executive Summary

EXECUTIVE SUMMARY

Existing research on fake news tends to be Western-centric, quantitative in nature, and to approach the problem of false information in silos. There is scarce empirical data on Singaporeans' consumption, responses, and strategies pertaining to false information, which is a pertinent gap in our understanding of the problem, given how context influences the type of false information that is disseminated and its impact.

This study on Singaporeans and false information, funded by the Ministry of Communications and Information (Digital Readiness and Learning Division),[1] is conducted in three phases. Using a mixed methodology that includes a survey, self-confrontational interviews, and an experiment, the study examines three aspects of Singaporeans and false information — susceptibility, immunity, and intervention. This Phase One report focuses on Singaporeans' susceptibility to false information, based on survey data collected from more than 2,000 citizens and Permanent Residents.

Drawing from various disciplines including media studies, political science, and cognitive science, this study adopts a holistic approach to understand the dynamics that influence the impact of false information on Singaporeans. We provide empirical evidence on Singaporeans' susceptibility to false information and how it is influenced by their demographic (e.g., age and education) and non-demographic traits (e.g., information-seeking behaviours, and political and psychological traits). In addition, we examine different aspects of false information that Singaporeans are susceptible to, such as their exposure to and belief in false information of various topics (e.g., health and medicine, government and politics), formats (e.g., image, text, audio), and on different media platforms (e.g., social networking sites, Instant Messaging platforms). Furthermore, using an approach that is novel in the field of misinformation and disinformation studies, we evaluate how well Singaporeans performed in terms of assessing information veracity, by embedding a manipulated news article in the survey for respondents to read and judge.

[1] The contents of this report, including the methods, findings, and results, are solely the authors' responsibility and do not represent the endorsement and views of the Ministry of Communications and Information.

The study is guided by the following research questions:

How susceptible are Singaporeans to false information?

1. Are there certain types and formats of false information to which Singaporeans are more likely to fall prey, and why?

2. Which segments of Singaporeans are more susceptible?

3. How is their susceptibility linked to their demographic profile and other characteristics (e.g., information-seeking behaviours, political traits, and psychological traits)?

The key findings of the study are:

1. No one is immune to false information. More than two-thirds of the respondents trusted a manipulated news article. Singaporeans who were more susceptible to false information tended to (1) be older; (2) live in public housing (especially those living in HDB 1-3 Room Flats); (3) have higher trust in local online-only news sites or blogs; (4) exhibit greater confirmation bias in information-seeking and processing; (5) have lower levels of self-efficacy in discerning between real and false information; and (6) have lower digital literacy (i.e., levels of knowledge regarding the media and information landscape). These suggest a possible age- and class-divide in terms of information and digital literacy among Singaporeans, and that targeted interventions focusing on these segments of the population may be needed. They also suggest the need for literacy programmes to emphasise the imparting of concrete news literacy skills to increase people's self-efficacy, and to provide knowledge about how the tech and media industries work.

2. We identified four typologies of information users in Singapore: (1) "informationally disengaged"; (2) "informationally overconfident"; (3) "informationally diffident"; and (4) "informationally savvy" — and how different profiles may be susceptible to false information in different ways. Those classified as "informationally disengaged" might be susceptible to false information because of a reliance on their gut instincts when assessing information veracity, due to their disinterest in engaging with news and current affairs. The susceptibility of those classified as "informationally overconfident" stemmed from an over-estimation of their ability to discern real information from false information, and a lack awareness of their cognitive biases in information-seeking and processing. On the other hand, those classified as "informationally diffident" might be more susceptible to false

information because of their poorer ability in navigating the information space for accurate information, which their lack of confidence indicates. Finally, respondents classified as “informationally savvy” had high self-efficacy, high digital literacy, and low confirmation bias, thus making them the least vulnerable to false information among the different types of information users.

3. Digital and information literacy among Singaporeans was generally low. Majority of the respondents said that the manipulated news article in our survey could be trusted despite many signs of manipulation (e.g., altering the source URL, citing false authorities, and including multiple grammatical errors). Furthermore, our analyses showed a reliance among Singaporeans on the source of a piece of information as a heuristic when assessing information veracity. While evaluating the authenticity of a source is a key literacy competency, an over-reliance on the source as a heuristic may, at the same time, put people at risk of falsehoods, especially when false information is intentionally designed to mimic the look of established news sources in order to deceive. In addition, Singaporeans who performed poorly at recognising false or manipulated information also tended to rely on an overall hunch or look-and-feel when assessing information, especially if the article looks “legitimate”.

4. Singaporeans reported more encounters with satire and parody than other types of content such as clickbait or misleading headlines. While this could mean that satire and parody are more prevalent in Singapore, it could also mean that Singaporeans lack certain competencies to identify stories that are completely made up for political or commercial reasons (i.e., fake news or disinformation), especially those that are sophistically and elaborately crafted. Singaporeans also most frequently encountered and believed false information in the form of text and images; in relation to the topics of international or foreign issues, lifestyle, and health and medicine; and on social networking sites and Instant Messaging platforms.

5. Singaporeans tended to ignore the false information that they had encountered on social networking sites and Instant Messaging platforms. Only a small minority would inform the person or organisation that shared the false information that it is wrong. Posting and sharing corrections were also infrequent among them. This inaction is problematic as it allows the continuous spread of false information, and may also limit the effectiveness of certain content moderation strategies used by platform companies, where users are encouraged to flag content

that they suspect is false so that it gets reviewed in greater detail by established fact checkers.

6. People's social networks were found to drive the sharing of false information, as almost three-quarters of the respondents said they had shared false information on social networking sites and/or Instant Messaging platforms because the information they had received came from close family and friends. Informational characteristics, such as whether the information seemed important or novel, were other common reasons that accounted for why people shared false information. Singaporeans also most frequently shared news information and current affairs with their family and friends, of whom they have a moderate to high level of trust as a source of news information and current affairs. While these findings explain why misinformation and rumours spread quickly and widely on closed-group messaging platforms such as WhatsApp, they also highlight the potential for interventions that leverage the power of social and community networks to spread corrective information in fighting false information.

Considering these findings, we make the following recommendations:

1. **Reinforce digital literacy efforts.** Current literacy efforts such as those by the Media Literacy Council and National Library Board remain highly relevant. Nevertheless, efforts aimed at improving people's news media or information literacy should emphasise imparting people with the skills and tools to assess the various elements of a piece of information, e.g., sensationalised headlines, typos and errors, source of the news, and tone of the language used. In particular, information literacy efforts that incorporate hands-on experiences will better equip people with the technical skills to assess the various components of a piece of information to discern facts from dubious information. In addition, more targeted interventions should focus on vulnerable segments such as the elderly and those from lower socio-economic backgrounds. This will help increase people's self-efficacy in their individual ability to manage the problem of false information.

2. **Broaden digital literacy efforts.** On top of reinforcing existing efforts, the concept of digital literacy needs to be widened to address macro-level trends and developments. The curriculum for digital literacy programmes should be expanded to include how the tech and media industries work. One area is how the workings of media organisations and technological platforms are influenced by institutional forces, which in turn determine the type of information audiences can access. Another area is how the technology industry and online space operate. Such a

broader approach will enhance people's understanding of the underlying dynamics that affect the information that is produced, and nudge a more critical assessment of its purpose and authenticity.

3. **Adopting an ecosystem approach.** Our study highlights the importance of cultivating a balanced information diet among people. People with a high trust in non-legacy media, in particular local online-only news sites or blogs, were more susceptible to false information. Being exposed to different sources, especially those that promote different perspectives, may also contribute to reducing confirmation bias among people, which was also found to be a factor that significantly influenced people's susceptibility to false information. Our study also identified specific formats and topics of false information that Singaporeans were more likely to encounter online. Thus, it may be strategic for fact checkers in Singapore — both government and non-government initiatives — to dedicate their resources and focus on false information relating to these more "popular" topics. Furthermore, the high use of and trust in legacy media in Singapore puts legacy media in an important position. Partnerships with technology partners, given the growing reliance on social networking sites and Instant Messaging platforms for information and the use of search engines for information verification, should be harnessed to debunk falsehoods and spread corrective information.

4. **Cultivating network immunity.** Finally, the salient role played by social and community networks in the spread of information, both true and false, highlights the potential to cultivate "network immunity" among Singaporeans to leverage the power of social networks in debunking false information. Thus, on top of continuing to impart knowledge on the "what" and "how" in recognising false information and authenticating information, digital literacy programmes should also look into imparting soft skills relating to intervention (e.g., how to respond to family members and friends who forward unverified or false information in a sensitive yet effective manner). Finally, Singaporeans' inaction towards false information also suggests a perception among most people that false information is problem for others (e.g., platform companies or governments) to solve, rather than appreciating that individual ownership of the problem is a crucial part of the solution as well. The strategy of encouraging and equipping people with the skills to intervene will complement other countermeasures like the Protection from Online Falsehoods and Manipulation Act (POFMA), which has limited efficacy on closed-communication channels such as Instant Messaging platforms.

Chapter 1

Introduction

CHAPTER 1: INTRODUCTION

Political upheavals brought about by Russian interference in the 2016 US Presidential Election as well as other occurrences in countries such as France, Germany, India, Indonesia, and the UK confer a pandemic status to fake news. However, the problem of fake news is not limited only to election times. On a daily basis, fake news on myriad topics relating to the economy, health, international relations, and domestic politics are disseminated on various communication platforms.

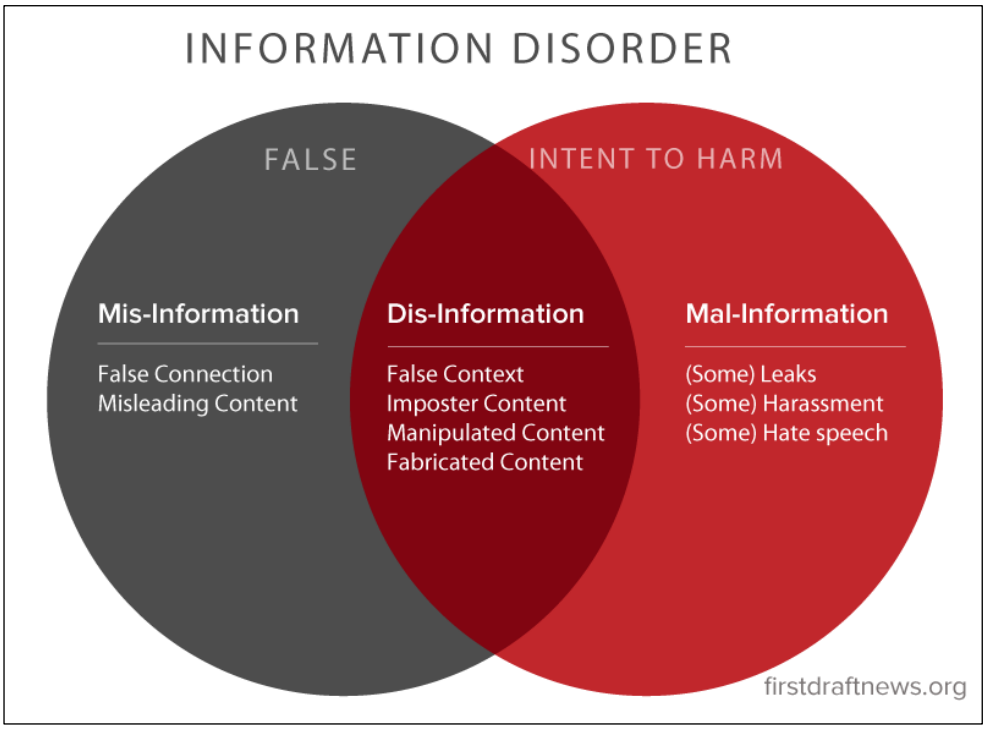
Fake news is only one type of false information in the information ecology. The use of the term “fake news” is problematic as it fails to adequately describe the complexities of the phenomenon and as a result, leads to overly narrow solutions. In addition, politicians and others have used the term to describe news organisations whose coverage they disagree with, resulting in the politicisation and erosion of trust in media organisations among the public.

Academics and industry players use a more stringent application in defining “fake news” and ascribe four characteristics to it: (1) it is false information that is deliberately fabricated; (2) it is produced with the intent to deceive; (3) it is often motivated by economic gains or political influence; and (4) it assumes the disguise of an authoritative news source. Together, these characteristics distinguish fake news from other types of false information such as rumours, parodies, satire, hoaxes, conspiracy theories, and poor journalism.

First Draft’s definitional framework provides a useful illustration of the diverse types of problematic information, categorised based on the intent (or lack thereof) to deceive and to harm (Wardle & Derakhshan, 2017) (see Figure 1). The three types of false information are: mis-information, when false information is shared but no harm is meant; dis-information, when false information is knowingly shared to cause harm; and mal-information, when genuine information is shared to cause harm, often by moving private information into the public sphere.

Given the definitional parameters of existing terminologies, the term “false information” which covers a wide range of falsehoods, irrespective of their form and intent, is used for this study and our reporting.

Figure 1: First Draft's framework of information disorder



In May 2019, the Singapore government passed the Protection from Online Falsehoods and Manipulation Act (POFMA). The introduction of POFMA was a culmination of two years of consultation that included the convening of the Select Committee on Deliberate Online Falsehoods in 2018. The provisions of the regulation are published on the website of the POFMA Office (Protection from Online Falsehoods and Manipulation Act, 2019). Some notable features of the regulation that set it apart from measures introduced in other jurisdictions include the provisions for the government to issue targeted correction directions, and general correction directions, for falsehoods that meet the definitional criteria and pose threats to one or more of the six types of public harms, as defined in the regulation.

Based on our meta-review of studies and reports published on fake news and other forms of disinformation conducted in 2017 (Soon & Goh, 2017), we observed that producers of false information often exploit the cracks in societies and people's insecurities. For instance, domestic and foreign deliberate online falsehood producers stoked already high tensions in the run-up to the US Presidential Election by targeting citizens who rallied behind different party lines. The alt-right communities in France and Germany spread anti-immigrant falsehoods, capitalising on tensions that

have been simmering between citizens and the immigrant population as a result of the immigration crisis in Europe. Similar exploitation was evident in Indonesia where deliberate online falsehood producers fed on anti-Chinese and anti-Communism sentiments.

With the ongoing outbreak of COVID-19 in 2020, mainstream media, social media, and Instant Messaging platforms are awash with conspiracy theories, rumours, and hoaxes that heighten feelings of fear and anxiety among the world's population and fuel tensions between countries (e.g., between China and the US). False information that has gone viral includes health misinformation and disinformation, frauds and scams, and allegations of virus production in both China and the US. While some of the false information are macro narratives that resonate with the international public, others are localised in nature. For instance, in Singapore, at the start of the outbreak in January 2020, rumours of the first death, closure of an MRT station, selected shopping malls and hospitals to avoid due to infected cases, circulated on social media, WhatsApp, and discussion forums (e.g., HardwareZone Forum).

As the next chapter will establish, existing empirical research tends to be Western-centric, quantitative in nature, and to approach the problem of false information in silos. There is scarce empirical research that addresses Singaporeans' consumption, responses, and strategies pertaining to false information. This gap is a pertinent one given how context influences the type of false information that is disseminated and its impact. It is thus timely to examine the impact that false information has on Singaporeans, if and how Singaporeans are indeed susceptible to false information, and what measures do they take to protect themselves from false information.

This study on Singaporeans and false information, funded by the Ministry of Communications and Information (Digital Readiness and Learning Division), is conducted in three phases. It uses a mixed-methodology (a combination of a survey, self-confrontational interviews, and an experiment) and examines three aspects of Singaporeans and false information — susceptibility, immunity, and intervention.

This report focuses on Phase One that examines the susceptibility of Singaporeans to false information, based on survey data collected from more than 2,000 citizens and Permanent Residents. Specifically, we investigate the following research questions:

How susceptible are Singaporeans to false information?

1. Are there certain types and formats of false information to which Singaporeans are more likely to fall prey, and why?

2. Which segments of Singaporeans are more susceptible?

3. How is their susceptibility linked to their demographic profile and other characteristics (e.g., information-seeking behaviours, political traits and psychological traits)?

By addressing the above gaps and examining the problem on three fronts — susceptibility, immunity, and intervention — this study will be the first comprehensive investigation into the impact of false information on different segments of the Singaporean public. It will also provide the needed empirical evidence for interventions that suit local needs. While organisations such as the Media Literacy Council and the National Library Board have been promoting awareness and understanding of the problem among the public, this study will highlight people's pain points for consideration as organisations evolve their programmes.

The next chapter of the report is a review of research conducted on false information. As we present the key findings of some of the more pertinent studies, we also uncover the gaps in existing research — following which, we discuss the methodology that we used to collect data for the Phase One study. The study yielded a copious number of findings, which we organise into three key chapters (information-seeking, political traits and psychological factors, and susceptibility to false information). We conclude the report by discussing the key themes, implications for policy, and highlighting the areas, which will be followed up in Phase Two and Phase Three of the study.

Chapter 2

Literature Review

CHAPTER 2: LITERATURE REVIEW

2.1. Public perceptions and impact of false information

Given the political roots of the problem that emerged in 2016, earlier research conducted on false information was dominated by election or post-election time studies, many of which focused on the US.

One well-known study was conducted by Allcott and Gentzkow on the 2016 presidential election. Using web browsing data, archives of fact-checking websites, and an online survey to examine Americans' exposure to fake news during the election, the researchers found that the average American adult saw one to several fake news stories in the months around the election, with over half of those who recalled seeing them believing them. Their study also highlighted the possible effect of cognitive bias and partisanship, where people were much more likely to believe stories that favoured their preferred candidate, especially if they had ideologically segregated social media networks (Allcott & Gentzkow, 2017).

A separate study, also conducted on the 2016 US presidential election, uncovered a dismal picture as well. Conducted with 3,015 Americans by BuzzFeed and IPSOS, the survey found that while real news headlines received a higher overall accuracy rating than fake news headlines, the latter were perceived to be somewhat or very accurate by people 75 per cent of the time (Silverman & Singer-Vine, 2016).

Subsequently, a study by Brookings Institute on the 2018 US midterm elections indicated more direct effects between fake news and elections. An online national poll conducted with about 2,000 adult Internet users found that more than half (57 per cent) said they had come across fake news during the 2018 elections, and 19 per cent believed it had influenced how they planned to vote. Men and senior citizens were more likely than women and young people to have seen fake news and to say their vote was influenced by fake news (West, 2018).

Another study by Pew Research Center, carried out around the same time with 10,683 respondents, uncovered pessimism among the American public pertaining to the impact of fake news on the electoral system. More than two-thirds of Americans (67 per cent) felt that it was very or somewhat likely that foreign governments such as Russia would try to influence the midterm elections. Fewer than half (45 per cent) were very or somewhat confident that the election systems across the country are secure from hacking, and only 8 per cent said they were very confident in the security of election systems nationwide (Pew Research Center, 2018).

Given that the spread and effects of false information are not limited to election periods only, researchers have also examined the manifestations of the problem in people's daily lives, its impact on the public, and the different factors that might mitigate the effects of false information on people.

Across the globe, people have expressed concerns and anxieties pertaining to the prevalence of false information. One area of work deals with people's exposure to false information. A comparative study in 2018 that spanned 27 countries found that the term "fake news" was associated mostly with "stories where the facts are wrong". A significant number of adults aged 18 to 64 years (60 per cent) fairly often or very often saw false stories from news organisations. A breakdown of the responses showed that perceptions varied sharply, with the problem being perceived to be more severe in some countries (e.g., 82 per cent of the respondents in Argentina felt so) than in others (e.g., 48 per cent of the respondents in Germany felt so) (IPSOS, 2018).

Similar perceptions were observed in Europe with citizens in EU member states expressing concerns about the impact of fake news and online disinformation. Among the 26,000 citizens surveyed, slightly more than a third of the people said they came across fake news every day or almost every day. A large majority felt that fake news was a problem in their country and a problem for democracy (85 per cent and 83 per cent, respectively) (European Commission, 2018). People's fear and apprehension towards fake news was also observed closer to Singapore. In the Philippines, 67 per cent of the people felt that fake news poses a serious problem to the society (ABS-CBN News, 2018).

For Singapore, a small number of studies conducted on the phenomenon, at the time commonly referred to as "fake news", shed some light on the situation here. Besides the REACH polls that were conducted in 2017 and 2018 (REACH, 2018), there were surveys by commercial survey companies like Blackbox and IPSOS. Those studies were quantitative in nature and they examined people's perceptions and attitudes towards fake news and what needs to be done (e.g., regulation). In 2017, when the government warned of the problem and its potential impact on the Singapore society, Blackbox conducted a study with 1,000 Singaporeans aged 15 years and above to understand how the public felt about fake news. The survey found that fake news was a problem that worried many Singaporeans too — four in 10 people often wondered whether the news they read was true or false, and two in 10 worried about the issue of fake news online a lot. Only a minority, 12 per cent of Singaporeans, did not worry about the problem at all.

2.2. Influence of media use and trust

Researchers have also sought to understand who the perpetrators were in the court of public opinion. For some, besides technology platforms, one of the key culprits of false information are media organisations. While people believe that quality journalism is important for a functioning democracy, many are sceptical about what they read and hear from traditional media (Cooke, 2017). Media polarisation, observed in countries such as the US, could have contributed to a decline in people's trust in the news media.

In a report published by the Knight Foundation in 2018, Americans' perceptions of the news media were generally negative, an outcome of their perceptions of media bias. More than two-thirds of the Americans said that most news media fail to separate fact from opinion, an increase by 20 per cent from those who felt so in 1984 (Knight Foundation, 2017).

Despite suspicions towards traditional media, they were still most used by people for news and information, and more trusted than digital sources and social media. Roughly two-thirds of American adults said they relied on television news "a great deal" or "a fair amount" for staying up to date on news. Internet news websites were the next most commonly used source. Americans have the greatest trust in national network news and local and national newspapers (Knight Foundation, 2017). Across the EU member states, traditional media was perceived by people as the most trusted source of news, with radio topping the list (70 per cent), followed by television (66 per cent) and printed newspapers and news magazines (63 per cent) (European Commission, 2018). In the UK, the top three sources for trusted news were 24-hour television news channels, television news bulletins/programmes, and radio news sources, and "the websites or apps of television or radio companies". Social media and online-only news outlets were less trusted as a news source (Cooke, 2017).

The same situation was observed in the Asia Pacific (APAC) region. Television was the most trusted source of news content. Three-quarters of those surveyed (75 per cent) placed either a little or a lot of trust in television, which was followed by radio (trusted by 70 per cent), and newspapers (68 per cent), while digital was the least trusted source for news (60 per cent). While people trusted traditional media and were at the same time aware that those sources were also responsible for spreading "fake news", they felt that digital sources posed a bigger problem (YouGov Staff, 2017). Media trust can potentially exert an effect on people's response to false information. For instance, a study examining how well Americans could distinguish factual statements from opinions in news stories found that almost 40 per cent of Americans who have a lot of trust in the information from national news organisations correctly identified all five factual statements in a survey,

compared with 18 per cent of those who have not much or no trust (Mitchell, Gottfried, Barthel & Sumida, 2018).

Social media has become a growing source of news and information, especially among younger adults (Knight Foundation, 2017; YouGov Staff, 2017). Averaging across APAC countries, more than a third (37 per cent) share online news content on social media at least once a day, with Thailand (54 per cent), Vietnam (50 per cent), Indonesia (44 per cent) and the Philippines (40 per cent) seeing higher usage (YouGov Staff, 2017). However, those platforms were also seen as a source of fake news (Knight Foundation, 2017; YouGov Staff, 2017). People who cited Facebook as a major source of news, compared with those who cited Facebook as a minor source of news and those who rarely or never did so, were more likely to view fake news headlines as accurate than those who relied less on the platform for news (Silverman & Singer-Vine, 2016).

As for who Singaporeans thought the perpetrators of fake news were, a survey by Blackbox found that people across ages and races perceived alternative socio-political sites to be more likely to publish fake or misleading news than mainstream media sites and government websites. While more than 40 per cent felt that alternative news sites such as TR Emeritus, All Singapore Stuff, Mothership.sg, and now-defunct The Middle Ground published fake or misleading news, a much smaller group felt that websites of The Straits Times (13 per cent) and Channel NewsAsia (12 per cent) did so. Government websites were perceived to be least likely to publish fake or misleading news with only 7 per cent thought they did so (Blackbox Research, 2017).

Besides traditional media and social media, people also obtain information from other sources, such as people in their social networks. Friends and family members are commonly cited sources of news, with the majority of residents in APAC countries saying they trust news that friends and family share on social media. However, there seems to be some scepticism regarding the news shared by this group as only 13 per cent said they placed “a lot” of trust in news that friends and family shared online (YouGov Staff, 2017). On the end of information sharers, regular users share misinformation on social media for myriad reasons. They include the ability of the information to spark conversations, the “catchiness” of the message, self-expression, and for socialising with others (Chen, Sin, Theng & Lee, 2015).

2.3. Effects of psychological and political factors

A large body of work that sits in the intersection between media studies and cognitive science focuses on the role of psychological factors in influencing people's responses to the information they are exposed to. Studies have found that people are more likely to evaluate information that is in line with their political beliefs and preferences positively. For instance, both Republicans and Democrats were more likely to judge factual and opinion statements that appealed to their political side as factual (Mitchell, Gottfried, Barthel & Sumida, 2018). Republicans were more likely than Democrats to believe that President Obama was born outside the US, while Democrats were more likely than Republicans to believe that President Bush was complicit in the 9/11 attacks (Cassino & Jenkins, 2013).

Besides having an effect on how people evaluate information, political partisanship also influences how people share information with others. A study by Knight Foundation found that people tend to share news stories with those who have similar views as them (68 per cent), rather than with people who have different views from their own (29 per cent) (Knight Foundation, 2017). These findings strengthen the argument that people tend to reside in filter bubbles.

Political knowledge also has a mediating effect on people's ability to differentiate factual information and false information. After controlling for education, among those who were surveyed, people with high levels of political awareness (i.e., high political knowledge) correctly identified all factual statements in a survey, compared with those with low political awareness. The same relationship was observed for digital savviness; those who were more digitally savvy were more able to identify factual statements than those who were less digitally savvy (Mitchell, Gottfried, Barthel & Sumida, 2018).

The earlier chapter has established that people are concerned with the impact of false information on democracy and the society. Furthermore, the studies reviewed also point to generally low competency among people to tell false information from factual information, an ability that is influenced by psychological factors such as political partisanship. Researchers have sought to determine people's literacy and their perceived confidence in identifying false information. In general, confidence and literacy levels are low. Americans believe that it is increasingly harder to be a well-informed citizen. About half of American adults feel that there are sufficient sources that help people overcome bias and tell what the facts in the news are and only 27 per cent feel "very confident" that that they are able to tell when a news source is reporting factual news, a commentary, or an opinion (Knight Foundation, 2017). A global study by Kantar on people's trust in news found

that 70 per cent of people reconsidered sharing an article as they were worried that it might be fake news (Cooke, 2017). These findings point to a possible widespread phenomenon where people's perceived efficacy and confidence in their own ability to identify false information from factual information is low, which may in turn shape their responses to the problem and the strategies they adopt.

These findings are corroborated by studies in other parts of the world. In Europe, 37 per cent of those surveyed come across fake news every day or almost every day. While 71 per cent feel confident on identifying them, almost one in five admitted to sharing a story after reading only the headline (17.7 per cent) (European Commission, 2018). Among young Australians aged eight to 16 years old, about a third felt they could distinguish fake news from real news and another third felt they could not make this distinction. The final third was uncertain about their ability. Despite having low confidence in their ability to distinguish fake news from real news, majority of those surveyed did not take steps to verify the accuracy of news they encountered online. Only 10 per cent said they often tried to determine the veracity of news stories they encountered online, but more than half said they either hardly ever tried or never tried to do so (Notley & Dezuanni, 2017).

In addition to the studies mentioned earlier, others conducted in the Singapore context sought to determine people's confidence in their ability to tell fake news from real news and the strategies they used to verify information. In IPSOS' 2018 study on people's trust and confidence in news sources, which surveyed 750 Singapore citizens and Permanent Residents, they found that 79 per cent of Singaporeans aged 15 to 65 years were "somewhat" or "very confident" in their ability to detect "fake news". Higher confidence was expressed by males and those who had higher education qualifications (e.g., with university degrees). However, when presented with five "fake news' headlines" and asked if they were real or not, 91 per cent incorrectly identified one or more as being real. Thus, while one could be confident about his ability to detect fake news, one may not be able to do in reality. The survey by IPSOS uncovered a worrying fact — almost half (45 per cent of the respondents) said they had falsely believed a fake news story until they found out otherwise (IPSOS, 2018).

To understand how Singaporeans managed and responded to information they were unsure of, Tandoc et al. analysed open-ended survey responses from 2,501 people in 2018. The researchers found that individuals relied on both their own judgment of the source and the message. When their own judgment did not adequately provide a definitive answer, they turned to external resources to authenticate news items.

Our review of recently published work sheds light on existing gaps in the study of disinformation, which this study proposes to fill.

First, much of the research published uses a "catch-all" approach when studying "fake news" or disinformation, without breaking down the different types of false information. There is an absence of empirical work that determines people's susceptibility and responses to different types of false information.

Second, current research typically focuses on the perceptions and concerns of the general population. Little attention has been paid to whether different segments of the population have varying degrees of susceptibility to false information, and the actual measurement of their susceptibility. Some empirical work has pointed to demographic factors such as age and education while others, such as the studies reviewed earlier, have indicated that media use, media trust, and political traits (e.g., partisanship) exert some influence on people's susceptibility to false information. Scholars in the fields of cognitive science have also studied how confirmation bias affect people's belief in false information such as rumours and conspiracy theories. The dearth of research in this area is even starker in the Singapore context.

Third, a correlational approach has been used by researchers to establish the connection between people's exposure to false information to outcomes. This is done by extrapolating from events such as elections, with an underlying assumption being exposure equals effect. There is a paucity of research that studies what people do and how they respond to the information they receive upon exposure. Research has shown that people tend to rely on heuristics, or shortcuts, such as the "design look" of a website, information structure and information focus (Fogg et al., 2003). This study embeds a stimulus to determine people's responses and reasons for their judgement of information veracity when they encounter information that may be false.

Chapter 3

Methodology and Profile of Respondents

CHAPTER 3:

METHODOLOGY AND PROFILE OF RESPONDENTS

In this chapter, we discuss the study methodology and survey questionnaire design, present key demographics of the respondents, and explain the data analyses that were performed for this report.

3.1. Data Collection

IPS Social Lab was engaged for the data collection. Prior to the actual survey, a pilot survey was conducted to: (1) test the flow of the entire survey (from seeking consent to completion of the interview); (2) gather feedback on the flow of the questionnaire, phrasing of questions, response options, and translations; and (3) identify potential operational and logistical difficulties. The pilot survey was conducted with different age groups and in various languages. A total of 20 pilot interviews were conducted in different languages.

Data collection for the actual survey was conducted between 1 November and 31 December 2019 via face-to-face interviews, using the computer-assisted data collection (CAPI) method. Prior to assigning interviewers to visit the selected households for the face-to-face interviews, invitation letters were mailed out on 20 October 2019 to inform the residents that their household had been selected for the survey. Households were selected based on random household sampling, using the sampling frame provided by the Department of Statistics. A total of 90 households (3 per cent) either called or emailed IPS Social Lab to decline participation after receiving the invitation letter.

One respondent in each household was selected based on the person who had last celebrated his or her birthday within the household. Replacement of household within the same block and dwelling type was only allowed after three unsuccessful visits across three different time periods (weekday afternoons, weekday nights, and weekends). The final sample size was 2,011. In terms of interview duration, 67 per cent of the interviews lasted between 20 to 40 minutes, whereas the remaining 33 per cent lasted more than 40 minutes.

Upon completion of data collection, IPS Social Lab conducted data validation based on industry best practices via various modes including telephone validation, on-site validation, and audio recordings. A total of 49 per cent of the data collected were validated.

3.2. Profile of respondents

In this sub-chapter, we present the demographic profile of the respondents who took part in the survey. The data collected was weighted by interlocking age, gender, and ethnicity based on the Population Trends 2019 published by the Department of Statistics to reflect the general population aged 18 years old and above (Department of Statistics Singapore, 2019). Table 1 shows the weighting factors that were used.

Table 1: Weighting factors obtained from 2019 Population Trends

Age	Chinese		Malay		Indian & Others	
	Male	Female	Male	Female	Male	Female
18 - 20	0.71	0.83	0.96	1.80	0.82	1.94
21 - 24	0.80	0.76	0.87	0.81	0.88	0.56
25 - 29	1.31	1.27	0.81	1.05	0.85	0.74
30 - 34	1.20	0.92	1.20	0.59	1.22	0.71
35 - 39	1.02	0.93	0.91	0.65	1.01	0.80
40 - 44	1.04	0.94	0.94	0.44	0.96	0.82
45 - 49	1.53	1.05	1.57	0.84	1.20	1.28
50 - 54	1.25	0.82	1.15	1.22	1.43	1.19
55 - 59	1.26	0.77	1.40	0.91	0.80	0.78
60 - 64	1.02	0.89	1.24	0.79	1.11	1.19
65 - 69	1.01	0.90	0.82	1.22	0.53	5.20
70 - 74	0.83	0.84	0.74	2.18	0.80	1.13
75 & over	2.04	2.03	1.37	5.88	0.94	0.77

Table 2 shows the breakdown of respondents by their citizenship, age, gender, ethnicity, education, housing type, and income.

Singapore citizens and Permanent Residents made up 88.5 per cent and 11.5 per cent of the respondents, respectively. Male respondents made up 48.5 per cent of the sample, and female respondents constituted 51.5 per cent.

In terms of age, 27.8 per cent of the sample were youths (those aged 18 to 34 years). Close to half of the sample, 46.1 per cent were aged 35 to 59 years old. Seniors, or those aged 60 years and above, made up 26.1 per cent of the sample.

After weighting the data, the ethnic representation of the sample was close to that of the general population, with slightly fewer Malays (12.6 per cent) and slightly more Indians and Others (11.6 per cent). Chinese respondents made up 75.8 per cent of the sample.

In terms of education, almost half of the respondents (49.4 per cent) had a diploma education or above (i.e., have tertiary education).[1] For housing type, the largest group comprised those living in HDB 4-Room Flat, followed by those living in HDB 1- to 3-Room Flat.[2]

Two hundred and fifty-five respondents (12.7 per cent of the sample) refused to answer the question on their monthly household income. Among those who answered the question, the largest group comprised respondents who had a monthly household income of $10,000 and above (17.6 per cent), followed by those from a "no working person" or "retiree household" (12.3 per cent). About one-fifth of the respondents (21.7 per cent) earned a monthly household income of $9,000 or more (the national median household income as of 2018 was $9,239). About a third of the respondents (33.5 per cent) earned a monthly household of less than $3,000.[3]

[1] Given the small number of respondents who had post-graduate diploma, we combined the categories for "University" (28.3 per cent) and "Post-graduate diploma/degree" (0.9 per cent) to form a new category — "University and above" (29.2 per cent).

[2] We collapsed the six dwelling types (i.e., "HDB 1- or 2-Room Flat", "HDB 3-Room Flat", "HDB 4-Room Flat", "HDB 5-Room Flat/Executive Flat", "Condominium/Other Apartments", and "Landed Property") into four categories — "HDB 1- to 3-Room Flat", "HDB 4-Room Flat", "HDB 5-Room Flat/Executive Flat" and "Private".

[3] We combined all responses that indicated a gross monthly household income of $10,000 or more into a single category – "$10,000 and above".

Table 2: Percentage of respondents by citizenship, age, gender, ethnicity, education, housing type, and income

Demographics of respondents		Percentage (%) of respondents
Citizenship	Singapore citizens	88.5
	Permanent Residents	11.5
Gender	Male	48.5
	Female	51.5
Ethnicity	Chinese	75.8
	Malay	12.6
	Indian/Others	11.6
Education	Below Secondary	15.3
	Secondary	23.9
	Post-Secondary (Non-Tertiary)	11.4
	Diploma and Professional Qualification	20.2
	University and above	29.2
Housing type	HDB 1- to 3-Room Flat	26.2
	HDB 4-Room Flat	35.2
	HDB 5-Room Flat / Executive Flat	22.3
	Private	16.3
Monthly household income	No working person / Retiree household	12.3
	Below $1,000	3.5
	$1,000 – $1,999	8.5
	$2,000 – $2,999	9.2
	$3,000 – $3,999	10.2
	$4,000 – $4,999	8.1
	$5,000 – $5,999	8.6
	$6,000 – $6,999	6.4
	$7,000 – $7,999	4.8
	$8,000 – $8,999	6.7
	$9,000 – $9,999	4.1
	$10,000 and above	17.6

3.3. Survey questionnaire design

In addition to questions on their demographics, respondents also had to answer questions on the following:

1. Information-seeking and news consumption (e.g., media use and media trust);

2. Political traits (e.g., political participation and political trust);

3. Psychological factors (e.g., selective exposure and confirmation bias in information-seeking);

4. Experiences with false information (e.g., frequency of encountering and believing false information);

5. Information verification techniques (e.g., how people verify information they encountered).

3.4. Embedded manipulated news article

In order to assess people's susceptibility to false information more accurately, the study also included a component that was designed to evaluate respondents' ability to discern the truth from falsehoods.

The study presented respondents with a manipulated news article that was adapted from an original news article published by a Singapore mass media, but manipulated to include common tell-tale signs of fake news articles that should prompt people to pause and doubt the veracity of the information presented.

Some examples of the manipulations include: (1) altering the URL of the article such that the domain name does not correspond with the name of the Singapore mass media; (2) re-writing the headline into a highly sensationalised one; (3) inserting multiple grammatical errors; and (4) citing false local authorities such as "The Ministry of Health and Hygiene" in the article. The manipulated news article also retained the use of the logo of the Singapore mass media. This is a technique often used by fake news producers to create a more authoritative and credible look to deceive audiences into trusting a piece of information.

The study required respondents to spend some time reading the manipulated news article, and subsequently indicate to what extent they felt

that "news article" could be trusted.[4] Upon completion of the survey, interviewers debriefed the respondents who were informed that the "news article" they read was manipulated for the purpose of the study.

3.5. Data analyses

The IBM SPSS Statistics software (version 25) was used to analyse the survey data. The following data analyses were conducted and presented in this report:

1. Descriptive statistics to provide quantitative summaries of each variable and to highlight emerging patterns in the data;

2. Chi-square test for association to determine if there are relationships between two categorical variables, and cross-tabulations of category frequencies;[5]

3. Binary logistic regressions to identify variables that predict people's susceptibility to false information (i.e., whether or not respondents trusted the manipulated news article).[6]

4. Cluster analysis to generate subgroups and to identify typologies of respondents in the sample.

The next few chapters present the findings of our data analyses.

[4] Respondents were asked to indicate to what extent they felt that the manipulated article could be trusted on a four-point Likert scale ("untrustworthy" to "very trustworthy").
[5] Only results that were deemed statistically significant (i.e., p value < 0.05) were included in the report.
[6] A regression is a statistical method used to assess how well a set of variables predicts a particular outcome, and whether a specific independent variable can predict the variations of the dependent variable when the effects of other independent variables are controlled for.

Chapter 4

Information-seeking and News Consumption

CHAPTER 4:

INFORMATION-SEEKING AND NEWS CONSUMPTION

The media ecology today is a diverse and multi-faceted one — media organisations and news publishers are experimenting with different platforms to reach their target segments. In addition, there has been a growth of media start-ups encouraged by lower barriers of entry into the industry, made possible by web 2.0 technologies. Technology companies are also changing their business strategy and expanding their product offerings; their services are no longer confined to facilitating communication and social interaction, but include news making and information delivery as well. According to the 2019 Global Web Index News Consumption Trend Report, social media such as Facebook have become popular platforms for news consumption among Internet users (Global Web Index News, 2019). The other features of the rapidly changing media landscape include the growing popularity of aggregators as a news source and new formats of deliveries (e.g., podcasts and social media stories).

In today's hybrid media environment where "old" and "new" media co-exist, understanding people's information-seeking behaviours provides a broader context when examining people's susceptibility towards false information. For instance, research suggests that the use of social media platforms for information-seeking allows for the curation of personalised information streams that reinforce online echo chambers, thus putting people at risk of false information because of the decreased likelihood of being exposed to corrective information to counter falsehoods (Guess, Nyhan & Reifler, 2018; Lazer et al., 2017).

This chapter presents the findings of Singaporeans' use of different media types for news information and current affairs, their level of trust in the media, and trust in different interpersonal networks as a source of news information. As existing research has shown that social networking sites and Instant Messaging platforms are increasingly used for information consumption and sharing, we took a closer look at the different social networking sites and Instant Messaging platforms Singaporeans used for information access and information sharing.

4.1. Media use for seeking news information and current affairs

To measure respondents' media use for news information and current affairs, we asked them to indicate their frequency of use of 12 media types using a five-point frequency scale (from "never" to "once a day or more"). Given the wide array of media types, we classified them into "legacy media" (e.g., print newspapers/online websites of Singapore mass media, television, radio, and foreign print newspapers) and "non-legacy media" (e.g., social networking sites, Instant Messaging platforms, online discussion forums, podcasts, search engines, and news aggregating websites or apps).

This classification is informed by existing scholarly work looking at "old media" versus "new media" or "mainstream media" versus "social media". "Legacy media" can be predominantly characterised by its institutionalised structure and affiliations with power centres such as governments and corporations (Chomsky, 1997), whereas "non-legacy media" is predominantly characterised by elements of connectivity and interactivity, where user-generated content creation and sharing is enabled by web 2.0 technologies (Flew, 2005; van Dijck & Poell, 2013).

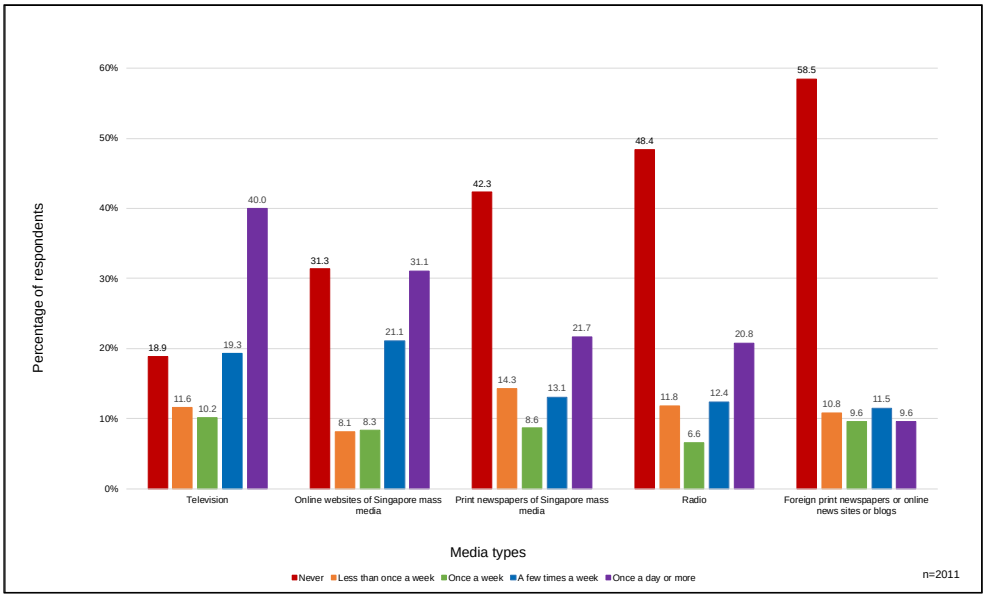
Among legacy media, the study showed that television was used most frequently by respondents for seeking news information and current affairs, with 59.3 per cent using it at least a few times a week ($\bar{x}$ = 3.50). This finding is consistent with earlier studies conducted during general election and non-election times (Soon, Tan & Samsudin, 2016). Television continues to play a dominant role in Singaporeans' media diet, especially for current affairs and news.

The online websites of Singapore mass media (e.g., The Straits Times, TODAY, Channel NewsAsia, at 52.2 per cent, $\bar{x}$ = 3.13) were the second most used media type, followed by print newspapers of Singapore mass media (e.g., The Straits Times, Lianhe Zaobao and Berita Harian, at 34.8 per cent, $\bar{x}$ = 2.58). This trend is reflective of a population that is increasingly turning to their digital devices to access online platforms for news consumption and information-seeking. According to the 2019 Reuters Digital News Report that was based on a study of 38 countries, 69 per cent of those aged 35 years and below used their smartphone as their main device for news consumption. Slightly less than half (45 per cent) of those aged 18 to 24 years had their first contact with the news in the morning via their smartphones (Newman, Fletcher, Kalogeropoulos & Nielsen, 2019).

Foreign news publications were used the least often with only 21.1 per cent of the respondents using them at least a few times a week ($\bar{x}$ = 2.03), indicating that Singaporeans' information diet and media choice are very

localised in nature. See Figure 2 for respondents' use of legacy media for seeking news information and current affairs.

Figure 2: Use of legacy media



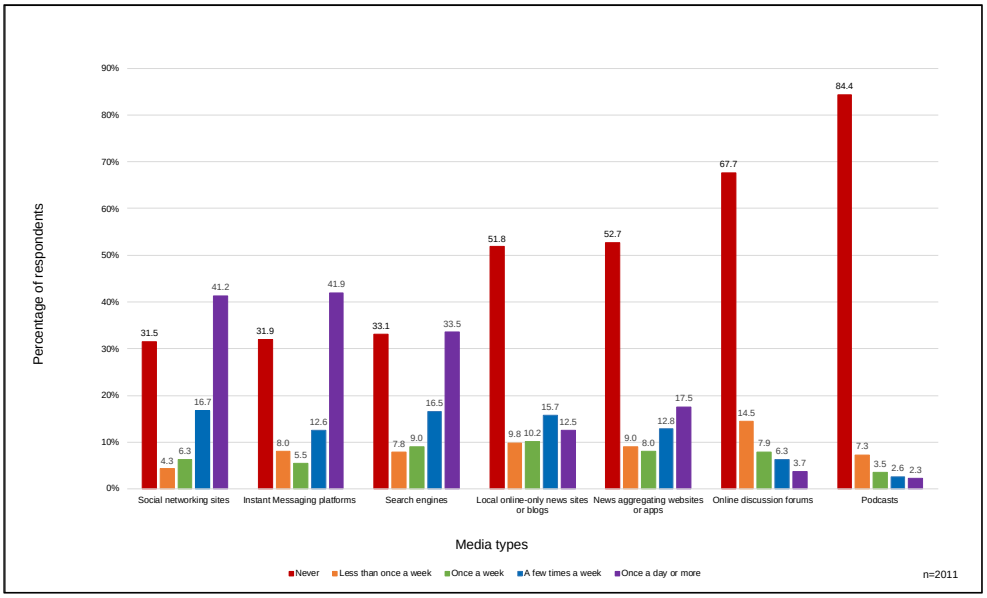
As for non-legacy media, social networking sites such as Facebook, YouTube, and Instagram were used most frequently by respondents for seeking news information and current affairs, with about 58 per cent using them at least a few times a week ($\bar{x}$ = 3.32), followed closely by Instant Messaging platforms such as WhatsApp, Facebook Messenger, and Telegram (54.5 per cent, $\bar{x}$ = 3.24), and search engines such as Google search (50 per cent, $\bar{x}$ = 3.10).

Our survey confirms that local online-only news sites and blogs are on the decline. Among non-legacy media, local online-only news sites and blogs were used even less frequently (28.2 per cent, $\bar{x}$ = 2.27) than news aggregating websites or apps (30 per cent, $\bar{x}$ = 2.33). After the 2015 General Election, there has been a decrease in online-only news sites and blogs, with the closure of sites (e.g., Six-Six News and Inconvenient Questions) due to financial strains faced by online publishers (Cheng, 2016), as well as the growing popularity of social networking sites where prominent public intellectuals and civil society activists publish their commentaries on important socio-political issues.

Within the category of non-legacy media, podcasts were used the least often with only 4.9 per cent of the respondents using them at least a few times a

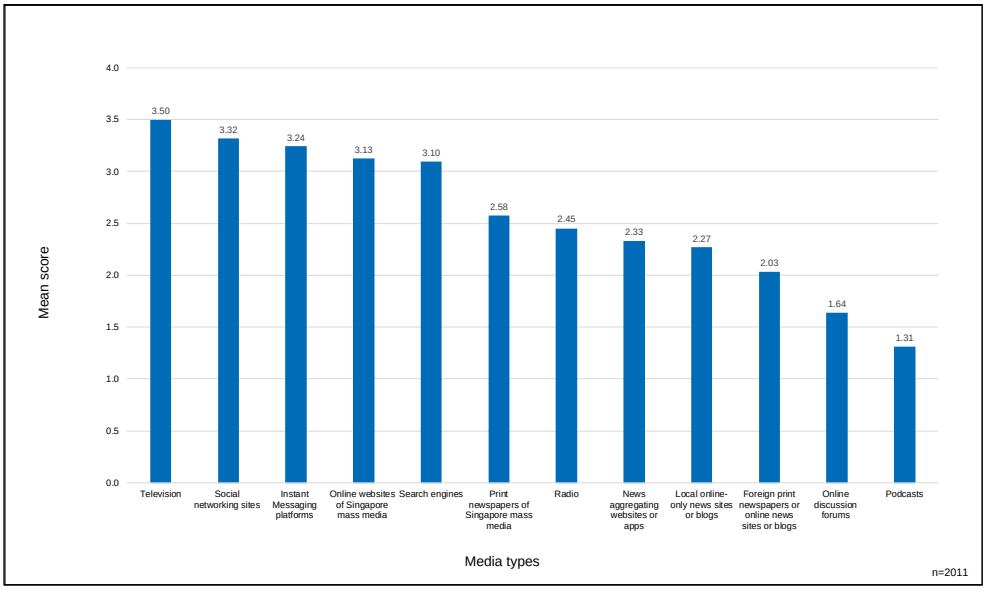
week ($\bar{x}$ = 1.31). Global trends suggest that podcasts are becoming more popular as a news and information source. According to the 2019 Reuters Institute Digital News Report, podcasting is fast becoming a worldwide phenomenon, with 36 per cent of those surveyed from almost 40 countries accessing a podcast each month and around 15 per cent using a news podcast (Newman & Gallo, 2019). However, our study shows that podcast use has not caught on in Singapore yet and Singaporeans are still relying primarily on established forms of media for information-seeking. See Figure 3 for respondents' use of non-legacy media for seeking news information and current affairs.

Figure 3: Use of non-legacy media



When we combined all 12 media types, the most frequently used media was television, followed very closely by social networking sites and Instant Messaging platforms. This trend is a cause for concern due to the proliferation of false information on these social networking sites and Instant Messaging platforms. Online websites of Singapore mass media were ranked fourth in respondents' choice of news information and current affairs source (see Figure 4).

Figure 4: Mean scores of respondents' media use



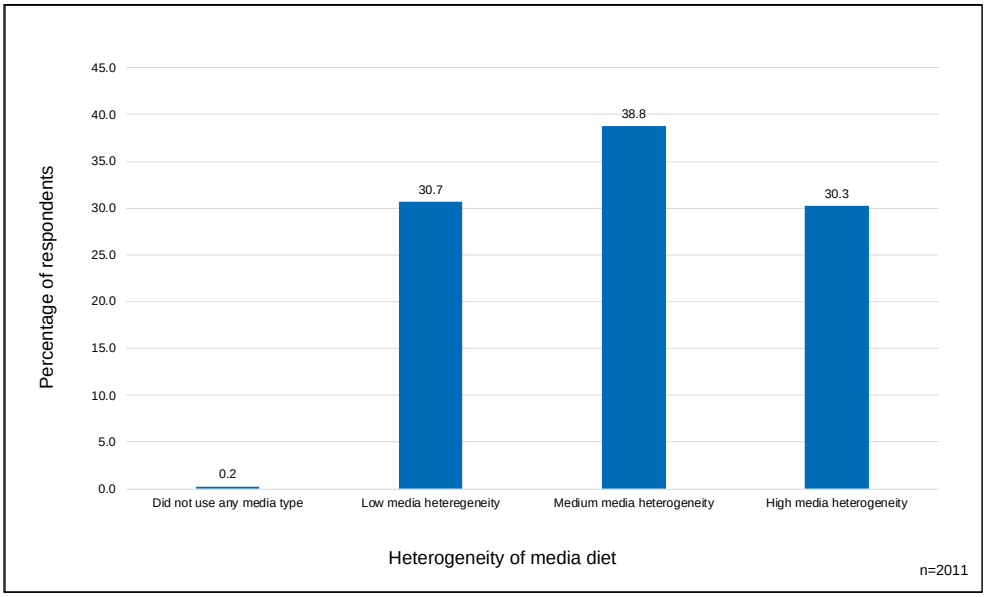
4.2. Heterogeneity of people's media diet

Based on the above responses that looked at which media types Singaporeans depended on for news information and current affairs, we also examined how heterogeneous Singaporeans' media diet was; in other words, how many different types of media they used. For instance, a person who only uses one media type has the least heterogeneous media diet while a person who uses all 12 media types has the most heterogeneous media diet.[1] A person with a heterogeneous media diet uses a plurality of sources and is likely to be exposed a greater diversity in perspectives (e.g., local, foreign, mainstream, alternative, official, and personal) (Hmielowski, 2012; Webster, 2007).

Figure 5 shows that while there was a relatively even distribution across the three levels of heterogeneity in media diet, the media diet of most of the respondents, 38.8 per cent of them, was medium in heterogeneity.

[1] We classified respondents' heterogeneity of media diet into three categories: low (one to four media types were used), medium (five to eight media types were used), and high (nine to 12 media types were used).

Figure 5: Heterogeneity of respondents' media diet



4.3. Trust in media

Besides the usage of different media types for news information and current affairs, we also asked people how much they trusted each media type,[2] as trust in media has long been seen as a crucial factor in understanding people's relationship with the news. Research has shown that trust in media affects the frequency of media use, where a higher trust in media is positively correlated with a higher frequency of media use (Gainous, Abbott & Wagner, 2019). Research has also shown that trust in media affects media preference.

For example, the 2017 Reuters Institute Digital News Report found that people with low levels of trust in the news media were more likely to prefer "non-mainstream" news sources such social media, blogs, and digital-only news sites (Fletcher & Park, 2017).

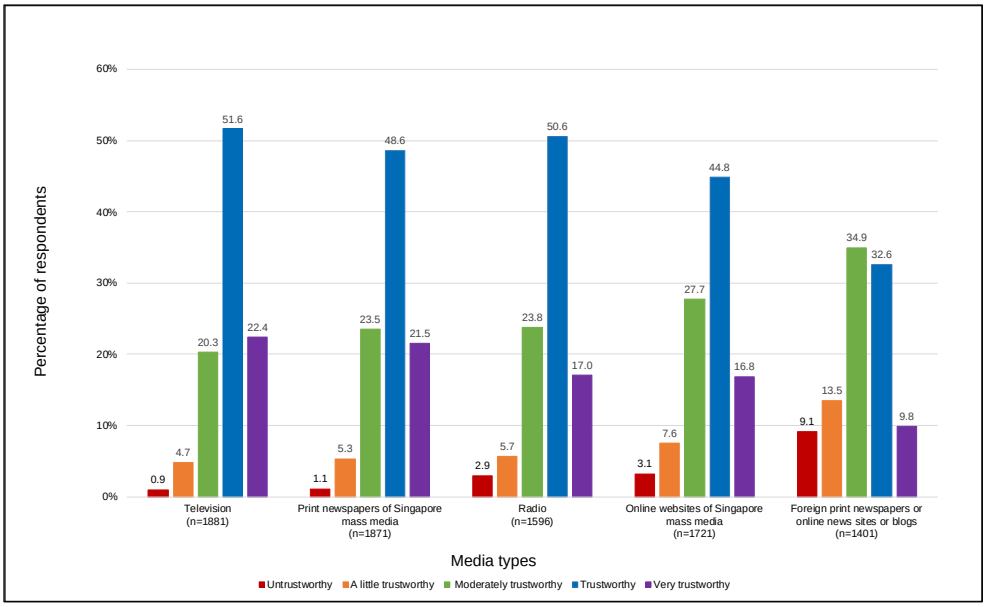
Our study found that within legacy media, television, which was the most frequently used media, also enjoyed the highest trust among respondents, with 74 per cent of them saying that the medium was trustworthy or very

[2] Respondents were asked to indicate on a five-point Likert scale (from "untrustworthy" to "very trustworthy") how trustworthy they found each media type to be. Respondents were also given a "don't know" option as some of them might not be familiar with a specific media type or were unsure of its trustworthiness.

trustworthy ($\bar{x}$ = 3.90). Television was followed closely by print newspapers of Singapore mass media (70.1 per cent, $\bar{x}$ = 3.84), radio (67.6 per cent, $\bar{x}$ = 3.73), and online websites of Singapore mass media (61.6 per cent, $\bar{x}$ = 3.65). While online websites of Singapore mass media were used more frequently than print newspapers of Singapore mass media, the latter were more trusted by users. This could be due to real-time breaking news and short production cycle of online news publishing, which may lead to more errors. On the other hand, print newspapers follow a fixed production cycle where the longer process enables more robust fact-checking and verification to be done. In 2017, a study carried out in four countries — Brazil, France, the UK and the US — similarly found that print media was more trusted by audiences than online media, primarily due to the depth of coverage delivered (Kantar, 2017).

The legacy media type that saw the lowest trust among respondents was foreign print newspapers or online news sites and blogs (42.4 per cent, $\bar{x}$ = 3.20). Two reasons could account for this — the perception of false information being prevalent in foreign media, especially post-presidential election in the US in 2016, and the partisanship of many foreign media organisations that may have given rise to perceptions of media bias in those organisations. See Figure 6 for respondents' trust in legacy media.

Figure 6: Trust in legacy media

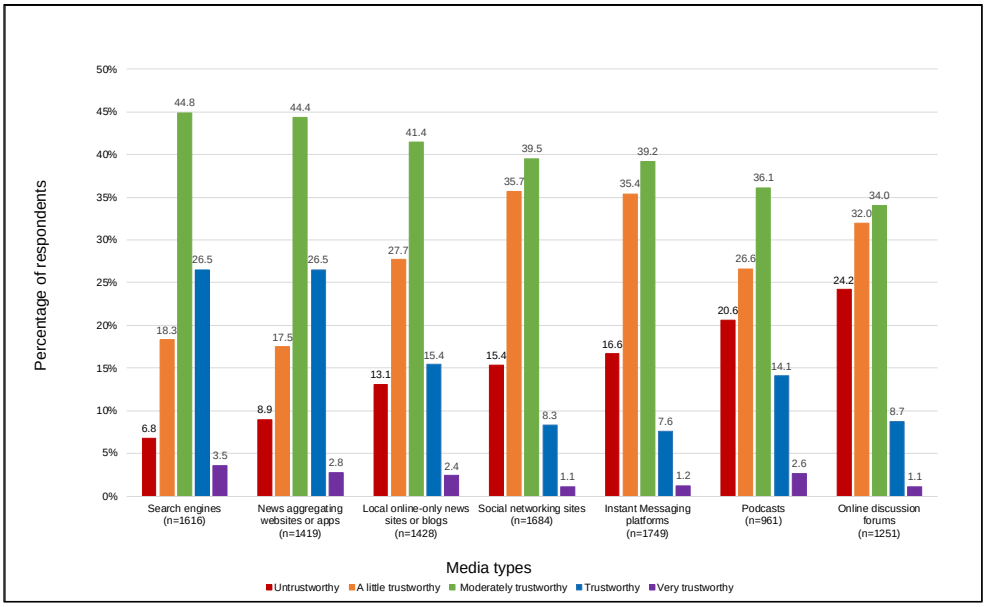


Despite social networking sites and Instant Messaging platforms being ranked the second and third most frequently used across all 12 media types, respondents' trust in them was low. Less than 10 per cent of the respondents thought that social networking sites (9.4 per cent, $\bar{x}$ = 2.44) and Instant Messaging platforms (8.8 per cent, $\bar{x}$ = 2.41) were trustworthy as a source of news information and current affairs. One possible reason is that the news and information circulated on social networking sites and Instant Messaging platforms often take the form of "soft news", cultural appropriations (e.g., satire and memes), and personal commentaries that contribute to their perceived lack of seriousness and objectivity (Kaisnes & Larsson, 2018).

Another reason is the growing awareness of false information being circulated on these platforms among the public, due to media reports and government warnings. In a study on understanding audience perspectives on low trust in media for instance, researchers found that while social media has become a central source of news for many due to convenience and ease of use, people did not trust social media all the time due to reasons such as lack of fact-checking, the prevalence of opinion-driven information, and a distrust of the platforms' algorithms (Newman & Fletcher, 2017).

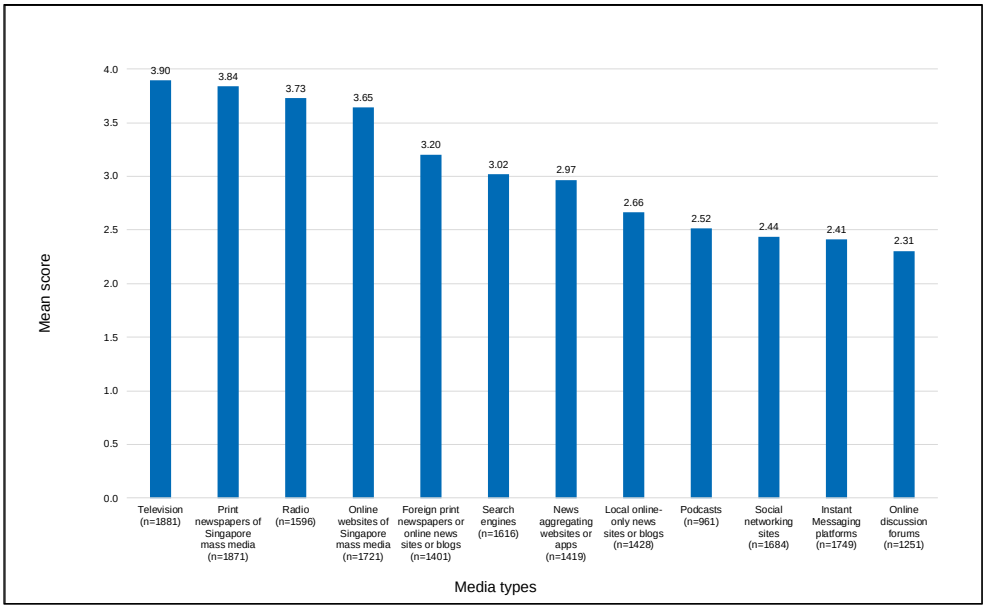
Local online-only news sites and blogs also saw low trust among the respondents (17.8 per cent, $\bar{x}$ = 2.66). Controversies surrounding the reporting and publishing practices of sites such as The Online Citizen, The Real Singapore, and States Times Review in the recent years could have contributed to low trust in such platforms. See Figure 7 for respondents' trust in non-legacy media.

Figure 7: Trust in non-legacy media



When we combined all 12 media types, all legacy media enjoyed higher trust compared to non-legacy media. Figure 8 shows the mean scores for respondents' trust in the different media types. Using the political economy lens to understand why Singaporeans trust legacy media more than non-legacy media, the stringent rules that the Singapore legacy media are subjected to could have contributed to the establishment of media that place premium on objective and responsible reporting. In addition, the relatively lower trust in social networking sites and Instant Messaging platforms relative to their high frequency of use suggests some level of scepticism among Singaporeans towards those platforms as sources of information and news.

Figure 8: Mean scores of respondents' trust in all media types



4.4. Trust in news information from interpersonal networks

Besides the type of media that can influence people's level of trust in news information received, from whom people receive news information can also affect the perceived trustworthiness of the information. For instance, research on news engagement on social media platforms such as Facebook found that people were more likely to trust a piece of information, or trust a news media source, when it is shared or endorsed by their family members, friends, or people whom they perceive as opinion leaders (Anspach, 2017; Turcotte et al., 2015). Thus, on top of examining how much people trusted each media type for news information and current affairs, we also look at how much people trusted news information that they received from their interpersonal networks, such as their family members, friends, colleagues, people they met online, and people from their community and interest groups.[3]

Family members of respondents enjoyed the highest trust among the different groups of people, with 44.8 per cent of them saying that family

[3] Respondents were asked to indicate on a five-point Likert scale (from "untrustworthy" to "very trustworthy") how trustworthy they found each group of persons in their lives as a source for news information and current affairs. Respondents were also given a "not applicable" option as some might not have specific groups of people (e.g., colleagues or people from their community/interest groups) in their lives.

members were trustworthy or very trustworthy as a source of news information and current affairs ($\bar{x}$ = 3.34). This was followed by friends, with 22.4 per cent saying that friends were trustworthy or very trustworthy ($\bar{x}$ = 2.94). Among the respondents, 21.7 per cent said that their colleagues were trustworthy or very trustworthy as sources of news information and current affairs ($\bar{x}$ = 2.90). This high level of trust in family members may result in people being less sceptical of the unverified rumours or falsehoods that they receive from family members, thus explaining the spread of false information in family WhatsApp chat groups, for example. See Figures 9 and 10 for respondents' level of trust in news information received from interpersonal networks.

Figure 9: Trust in news information from interpersonal networks

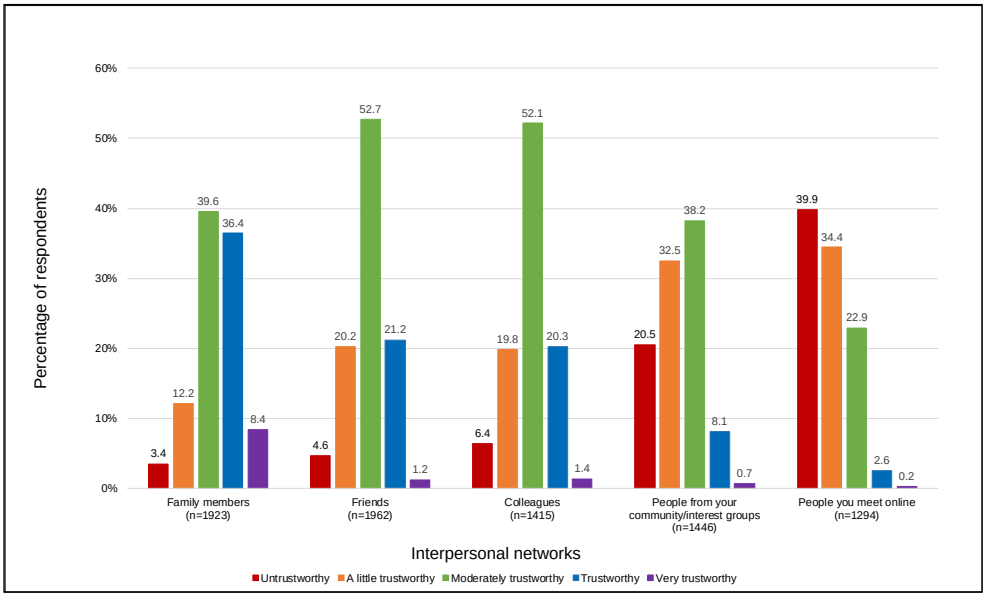
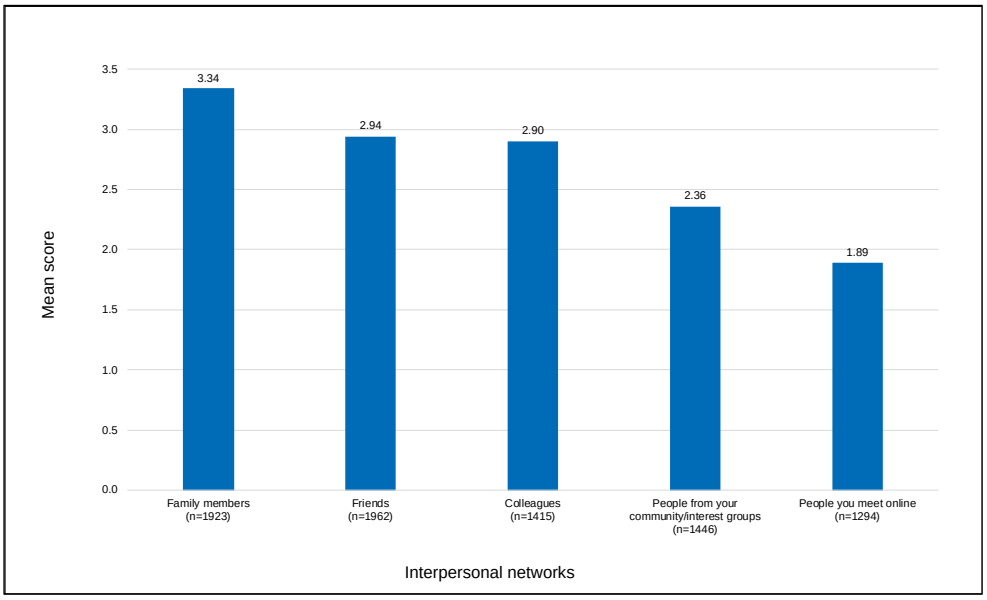


Figure 10: Mean scores of respondents' trust in interpersonal networks



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4.5. Information-seeking and sharing on social networking sites and Instant Messaging platforms

As mentioned at the start of this chapter, social networking sites and Instant Messaging platforms play an increasingly dominant role in people's information-seeking and information sharing habits. The 2019 Reuters Institute Digital News Report (Singapore) found that news consumption via social media remained stable from 2018 to 2019, with 62 per cent of Singaporeans saying that they get news via social media each week, whereas news consumption via television and print media dropped by four and five percentage points, respectively, from 2018 to 2019 (Tandoc, 2018; Tandoc, 2019). Given the big part social networking sites and Instant Messaging platforms play in Singaporeans' media diet (they were ranked as the second and third most used media type for news information and current affairs in this study), we take a closer look at respondents' use of different social networking sites and Instant Messaging platforms for information access and sharing.

[4] We asked those who used social networking sites (69 per cent) and platforms (68 per cent) for news information and current affairs consumption to indicate their frequency of use for different social networking sites and Instant Messaging platforms using a five-point frequency scale (from "never" to "once a day or more").

Among social networking sites, our findings indicate that Facebook was used most frequently by the respondents for seeking news information and current affairs, with 76.5 per cent using it at least a few times a week ($\bar{x}$ = 4.11), followed by YouTube (51.3 per cent, $\bar{x}$ = 3.16), and Instagram (33.8 per cent, $\bar{x}$ = 2.45). Tumblr was used the least often with only 2.3 per cent of the respondents using it at least a few times a week ($\bar{x}$ = 1.15). Facebook was ranked the most used social networking site for news in the 2019 Reuters Digital News Report as well. A reason that accounts for the popularity of Facebook, compared with other social networking sites, is the publishing of news articles on the platform by legacy media around the globe. See Figures 11 and 12 for respondents' use of social networking sites for news information and current affairs.

Figure 11: Use of social networking sites

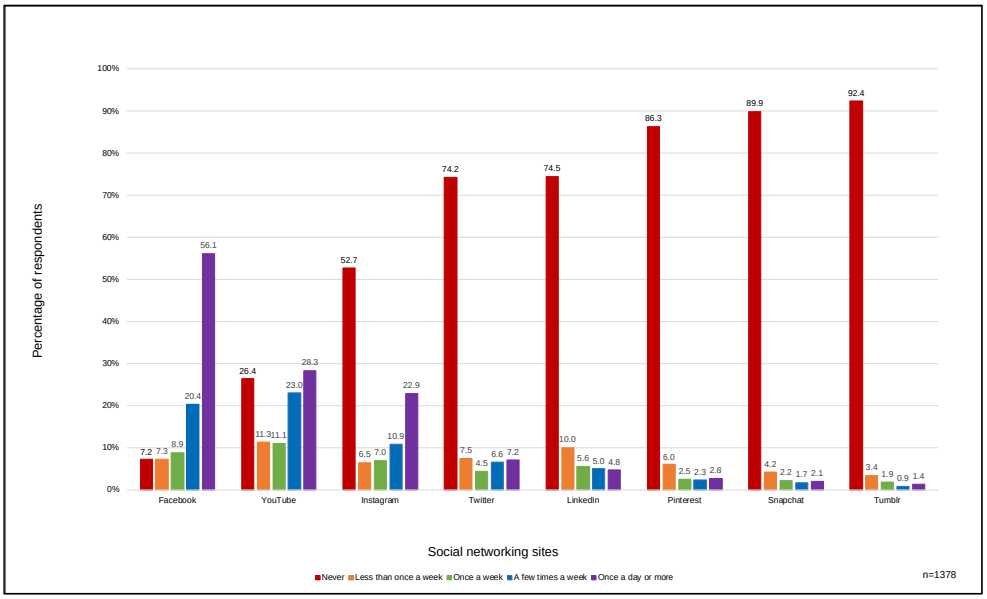
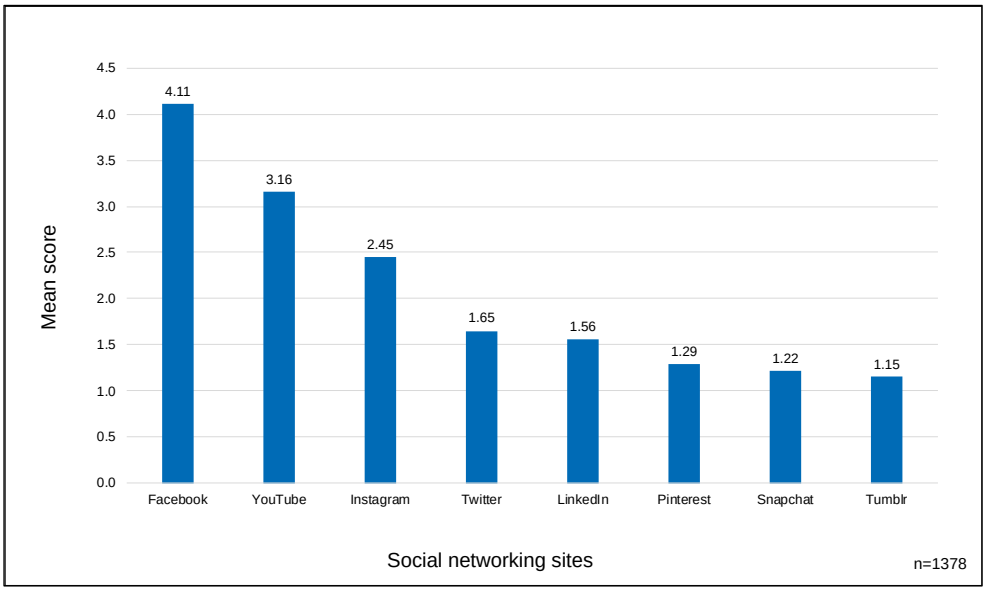


Figure 12: Mean scores of respondents' use of social networking sites



As for Instant Messaging platforms, WhatsApp was used most frequently by the respondents for seeking information on news and current affairs, with 72.7 per cent using it at least a few times a week ($\bar{x}$ = 4.03), followed by Facebook Messenger (21.1 per cent, $\bar{x}$ = 2.06). Telegram (15.3 per cent, $\bar{x}$ = 1.73) and WeChat (14.6 per cent, $\bar{x}$ = 1.72) followed closely behind. Viber was used the least often with only 1.9 per cent of the respondents using it at least a few times a week ($\bar{x}$ = 1.12). See Figures 13 and 14 for respondents' use of Instant Messaging platforms for news information and current affairs.

Figure 13: Use of Instant Messaging platforms

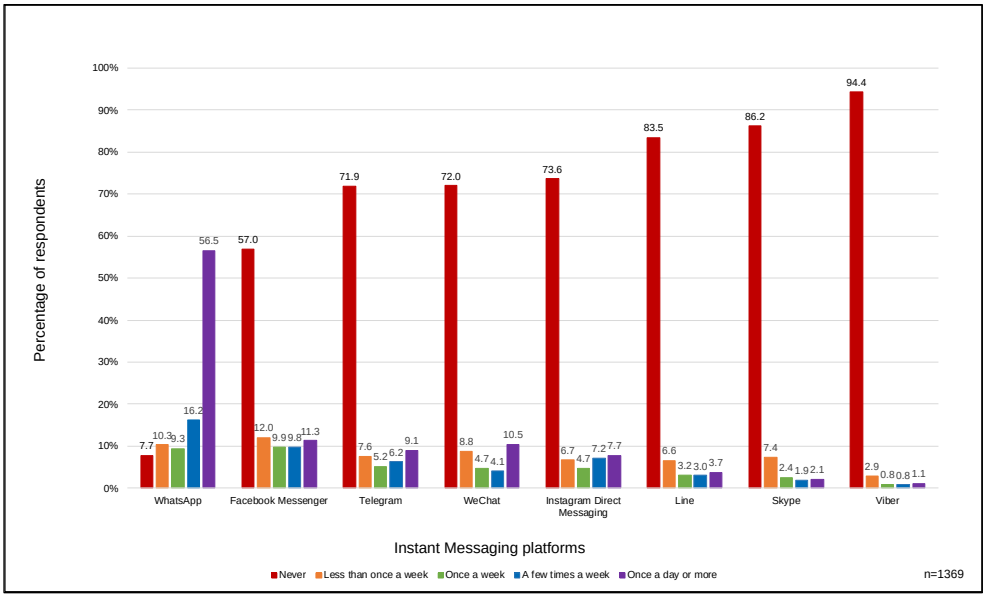
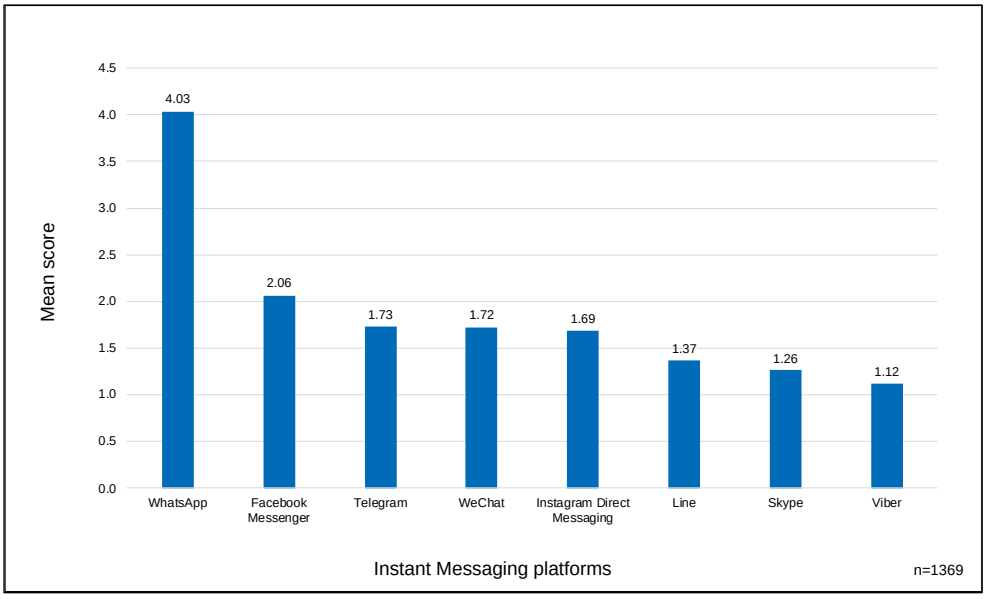


Figure 14: Mean scores of respondents' use of Instant Messaging platforms



On top of being used for information-seeking, research has shown that social networking sites and Instant Messaging platforms are also popularly used for information sharing for a variety of reasons, such as to inform, entertain and socialise, and for self-expression (Lee et al., 2011; Thompson, Wang & Daya, 2019). Thus, in addition to measuring Singaporeans' use of social networking sites and Instant Messaging platforms for information-seeking, we also examine their use of these platforms for sharing information with different groups of people.[5]

On the whole, sharing news information and current affairs with people via social networking sites was an infrequent activity among respondents. When they did do so, it was with their family members and friends. Respondents shared news information and current affairs at least a few times a week on social networking sites mostly with their family members (28.5 per cent, $\bar{x}$ = 2.35), followed by their friends (26.3 per cent, $\bar{x}$ = 2.31), colleagues (19.8 per cent, $\bar{x}$ = 2), people from their community and interest groups (8.4 per cent, $\bar{x}$ = 1.55), and people they met online (5.7 per cent, $\bar{x}$ = 1.37). See Figures 15 and 16 for respondents' sharing of news information and current affairs on social networking sites.

[5] We asked respondents to indicate on a five-point frequency scale (from "never" to "once a day or more") how often they shared news information and current affairs on social networking sites and Instant Messaging platforms with five groups of people — friends, colleagues, family members, people they met online, and people from their community and interest groups. Respondents were also given a "not applicable" option as some might not have specific groups of people (e.g., colleagues or people from their community/interest groups) in their lives.

Figure 15: Sharing of news on social networking sites

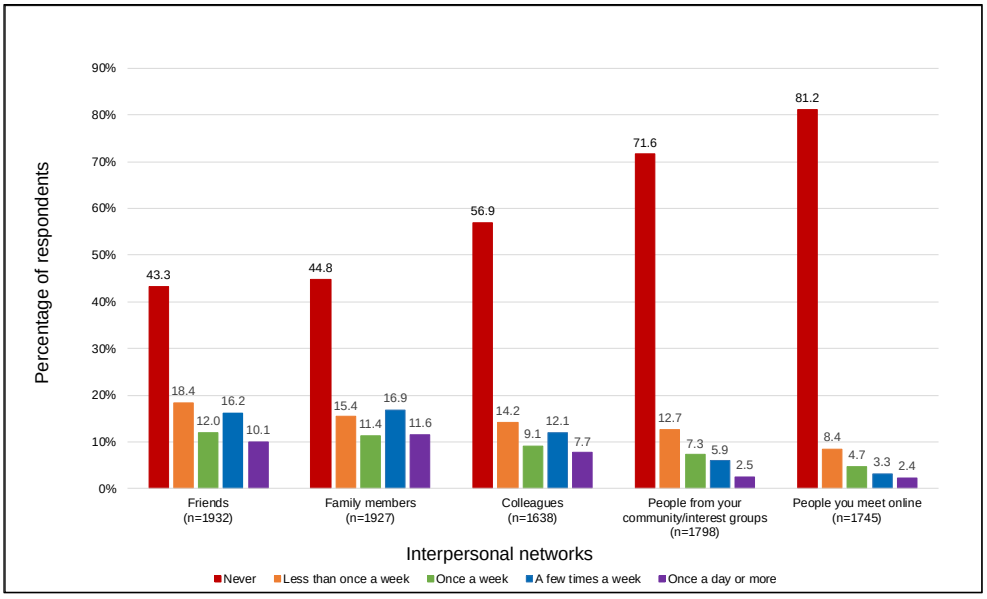
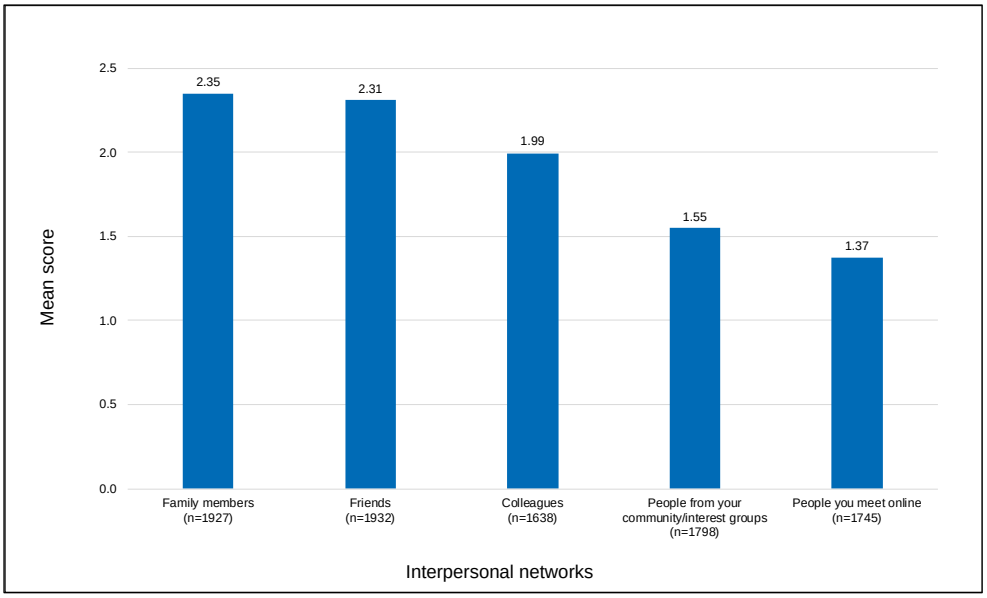


Figure 16: Mean scores of respondents' sharing of news on social networking sites



Similarly, sharing news information and current affairs with people via Instant Messaging platforms was also an infrequent activity among the respondents. However, respondents used Instant Messaging platforms to share news information and current affairs slightly more frequently than via social networking sites. Respondents did so (at least a few times a week) mostly with their friends (32.5 per cent, $\bar{x}$ = 2.56), followed by their family members (31 per cent, $\bar{x}$ = 2.49), colleagues (21.6 per cent, $\bar{x}$ = 2.10), people from their community and interest groups (9 per cent, $\bar{x}$ = 1.55), and people they met online (5.5 per cent, $\bar{x}$ = 1.35). See Figures 17 and 18 for respondents' sharing of news information and current affairs on Instant messaging platforms.

Figure 17: Sharing of news on Instant Messaging platforms

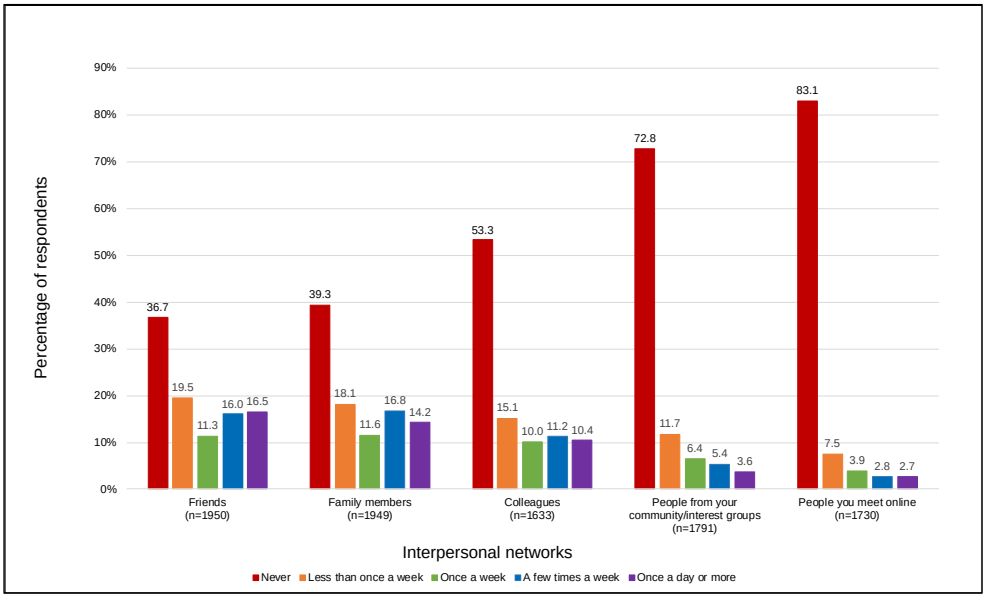
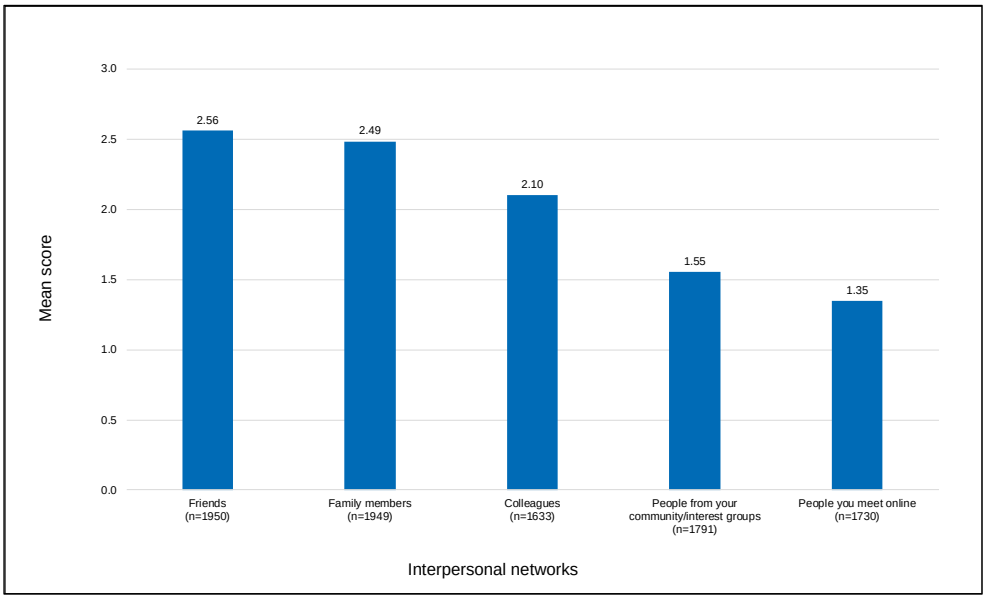


Figure 18: Mean scores of respondents' sharing of news on Instant Messaging platforms



Chapter 5

Political Traits and Psychological Factors

CHAPTER 5:

POLITICAL TRAITS AND PSYCHOLOGICAL FACTORS

In addition to examining respondents' demographics and media consumption habits, we also seek to understand people's political traits and psychological factors to examine how these may be related to people's susceptibility to false information.

For instance, research has found that a person's political beliefs can contribute to motivated reasoning, leading them to seek justifications for their desired conclusions, thus making them more receptive to falsehoods (or dismissive of corrective information) depending on their political beliefs. In addition, people with extreme political beliefs were also found to be more likely to distrust political institutions, endorse conspiracy theories, and reject scientific evidence (Sunstein et al., 2016; Uscinski, Klofstad & Atkinson, 2016; van Prooijen, Krouwel & Pollet, 2015).

Vast amounts of scholarly work have also been done in examining the role of psychological factors, such as cognitive biases, in influencing people's susceptibility towards false information. For instance, confirmation bias — the tendency for one to accept information consistent with one's pre-existing beliefs and reject information that contradicts them — in information-seeking increases people's susceptibility to false information when they uncritically accept falsehoods as true simply because it is consistent with their pre-existing beliefs, and reject corrective information that contradicts them (Knobloch-Westerwick et al., 2015; Lord, Ross & Lepper, 1979).

This chapter presents the findings of respondents' political traits, including their political participation, frequency of political talk with different groups of people, political orientation, and level of political trust, as well as respondents' psychological factors such as their tendency to explore views alternative to his or her own, degree of confirmation bias in information-seeking, and level of self-efficacy in recognising false information.

5.1. Political traits

Besides seeking and sharing information on what is happening in Singapore and around the world, people's engagement with the world they live in is also manifested through their civic engagement or political participation. The has opened up new avenues for people to express themselves and to advocate different causes. In an earlier study by Soon (2017), Singaporeans used a range of online tools (e.g., blogs, online petitions, Facebook groups) to organise ground-up movements and push for social change.

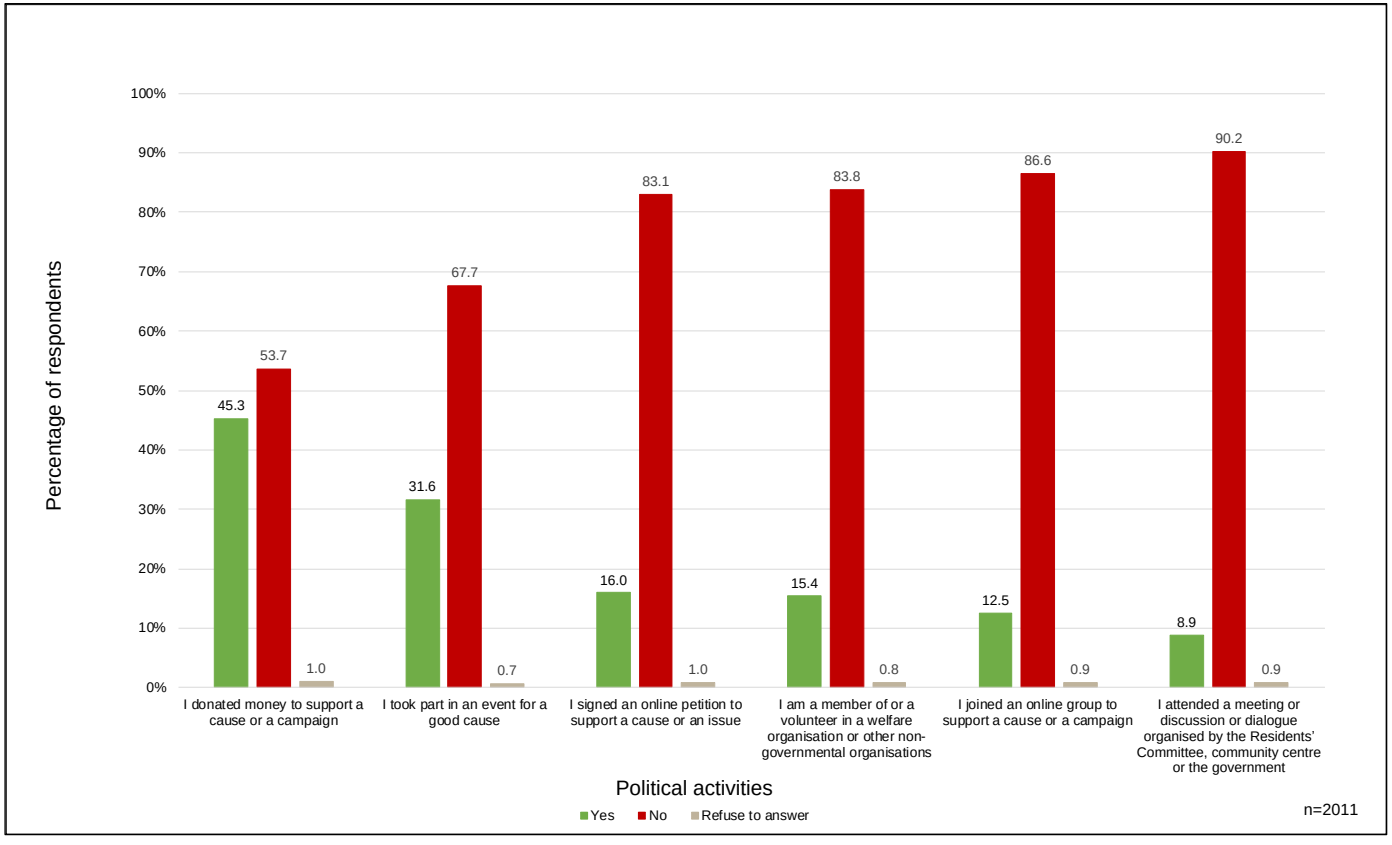
5.1.1. Political participation and civic engagement

On the whole, respondents' political participation was low — a finding that is consistent with other studies conducted during both election and non-election times (Soon, Tan & Samsudin, 2016).[1] Donating money to support a cause or a campaign, a political action that has comparatively lower costs of participation (in terms of time and effort) saw the highest participation in the past year. Even then, less than half of the respondents (45.3 per cent) have done so in the past year.

Donating money was followed by taking part in an event (e.g., a walkathon, a flag day, or other charity event) for a good cause (31.6 per cent), and signing an online petition to support a cause or an issue (16 per cent). The activity that saw the lowest participation among respondents was attending a meeting/discussion/dialogue organised by the Resident's Committee, community centre, or the government, at 8.9 per cent. See Figure 19 for respondents' political participation and civic engagement in the six activities.

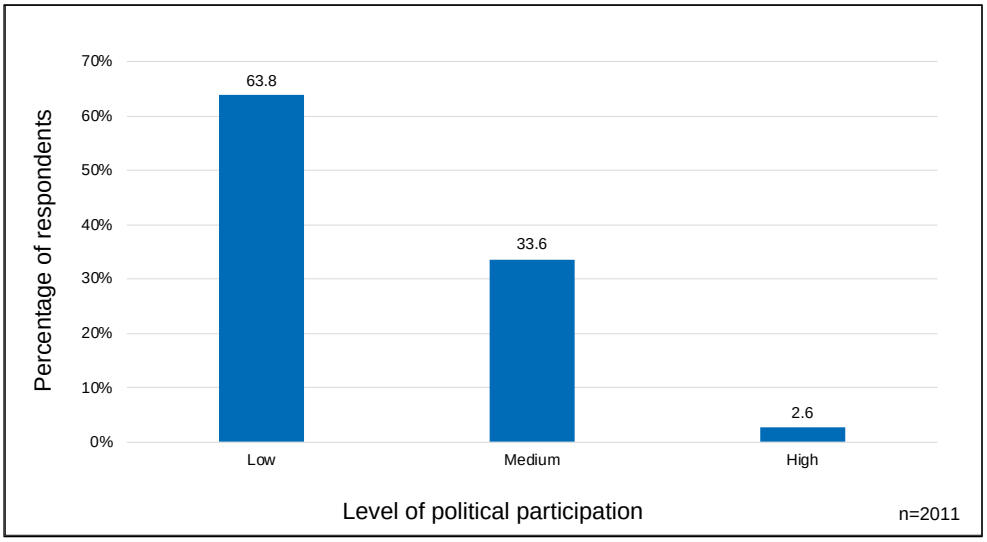
[1] To determine respondents' political participation and civic engagement, we asked them to indicate if they had participated in six different activities in the past one year (the options given to them were "Yes", "No" and "Refuse to answer").

Figure 19: Political participation and civic engagement



In addition, we also classified people's level of political participation into low, medium, and high participation.[1] As seen in Figure 20, the majority of respondents (63.8 per cent) had a low level of political participation in the past one year. About one-third (33.6 per cent) of the respondents had a medium level of political participation, while only 2.6 per cent had a high level of political participation.

Figure 20: Level of political participation



5.1.2. Political talk and disagreement

We also assessed respondents' political engagement on a personal level by asking them how often they discussed politics, current affairs, or government policies with five groups of people — their family members, friends, colleagues, people they met online, and people from their community or interest groups.[2]

[1] Respondents were grouped into three categories, those with low (participated in zero to two activities), medium (participated in three to four activities), and high (participated in five to six activities) levels of political participation.

[2] Respondents had to indicate the frequency of their political talk with each group of people on a five-point frequency scale ("never" to "very often"). Respondents were also given a "not applicable" option as some might not have specific groups of people (e.g., colleagues or people from their community/interest groups) in their lives.

Figures 21 and 22 present the frequency of respondents' political talk with the different groups of people. Respondents discussed politics, current affairs, or government policies most frequently with their friends and family members; 51.8 per cent ($\bar{x}$ = 2.49) said they did so with their friends sometimes, often, or very often, and 51.3 per cent ($\bar{x}$ = 2.45) said they did the same with their family members. This was followed by respondents' colleagues (39.5 per cent, $\bar{x}$ = 2.15), and people from respondents' community or interest groups (16.3 per cent, $\bar{x}$ = 1.57). The group that respondents discussed politics, current affairs, or government policies least frequently with were people they met online, with only 7.7 per cent ($\bar{x}$ = 1.33) who said they did so sometimes, often, or very often.

As seen in earlier findings, respondents also shared news information and current affairs with their family members and friends more often than with other groups of people on social networking sites and Instant Messaging platforms. This is likely due to the higher level of trust and understanding among friends and family members, with whom respondents could share their opinions on issues that may be deemed to be political, sensitive, or controversial. In other words, political talk tends to take place in a more intimate realm where people feel that their comments and opinions are less likely to be taken out of context (Ekstrom, 2016).

Figure 21: Political talk

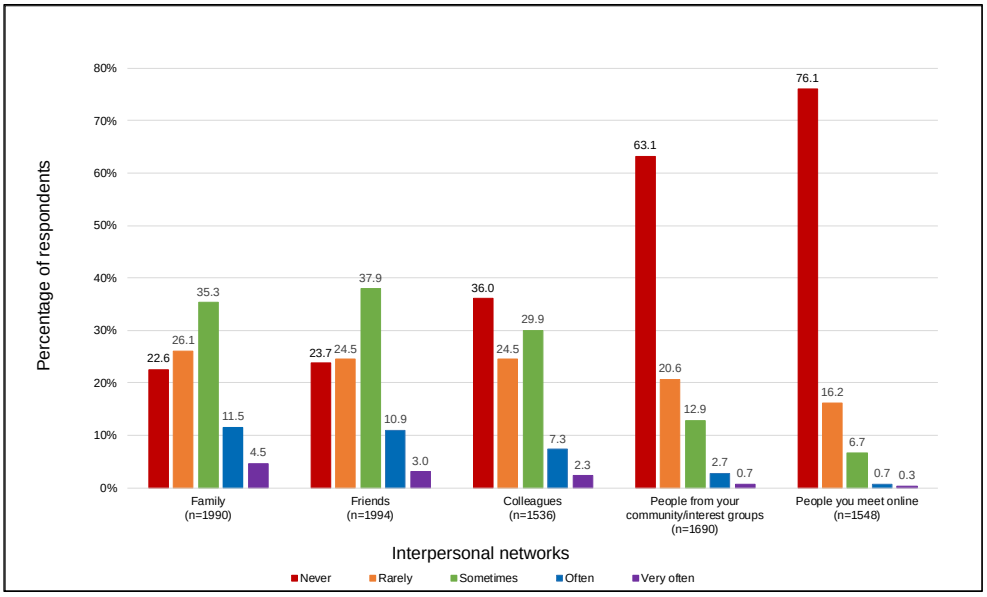
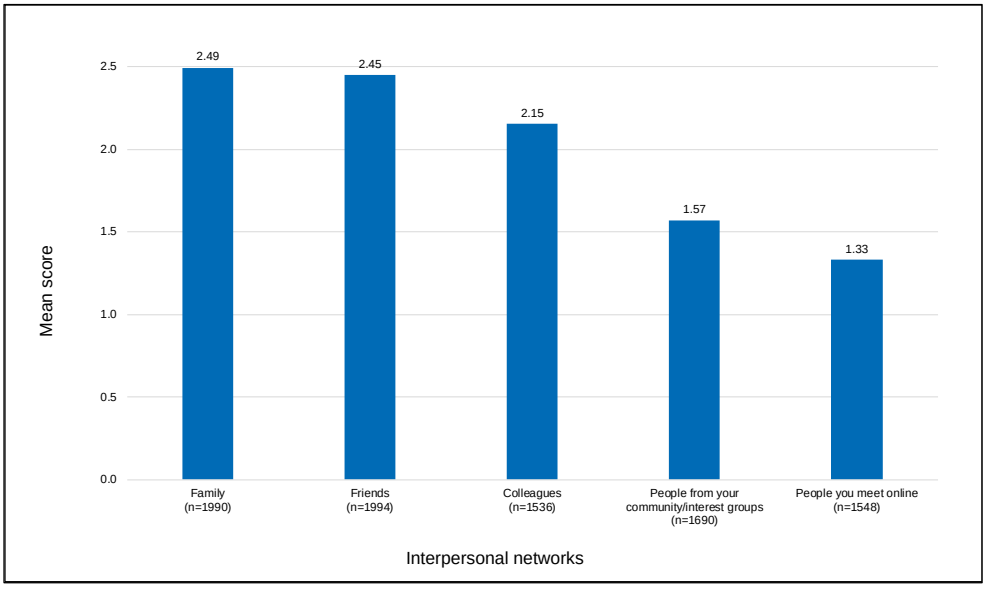


Figure 22: Mean scores of respondents' political talk



Among respondents who said they discussed politics, current affairs, or government policies with these five groups of people, we also asked respondents how often they disagreed with the different groups of people during such discussions. The findings showed that, again, respondents were most likely to disagree with their friends and family members when discussing politics, current affairs, or government policies, with 62.7 per cent ($\bar{x}$ = 2.65) and 58.7 per cent ($\bar{x}$ = 2.60) saying that they did so sometimes, often, or very often. This further supports the idea that people are more comfortable at expressing their political disagreement with those they are close to, rather than with acquaintances (see Figures 23 and 24 for respondents' disagreement in political talk).

Figure 23: Disagreement in political talk

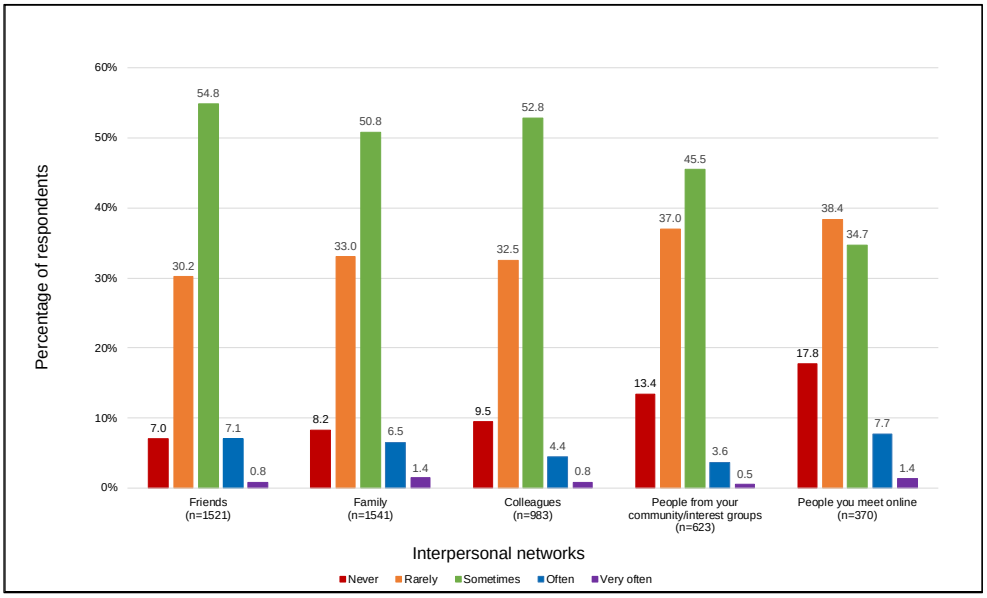
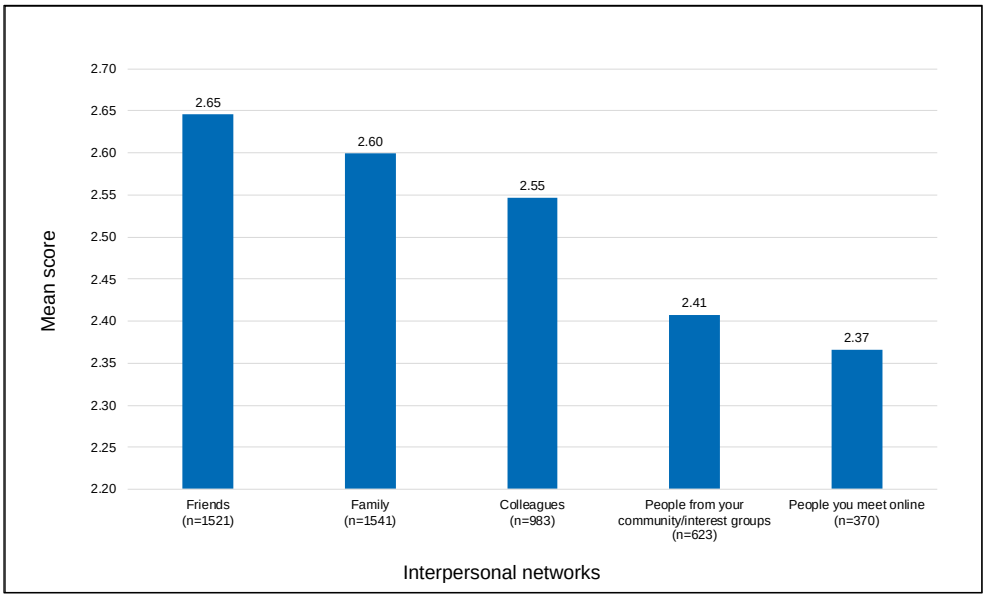


Figure 24: Mean scores of respondents' disagreement in political talk



5.1.3. Political ideology

In this study, we assessed respondents' political ideology through five pairs of statements relating to government regulation of businesses, Singapore's social safety net, impact of immigrants on Singapore, and homosexuality.[3] Table 3 presents how respondents felt about each issue.

[3] The five pairs of statements were adapted from the Pew Research Center's Ideology Consistency Scale, which is a scale is used to gauge how liberal or conservative people's views are across a range of socio-political issues. Each statement in a pair has a traditional "liberal/conservative" association, and respondents were asked to select the statement that best describes their personal views. Respondents were also given a "refuse to answer" option given the potential sensitivity of the statements.

Table 3: Respondents' political ideology

Topic	Pairs of statements	Percentage (%) of respondents
Government regulation of business	"Government regulation of business usually does more harm than good."	13.2
	"Government regulation of business is necessary to protect the public interest."	76.8
	Refuse to answer	10.0
Impact of government benefits on the poor	"Poor people today have it easy because they can get government benefits without doing anything in return."	25.0
	"Poor people have hard lives because government benefits do not go far enough to help them live decently."	60.7
	Refuse to answer	14.3
Government help towards the needy	"The government cannot afford to do much more to help the needy."	27.8
	"The government should do more to help needy Singaporeans, even if it means going deeper into debt."	56.2
	Refuse to answer	16.0
Impact of immigrants on Singapore	"Immigrants are a burden on our country because they take our jobs, housing, and healthcare."	27.6
	"Immigrants strengthen our country because of their hard work and talents."	58.0
	Refuse to answer	14.4
Homosexuality	"Homosexuality should be discouraged by society."	51.1
	"Homosexuality should be accepted by society."	35.1
	Refuse to answer	13.0

As shown in Table 3, respondents were more liberal in attitudes towards economic and social policies. The majority of them felt that government regulation is necessary to protect the public interest (76.8 per cent); that poor people have hard lives because government do not go far enough to help them live decently (60.7 per cent); and that the government should do more to help needy Singaporeans even if it means going deeper into debt (56.2 per cent). Furthermore, the majority of respondents (58 per cent) also felt that immigrants strengthen the country because of their hard work and talents.

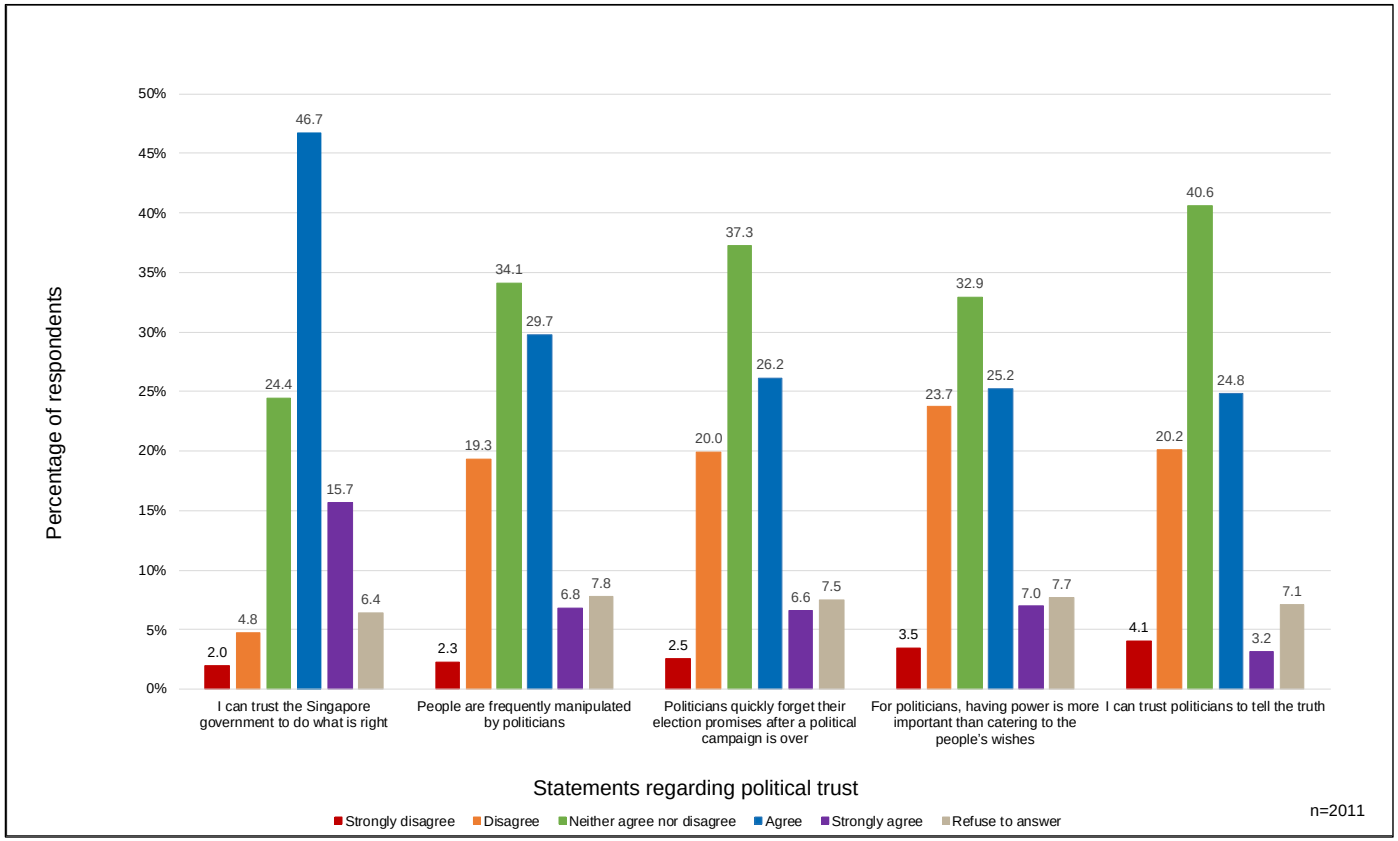
The importance respondents placed on government regulation is consistent with the public opinion for many policy domains. Government action, in particular regulation, has enjoyed high levels of support for many domains of Singapore life, ranging from fake news, the private car hire industry, and environment conservation. However, when it comes to social issues or issues of morality, respondents were more conservative — only 35 per cent felt that homosexuality should be accepted by society. This finding supports what has been established in other IPS studies (Mathews, Lim & Selvarajan, 2019a; Mathews, Lim & Selvarajan, 2019b).

5.1.4. Political trust

As for respondents' trust in the government, the majority of the respondents (62.4 per cent) agreed or strongly agreed that they could trust the Singapore government to do what is right. This is in line with the earlier finding that indicates an expectation among respondents for the government to be involved in social and economic policies (i.e., government regulation of business and having a social safety net to help the poor and needy). Confidence in both the government's impact (i.e., the changes it can bring about through its policies) and the government doing this the right way was high.

About one-third of the respondents were more cynical, where 36.5 per cent agreed or strongly agreed that people were frequently manipulated by politicians, and 32.8 per cent felt that politicians quickly forget their election promises after a political campaign is over. About 32.2 per cent of respondents felt that for politicians, having power was more important than catering to the people's wishes, and only 28 per cent agreed or strongly agreed that they could trust politicians to tell the truth. However, such political cynicism may not be a reflection of what respondents felt about the Singapore government. As these questions were generally worded (i.e., asked respondents about their views on "politicians" as opposed to "Singapore politicians"), the cynicism could be directed at politicians in general. See Figure 25 for respondents' political trust.

Figure 25: Political trust



5.2. Psychological factors

As mentioned at the beginning of this chapter, psychological factors, such as the tendency to exhibit confirmation bias, have an influence on one's susceptibility and immunity to false information. The effects of confirmation bias on people's attitudes in various domains like crime, morality, and health, have been well documented in research (Brock & Balloun, 1967; Munro & Ditto, 1997) — people who seek out information compatible with one's pre-existing beliefs, or like-minded others who confirm their world views, have been found to be more vulnerable to fake news (Hart, Nisbet & Shanahan, 2011; Nyhan & Reifler, 2010).

In addition, other psychological factors such as self-efficacy (i.e., people's perceived self-ability to distinguish real information from false information), as well as knowledge and literacy, also have an impact on people's susceptibility to false information. Research suggests that that while individual's self-efficacy lowers the persuasiveness of fake news, people who over claim their level of knowledge and ability to differentiate between fake and real news are also more likely to find fake news accurate (Chen & Cheng, 2019; Pennycook & Rand, 2018). Finally, research has also found that emotions play a role in how people process false information; anger drives people to turn towards information that reinforces their political beliefs, whereas anxiety prompts people to take a more "open-minded" approach in their information-seeking (Weeks, 2015).

In this sub-chapter, we present the psychological profile of respondents, specifically their propensity to be in information filter bubbles (i.e., their tendency to engage in selective exposure and exhibit confirmation bias in their information-seeking); their perceived self-ability to tell real information from false information and how they fare in comparison to the average person in Singapore; their digital literacy (defined as their understanding and knowledge of how the media and information landscape works); as well as their emotional responses in relation to encountering false information.

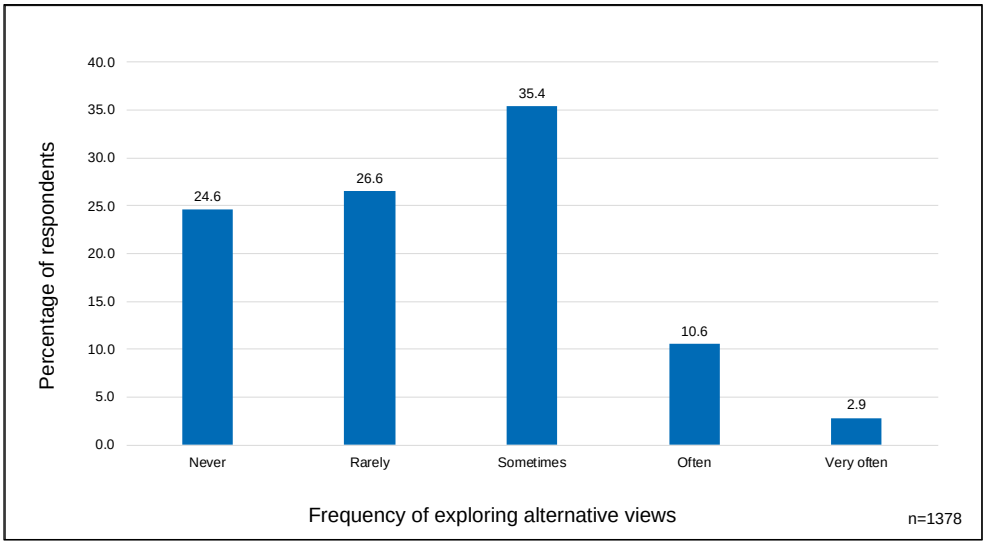
5.2.1. Selective exposure and confirmation bias

We measured respondents' propensity to be in information filter bubbles by first examining the frequency at which they explored alternative views on social networking sites (see Figure 26). [1] Only a small number of respondents, 13.5 per cent of them, explored alternative views on social networking sites often or very often. Those who never or rarely sought out

[1] Only respondents who said they used social networking sites for seeking news information and current affairs were asked this question.

views alternative to their own comprised slightly more than half (51.2 per cent) of the sample, and 35.4 per cent did so sometimes.

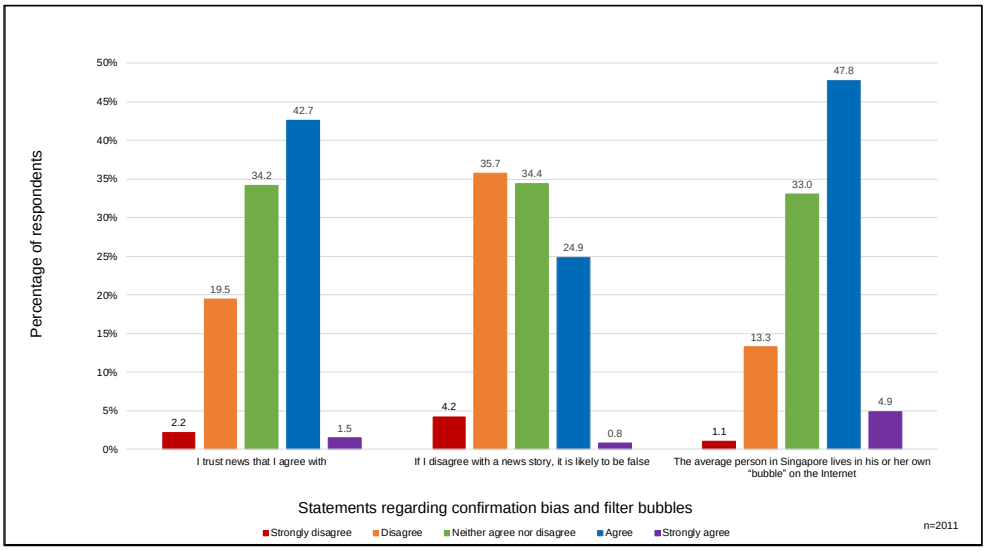
Figure 26: Exploring views alternative to one's on social networking sites



Next, we also measured respondents' propensity to be in information filter bubbles by examining their likelihood of exhibiting confirmation bias in information-seeking and processing. Besides keeping to views that were similar to their own, a significant proportion of respondents also exhibited confirmation bias in their information-seeking and processing; 44.2 per cent of respondents agreed or strongly agreed that they trusted news that they agreed with. Only a small number of respondents may be more discerning; 21.7 per cent disagreed or strongly disagreed with the statement that they trusted news they agreed with. Interestingly, a smaller proportion of respondents exhibited confirmation bias when the same question was framed negatively; 25.7 per cent of respondents agreed or strongly agreed with the statement, "If I disagree with a news story, it is likely to be false," and about 40 per cent of respondents disagreed or strongly disagreed with the statement. This suggests that confirmation bias in information-seeking and processing tends to manifest more strongly in terms of driving people to accept information they agree with rather than to reject information that they disagree with. This, in turn, may suggest the promise of the effectiveness of fact-checking efforts, which contradicts research that have suggested that the effectiveness of fact-checking is limited especially when corrective information contradicts people's pre-existing worldviews.

Finally, respondents were quite pessimistic when it came to the average person's propensity to exhibit confirmation bias. Slightly more than half (52.7 per cent of the respondents) felt that the average person in Singapore lives in his or her own "bubble" on the Internet, connecting with people like themselves and looking for opinions they already agree with. See Figure 27 for respondents' degree of confirmation bias in information-seeking and processing.

Figure 27: Confirmation bias in information-seeking and processing



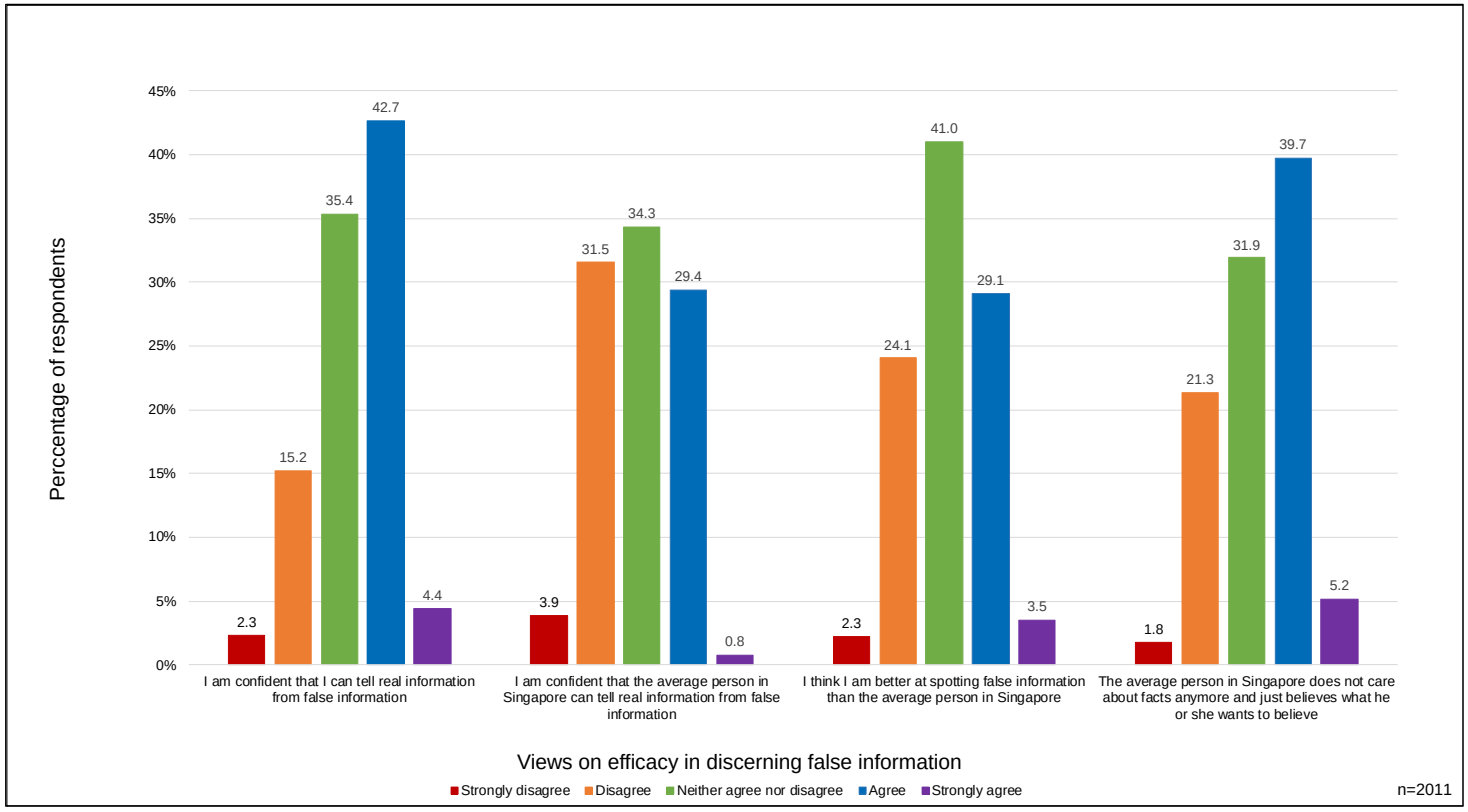
5.2.2. Perceived self-efficacy and knowledge

Generally, respondents' perceived self-efficacy and efficacy of others in discerning what was real or false was low. Less than half of them were confident that they could tell real information from false information; 47.1 per cent of them agreed or strongly agreed with the statement. Most of the respondents were either not confident (17.5 per cent strongly disagreed or disagreed with the statement) or were ambivalent about their ability to do so (35.4 per cent neither agreed nor disagreed).

Similar to the earlier pessimism about the average person's propensity to exhibit confirmation bias in information-seeking and processing, respondents were also quite cynical about people's interest and ability to tell real information from false information. Here, 44.9 per cent of the respondents felt that the average person in Singapore did not care about facts and believed what he or she wanted to believe, and only 30.2 per cent

of them felt confident in the average person's ability to tell real information from false information. Only a small group, 26.4 per cent of the respondents felt that they were better than the average person in Singapore in at identifying false information. See Figure 28 for respondents' views on their self-efficacy and efficacy of others in discerning real information from false information.

Figure 28: Respondents' perceived self-efficacy and efficacy of others in discerning real information from false information



To measure respondents' digital literacy in terms of their knowledge of how the media and information landscape works, respondents were required to indicate the correct answer for each of the three questions. Table 4 presents, at a glance, the proportions of respondents who answered each question correctly, wrongly, or did not know the answer.

Our findings show that the digital literacy — in terms of knowledge — among respondents was low. Only about one-third of them managed to answer each question correctly. The question that saw the highest number of respondents providing the correct answer was "Which of the following is typically responsible for writing a press release?" where 39.6 per cent answered correctly that it was the spokesperson or public relations personnel for an organisation. Only 36.5 per cent and 36.2 per cent answered the questions, "Which of the following news outlet does not depend primarily on advertising for financial support?" (the correct answer was the public broadcaster) and "Who do you think decides what news stories Facebook users will see on their news feed?" (the correct answer was by computer analysis of what stories might interest users) correctly, respectively.

Table 4: Responses to knowledge questions on how the media and information landscape works

Questions	Responses	Percentage (%) of respondents
Which of the following news outlet does not depend primarily on advertising for financial support?[1]	Chose correct answer	36.5
	Chose incorrect answers	36.0
	Don't know	27.5
Which of the following is typically responsible for writing a press release?[2]	Chose correct answer	39.6
	Chose incorrect answers	46.2
	Don't know	14.2
Who do you think decides what news stories Facebook users will see on their news feed?[3]	Chose correct answer	36.2
	Chose incorrect answers	40.8
	Don't know	23.0

We also classified respondents' level of knowledge into low, medium, and high.[4] As mentioned, respondents' level of digital literacy — in terms of knowledge — was low. Figure 29 shows that two-thirds of the respondents (66.3 per cent) had a low level of level of knowledge about the media and information landscape. Just over one-fifth (21 per cent) of the respondents had a medium level of knowledge, while only 12.7 per cent had a high level of knowledge.

Figure 29: Level of knowledge

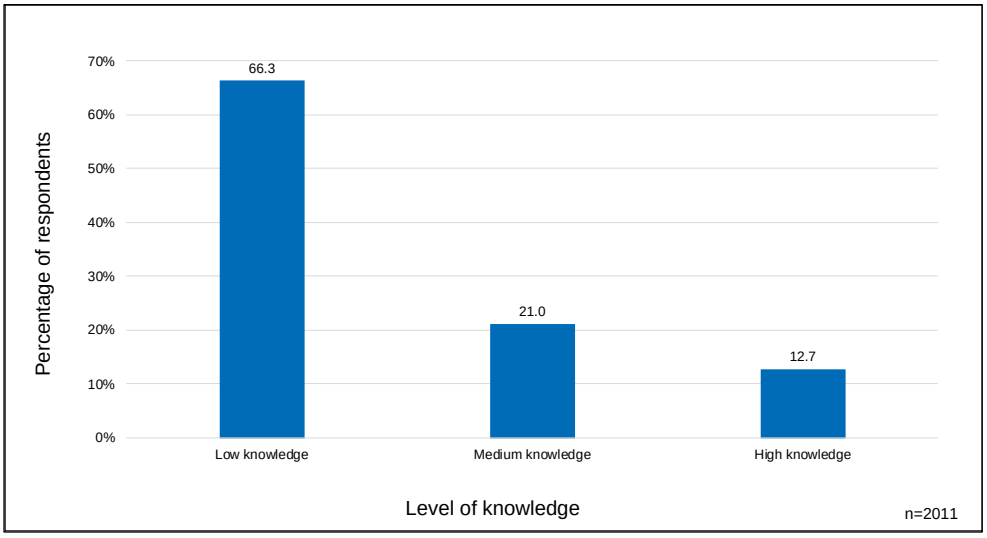
[1] Options given were: (1) Public broadcaster (correct answer); (2) Commercial broadcaster; (3) *The Straits Times*; (4) Mothership; (5) Don't know.

[2] Option given were: (1) A spokesperson/public relations personnel for an organisation (correct answer); (2) A reporter for a news organisation; (3) A producer for a news organisation; (4) A lawyer for a news organisation; (5) Don't know.

[3] Options given were: (1) By computer analysis of what stories might interest users (correct answer); (2) By editors and journalists that work for news outlets; (3) By editors and journalists that work for Facebook; (4) At random; (5) Don't know.

[4] Respondents were grouped into three categories, those with low (with zero to one correct answer), medium (two correct answers) and high (three correct answers) levels of knowledge.

of the media and news landscape



5.2.3. Emotions and false information

When respondents saw news reports that they believed contained false information about people or groups that they supported, most of them felt bothered but not angry (45.8 per cent) or were not bothered at all (37.9 per cent). When they saw news reports that they believed contained false information about people or groups that they opposed, most of them were not bothered at all (54.5 per cent) or were bothered but not angry (32.9 per cent). False information on groups that the respondents supported or opposed did not trigger extreme emotions such as anger and anxiety among majority. See Figures 30 and 31 for respondents' emotional responses towards false information.

Figure 30: Emotional responses when seeing news reports that contained false information about individuals or groups they supported

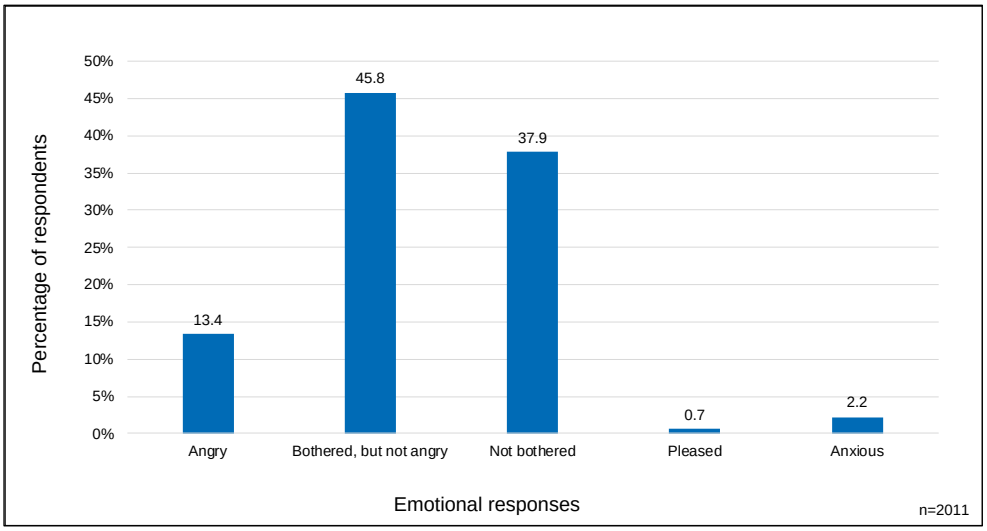
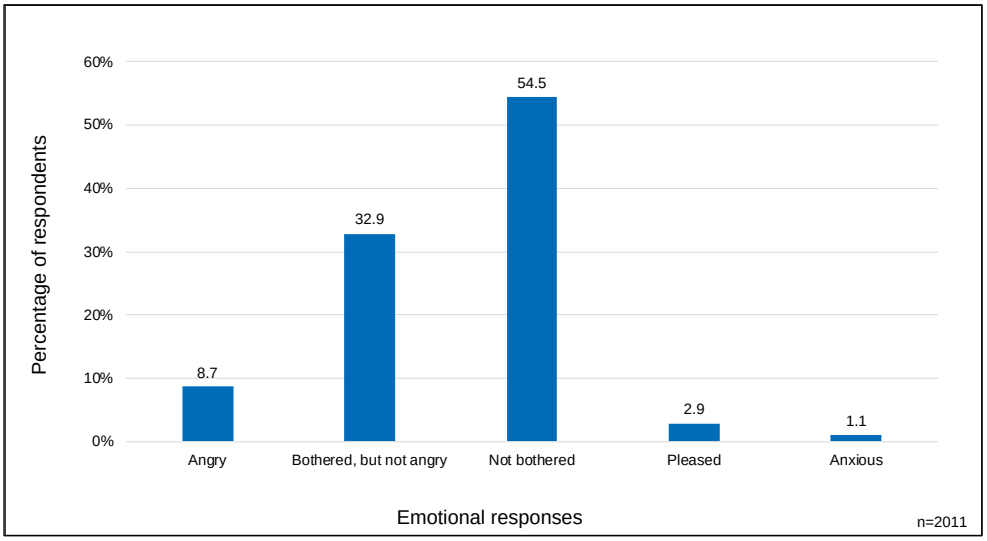


Figure 31: Emotional responses when seeing news reports that contained false information about individuals or groups they opposed



Chapter 6

Susceptibility to False Information

CHAPTER 6:

SUSCEPTIBILITY TO FALSE INFORMATION

In this chapter, we present our findings on Singaporeans' susceptibility to false information.

We examined people's susceptibility to false information in several ways. First, we looked at how often respondents were exposed to different types of content (e.g., clickbait or misleading headlines) in their everyday lives. We also asked respondents how frequently they encountered false information in various formats (e.g., text and images), and topics (e.g., politics, health and business), as well as on various media types (e.g., print newspapers, social networking sites and Instant Messaging platforms).

Next, we looked at how often respondents fell prey to false information by asking them how often they believed the false information that they had encountered. This adds greater nuance to understanding people's susceptibility to false information, as respondents' frequency of encountering false information alone may not provide the full picture of people's susceptibility to false information since it is contingent upon people's ability to recognise that a piece of information is false to begin with. In other words, respondents who report a high frequency of encountering false information may not necessarily be more susceptible to false information, especially if this is an outcome of having a strong ability to discern the truth from falsehoods without believing the false information one had encountered.

Third, we looked at how respondents performed in terms of being able to assess the veracity of a piece of information. As mentioned in Chapter 3, we did so by presenting them with an article that was manipulated to look like a credible news article from an established Singapore mass media, and asked respondents to indicate how trustworthy they thought the manipulated news article was.

In addition, we also present the findings on Singaporeans' responses towards encountering false information online, the reasons behind why people who shared false information with their family and friends did so, as well as their information verification strategies in general.

6.1. Encountering various types of content

We asked respondents how frequently they had encountered different types of content such as satire and parody, stories with misleading headlines, and clickbait.[1]

Stories that were made up to make people laugh (i.e., satire and parody) were the most common type of content that respondents had encountered, with 60.3 per cent ($\bar{x}$ = 2.68) of respondents who said they had sometimes, often, or very often encountered satire or parody. This was followed by advertisements that looked like news stories, with 56 per cent ($\bar{x}$ = 2.57) of respondents who said they had sometimes, often, or very often encountered this type of content. Stories where facts were spun or twisted to push a particular agenda followed closely behind, with 54.6 per cent ($\bar{x}$ = 2.54) saying that they had sometimes, often, or very often encountered it. Poor journalism (e.g., factual mistakes, misleading headlines, and clickbait) was the least commonly encountered type of content among respondents (49.2 per cent, $\bar{x}$ = 2.44). See Figures 32 and 33 for respondents' frequency of encountering various types of content.

[1] Respondents were asked to indicate their frequency of encountering the different types of content using a five-point frequency scale (from "never" to "very often").

Figure 32: Encounter of various types of content

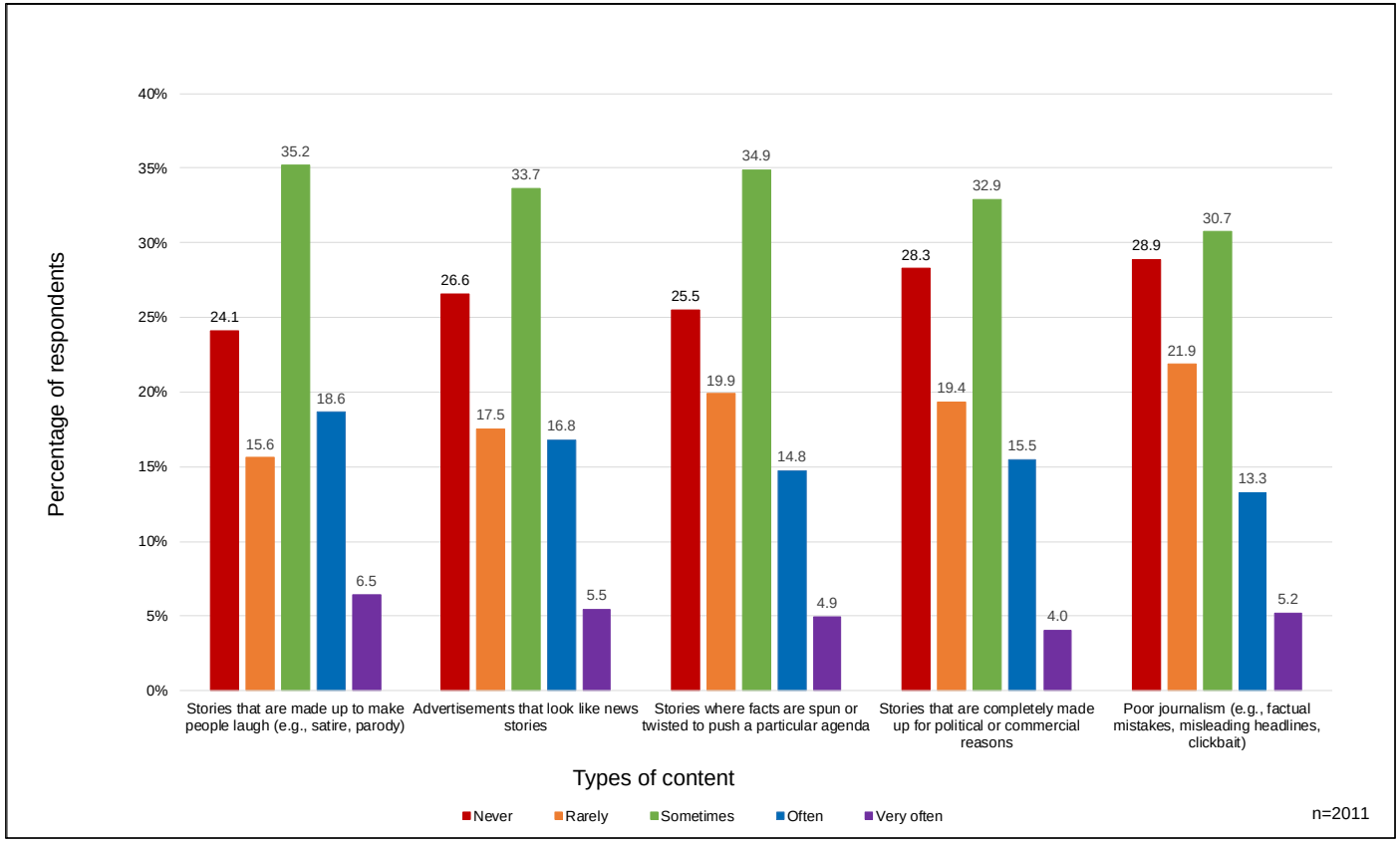
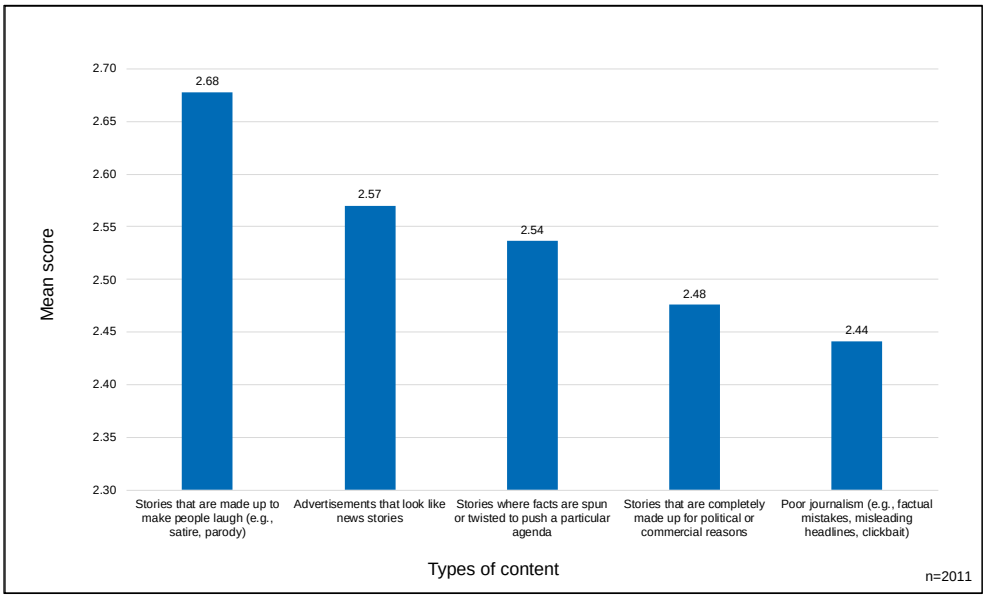


Figure 33: Mean scores of respondents' frequency of encountering various types of content



The findings illustrate quite a different picture from what was found in the 2018 Reuters Institute Digital News Report, where among respondents in nearly 40 countries, poor journalism and stories where facts were spun or twisted to push a particular agenda were the top two most frequently encountered types of content, whereas satire and parody were the least commonly encountered type of content (Newman, Fletcher, Kalogeropoulos, Levy & Nielsen, 2018). One possible reason for our findings is that the information ecosystem may have evolved significantly since 2018, or that Singapore's information ecosystem is unique in the sense that satire and parody are the most prevalent type of content in our information ecology.

6.2. Encountering and believing false information in different formats

In this sub-chapter, we present the findings on respondents' frequency of encountering and believing false information in different formats. Respondents were asked to indicate their frequency of encountering and believing false information in four different formats — text, image, audio, and video.[1]

6.2.1. Encountering false information in different formats

Respondents most frequently encountered false information in the form of text and images. Close to six in 10 of the respondents said they had sometimes, often, or very often encountered false information in the form of text (58 per cent, $\bar{x}$ = 2.59), and in the form of images (57.9 per cent, $\bar{x}$ = 2.58). This was followed by false information in the form of videos, with 49.7 per cent ($\bar{x}$ = 2.37) of respondents who said they had sometimes, often, or very often encountered false information in this format. Respondents encountered false information in the form of audio (e.g., voice recordings or podcasts) least frequently (36.7 per cent, $\bar{x}$ = 2.06). See Figures 34 and 35 for respondents' frequency of encountering false information in different formats.

[1] Respondents were asked to indicate their frequency of encountering and believing false information in different formats using a five-point frequency scale (from "never" to "very often"). For questions on believing false information, respondents who said they have "never" encountered false information in a particular format were not asked the corresponding questions on whether they believed the false information, as believing a piece of false information logically depends on encountering the false information in the first place. This applies for the subsequent questions on respondents' frequency of believing false information in various topics and on various media types.

Figure 34: Encounter of false information in different formats

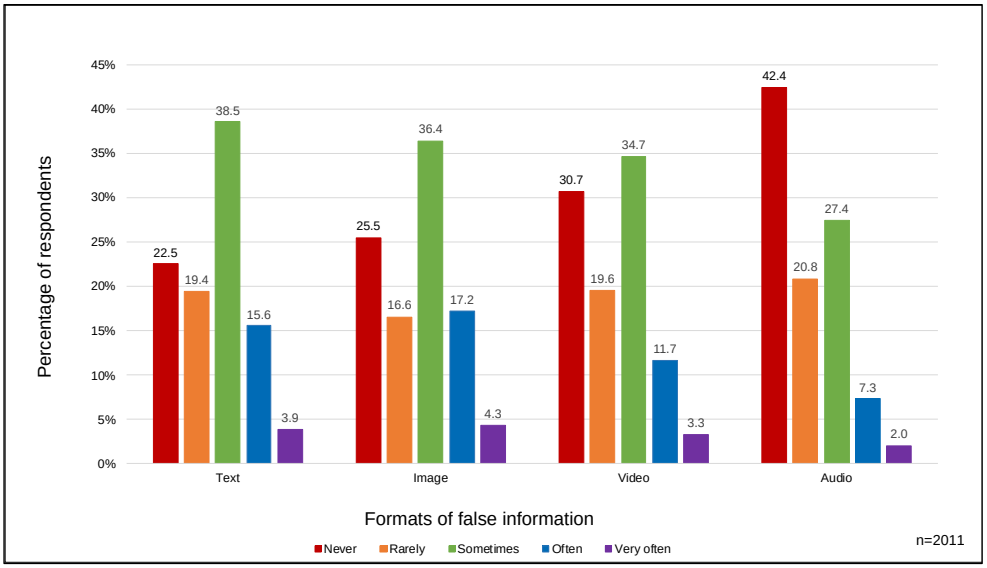
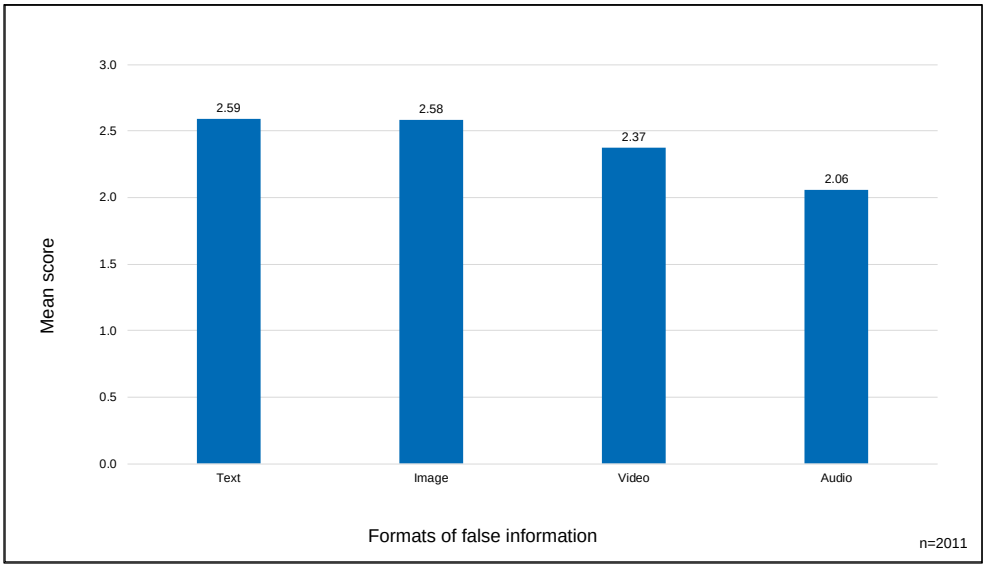


Figure 35: Mean scores of respondents' frequency of encountering false information in different formats



The findings suggest that while the emerging problem of using sophisticated technologies to create deceptive content such as deep-fakes is one to be concerned about, false information in the form of text and images remains a significant portion in the information ecosystem and its potential to cause harm should not be overlooked. In fact, experts have argued that deep-fakes have not been proven to be as dangerous as potentially feared because producers of disinformation can easily leverage cheaper and simpler forms of deception to achieve the same result (Ewing, 2020).

6.2.2. Believing false information in different formats

Our findings showed that respondents' frequency of believing false information in different formats followed a similar trend to respondents' frequency of encountering false information in different formats.

Close to six in 10 respondents said they had sometimes, often, or very often believed false information in the form of images (58.1 per cent, $\bar{x}$ =2.62), text (57.1 per cent, $\bar{x}$ =2.60), and videos (56.3 per cent, $\bar{x}$ =2.60). Respondents believed in false information in the form of audio least frequently (47.6 per cent, $\bar{x}$ =2.39). See Figures 36 and 37 for respondents' frequency of believing false information in different formats.

The findings seemed to suggest that false information in the form of images appear to be slightly more believable to people, possibly because of the eye-catching nature of images (as compared to text), as well as possibly because there are fewer dedicated tools for debunking fake images (e.g., reverse Google image search) that are popularly known to or used by Singaporeans.

Figure 36: Believe in false information in different formats

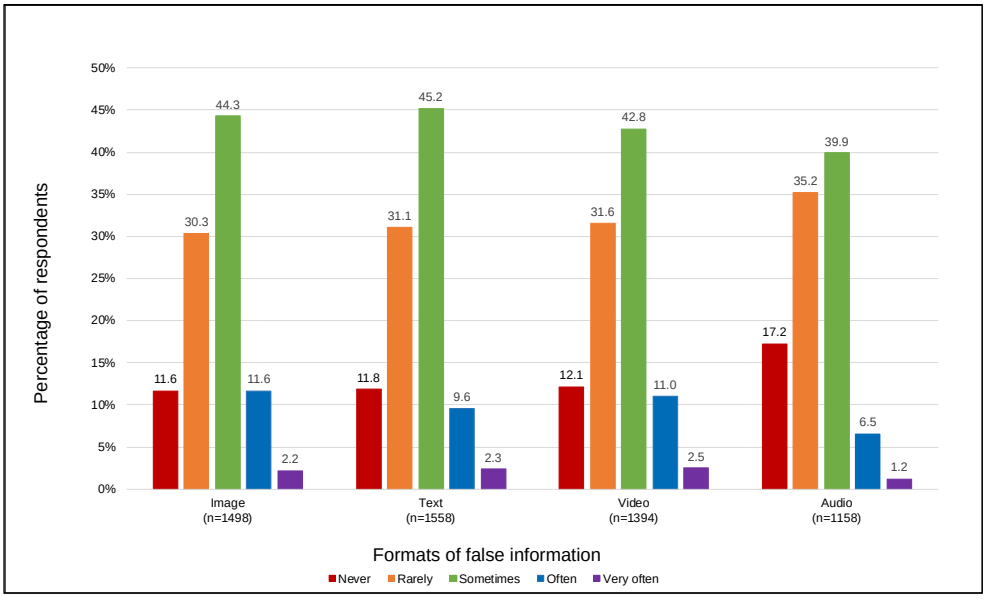
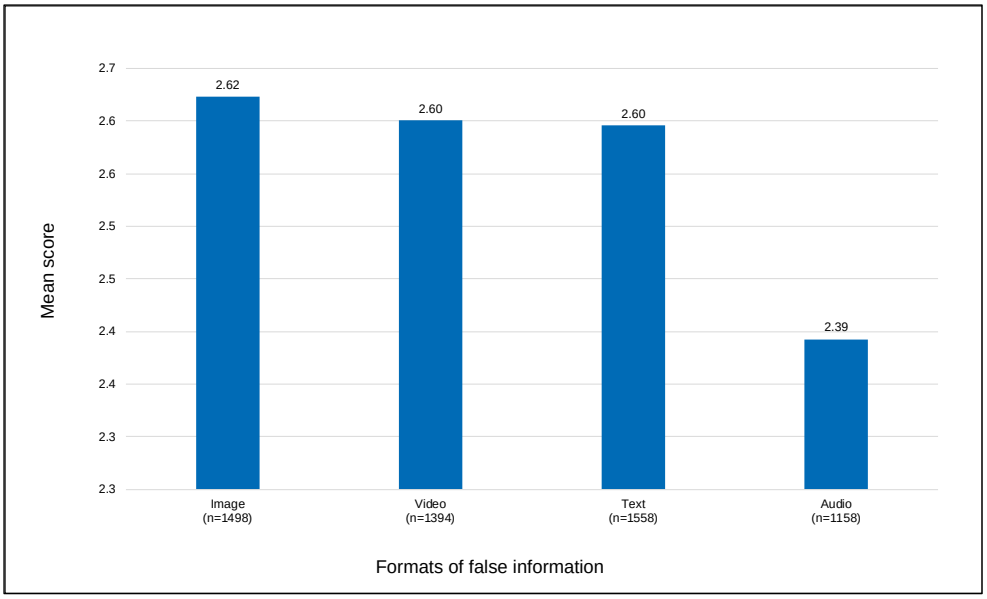


Figure 37: Mean scores of respondents' frequency of believing false information in different formats



6.3. Encountering and believing false information in different topics

This sub-chapter presents the findings on respondents' frequency of encountering and believing false information in different topics. Respondents were asked to indicate their frequency of encountering and believing false information relating to topics such as health and medicine, business and economy, and government and politics etc.[2]

6.3.1. Encountering false information in different topics

The findings show that among the various topics of false information, respondents most frequently encountered false information relating to the topics of international or foreign issues, lifestyle, and health and medicine.

Roughly 40 per cent of the respondents said they had sometimes, often, or very often encountered false information relating to international or foreign issues (43.2 per cent, $\bar{x} = 2.21$), lifestyle (40.9 per cent, $\bar{x} = 2.17$), and health and medicine (38.3 per cent, $\bar{x} = 2.14$). On the other hand, respondents were least likely to encounter false information relating to sports (18.8 per cent, $\bar{x} = 1.72$), arts and culture (20.7 per cent, $\bar{x} = 1.78$), and education (24.3 per cent, $\bar{x} = 1.85$). See Figures 38 and 39 for respondents' frequency of encountering false information in different topics.

[2] Respondents were asked to indicate their frequency of encountering and believing false information relating to various topics using a five-point frequency scale (from "never" to "very often").

Figure 38: Encounter of false information in different topics

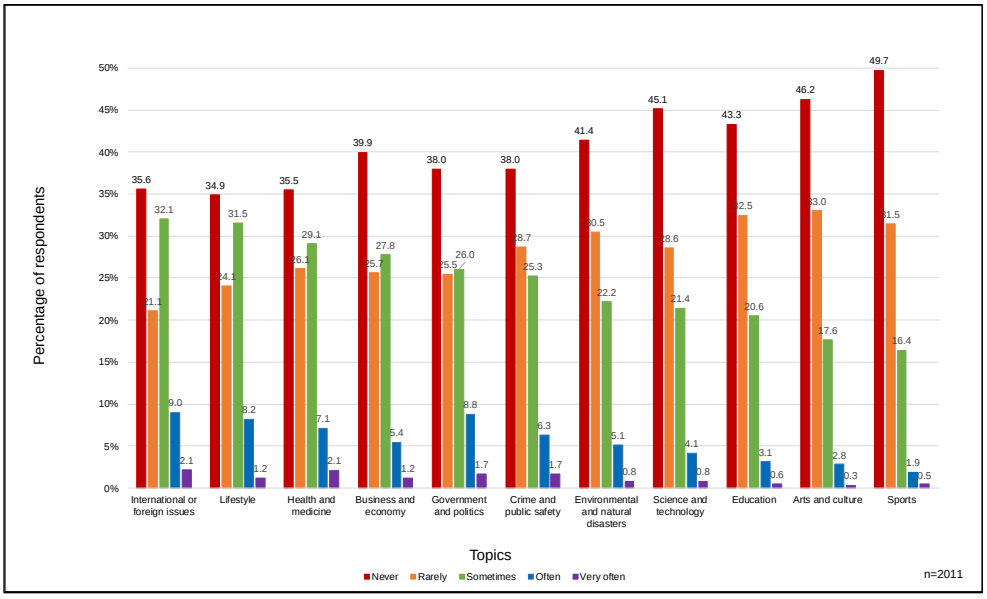
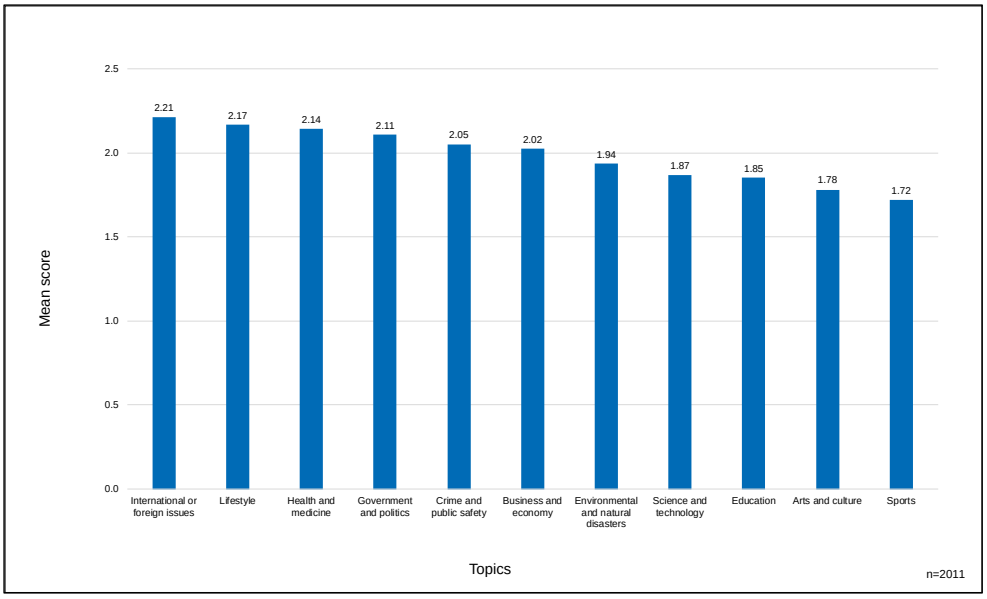


Figure 39: Mean scores of respondents' frequency of encountering false information in different topics



These findings suggest that the problem of false information could be more rampant in the domains of international or foreign affairs, lifestyle (e.g., celebrity death hoaxes), and health and medicine. Charges and reports of countries (e.g., China, Iran, and Russia) using false information as part of their disinformation campaigns to influence domestic politics and electoral processes could have contributed to the perceptions of fake news being prevalent in international news reports. Furthermore, as false information on health and medicine was ranked among the top three most frequently encountered topics of false information even though the fieldwork for this study was conducted (between November and December 2019) before the COVID-19 outbreak, the findings also suggest that health misinformation is an ongoing problem. Common health misinformation includes those put out by anti-vaxxers as well as alternative remedies for ailments.

6.3.2. Believing false information in different topics

Among the various topics of false information, the findings show that, similarly, respondents most frequently believed in false information relating to the topics that they had most frequently encountered as well. Respondents most frequently believed false information relating to international or foreign issues — slightly over half of the respondents (51.2 per cent, $\bar{x} = 2.51$) said they had sometimes, often, or very often believed false information relating to international or foreign issues. False information relating to health and medicine, lifestyle, business and economy, and government and politics followed closely; about 45 per cent of the respondents said they had sometimes, often, or very often believed false information relating to health and medicine ($\bar{x} = 2.45$), lifestyle ($\bar{x} = 2.43$), business and economy ($\bar{x} = 2.43$), and government and politics ($\bar{x} = 2.44$). See Figures 40 and 41 for respondents' frequency of believing false information in different topics.

Figure 40: Believing in false information in different topics

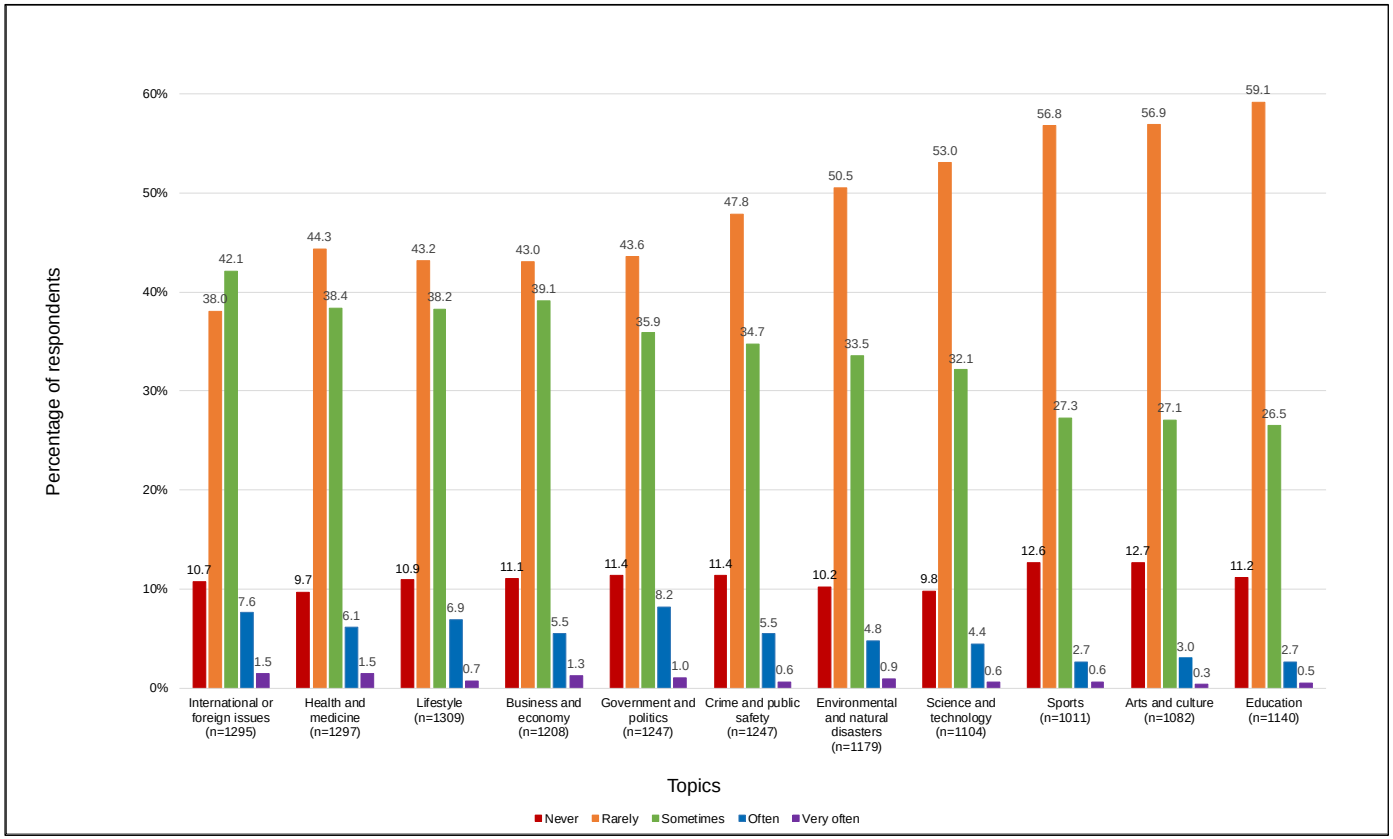
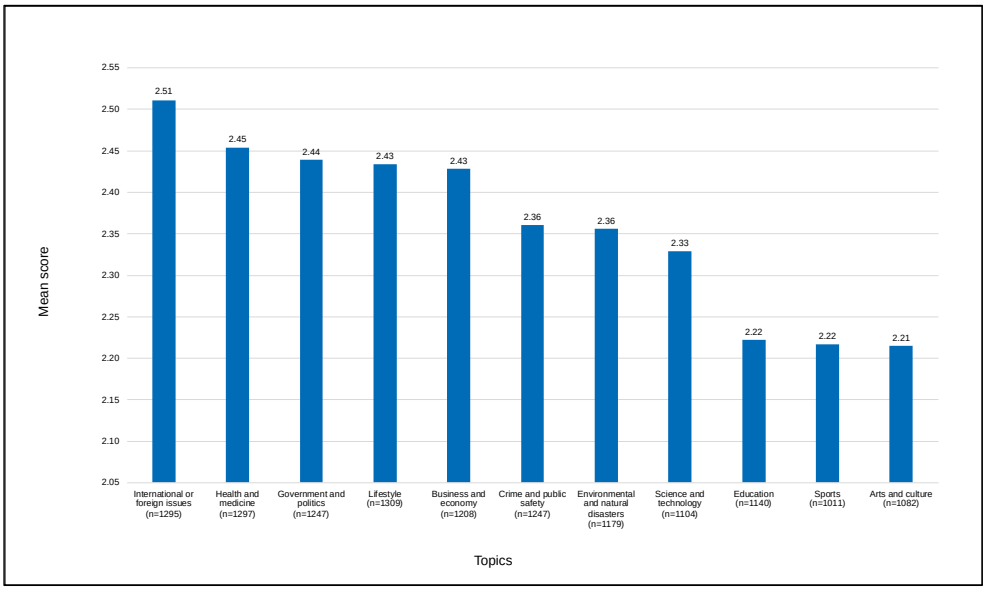


Figure 41: Mean scores of respondents' frequency of believing false information in different topics



These findings suggest that not only is the problem of false information possibly more rampant in the domains of international or foreign affairs and health and medicine, false information relating to these topics also seem to be more believable or have greater salience among people's consciousness. One possible explanation for this is perhaps due to the greater media attention given to certain issues (e.g., fake news in elections), or because people perceive a potentially direct impact on their lives (e.g., for health and medicine misinformation).

6.4. Encountering and believing false information on different media types

In this sub-chapter, we present the findings on respondents' frequency of encountering and believing false information on different media types. Respondents were asked to indicate their frequency of encountering and believing false information on 12 media types, which were classified into legacy media and non-legacy media.[1]

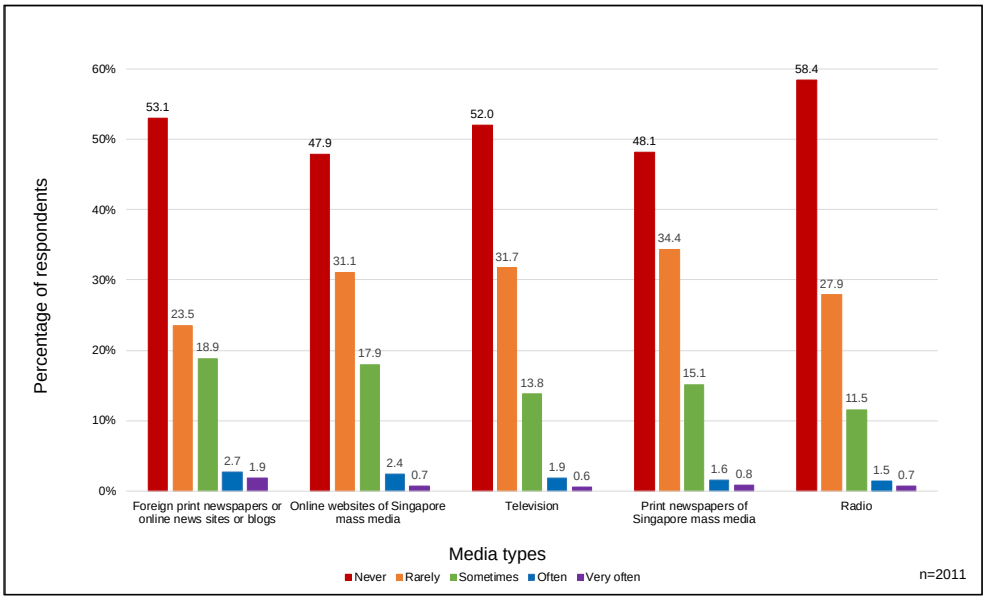
[1] Respondents were asked to indicate their frequency of encountering and believing false information on the different media types using a five-point frequency scale (from "never" to "very often"). See Chapter 4.1. for more information on the classification of media types into legacy media and non-legacy media.

6.4.1. Encountering false information on different media types

Among legacy media, the study found that respondents most frequently encountered false information on foreign print newspapers/online news sites/blogs. Almost one-quarter of respondents (23.5 per cent, $\bar{x}$ = 1.77) said they had sometimes, often, or very often encountered false information on foreign media. This could also explain earlier findings on foreign media being the least frequently used and least trusted legacy media type among respondents for news information and current affairs; the perception of having a relatively higher likelihood of encountering false information on foreign media may be a possible reason why respondents used and trusted it the least.

Foreign media was followed by online websites of Singapore mass media, with 21 per cent ($\bar{x}$ = 1.77) of respondents who said they had sometimes, often, or very often encountered false information there. Respondents encountered false information on radio least frequently (13.7 per cent, $\bar{x}$ = 1.58). See Figure 42 for respondents' frequency of encountering false information on legacy media.

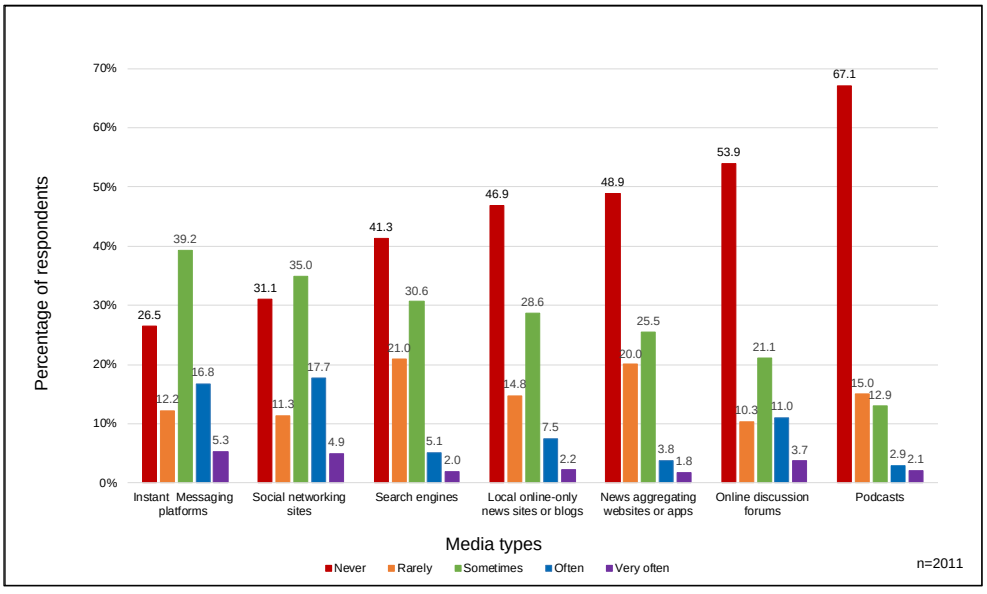
Figure 42: Encounter of false information on legacy media



When it came to non-legacy media, respondents encountered false information most frequently on Instant Messaging platforms and social networking sites. About six in 10 respondents said they had sometimes, often, or very often encountered false information on Instant Messaging

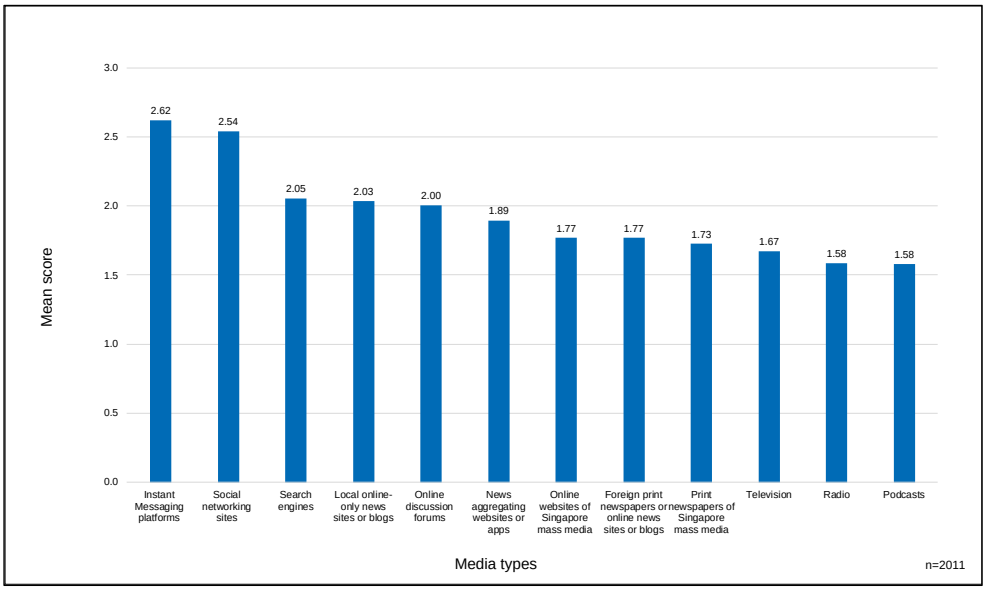
platforms (61.3 per cent, $\bar{x}$ = 2.62) and on social networking sites (57.6 per cent, $\bar{x}$ = 2.54). In fact, the proportion of respondents who said they had sometimes, often, or very often encountered false information on Instant Messaging platforms and social networking sites was approximately 1.5 to 2 times greater than the proportion of respondents who said the same for most of the other types of non-legacy media. Only between 31 to 38 per cent of respondents said they had sometimes, often, or very often encountered false information on local online-only news sites or blogs, search engines, online discussion forums, and news aggregating websites or apps. Respondents encountered false information on podcasts least frequently (17.9 per cent; $\bar{x}$ = 1.58). See Figure 43 for respondents' frequency of encountering false information on non-legacy media.

Figure 43: Encounter of false information on non-legacy media



When we combined all 12 media types, the findings showed that across the board, respondents encountered false information on non-legacy media types (with the exception of podcasts) more often than on legacy media types. Figure 44 shows the mean scores for respondents' frequency of encountering false information on the various media types.

Figure 44: Mean scores of respondents' frequency of encountering false information on various media types



This finding is also indicative of the problem of false information, which is also corroborated by several other studies (Grinberg, Joseph, Friedland, Swire-Thompson & Lazer, 2019; Guess, Nagler & Tucker, 2019), that false information is most rampant on Instant Messaging platforms and social networking sites due to their open, interconnected, and "frictionless" (i.e., requiring minimal effort on the part of users when they perform actions such as forwarding, retweeting, and sharing) nature, that allow information — both true and false — to spread at speed and scale.

Excluding Instant Messaging platforms and social networking sites however, respondents' frequency of encountering false information in general can be considered as low, as the majority of respondents said they had never or rarely encountered false information; about 62 to 86 per cent of respondents said they had never or rarely encountered false information across all media types across 10 media types (excluding Instant Messaging platforms and social networking sites).

The finding that respondents had least frequently encountered false information on radio and podcasts also corroborates our earlier observations, where respondents had encountered false information in the form of audio least frequently. Furthermore, one possible reason why respondents had encountered false information on podcasts least frequently is because podcasts were also the media type that was least frequently used for seeking

news information and current affairs among respondents (as seen in sub-chapter 4.1.). This implies that respondents' frequency of encountering false information on a particular media type was not only influenced by how rampant the problem of false information is on that media type, but also how frequently respondents used that media type for seeking news information and current affairs to begin with.[2]

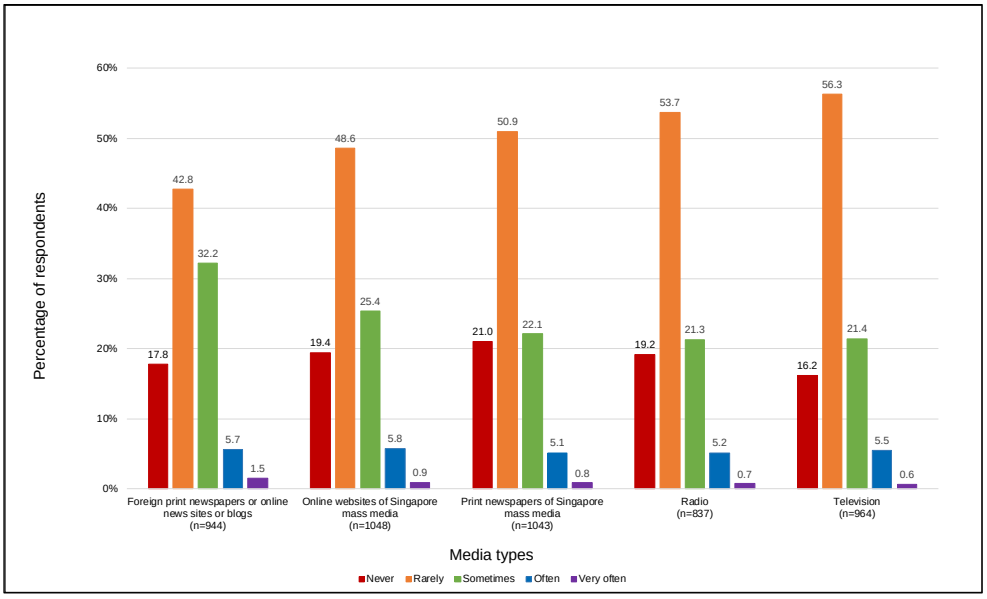
6.4.2. Believing false information on different media types

The findings for respondents' frequency of believing false information that they had encountered on different media types also follow a similar trend to that observed in respondents' frequency of encountering false information.

Among legacy media, respondents most frequently believed false information that they had encountered on foreign print newspapers/online news sites/blogs. Close to 40 per cent ($\bar{x}$ = 2.30) of respondents said they had sometimes, often, or very often believed false information that they had encountered on foreign media. Online websites of Singapore mass media followed next, with 32.1 per cent ($\bar{x}$ = 2.20) of respondents who said they had sometimes, often, or very often believed false information that they had encountered. Respondents believed false information that they had encountered on radio least frequently (27.2 per cent, $\bar{x}$ = 2.15). See Figure 45 for respondents' frequency of believing false information on legacy media.

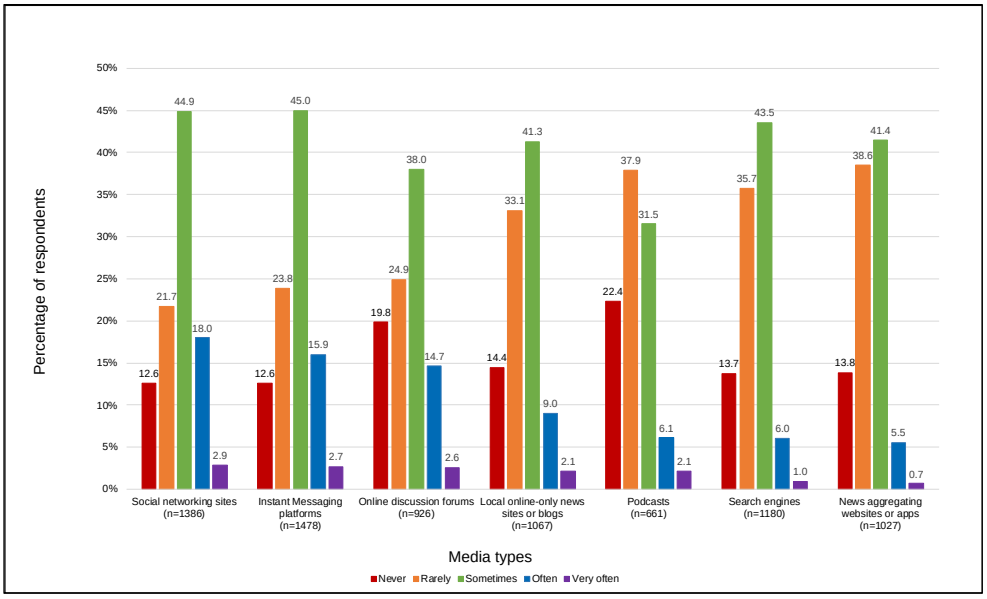
[2] We also performed a chi-square test for association to examine the relationship between respondents' frequency of using a particular media type for seeking news information and current affairs, and their frequency of encountering false information on that same media type. In general, when compared with respondents who said they only used a particular media type less than once a week, respondents who said they had used a particular media type a few times a week or once a day or more were more likely to say that they had sometimes, often, or very often encountered false information on that particular media type. These relationships were also found to be statistically significant — all 12 chi-square tests for association had a p-value of 0.000.

Figure 45: Believing in false information on legacy media



In terms of non-legacy media, again, respondents most frequently believed false information that they had encountered on social networking sites and Instant Messaging platforms. About six in 10 respondents said they had sometimes, often, or very often believed false information that they had encountered on social networking sites (65.8 per cent, $\bar{x}$ = 2.77) and on Instant Messaging platforms (63.6 per cent, $\bar{x}$ = 2.72). This was followed by online discussion forums and local online-only news sites or blogs; slightly more than half of the respondents said they had sometimes, often, or very often believed false information that they had encountered on online discussion forums (55.3 per cent, $\bar{x}$ = 2.55), and on local online-only news sites or blogs (52.4 per cent, $\bar{x}$ = 2.51). Respondents also believed false information that they had encountered on podcasts least frequently (39.7 per cent, $\bar{x}$ = 2.28). See Figure 46 for respondents' frequency of believing false information on non-legacy media.

Figure 46: Believing in false information on non-legacy media

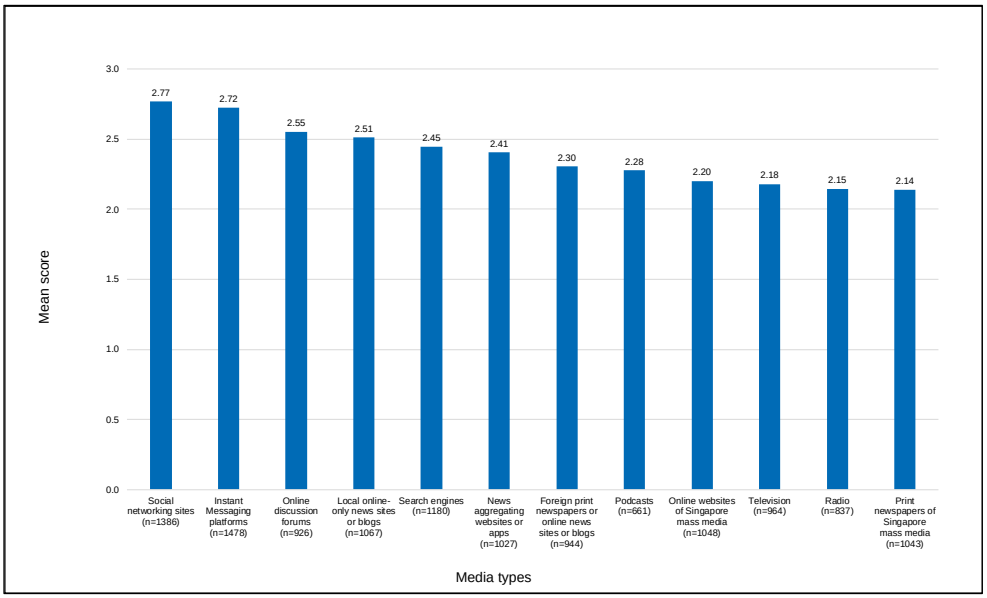


Comparing all media types, the study found that, in general, respondents believed false information that they had encountered on non-legacy media more often than on legacy media (see Figure 47). Between 60 per cent to 72 per cent of respondents said they had never or had rarely believed the false information that they had encountered on legacy media, whereas only between 34 per cent to 60 per cent of respondents said they had never or had rarely believed false information that they had encountered on non-legacy media.

Across all media types, respondents most frequently believed false information that they had encountered on social networking sites and Instant Messaging platforms. One possible explanation for why false information on social networking sites and Instant Messaging platforms appear more believable to people is that false information is likely to be shared by trusted persons such as family members, close friends, or opinion leaders. In the case of social networking sites, one additional factor may be because people's social media feeds exist in information bubbles that result from their information curation. The personalised information streams increase people's chances of being presented with false information that can more effectively capitalise on their individual biases.[3]

[3] We also performed a chi-square test for association to examine the relationship between respondents' frequency of encountering false information on a particular media type, and their frequency of believing false information on that same media type. In general, respondents

Figure 47: Mean scores of respondents' frequency of believing false information on various media types



6.5. False information on social networking sites and Instant Messaging platforms

As discussed in sub-chapter 6.4., we found that among the various media types, respondents most frequently encountered false information on social networking sites and Instant Messaging platforms. This sub-chapter explores the phenomenon of false information on social media in greater detail, looking at how people responded to false information that they had encountered on social networking sites and Instant Messaging platforms,[4] and examining the reasons behind why people who shared false information with their family members and friends did so. In addition, we also looked at people's information verification strategies in general and discuss what that suggests about people's susceptibility to false information.

who said they had sometimes, often, or very often encountered false information on a particular media type were also more likely than respondents who said they only rarely encountered false information to say that they had sometimes, often, or very often believed false information they had encountered on the same media type. These relationships were also found to be statistically significant — all 12 chi-square tests for association had a p-value of 0.000.

[4] Respondents were asked to indicate their frequency of engaging in specific activities (e.g., reporting the false information or ignoring the false information) in response to encountering false information, using a five-point frequency scale (from "never" to "very often").

6.5.1. Responses to encountering false information on social networking sites and Instant Messaging platforms

In terms of encountering false information on social networking sites, the findings showed that respondents most frequently ignored the false information that they had encountered — three-quarters (75.5 per cent, $\bar{x}$ = 3.38) of the respondents said they had sometimes, often, or very often ignored the false information that they had encountered on social networking sites. Only about a quarter of respondents (24.5 per cent) said they had never or had rarely ignored false information on social networking sites.

Following this, people were next most likely to unfollow or block the person or organisation who posted the false information that they had encountered on social networking sites. Close to four in 10 respondents (37.8 per cent, $\bar{x}$ = 2.12) said they had sometimes, often, or very often unfollowed or blocked the person or organisation that posted the false information on social networking sites. However, this proportion of respondents was almost half the proportion of respondents who said they had ignored false information that they had encountered on social networking sites. Respondents were also likely to share the content that may have false information with their family and friends after encountering it on social networking sites. One-third (33.5 per cent, $\bar{x}$ = 1.99) of the respondents said they had sometimes, often, or very often shared the false information with their family and friends after encountering it on social networking sites. See Figures 48 and 49 for people's responses to encountering false information on social networking sites.

Figure 48: Responses to false information on social networking sites

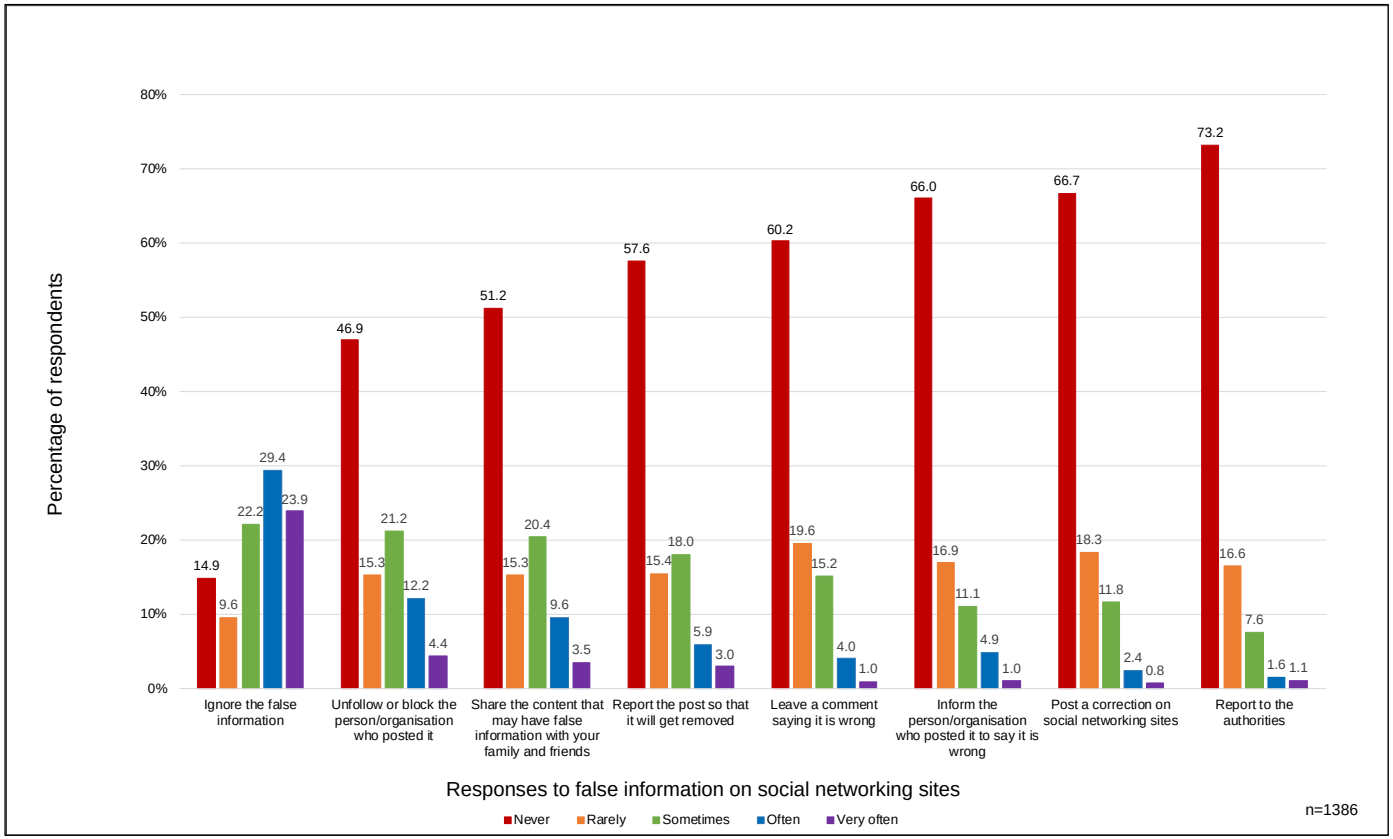
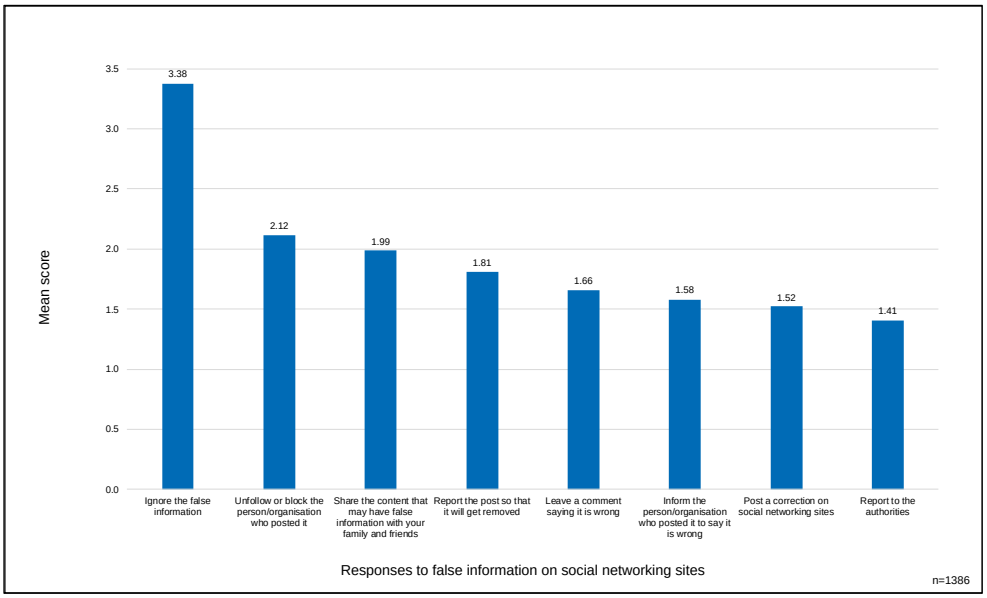


Figure 49: Mean scores of responses to false information on social networking sites



In terms of encountering false information on Instant Messaging platforms, the findings showed that, again, respondents most frequently ignored the false information that they had encountered. Just over three-quarters (76.2 per cent, $\bar{x}$ = 3.40) of respondents said they had sometimes, often, or very often ignored the false information that they had encountered on Instant Messaging platforms. This was followed by informing the person who shared it to say it is wrong — about four in 10 ($\bar{x}$ = 2.17) respondents said they had sometimes, often, or very often informed the person who shared the false information to say it is wrong. Similar to the earlier findings, about one-third of the respondents (33.9 per cent, $\bar{x}$ = 1.98) said they had sometimes, often, or very often, shared the content that may have false information with their family and friends after encountering it on Instant Messaging platforms. See Figures 50 and 51 for people's responses to encountering false information on Instant Messaging platforms.

Figure 50: Responses to false information on Instant Messaging platforms

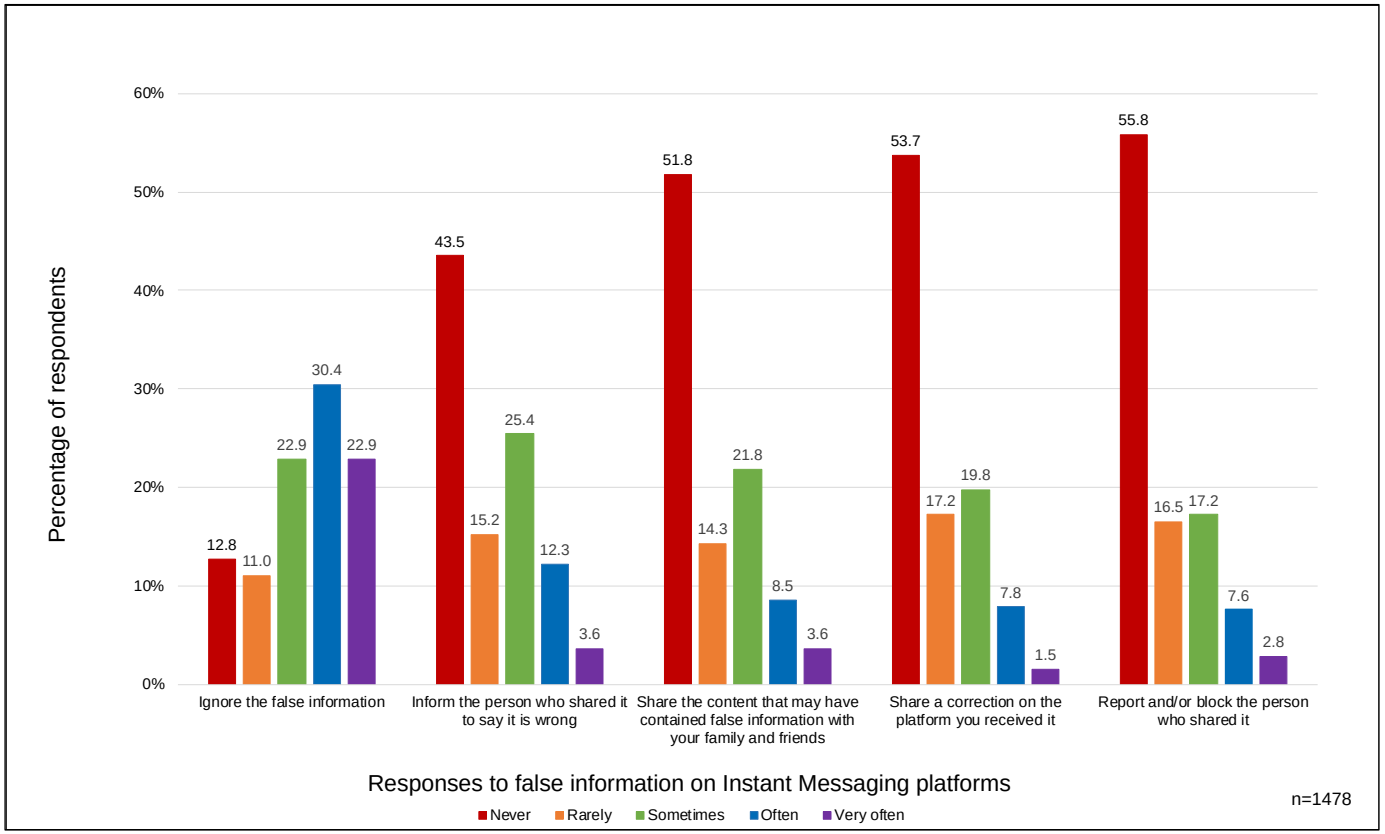
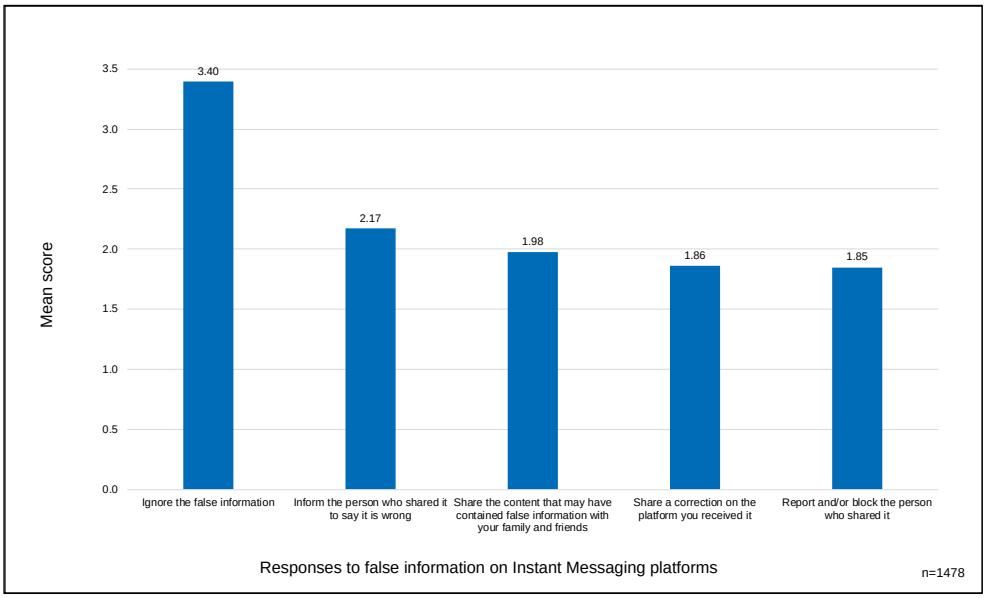


Figure 51: Mean scores of responses to false information on Instant Messaging platforms



In line with previous studies conducted in the context of Singapore, these findings show that people were most likely to ignore the false information that they had encountered online, both on social networking sites and on Instant Messaging platforms. For example, Tandoc, Lim & Ling (2020) also found that people most commonly ignored the fake news posts that they came across on social media, and would only offer corrections when the issue was strongly relevant to them and to people with whom they shared a strong and close interpersonal relationship.

6.5.2. Reasons for sharing false information on social networking sites and Instant Messaging platforms

This sub-chapter presents the findings on the reasons why people shared false information that they had encountered with their family members and friends.

As seen from the findings above, about one-third of respondents said they had shared false information that they had encountered on social networking sites and Instant Messaging platforms with their family members and friends. To understand what the most popular reasons for sharing false information after encountering it were, we presented respondents with 12 possible reasons (derived from existing literature) that may drive people to share false

information.[1] These 12 reasons can be broadly categorised into four main types: (1) due to specific information characteristics; (2) for entertainment purposes; (3) for socialising with others; and (4) for self-expression. Table 5 shows the list of reasons for sharing false information under each category.

Table 5: List of reasons for sharing false information

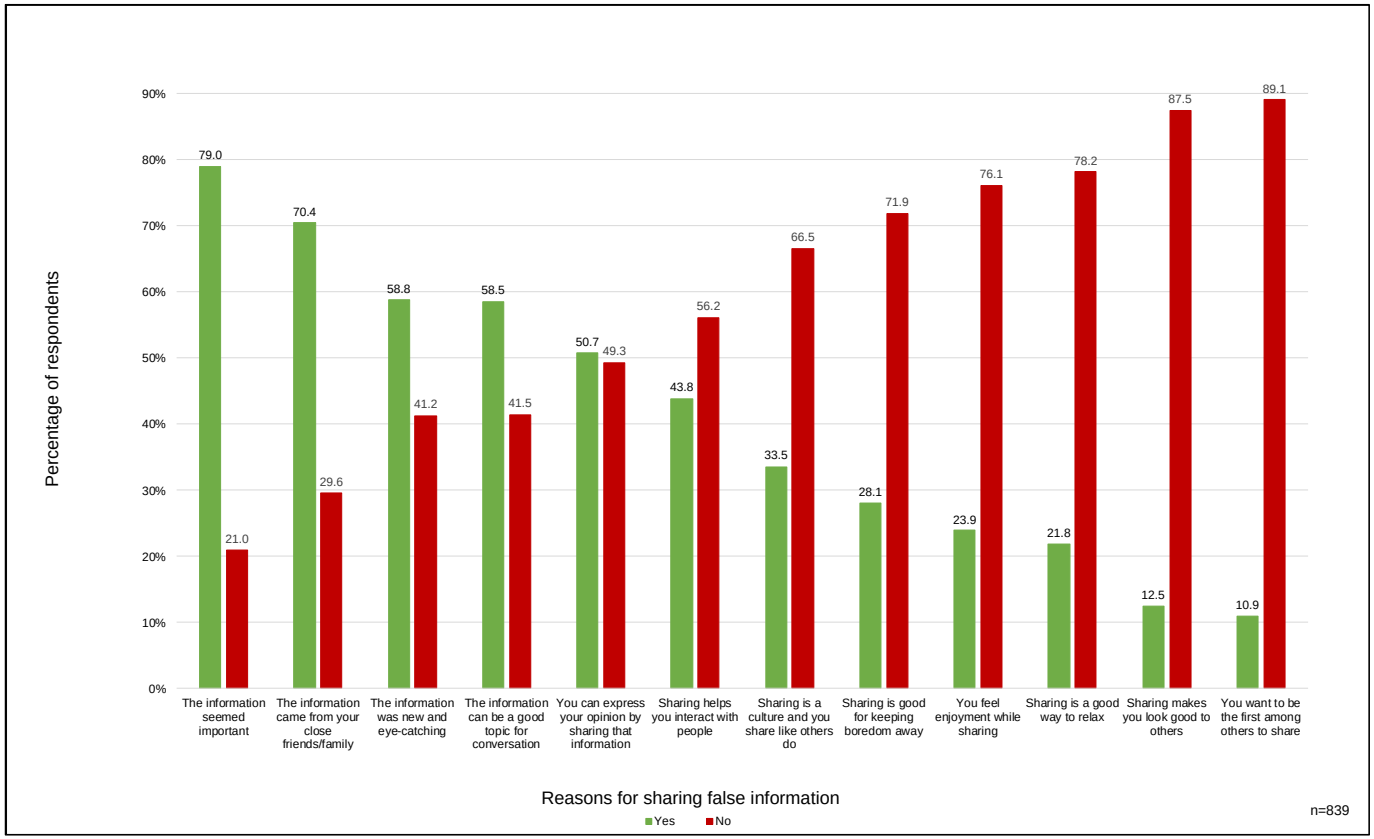
Type of reason	Specific reasons for sharing false information
Due to information characteristics	The information was new and eye-catching
	The information came from your close friends/family
	The information seemed important
For entertainment purposes	Sharing is good for keeping boredom away
	Sharing is a good way to relax
	You feel enjoyment while sharing
For socialising with others	Sharing helps you interact with people
	Sharing is a culture and you share like others do
	The information can be a good topic for conversation
For self-expression	Sharing makes you look good to others
	You want to be the first among others to share
	You can express your opinion by sharing that information

The findings showed that the top three reasons behind sharing false information from social networking sites and Instant Messaging platforms with family and friends all relate to the specific information characteristics of the false information — namely, because the information looked important, came from trusted close sources, and was novel and eye-catching. The most commonly cited reason by people (79 per cent of the respondents) for sharing false information after encountering it was because the information seemed important. 70.4 per cent of the respondents said they did so because the information came from their close friends or family, and 58.8 per cent said they did so because the information was new and eye-catching.

[1] Respondents were asked to indicate either “yes” or “no” to each of the 12 options. Only respondents who said they shared false information with their family and friends were asked this question.

Other reasons that led to people sharing false information with their family and friends include sharing for the purposes of socialising with others and for self-expression. More than half (58.5 per cent) of the respondents said they had shared false information because it could be a good topic for conversation with others, and 50.7 per cent of respondents said they did so because they could express their opinion by sharing the false information. Only a minority of respondents (between 21 per cent and 28 per cent) said they had shared false information for entertainment purposes, such as to keep boredom away. Hence, ironically, people's well-meaning intention — sharing information that they felt was important with those in their social networks — was the main driver for their sharing of false information. See Figure 52 for respondents' reasons for sharing false information on social networking sites and Instant Messaging platforms.

Figure 52: Reasons for sharing false information



6.6. Information verification strategies

Finally, we examined respondents' habits and practices in verifying the information they encountered online. We identified eight information verification techniques commonly used from current research on fact-checking. Media literacy resources such as those from the Media Literacy Council and the National Library Board's S.U.R.E. campaign have also advocated the practice of similar fact-checking efforts.

Our findings showed that the most common method people used to verify information was to ask their family members, friends, or colleagues who followed the news — 62 per cent ($\bar{x}$ = 2.65) of the respondents said they did so sometimes, often, or very often. The second and third most common techniques among respondents were using a search engine (50.1 per cent, $\bar{x}$ = 2.47) and checking with news sources that they used most often (47.4 per cent, $\bar{x}$ = 2.33). The least commonly used technique was using a fact-checking website to verify information (22.7 per cent, $\bar{x}$ = 1.70). See Figures 53 and 54 for the types of information verification strategies respondents used.

Figure 53: Types of information verification strategies

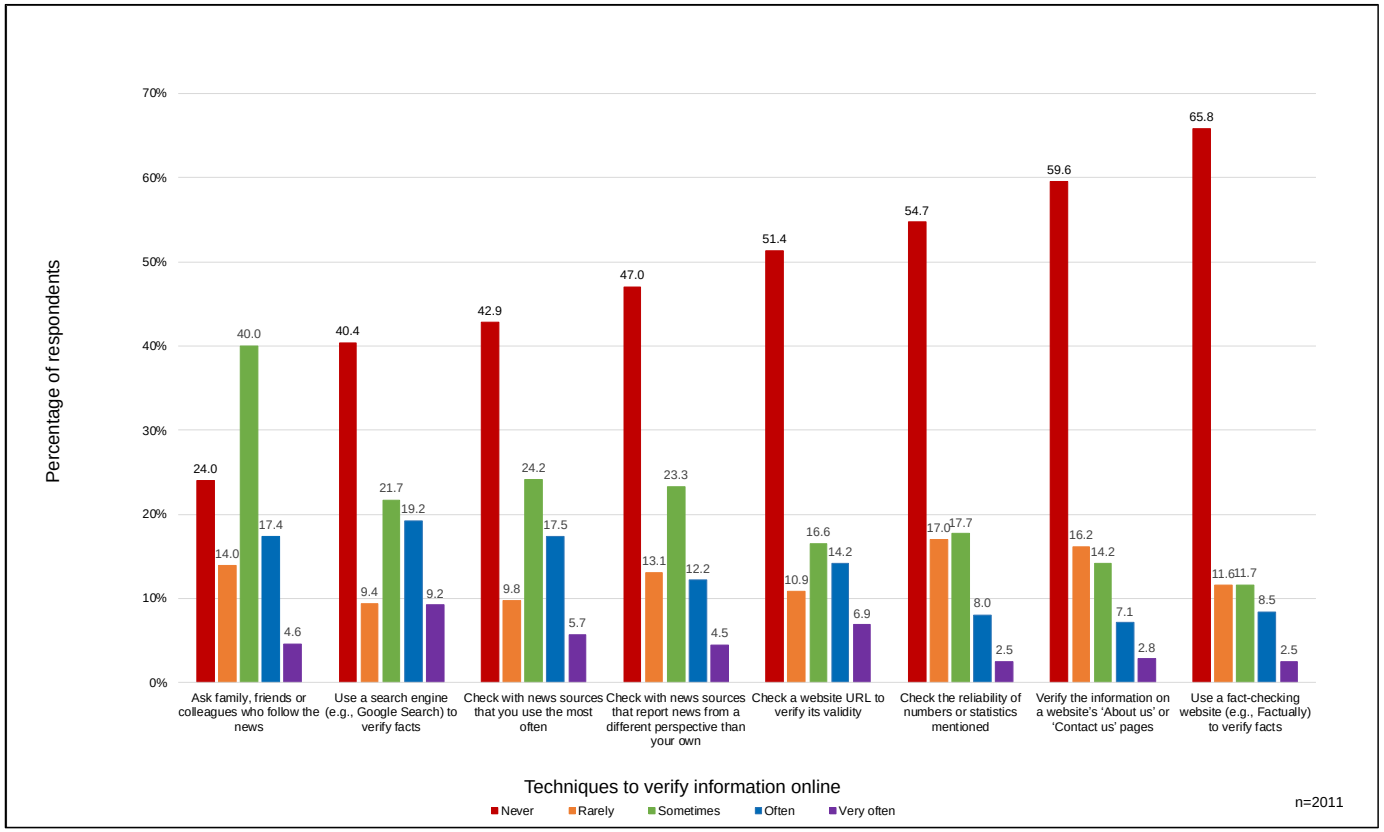
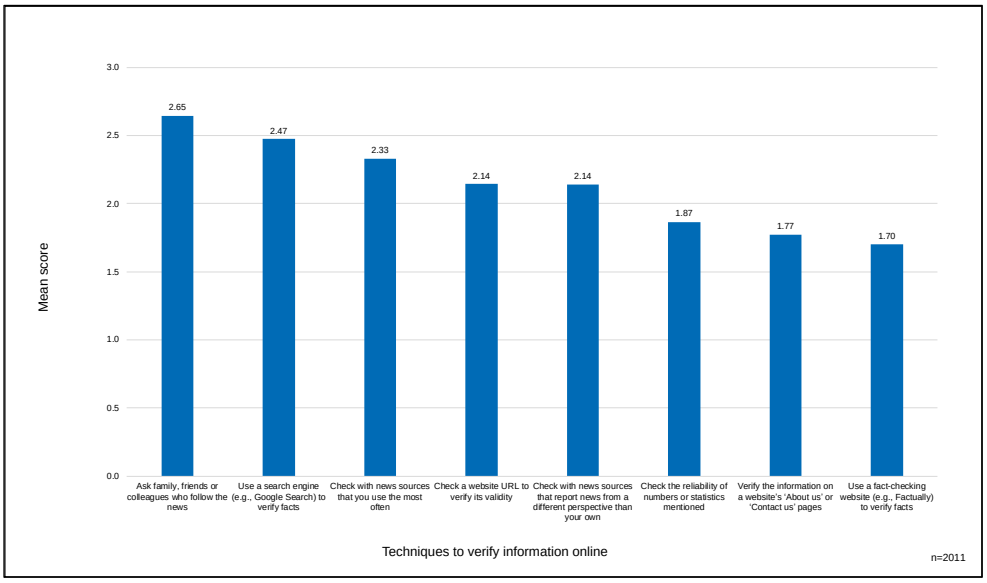


Figure 54: Mean scores of respondents' information verification strategies



It is unsurprising that the respondents' most cited go-to for information verification were people in their social networks due to the higher level of trust in interpersonal relationships. The influence of strong ties has been observed in studies in social movements and collective action, which found that civic engagement among family members and friends was a strong predictor of a person's participation. In IPS' previous study on Singapore's General Election 2015, social networks on closed communication platforms such as Instant Messaging were found to have exerted the strongest influence on Singaporeans' voting behaviour (Soon, Tan & Samsudin, 2016). The reliance on close contacts has been cited as a reason for social media's impact on the problem of fake news, besides its facilitation of easy and quick sharing. A reliance on family and friends to verify the authenticity of information is potentially problematic; they may not receive the correct verification if their personal contacts are uninformed or unsure of the facts, or worse, are victims of the false information themselves.

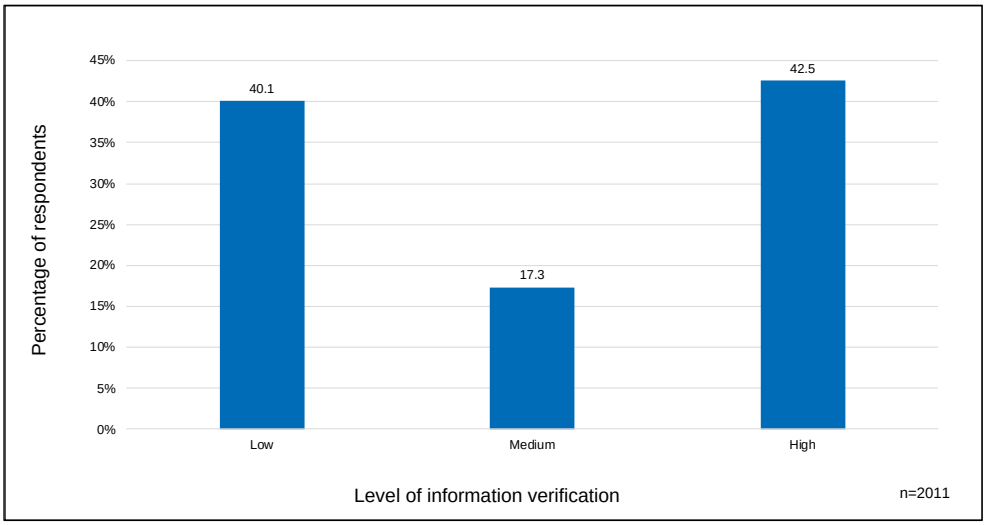
Furthermore, the findings also indicate that despite public education and outreach informing the public to consult authoritative sources and fact-checking sites, official fact-checking websites such as Factually (https://www.gov.sg/factually) remained underused by people.

In addition to examining the information verification techniques commonly used by Singaporeans, we also analysed the number of information

verification techniques used, which provides us with another indication of people's susceptibility to false information.[1] Specifically, people with a lower level of information verification techniques were also likely to be more susceptible to false information.

As seen in Figure 55, majority of the respondents occupied the two extremes; 40.1 per cent had a low level of information verification strategy and 42.5 per cent were of high level. This points to a stark literacy gap among Singaporeans, which is demonstrated later in our regression analyses as well (see sub-chapter 6.7.2.). Furthermore, these findings highlight that more needs to be done to equip people with the skills to verify information and protect themselves against the scourge of false information.

Figure 55: Level of information verification



[1] Respondents were grouped into three categories, those with low (zero to two techniques were used), medium (three to five techniques were used), and high (six to eight techniques were used) levels of information verification.

6.7. Trust in manipulated news article

Thus far, we have examined respondents' susceptibility to false information in two ways — how often respondents were exposed to false information and how often respondents fell prey to false information. However, one potential limitation of these two approaches is that they rely on respondents' self-reporting, which may be contingent upon people's ability to accurately recall their experiences with false information. In addition, given the nature of the questions, people's responses may also potentially be affected by their self-desirability bias, which in turn affects the effectiveness of the survey instrument in capturing an accurate picture of people's susceptibility to false information.

In order to better assess people's susceptibility to false information, we presented respondents with a manipulated news article that was designed to evaluate their ability in assessing the veracity of a piece of information and to discern accurate information from falsehoods.[2]

6.7.1. Trust in manipulated news article in general

Our findings show that less than one-third of the respondents, or 32.5 per cent, said that the manipulated news article was untrustworthy. A large majority of respondents said the manipulated news article was trustworthy, to varying extents — 27 per cent of respondents said that the article was a little trustworthy, and 40.6 per cent said that the article was either trustworthy or very trustworthy (see Figures 56 and Figure 57).

[2] We presented respondents with a manipulated news article and asked them indicate to what extent they felt that this piece of "news article" could be trusted on a four-point Likert scale (from "untrustworthy" to "very trustworthy") after reading it. Respondents who were unable to read were given as "not applicable" response for this and its subsequent related questions.

Figure 56: Level of trust in manipulated news article

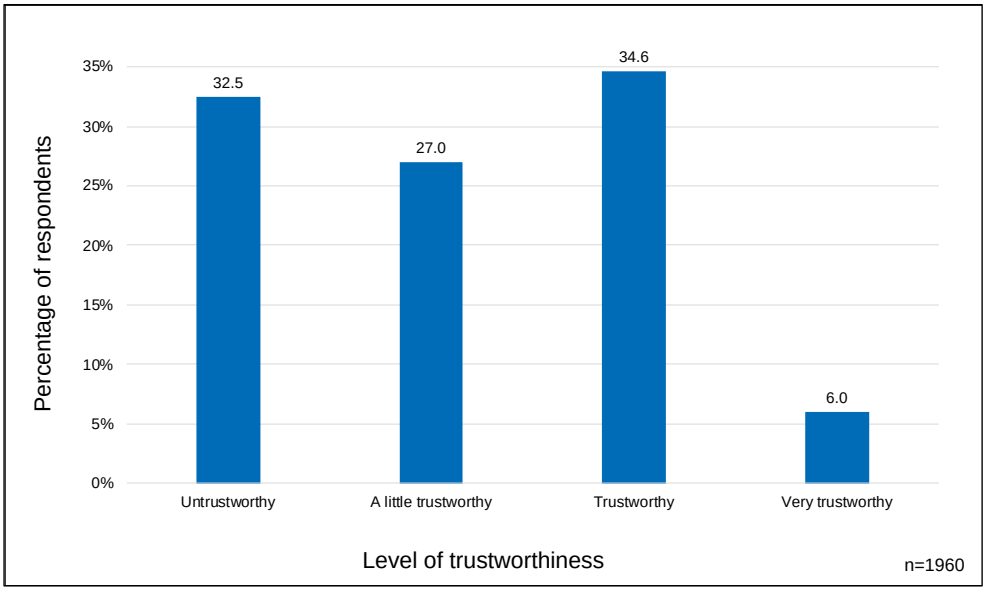
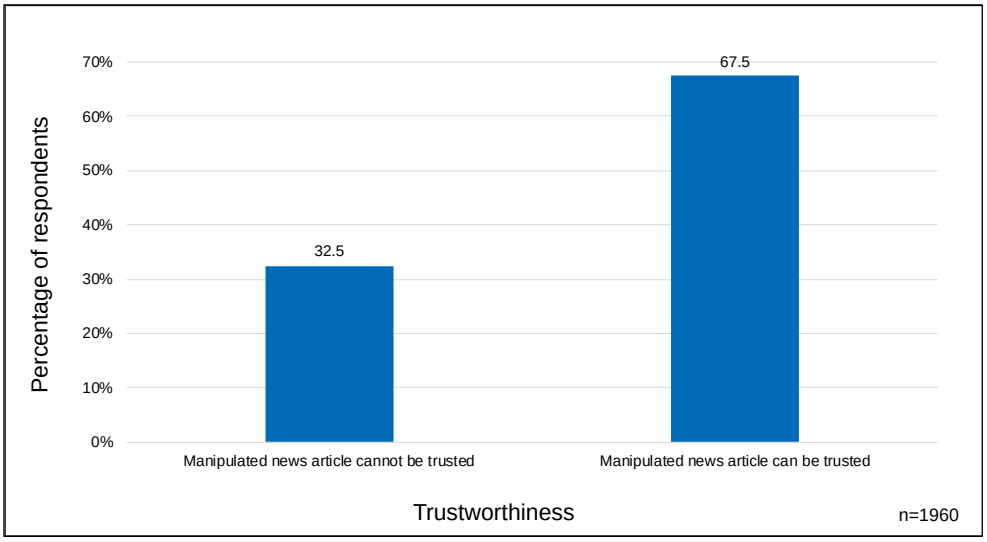


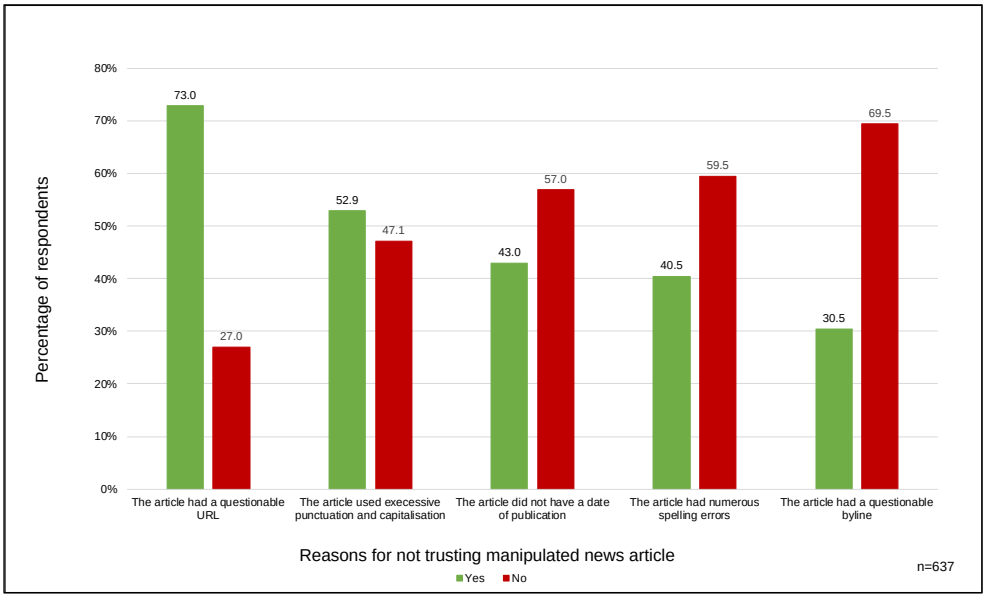
Figure 57: Level of trust in manipulated news article — responses in "a little trustworthy", "trustworthy", and "very trustworthy" were combined into a single category



Next, we examine the reasons behind why respondents found the manipulated news article untrustworthy or trustworthy.[3]

Among respondents who said that the manipulated news article could not be trusted, almost three-quarters of them (73.0 per cent) said that it was because the article had a questionable URL. The second most popularly cited reason was because the article used excessive punctuation and capitalisation, with 52.9 per cent of respondents selecting this reason. Only 30.5 per cent of respondents said that the manipulated news article could not be trusted was because it had a questionable byline (see Figure 58).

Figure 58: Reasons for not trusting manipulated news article

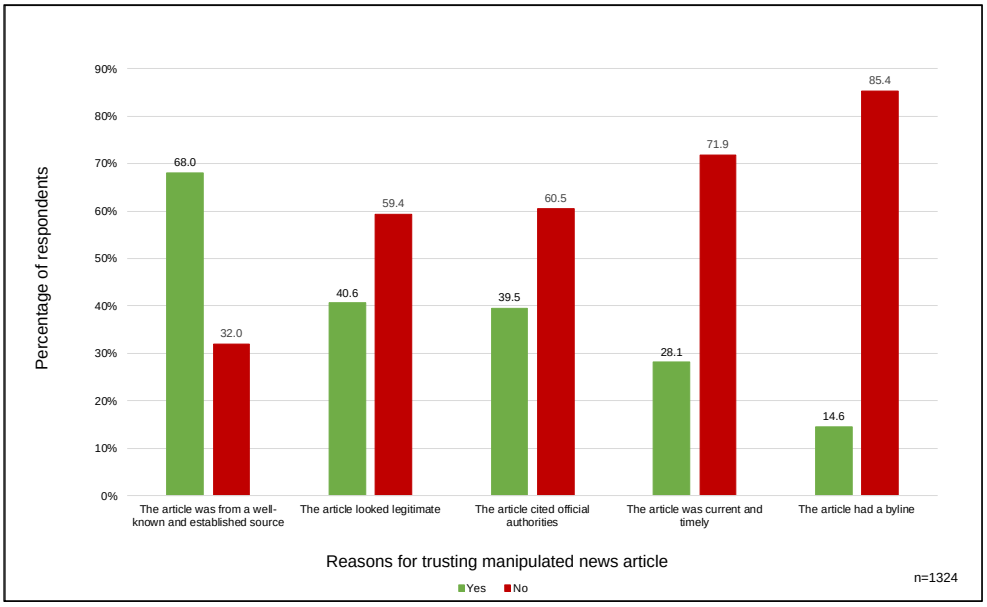


On the other hand, among respondents who said the manipulated news article could be trusted, more than two-thirds of them (68 per cent) said that it was because the article came from a well-known and established source. The second most popularly cited reason was because the article looked legitimate, with 40.6 per cent of respondents who also selected this reason.

[3] Using a skip-logic branching, respondents were presented with a set of reasons tailored to their responses and were asked to select all the reasons that applied to them (i.e., percentages do not add up to 100 per cent). For example, respondents who said the manipulated news article was "untrustworthy" were presented with reasons such as "The article had a questionable URL" and "The article had numerous spelling errors". On the other hand, respondents who said that the manipulated news article was either "a little trustworthy", "trustworthy", or "very trustworthy", were presented with reasons such as "The article was from a well-known and established source" and "The article looked legitimate".

Only 14.6 per cent of respondents said that the manipulated news article could be trusted because it had a by-line (see Figure 59).

Figure 59: Reasons for trusting manipulated news article



The findings suggest that people's level of information literacy is generally low, as less than one-third of the respondents successfully recognised signs that the "news article" had been manipulated and thus should not be trusted. Over two-thirds of respondents said that the manipulated news article could be trusted despite the many signs of manipulation that were included in the article. In addition, this finding contextualises earlier observations on people's frequency of encountering false information — respondents' low frequency of encountering false information (on most media types other than social networking sites and Instant Messaging platforms) may likely be also due to the fact that people perform poorly at recognising false or manipulated information when they had encountered it in the first place.

The findings also suggest a strong influence of the source of a piece of information — people tend to rely on the perceived source of a news article as a heuristic to assess the veracity and trustworthiness of the information they encounter. This is because the top reason cited by respondents who distrusted the manipulated news article was because the URL of the article was questionable (i.e., did not tally with where the information claimed to be from). Similarly, the top reason cited by respondents who trusted the manipulated news article was because the article came from a well-known

and established news source, likely because of the logo of the Singapore mass media that was included in the article. In fact, respondents who trusted the manipulated news article arguably relied heavily (perhaps even solely) on the article source to assess its veracity and trustworthiness, as many of the other manipulations included in the article (e.g., multiple errors and citing of false authorities), which should have led them to doubt the legitimacy of the article, were overlooked by them.

Finally, the findings also suggest that more astute respondents seemed to be adept at taking cues from the tone of the language used in an article as a proxy to assess the information. Among respondents who distrusted the manipulated news article, more than half (52.9 per cent) said that this was because the article used excessive punctuation and capitalisation. However, this percentage figure is about 20 percentage points lower than the top cited reason, once again highlighting the heavy reliance on information source as a heuristic for assessing information veracity, even among the more astute respondents.

6.7.2. Trust in manipulated news article by demographics and various traits

Next, we performed a regression analysis to examine which segments of the Singapore population were more likely to find the manipulated news article trustworthy (i.e., more susceptible to false information).

We used the binary logistic regression model, where the output variable had a binary outcome, i.e., respondents either trusted, or distrusted the manipulated news article. In order to identify input variables that might have a significant impact on the output variable, we first performed a series of logistic regression modelling to examine how input variables in different areas — including demographics variables, variables relating to information-seeking habits, political traits, and psychological factors — might potentially influence people's trust in the manipulated news article. These different areas were identified based on the current literature on people's susceptibility to false information. For instance, research has found that people's demographics such as age, education, and socio-economic status affect their information and digital literacy, and thus their susceptibility to false information (Adler, 2014; Guess, Nagler & Tucker, 2019). As mentioned earlier in Chapter 5, research has also found that people's political beliefs and psychological factors like confirmation bias affect their susceptibility to false information as well. Thus, this approach allowed us to shortlist candidate input variables that might potentially exert a significant impact on people's susceptibility to false information based on the data we collected.

After arriving at a pool of candidate input variables, we included all of them into a final regression model and performed a backward elimination, where we systematically removed input variables that were no longer significant one-by-one (i.e., with the highest p-value[4]) until we arrived at a model that comprised only input variables that had a significant impact on the outcome variable. In other words, this allowed us to construct the simplest model that can best explain people's susceptibility to false information based on the data we collected. Table 6 below shows the final regression model that we arrived at.

Table 6: Binary logistic regression modelling the effects of age, housing type, media trust, confirmation bias, self-efficacy, and knowledge, on respondents' trust in the manipulated news article

Variables	**Model**
Age	**.114*** **
Private housing	**-.429** **
Trust in local online-only news sites or blogs	**.130***
News I disagree with is likely to be false	**.220** **
Confident in telling real information from false information	**-.649*** **
Medium level of knowledge	**-.277***
High level of knowledge	**-.595*** **
Intercept	**1.348*** **
N size	1448
Nagelkerke R-square	.159
Degrees of freedom	8
Chi-square	6.280
Notes: **p < .05. **p< .01. ***p< .001* *Omitted (i.e., reference) categories: "public housing" and "low level of knowledge"*	

[4] Using the backward elimination approach, we systematically removed variables with the highest p-value that was greater than 0.05 until all input variables remaining in the model had p-values of less than 0.05.

As seen in Table 6, a positive coefficient indicates a higher likelihood of trusting the manipulated news article (i.e., greater susceptibility to false information), whereas a negative coefficient indicates the reverse. The model suggests that people who (1) were older; (2) were living in public housing (especially those living in HDB 1-3 Room Flats); (3) had higher trust in local online-only news sites or blogs; (4) exhibited greater confirmation bias in information-seeking and processing; (5) possessed lower levels of self-efficacy or self-confidence in discerning between real and false information; and (6) had lower levels of knowledge about the media and information landscape, were more susceptible to false information. Based on the magnitude of the coefficients, self-confidence in discerning between real and false information, knowledge about the media and information landscape, and their housing type, exerted the strongest influence on people's susceptibility to false information.

We found that older respondents were more likely than younger respondents to trust the manipulated news article, suggesting a greater susceptibility to false information. This adds to an existing body of scholarly work that found that age often exercise a significant influence on people's susceptibility to false information. For example, in a study that looked at the effects of three demographic categories (age, gender, and education) on people's acceptance of fake news, researchers found that age exerted the greatest positive effect on people's acceptance of fake news among the three demographic categories, i.e., as age increases, acceptance of fake news increases (Rampersad & Althiyabi, 2020). In another study looking at the predictors of fake news dissemination on Facebook, researchers also found a strong age effect on fake news dissemination even after controlling for partisanship and political ideology — Facebook users who were over 65 years old shared almost seven times more fake news articles than Facebook users in the youngest age group of the study (Guess, Nagler & Tucker, 2019). Our findings thus suggest a likely age divide in information literacy in Singapore, with a clear implication that literacy efforts targeting older adults and seniors need to continue engaging these more vulnerable groups of Singaporeans.

We also found that people living in public housing, especially those living in HDB 1-3 Room Flats, were more likely than respondents living in private housing to trust the manipulated news article, suggesting a possible class-divide in information literacy in Singapore as well. Existing scholarship also affirms our finding. For instance, research has found that news literacy tends to decline with socio-economic status; students from families of lower socio-economic status tend to be less confident in and capable of navigating the online space to find credible information (Adler, 2014). Studies looking at the relationship between socio-economic status and information and

communication technology (ICT) skills also found a positive correlation between the two; students of higher socio-economic status tend to perform better at ICT-related tasks than students of lower socio-economic status (Scherer & Siddiq, 2019).

One interesting point to note here is that in our analysis, people's monthly household income was not found to be a significant predictor despite the fact that people's dwelling type and income are typically strongly positively correlated with each other. One possible explanation for this is that housing type, as an indicator of socio-economic status, may also be a reflection of people's physical or offline communities as well. For example, a previous IPS study on social capital in Singapore found that Singaporeans tend not to interact with others who are distinctly different from themselves in terms of housing type (Chua, Tan & Koh, 2017). In other words, there may be a possibility that people's offline social networks and communities are heavily shaped along class lines, especially by housing type, and that the interactions among people within these communities may in turn have an indirect impact on people's level of information literacy. Further research will have to be done to better understand this relationship between socio-economic status and susceptibility to false information in the context of Singapore.

Next, our analyses revealed that people with higher trust in local online-only news sites or blogs were also more likely to trust the manipulated news article. Due to the low barriers of entry that web 2.0 technologies have provided in allowing anyone to become a "news producer", the landscape of online-only news sites or blogs is a diverse one. While some news sites and blogs may adhere to a more rigorous standard of journalism, others may lack the processes that established newsrooms have in place for ensuring the publishing of accurate information; some may even be peddling purely sensationalised and inaccurate information e.g., States Times Review. Thus, people's level of trust in online-only news sites or blogs as a source for news information and current affairs should ideally be moderated to take into account the complex and contaminated information environment as a sign of strong information literacy. A high level of trust in online-only news sites or blogs among some respondents possibly reflects a lack of awareness of the complexities of the online news space, thus explaining their increased susceptibility to false information as well, i.e., trust in the manipulated news article.

As discussed in sub-chapter 5.2., studies have shown that confirmation bias in information-seeking and processing increases people's susceptibility to false information as it primes people to uncritically accept falsehoods as true simply because they are consistent with their pre-existing beliefs, and to

reject corrective information that contradicts them. Our findings affirm this relationship. Respondents who strongly believed that the news they disagreed with were likely to be false (i.e., exhibited stronger confirmation bias) were also more likely to trust the manipulated news article (i.e., more susceptible to false information). Interestingly, the variable that measured respondents' views about trusting the news that they agreed with was not found to be a significant predictor, even though it also measured respondents' confirmation bias in information-seeking and processing, but framed differently. This comparison adds a nuance to our understanding of the relationship between confirmation bias in information-seeking and processing and susceptibility to false information. It suggests that people who are resistant to corrective information contradicting their pre-existing beliefs may be more vulnerable to false information than people who uncritically accept information that resonates with their existing worldview. It also implies room for more to be done in the field of fact-checking to leverage specific messaging and framing strategies informed by psychological and communications research when presenting corrective information to audiences to minimise any potential backfire effects (Soon & Goh, 2018).

We also found that people's perceived self-efficacy or self-confidence in being able discern the truth from falsehoods was a significant predictor of respondents' trust in the manipulated news article. Perceived self-efficacy is essentially the "expectation that people hold about their personal ability to perform a particular behaviour" (Tedesco, Keffer & Fleck-Kandath, 1991). Considerable research has been done on examining the impact of people's perceived self-efficacy in several areas, including on their ability to look for credible information online (Hocevar, Flanagin & Metzger, 2014), assess the source credibility of a piece of information (Ormond, Warkentin, Johnston & Thompson, 2016), and evaluating information in general (Hocevar, Flanagin & Metzger, 2014; Khan & Idris, 2019). Our findings add to the existing body of scholarly work in that people with higher levels of perceived self-efficacy also tend to exhibit greater proficiency in executing a particular behaviour due to greater confidence, experience, and mastery. We found that respondents who possessed higher levels of perceived self-efficacy in discerning between real and false information were also less likely to trust the manipulated news article, suggesting that these respondents most likely had spotted signs of manipulation when they read the article during the survey. On the other hand, respondents with lower levels of perceived self-efficacy were more likely to trust the manipulated news article, suggesting their increased vulnerability to false information. Furthermore, these findings also suggest that measuring people's perceived self-efficacy in distinguishing between real and false information could potentially be a useful indicator for evaluating the effectiveness of literacy interventions in the future.

Finally, people's level of digital literacy (i.e., knowledge of the media and information landscape) was also found to be a significant predictor of their susceptibility to false information; respondents with a higher level of knowledge of the media and information landscape were less likely than those with lower knowledge to trust the manipulated news article. One interesting point to note here is that respondents' level of education was not found to be a significant predictor of people's susceptibility to false information. Together, this suggests that higher educational qualifications itself may not necessarily confer people with adequate immunity against false information. In fact, existing research has found that education may be a double-edge sword when it comes believing false information. For example, while some research has found that people with higher education were less likely than people with lower education to believe in conspiracy theories (van Prooijen, Krouwel & Pollet, 2015), other studies have also found that people with higher education may be more susceptible to false information because they also tend to be better equipped at counter-arguing against corrective information that contradicts their existing worldviews (Flynn, Nyhan & Reifler, 2017). Our findings suggest that instead, people need to be educated with a very specific type of knowledge — knowledge about the how the news media and information landscape operates — in order for them to become less susceptible to false information. This would in turn have clear implications on informing the design and curation of news media and information literacy programmes in Singapore.

6.8. Typology of information users

Cluster analysis is a method that is used to identify groups of individuals that are more similar to each other across a number of variables, but less similar to individuals in different groups. In our study, we performed cluster analysis to classify our sample into typologies and to better understand whether different groups of people may be susceptible to false information in different ways.

The K-means cluster analysis approach was chosen for its lack of sensitivity to outliers and greater maximisation of within-cluster homogeneity and between-cluster heterogeneity. Our selection of which variables to include in the cluster analysis was informed by our earlier findings from the regression modelling, as well as by theoretical and conceptual underpinnings. We selected a total of nine variables [5] that were first

[5] The variables included in the cluster analysis were: (1) frequency of using online websites of Singapore mass media; (2) frequency of using local online-only news sites or blogs; (3) trust in online websites of Singapore mass media; (4) trust in local online-only news sites or blogs; (5) self-efficacy in being able to tell real information from false information; (6) self-

standardised into z-scores before we performed K-means clustering by selecting a four-cluster framework to fit our data.

Our cluster analysis classified nearly 75 per cent (n=1,446) of the respondents in our sample, and the ANOVA tests also revealed that all of the selected variables had a significant contribution (i.e., p-value < 0.05) to the final clustering. See Figure 60 for the four clusters differentiated by the selected variables and Table 7 for the final cluster centres for each variable.

efficacy in being better at spotting false information than the average Singaporean; (7) level of knowledge of the media and news information landscape; (8) views on the statement, "I trust news that I agree with."; and (9) views on the statement, "If I disagree with a news story, it is likely to be false." .

Figure 60: Bar chart illustrating how each of the four clusters differs from the others based on the variables included

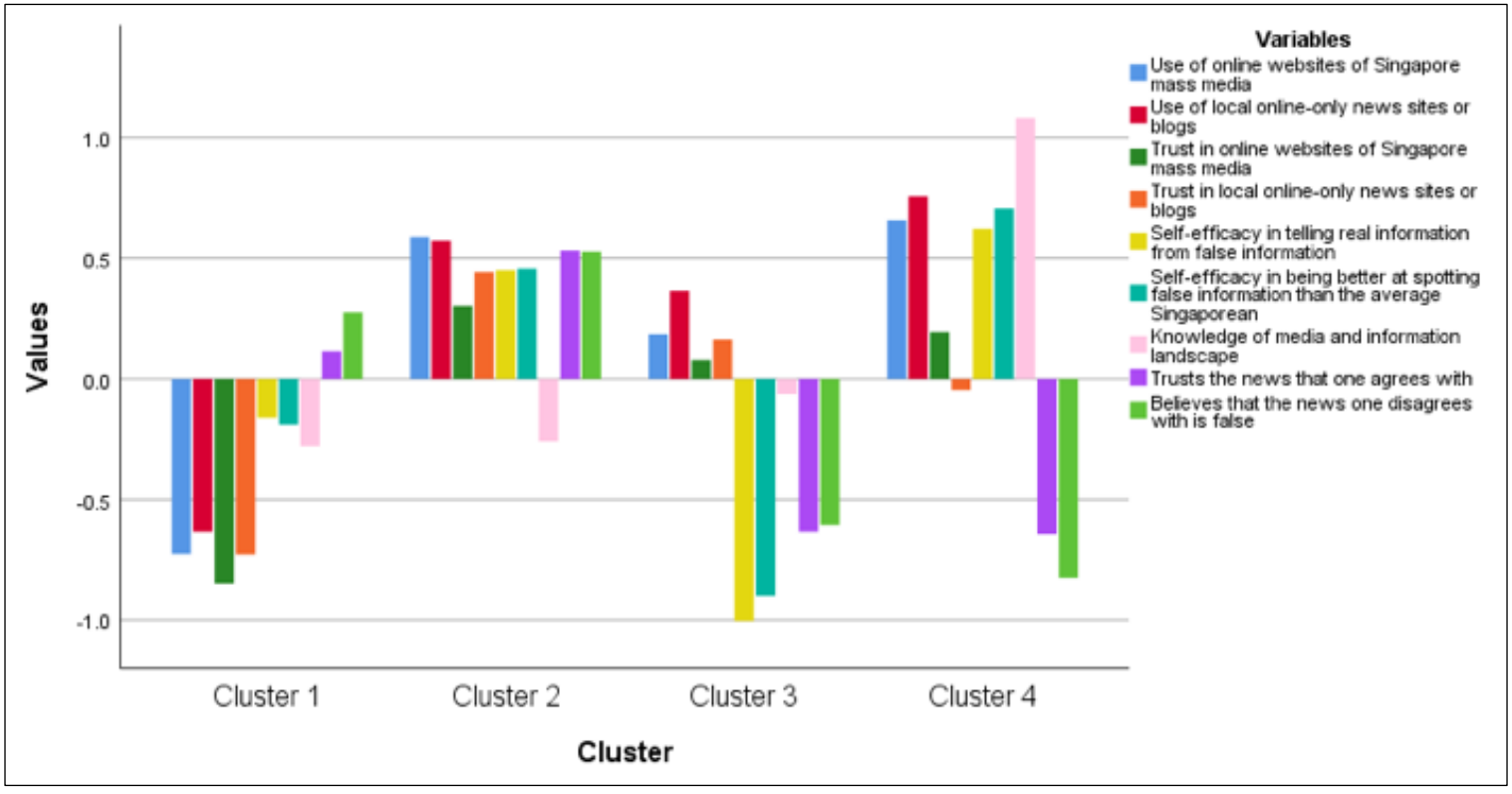


Table 7: Final cluster centres for each variable

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Use of online websites of Singapore mass media	-0.72	0.58	0.18	0.65
Use of local online-only news sites or blogs	-0.63	0.57	0.36	0.75
Trust in online websites of Singapore mass media	-0.84	0.30	0.07	0.19
Trust in local online-only news sites or blogs	-0.72	0.44	0.16	-0.04
Self-efficacy in telling real information from false information	-0.16	0.45	-1.00	0.62
Self-efficacy in being better at spotting false information than the average Singaporean	-0.19	0.45	-0.90	0.70
Knowledge of media and information landscape	-0.27	-0.25	-0.06	1.08
Trusts news that one agrees with	0.11	0.53	-0.63	-0.64
Believes news that one disagrees with is false	0.27	0.52	-0.60	-0.82

Cluster 1 (n=319) consisted of respondents who were best described as "informationally disengaged", as they had an extremely low use of, and trust in, both mainstream and alternative media for news information and current affairs. Respondents from this cluster had the lowest frequency of using both online websites of Singapore mass media and local online-only news sites or blogs for seeking news information and current affairs across all four clusters. They also possessed the lowest levels of trust in both media types for seeking news information and current affairs. Furthermore, respondents from this cluster also had relatively low levels of perceived self-efficacy in being able to discern real information from false information and demonstrated very low levels of knowledge of the media and information landscape as well. However, respondents from this cluster exhibited a relatively high degree of confirmation bias (second highest among all four clusters) in information-seeking and processing. Taken altogether, respondents from Cluster 1 were best described as "informationally disengaged" as they seemed to show a disinterest in engaging with the news regardless of the media type, and were likely to be relying on their gut instincts instead when navigating the information environment, as demonstrated by their relatively high degree of confirmation bias in information-seeking and processing. This tendency to rely on their gut instinct may be a key factor that makes this group of respondents susceptible to false information. In fact, close to three-quarters (73.1 per cent) of respondents in Cluster 1 had said that the manipulated news article they were presented with in the survey could be trusted.

In terms of demographics, respondents from Cluster 1 were likely to be older, as they consisted of the highest proportion (32.7 per cent) of seniors (i.e., aged 60 and above) across all four clusters. They were likely to have lower education, as 61.8 per cent of them were without tertiary education. They were also likely to be from lower socio-economic backgrounds, as respondents in this cluster consisted of the largest proportion of those living in HDB 1-3 Room Flats (29.1 per cent), as well as the lowest proportion of those living in private housing (12.2 per cent). Respondents in this cluster also had the largest proportion of those with a monthly household income that is below Singapore's median income (86.5 per cent).[1] See Table 8 for respondents' breakdown by demographics and trust in manipulated news article within each of the four clusters.

[1] According to the Department of Statistics Singapore, the national median household income as of 2018 is $9,239.

Table 8: Respondents' breakdown by demographics and trust in manipulated news article for the four clusters

Demographics & trust in manipulated news article		Percentage (%) of respondents			
		Cluster 1	Cluster 2	Cluster 3	Cluster 4
Age	Youths	24.3	34.1	37.7	47.2
	Middle-aged	43.0	55.9	49.0	44.5
	Seniors	32.7	10.0	13.3	8.3
Ethnicity	Chinese	71.5	74.6	74.2	83.9
	Malay	18.8	13.2	13.7	7.5
	Indian/Others	9.7	12.2	12.1	8.6
Gender	Male	44.2	52.7	39.8	52.8
	Female	55.8	47.3	60.2	47.2
Education	Non-tertiary education	61.8	36.7	44.7	19.8
	Tertiary education	38.2	63.3	55.3	80.2
Housing type	HDB 1- to 3-Room Flat	29.1	18.3	20.4	13.4
	HDB 4-Room Flat	39.7	36.5	36.1	33.8
	HDB 5-Room Flat/Executive Flat	19.1	25.8	22.4	27.6
	Private	12.2	19.4	21.2	25.2
Income	Below Singapore's median household income[2]	86.5	74.1	78.9	60.5
	Above Singapore's median	13.5	25.9	21.1	39.5

[2] According the Department of Statistics Singapore, the national median household income as of 2018 is $9,239. Thus, we classified all respondents with a monthly household income of below $9,000 as "below Singapore's median household income".

	household income[3]				
Trust in manipulated news article	Manipulated news article could not be trusted	26.9	36.4	22.3	53.1
	Manipulated news article could be trusted	73.1	63.6	77.7	46.9

Cluster 2 (n=477) consisted of respondents who were best described as "informationally overconfident". Unlike the "informationally disengaged", respondents in Cluster 2 were highly engaged with the news. They possessed the second highest frequency of using both online websites of Singapore mass media and local online-only news sites or blogs for seeking news information and current affairs across all four clusters, and also had the highest level of trust in these two media types. However, we described them as "informationally overconfident" because they had one of the highest levels of perceived self-efficacy in being able to distinguish between real and false information, despite demonstrating one of the lowest levels of knowledge about the media and information landscape. Furthermore, respondents from this cluster also exhibited the highest degree of confirmation bias in information-seeking and processing. In other words, respondents from Cluster 2 are likely to be susceptible to be false information because they have a very active news information and current affairs consumption routine, yet seem unaware of their vulnerabilities (e.g., low knowledge and high confirmation bias) pertaining to information-seeking and processing — about six in 10 respondents (63.6 per cent) from this cluster had said that the manipulated news article they were presented with in the survey could be trusted.

In terms of demographics, respondents from Cluster 2 were likely to be middle-aged (i.e., between 35 and 59 years old) (55.9 per cent) and were also likely to have tertiary education. In fact, respondents in this cluster consisted of the second highest proportion of those with tertiary education (63.3 per cent) among the four clusters. This further illustrates our earlier point in sub-chapter 6.7.2. that education may be a double-edge sword when it comes believing false information and that a very specific type of knowledge — knowledge about the how the news media and information

[3] According the Department of Statistics Singapore, the national median household income as of 2018 is $9,239. Thus, we classified all respondents with a monthly household income of $9,000 and above as "above Singapore's median household income".

landscape operates — is needed for people be less susceptible to false information. In this case, respondents' relatively higher education may be a possible reason that explains their overconfidence in navigating the information space, thus making them more vulnerable to false information.

Cluster 3 consists of respondents who were best described as "informationally diffident". Respondents from Cluster 3 had a moderate frequency of using, and level of trust in, online websites of Singapore mass media and local online-only news sites or blogs for seeking news information and current affairs. We described these respondents as "informationally diffident" because they possessed the lowest levels of confidence in being able to discern truth from falsehoods among all four clusters, despite having the second highest level of knowledge (though still low), and exhibiting the second lowest level of confirmation bias in information-seeking and processing. In other words, respondents from Cluster 3 most probably feel unsure about their ability to navigate the information landscape and find accurate information because they are aware of their relative lack of knowledge about the information space, and are highly conscious about the effects of their own cognitive bias when seeking and processing information (though in itself, is a positive thing). Interestingly, Cluster 3 also comprised the greatest proportion (77.7 per cent) of respondents who had said that the manipulated news article could be trusted among the different clusters, suggesting a corroboration of our earlier observations that people's perceived self-efficacy in being able to recognise real and false information is crucial to their ability to do so in reality, and thus also a key indicator for assessing the effectiveness of literacy interventions moving forward. In terms of demographics, the majority of respondents in this cluster were middle-aged (49 per cent) and had a somewhat equal proportion of respondents with non-tertiary (44.7 per cent) and tertiary education (55.3 per cent).

Finally, Cluster 4 consists of respondents who were best described as "informationally savvy". Respondents from this cluster were highly engaged with the news and current affairs, as they had the highest frequency of using both online websites of Singapore mass media and local online-only news sites or blogs for seeking news information and current affairs among the four clusters. However, their level of trust in these two media types, relative to their frequency of use, can be considered low, possibly suggesting some (healthy) level of scepticism when it comes to dealing with information from any source. Furthermore, their level of trust in online websites of Singapore mass media was also higher than their level of trust in local online-only news sites or blogs. Respondents from Cluster 4 can also be said to be the most adept group of respondents at navigating the information landscape for seeking credible information. This can be seen from their perceived self-

efficacy in discerning real information from false information, and their level of knowledge about the media and information landscape, where they demonstrated the highest level of self-efficacy and knowledge across all four clusters. On top of that, they also exhibited the lowest degree of confirmation bias in information-seeking and processing. In other words, this combination of possessing high self-efficacy, high knowledge, and low confirmation bias, is what makes this group of respondents "informationally savvy", and thus least susceptible to false information among the different clusters of respondents despite being highly engaged with the news and current affairs. In fact, Cluster 4 comprised the highest proportion (53.1 per cent) of respondents who had said that the manipulated news article could not be trusted across all four clusters. These three psychological traits were also found to be significant predictors of people's susceptibility to false information in the regression analyses earlier.

In terms of demographics, Cluster 4 consisted of the highest proportion of youths (i.e., aged below 35 years old) (47.2 per cent) and the lowest proportion of seniors (8.3 per cent) among the different clusters. This further supports our finding that there may be a possible age divide in information literacy in Singapore as mentioned in our regression analyses earlier. Respondents from this cluster also made up the highest proportion of people with tertiary education (80.2 per cent), people living in private housing (25.2 per cent), and people with a monthly household income that is above Singapore's median monthly household income (39.5 per cent). Furthermore, respondents from this cluster made up the small proportion of those living in HDB 1-3 Room Flats (13.4 per cent) among the four clusters. Again, this corroborates our earlier finding that there may also be a possible class-divide in information literacy in Singapore.

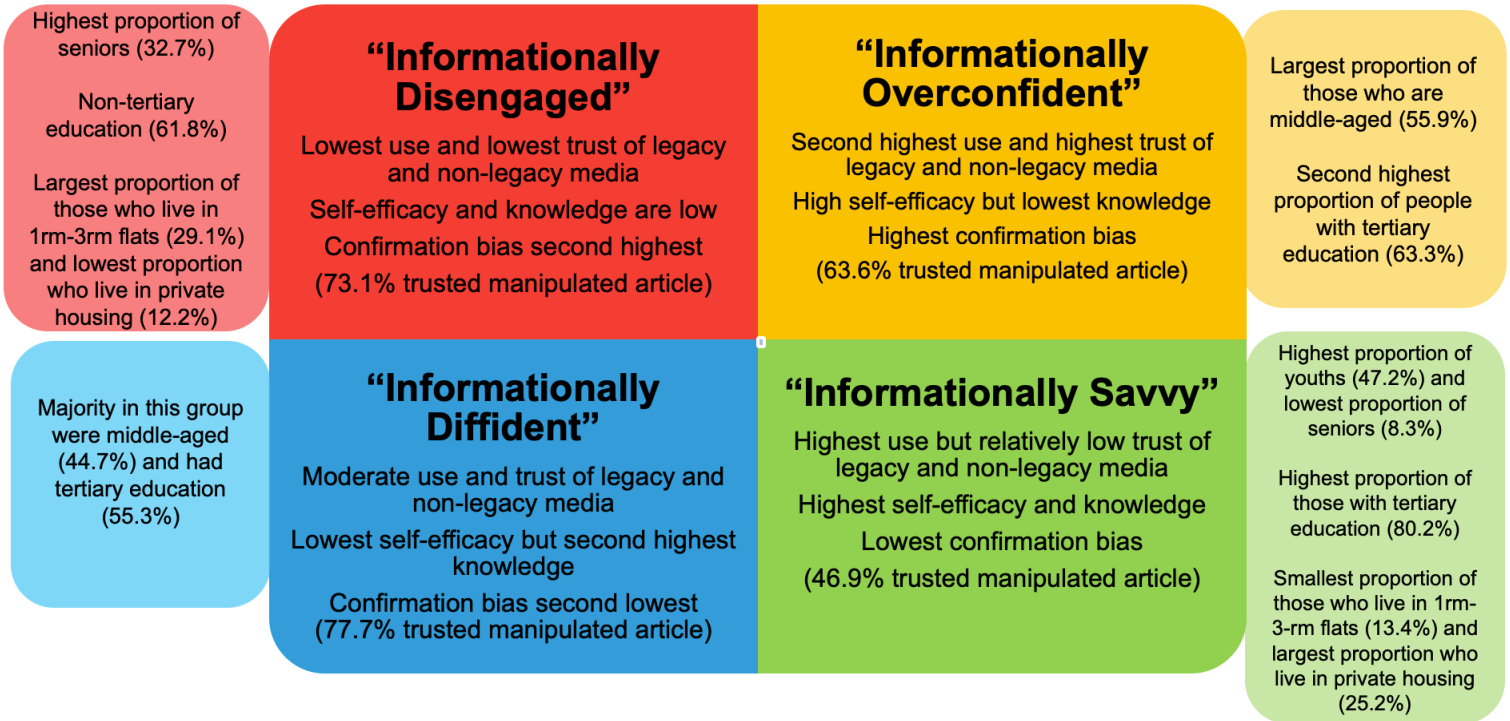
In short, the cluster analysis provided further nuance to our understanding of Singaporeans' susceptibility to false information, on top of the earlier predictors identified in the series of binary logistic regression models that illustrated which segments of the population are more susceptible to false information.

The cluster analysis revealed that different groups of people might be susceptible to false information in different ways. First, as demonstrated by Cluster 1, people may be susceptible to false information because they are simply disengaged with and detached from keeping up with the news and current affairs, and instead choose to rely on their instincts to assessing the veracity of information that they encounter. Second, people may also be susceptible to false information when they are overly confident about their ability to navigate the media and information landscape to seek credible and accurate information, which is illustrated by those in Cluster 2. Third, on the

flip side, people may be susceptible to false information when they are not confident about their ability to tell real information from false information, as seen in people from Cluster 3. This lack of confidence seems to be a close reflection of their ability to do so in practice. However, the up-side for this group of people is that they seem to be highly aware of the potential negative effects of their cognitive biases in seeking and processing information, suggesting that their susceptibility to false information can likely be reduced by equipping them with the specific skillsets to discern real information from falsehoods.

Finally, similar to earlier regression analyses, the cluster analysis found that respondents with high self-efficacy, high knowledge, and low confirmation bias seemed to be more savvy at navigating the information landscape and thus less susceptible to false information. However, one point to note here is that even among the "informationally savvy" respondents from Cluster 4, there remains a segment of respondents (46.9 per cent) who had said that the manipulated news article we presented to them during the survey could be trusted. This suggests that on top of the psychological traits such as high self-efficacy, high knowledge, and low confirmation bias, respondents from this cluster who distrusted the manipulated news article perhaps engage in certain "best practices" in their everyday information-seeking that confer with them greater immunity against false information, and this is something that Phase 2 of this study will seek to uncover. Figure 61 below summarises the profile of the four types of information users in Singapore.

Figure 61: Typology of information users



Chapter 7

Conclusion

CHAPTER 7: CONCLUSION

7.1. Conceptual and methodological contributions

This study has sought to fill existing gaps in research on Singaporeans' susceptibility to false information and how they might be affected by it. By combining theoretical approaches from different fields — media studies, political science, and cognitive science — we adopted a holistic approach to understanding the dynamics that influence the impact of false information on people. In so doing, this study provides the much-needed empirical evidence for Singaporeans' susceptibility to false information and how it is influenced by their demographic traits (e.g., age and education) and non-demographic traits (e.g., information-seeking behaviours, and political and psychological traits).

In addition, we also examined different aspects of false information that Singaporeans were exposed to, such as false information that is presented in different formats (e.g., image, text, audio), on different topics (e.g., foreign issues, health and medicine, and lifestyle), and on different media platforms (both legacy media and non-legacy media). As one's encounter with false information does not necessarily mean that one would believe in it, this study also measured people's belief in false information based on the aforementioned dimensions. Besides exposure and belief, we also examined people's responses to false information (the most common response being ignoring the false information) and the strategies they used to verify information that they encountered online (the most common method used being checking with family members, friends, and colleagues who followed the news). Given its comprehensiveness, this study provides a good starting point for further tracking and analysis as the false information landscape and policy interventions evolve.

This study also made an important methodological contribution that has potential for application beyond the domain of misinformation and disinformation studies. Existing studies that sought to measure people's ability to discern false information from factual information typically rely on self-reporting measures and gut feel. For instance, a popular technique is to provide respondents with a list of false and real news headlines, where respondents are asked to indicate if each headline is true or false. Such a method of testing relies on people's ability to make a judgment based on the headline alone, an action that is discouraged in digital literacy programmes. A common lesson taught in digital literacy programmes in Singapore and in other countries is to read the entire article, and not just the headline, before one arrives at a conclusion on its veracity and shares the information with others. Furthermore, the rigour of one's ability to tell if the event referred to

in the headline is true or not is also dependent on one's knowledge of news and current affairs.

To address these limitations, our study included a manipulated news article in the questionnaire and required respondents to read and assess its trustworthiness. The manipulated news article incorporated different forms of manipulation — a practice commonly used by false information perpetrators. We also designed the questionnaire to determine the reasons why respondents felt that the manipulated news article was trustworthy or untrustworthy. This enabled us to pinpoint with specificity people's weak spots when it comes to information verification. This method also enabled us to conduct a rigorous analysis of people's responses to false information and draw valid conclusions on how people fare and who fares better when assessing information veracity. In addition to avoiding the aforementioned pitfalls that have an implication on the internal and external validity of the measures, this method also helped to minimise the limitations of self-reporting measures — specifically, people's ability to accurately recall their experiences with false information and their self-desirability bias may affect the reliability of self-reporting measures and validity of the findings.

The regression analysis and cluster analysis provided a lucid picture of the segments of the Singapore public who may be more vulnerable to false information. To recap, the more vulnerable segments consisted of people who were older, were living in public housing (especially those living in HDB 1-3 Room Flats), had higher trust in local online-only news sites or blogs, exhibited greater confirmation bias in information-seeking and processing, had lower levels of self-efficacy in discerning between real and false information, and had lower digital literacy (i.e., levels of knowledge regarding the media and information landscape). From the cluster analysis, we identified four profiles of information users in Singapore: the (1) "informationally disengaged", (2) "informationally overconfident", (3) "informationally diffident", and (4) "informationally savvy" — and revealed a more nuanced picture of how different profiles of Singaporeans may be susceptible to false information in different ways (as explained in sub-chapter 6.8.).

7.2. No one is immune to false information

The findings from this study hold several implications for the design of digital literacy programmes and outreach. The study shows that digital literacy competency among Singaporeans is generally low. This is a challenge that is faced by other societies as well, as established in other studies (see sub-chapter 2.1.). The prevalence of false information, produced by myriad actors to meet a variety of objectives across the globe, is exacerbated by high susceptibility among people. Our study points to an age divide as well

as a class divide among Singaporeans when it comes to their ability to identify false information.

Seniors (aged 60 years and above) were more likely to fall prey to false information, as evidenced by the regression analysis and the largest proportion of them occupying the "informationally disengaged" group. Post-hoc analyses we performed also found that older respondents were more likely than younger respondents to use legacy media for news information and current affairs (especially television, radio, and print newspapers of Singapore mass media).[1] This reliance on legacy media indicates a possible lack of familiarity with non-legacy media, which in turn suggests that their susceptibility to false information when navigating the online space may be a result of lower levels of digital literacy and familiarity. Our post-hoc analyses also found that older respondents were less likely to say they had encountered and believed in false information in different formats and on different topics.[2,3] One possible reason could be due to their inability to recognise false information when they had come across it to begin with, and their lack of savviness when it comes to navigating the online space and digital platforms with varying affordances and features.

In addition to an age divide, this study also uncovered a possible class divide. Our analyses found that people living in public housing (especially those living in HDB 1-3 Room Flats) were more likely than those living in private housing to be susceptible to false information. The "informationally disengaged" group of information users also consisted of the largest proportion of HDB 1-3 Room Flat dwellers. The current COVID-19 has cast

[1] We performed a chi-square test for association to examine the relationship between respondents' age and their frequency of using different media types for seeking news information and current affairs. We found that older respondents were more likely to use legacy media types such as print newspapers of Singapore mass media, television, and radio for seeking news information and current affairs. These relationships were also found to be statistically significant — all three chi-square tests for association between age and frequency of using print newspapers of Singapore mass media, television, and radio, had a p-value of 0.000.

[2] We performed a chi-square test for association to examine the relationship between respondents' age and their frequency of encountering false information in different formats. We found that older respondents were less likely than younger respondents to report encountering false information in all four formats (text, images, audio, and videos). These relationships were also found to be statistically significant — all four chi-square tests for association between age and frequency of encountering false information in the form of text, images, audio, and videos, had a p-value of 0.000.

[3] We also performed a chi-square test for association to examine the relationship between respondents' age and their frequency of encountering false information in different topics. We found that older respondents were less likely than younger respondents to report encountering false information relating to more "popular" topics (e.g., international or foreign issues, health and medicine, and lifestyle). These relationships were also found to be statistically significant (i.e., p-value of 0.000).

a spotlight on this group's access to digital technologies and ability to harness them effectively for learning. Our findings emphasise the urgent need to equip this vulnerable group with the skills and competencies required for navigating the online space safely and smartly as well.

Furthermore, as discussed in sub-chapter 6.7.2., while our study found a significant relationship between people's susceptibility to false information and their housing type, we did not find a relationship between people's susceptibility to false information and their income. While this may seem counter-intuitive, it highlights potential effects of people's offline social and community networks. Further inquiry should be conducted on the role of interpersonal relationships formed in community networks in the dissemination and sharing of information.

7.3. Reinforce and broaden digital literacy efforts

As found in this study, Singaporeans reported more encounters with content created for the purposes of satire and parody. While this could be a reflection of satire and parody being the more popular type of content in Singapore (as opposed to poor journalism and stories where facts are spun or twisted to push a particular agenda), there is also a possibility that people may be lacking competencies to identify stories that are completely made up for political or commercial reasons (i.e., fake news or disinformation). The inability of most the respondents to tell that the article presented to them in the survey is a manipulated and false one provides another indication of people's low competency.

Pertaining to the formats of false information to be addressed in digital literacy programmes, our study found that false information in the form of text and images were most encountered and believed by people in Singapore. It corroborates findings from recent studies that found that most of the visual misinformation that people were exposed to involve much simpler forms of deception (e.g., simple out-of-context images, mis-captioned photos, and memes). While there have been growing concerns surrounding sophisticated deep-fakes, it appears that low-tech forms of manipulation can be equally deceptive. A recent study on COVID-19 misinformation conducted by the Reuters Institute found that almost 60 per cent of the misinformation disseminated on social media, legacy media, and other websites were "cheap-fakes" — misinformation that exists in different forms of re-configuration and re-contextualisation produced using simple tools. Cheap-fakes made up 87 per cent of social media interactions in the sample. Contrary to popular belief, their study did not find any samples of deep-fakes (Brennen, Simon, Howard & Nielsen, 2020).

Clearly, as supported by the findings from this study, current literacy efforts such as those by the Media Literacy Council and National Library Board still have much relevance. While researchers and technology companies develop tools to identify deep-fakes, there needs to be continuous effort to increase people's efficacy in identifying cheap-fakes. The responses among respondents who found the manipulated news article trustworthy also point to a reliance among people on the source of a piece of information as a heuristic, or shortcut. While the finding reflects people's high trust in mainstream news sources, an over-reliance on the source of a news article as a heuristic may, at the same time, put people at risk of falsehoods, especially when false information is intentionally designed to mimic the look of established news sources in order to deceive. Other than relying on the source, the findings also suggest that respondents who performed poorly at recognising false or manipulated information also tend to rely on an overall hunch or look-and-feel when assessing a piece of information, as the second most popularly cited reason behind why respondents said the manipulated news article could be trusted was because the article "looked legitimate".

Furthermore, reasons relating to information characteristics were the most common ones that account for why people shared false information. Efforts aimed at improving people's news media or information literacy should emphasise imparting people with the skills and tools to assess the various elements of a piece of information — sensationalised headlines, typos and errors, source of the news, and tone of the language used. As seen in sub-chapter 6.7.1., regarding the reasons people cited for trusting the manipulated news article, respondents seemed to be lacking information literacy competencies in this respect. Information literacy efforts that incorporate hands-on experiences will help equip people with the technical skills to assess the various components of a piece of information (e.g., source, language, and byline) to discern facts from dubious information. For instance, research shows that people with better photo-editing experience are better able to evaluate image credibility — people with greater digital imaging competencies tend to perceive images as less credible when compared with people with less skill or experience (Shen et al., 2019). Detection tactics, such as those taught at Stony Brook (e.g., looking up domain name registration records and image searches), while technical and "workman-like", have been found to be equally important (Rosenwald, 2017).

In addition, more targeted interventions should focus on vulnerable segments such as the elderly and those from lower socio-economic backgrounds. These groups, particularly the former, do not have the benefit of acquiring some skills taught in schools. Our post-hoc analyses also found that older respondents were also less likely than younger respondents to engage in the various information verification techniques when they

encountered information online.[4] While there has been much concern over seniors' susceptibility to false information, our study shows that the problem is a pressing one, given that this group is less likely, compared to the younger cohorts, to engage in all the different forms of verification practices, including checking with their family and friends. The same effects of age were observed for the number of techniques respondents used to verify the information they encountered online. Older respondents were more likely to use fewer verification techniques while youths (aged 34 years and below) were more likely to engage in a medium to high number of techniques to verify the information they encountered online.

The above recommendations will help increase people's efficacy in their ability to manage the problem of false information. As shown in our study, people who felt more confident in their ability to tell real information from false information, and those who thought they were better at spotting false information than the average Singaporean, were less likely to trust the manipulated news article. Research has found that people with higher levels of self-efficacy also tend to exhibit greater proficiency in navigating the information environment due to greater confidence, experience, and mastery (Hocevar, Flanagin & Metzger, 2014).

Furthermore, the findings from this study indicate the need for a specific type of education to improve people's immunity to false information. Digital literacy needs to be widened to address macro-level trends and developments. The findings suggest that Singaporeans have low knowledge about the broader technological and media landscape. This was manifested in their lack of understanding of how media and technology platforms operate. The majority (66.3 per cent) of respondents had a low level of level of knowledge about the media and information landscape. This is a gap that needs to be addressed as our analysis showed that people who had lower levels of digital literacy were more likely to fall prey to false information. The curriculum for digital literacy programmes should be expanded to include how the tech and media industries work. One area is how the workings of media organisations and technological platforms are influenced by institutional forces (both economic and political), which in turn determine the type of information audiences have access to. Another area is how the technology industry and online space operate; the source-layering and echo

[4] We performed a chi-square test for association to examine the relationship between respondents' age and their frequency of using different information verification techniques. We found than older respondents were less likely than younger respondents to engage in all eight different types of information verification techniques, including checking with their family and friends. These relationships were also found to be statistically significant — all eight chi-square tests for association between age and frequency of using the various information verification techniques had a p-value of 0.000.

chambers on social media exploit people's cognitive biases, and mechanisms embedded in the online environment such as algorithms skew the information people receive. Such a broader approach will enhance people's understanding of the underlying dynamics that affect the information that is produced, and nudge a more critical assessment of its purpose and authenticity. While the current National Digital Literacy Framework contains some of these elements, the empirical findings from this study underscores the importance of broadening the definitions of digital literacy.

7.4. Adopting ecosystem approach and cultivating network immunity

The plethora of online websites, while contributing to an open marketplace of ideas and providing a platform for emerging publishers, pose a challenge when they are the dominant source of information and news. Our analysis shows that people who relied heavily on non-legacy media, in particular local online-only news sites or blogs and have a high trust in them, were more susceptible to false information. This highlights the importance of cultivating a balanced information diet among people. Being exposed to different sources, especially those that promote different perspectives, may also contribute to reducing confirmation bias among people. Our study found that only a small minority of the respondents (13.5 per cent) explored alternative views on social networking sites often or very often. The rest never, rarely, or sometimes did so. Inculcating the habit to seek out a wider range of information sources can potentially lead to long-term benefits as it builds people's resilience to false information. At the same time, efforts should be made to improve the quality of journalism, a recommendation that was put forth by the Select Committee on Deliberate Online Falsehoods (Report of the Select Committee on Deliberate Online Falsehoods, 2018).

Fact-checking is a resource-intensive effort. The wide variety of formats and types that false information assume, and the numerous platforms on false information is circulated on, compound the problem. This study found that the most common topics that Singaporeans had encountered false information on were about international or foreign issues, lifestyle, and health and medicine. False information relating to these three topics was also most believed by people. Thus, it may be strategic for fact checkers in Singapore — government and non-government initiatives — to dedicate their resources and focus on false information relating to these more "popular" topics. However, it should also be noted that topics of false information change dynamically in response to real-world situations; for example, countries tend to experience a surge in the number of fake news relating to politics and socio-political issues during politically heightened

periods like during elections. Besides fact-checking, pushing out corrective information in a timely manner is critical to mitigate the negative repercussions of false information. The high use of and trust in legacy media in Singapore puts legacy media in an important position. Partnerships with technology partners, given the growing reliance on social networking sites and Instant Messaging platforms for information and the use of search engines for information verification, should be harnessed to debunk falsehoods and spread corrective information.

This study also casts a spotlight on the role of social networks in the spread of false information. The sharing of false information was found to be driven by people's social networks to some extent, as almost three-quarters of the respondents said they had shared false information on social networking sites and/or Instant Messaging platforms because the information they had received came from close family and friends. People were also most likely to share news information and current affairs with their family and friends, whom they have a moderate to high level of trust in as a source of new information and current affairs. Thus, social and community networks play an important role in the spread of information, true and false, especially when the information gives off a sense of importance and authority or when it is novel and eye-catching. This may also explain why misinformation and rumours spread quickly and widely on closed-group messaging platforms such as WhatsApp, as seen anecdotally during the COVID-19 pandemic, where perpetrators exploit such informational characteristics to ensure that something goes viral.

However, on a positive note, the findings from this study highlight the potential to cultivate "network immunity" and the role of social networks in debunking false information. This study found that people most often asked their family, friends, and colleagues when they wanted to verify information that they encountered online. Existing digital literacy programmes focus on imparting knowledge on the "what" and "how" in recognising false information and authenticating information. While this approach should continue, as shown by the aforementioned current gaps in ability, there is an increasing need for programmes to also impart soft skills relating to intervention (e.g., how to respond to family members and friends who forward unverified or false information in sensitive yet effective manner). This is especially so when the most common response among people who had encountered false information on social networking sites and Instant Messaging platforms was to ignore it, as found in the study. Only a small minority would inform the person or organisation who shared the false information that it is wrong. This inaction is problematic as it allows the continuous spread of false information.

Indeed, our findings also show that posting or sharing corrections on social networking sites and Instant Messaging platforms were infrequent activities among respondents. This is a worrying trend because if the people who are able to recognise false information on social media platforms do not take action to ensure that the false information gets taken down by the relevant authorities or ensure that corrective information is provided, the falsehood remains accessible to other users who may not have the same level of information literacy to be able to identify the false information by himself or herself. This might also limit the effectiveness of certain content moderation strategies used by platform companies, where users are encouraged to flag content that they suspect is false so that the content will be reviewed in greater detail by established fact checkers. Finally, this perhaps also suggests a perception among most people that false information is problem for others (e.g., platform companies or governments) to solve, rather than appreciating the fact that individual ownership of the problem is a crucial part of the solution as well. The strategy of encouraging and equipping people with skills to intervene will complement other countermeasures like POFMA, which has limited efficacy on closed-communication channels such as Instant Messaging platforms.

Annex 1

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ANNEX 1: REFERENCES

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Annex 2

About the Authors

ANNEX 2:

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