

Influences on the ability to recognise fake news

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ATTESTATION OF AUTHORSHIP

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Signed: 

Date: 19/04/2019

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ABSTRACT

This study analysed whether certain personal background attributes, such as age, gender, highest qualification and so on, impact on the ability to recognise whether the online news is fake or real. The study contributes to emerging research being carried out on fake news. The results of this study may help prevent the publication of fake news in the future.

This research applied a mixed methods approach to collecting and analysing the data. 89 participants were asked to answer a Fake News Test, a background questionnaire about ten background attributes and an interview with open-ended questions. The Fake News Test and background questionnaire data were analysed quantitatively using statistical analysis through SPSS statistical software. One-way ANOVA analysis was established to examine if any statistically significant relationships existed between the participants' background attributes and their ability to recognise whether the news in the Fake News Test was fake or real. The transcribed interview data was analysed by using NVivo qualitative software through a process of coding, labelling and categorisation.

This quantitative component of the study found that, age, highest qualification and time spent on social media were the background attributes that significantly affected participants' ability to recognise whether the news was fake or not. The qualitative analysis supported the quantitative results and showed that those participants who were better able to identify fake news from real news more actively read the news, had informed views and a deeper understanding of issues around fake news and usually checked the validity of the news that they read.

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CHAPTER ONE: INTRODUCTION

1.1 Background and problem statement

Since the 2016 US election, fake news has become a widely discussed phenomenon (Guess, Nagler, & Tucker, 2019). This is largely due to the belief that fake news played an influential role in the election of Donald Trump to the US presidency (Allcott & Gentzkow, 2017) and Trump's subsequent description of any news that criticises his presidency as fake (Frankland, 2017). In 2017, fake news was Collin's Dictionary's word of the year, which Briegas and Perez (2018) have suggested was because the global use of the term had increased by 365 percent since the previous year. They point out that the term fake news has now become fully integrated into US political discourse and that fake news is now repeatedly causing problems for the large Internet companies Google, Facebook and Twitter. According to Tandoc, Lim and Ling (2018) the term fake news was previously used to describe news parody, political satire and news propaganda, but today "fake news" is seen as referring to false news spread by social media, a medium that an increasing number of people are using to access their news information (Tandoc et al., 2018).

Different people hold different opinions about fake news. Although for many, fake news does not present a major problem, a number of scholars have suggested that it can exhibit a degree of influence. Brooke Binkowski, for instance, who works for one of the largest fact checking websites, Snopes, suggested that an individual fake news story may not appear dangerous, but that their damage is palpable when aggregated over time (BBC, 2016). Vosoughi, Roy and Aral (2018) claimed that the spread of false information can influence the economy. As an example, they showed how a fake tweet stating that Barack Obama was injured in an explosion wiped out \$130 billion in stock value. They also argued that responses to natural disasters and terrorist attacks can be influenced by false online news.

A BBC article (2016) argues that “the deliberate making up of news stories to fool or entertain is nothing new. But the arrival of social media has meant real and fictional stories are now presented in such a similar way that it can sometimes be difficult to tell the two apart” (para. 1). Flam (2016) points out that with a little common sense and the Internet, it is quick and easy to check facts in order to establish the credibility of news stories such as “ Clintons are running a child sex ring from a pizza parlour, Sharia law has been instituted in Florida and CNN accidentally aired 30 minutes of pornography.” However, lots of readers were still deceived by such fake news items. This raises questions such as why are some people inclined to believe in fake news, and what sort of individuals are they?

A number of studies have analysed whether people can recognise the difference between fake and real online news, with most showing that participants often struggle to do so. Briegas and Perez (2018), for example, reported that a Spanish research team stated that “eight out of every ten Spaniards cannot distinguish between real news and fake news” (para. 2). In addition, a study from Stanford University (Shellenbarger, 2016), which analysed 7804 students from middle school through college found that 82% of them were not able to identify the difference between real news stories and advertisements labelled “sponsored content” on a website. The findings also showed that many students do not base their evaluation of the legitimacy of the news on its sources (Shellenbarger, 2016). In another study, El Rayess, Chebl, Mhanna and Hage (2018)’s explored the ability of undergraduate students at Notre Dame University to identify fake news. Their results showed that only the faculty which students are enrolled in is related to their ability of identifying the authoritativeness of information (the term “faculty” used in that paper is to describe the different university schools at Notre Dame University).

1.2 Research objectives

While the above studies look at whether a particular population can distinguish between fake and real news on the Internet, or analyse their ability of recognition of fake news with fewer attributes, there

are no studies that examine whether participants' background details, such as age, computing ability or time spent on the Internet, can influence their ability to recognise fake news. This study, therefore, is interested in what type of people are not able to identify fake news and why. Based on discussions above, the research objectives involve:

1. Establishing whether certain background attributes contribute to people's ability to evaluate whether the online news is fake or real.
2. Establishing why certain background attributes may contribute to a person's ability to evaluate whether the news is fake or real (e.g. how do people with certain background attributes understand the phenomenon of fake news)?

1.3 Significance of the dissertation

Fake news is an ever increasing issue in contemporary society, yet due to its relative novelty, very little is known about what is behind the ability to recognise news as fake or not. This study will contribute to the emerging research being carried out in this area. Indeed, participants, many of whom are likely to be exposed to fake news, may indirectly be affected by the study, as the cumulative results of research into fake news may help people improve their media and information literacy in order to recognise online fake information better in the future.

1.4 Dissertation overview

This research is organised as follows:

Chapter Two provides a review of literature. This chapter provides a conceptual background to the concept of fake news through a discussion of its emergence, the provision of scholarly definitions and classifications, an overview of the way it is shared and disseminated, the challenges it presents, and the proposed solutions to these challenges.

Chapter Three introduces the methodology and the research instruments used in this study. The mixed methodological research paradigm underpinning this study is firstly introduced, followed by a discussion identifying the way the different methods (descriptive statistics, one-way ANOVA and participant interviews) are applied. Following this, the process for data collection and analytical procedure are discussed. The consideration of ethical issues, reliability and validity of the research are also raised in this chapter.

Chapter Four provides the results of quantitative data analysis. It begins with a focus on the results of the Fake News Test and then examines the statistical relationship between the ten background attributes of participants and their Fake News Test scores.

Chapter Five shows the results of qualitative data analysis. It analyses the 70 interviews of the same participants joined in quantitative analysis. This chapter firstly analyses participants' interviews based on the statistical significance in Chapter Four. Then, it compares the responses of participants who correctly identified at least 11 questions and the responses of participants who correctly identified up to 7 questions in the Fake News Test. Finally, a chapter summary is provided.

Chapter Six presents a discussion of the findings. Initially, it provides a summary of key findings in this research. Following that, comparisons and relationships with results of previous studies and related theories are discussed. Then, the implications, limitations and potential for future studies are presented. Lastly, a conclusion is provided.

The study concludes with a reference section followed by the information sheet, background questionnaire, test questionnaire, interview questionnaire and the data analysis outputs from SPSS.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter begins by providing the different definitions and categorisations of fake. Next, the factors that have caused the rise of the fake news phenomenon are discussed. Following this, the way that fake news is disseminated and its influences are introduced, and then the way that people combat fake news is examined. Finally, the challenges of the fake news phenomenon are discussed.

2.1 What is fake news?

2.1.1 The history of fake news

Fake news is not a new term. In fact, the origin of fake news can be traced back well before the invention of the printing press, when news was spread by word of mouth. Ever since people have lived in groups and communities, rumours and false stories have proliferated. There is also evidence that information written on stone, clay or papyrus was used by powerful leaders to control commoners and strengthen their own status. The remains of these early texts have been identified as focusing on the power and wonder of these leaders, and while it is difficult to establish the accuracy of these writings, they could arguably be viewed as the earliest examples of ‘fake news’ (Burkhardt, 2017).

With the invention of the printing press, it became possible to spread information more widely. Printers also became aware that fake news could increase the sales of publications, and in the 16th and 17th centuries they would produce pamphlets which provided details about unusual beasts and unnatural events. At that time, it was easy to pass on such information to a largely uneducated public, however as an increasing number of people became educated, it became less easy to mislead or control people through misinformation (Burkhardt, 2017). Nevertheless, fake stories were still created as a commercial strategy (Standage, 2017). For instance, in 1835, the New York Sun reported a news story that a well-known British astronomer, John Herschel had seen some astonishing sights on the Moon using a powerful telescope in South Africa. These sights included “giant man-bats that spent their days

collecting fruit and holding animated conversations; goat-like creatures with blue skin; a temple made of polished sapphire” (para. 1). The report caused many people to begin buying the daily editions of the paper and its circulation soared from 8000 to 19,000 copies, even surpassing the popular Times of London. As a result, the Sun became the world’s best-selling daily newspaper. Richard Adams Locke, editor of the Sun, who made up these stories, knew Herschel was making astronomical observations in South Africa. However, Locke also knew that his false stories would take months to unravel, because the truth would only emerge if Herschel sent a letter to London from South Africa (Standage, 2017). The Sun, one of the first modern newspapers, was mostly funded by advertisers, and therefore its primary goal was to attract as many readers as possible, and while it initially thrived, due to its publication of invented stories such as the moon hoaxes, it was eventually exposed by its competitors (Standage, 2017).

In the 19th century, with the development of technology and progress of society, justice and objectivity were increasingly valued in the most prestigious newspapers (Standage, 2017). Dornan (2017) writes that for most of the 20th century, the news media in North America was guided by an ethos of “social responsibility” (p. 5) They promise readers that their reports were credible and objective. Company owners who could pay for the cost of large-scale circulation printing presses or had acquired the broadcast license issued by the state had the privilege to print news freely, and the only people who created content for the mass media were the employees of these companies (Dornan, 2017). However, by the end of the 20th century with the emergence of the Internet, anyone with a computer could produce and make information publicly available and instantly accessible to almost everyone. The Internet became a new way to spread news and sell products, however it also meant that fake news was once again a profitable business (Burkhardt, 2017).

2.1.2 Definition

Tandoc et al. (2018) evaluated 34 academic articles that included the term “fake news” between 2003 and 2017. They found that “earlier studies have applied the term to define related but distinct types of content, such as news parodies, political satires, and news propaganda” (p. 138). However by 2017,

more than two-thirds of American adults obtained their news from social media such as Facebook, Twitter, and YouTube (Jang & Kim, 2018) and as a result “fake news” has more recently become understood as the false news spread by social media (Tandoc et al., 2018). Ghaisani, Handayani and Munajat (2017) hold a view that “social media is a digital platform used to connect people, create and share content, and process knowledge and restore that knowledge” (p. 530). Unlike the mainstream print media, the content of information on social media often lacks filtering, fact-checking and editorial judgement (Allcott & Gentzkow, 2017) and this lack of regulation easily enables online content providers to place fake news on websites and social media platforms. One of the leading publishers of fake news is the social media application Facebook. A news survey of 26 countries, for example, found that 44 percent of respondents used Facebook to read, watch, share or discuss news (Tandoc, Ling, Westlund, Duffy & et al., 2017). A click on any interesting headline on Facebook often enables the reader to enter a fake news site that is designed to attract traffic and generate advertising revenue. According to Standage (2017), the peddler of such false stories has no reputation to defend and no motive to be honest. They are only interested in clicks.

Pennycook and Rand (2018) suggest that “fake news” are stories that are fabricated and promoted on social media to deceive the public for ideological and/or economic interests. They state that fake news represents a particularly egregious and direct way to spread inaccurate beliefs through social media. Similarly, McNair (2018) defines fake news as: “intentional disinformation (invention or falsification of known facts) for political and/or commercial purposes, presented as real news” (p. 46). Rochlin (2017), however, believes that for many, “fake news” no longer means untruthful or defamatory news, but news that contradicts an individual’s pre-existing beliefs. In Bolton and Yaxley (2017)’s article, they argue that fake news is fictional information intended to mislead the reader to believe in the trustworthiness of the source and then to benefit the sponsor by ‘clickbait’.

2.1.3 Types of fake news

Different scholars classify fake news in different ways. Johnson (2017), for example, identifies five kinds of fake news: 1. 100% false; 2. slanted and biased; 3. pure propaganda; 4. Misuse of data; and 5.

imprecise and sloppy reporting. Zimdars (2016) offers a more specific lists of 11 different types of false information:

1. Fake news: sources that entirely fabricate information, disseminate deceptive content, or grossly distort actual news reports.
2. Satire: Source that use humour, irony, exaggeration, ridicule, and false information to comment on current events.
3. Extreme Bias: Sources that come from a particular point of view and may rely on propaganda, decontextualized information, and opinions distorted as facts.
4. Conspiracy Theory: Sources that are well-known promoters of kooky conspiracy theories.
5. Rumour Mill: Sources that traffic in rumours, gossip, innuendo, and unverified claims.
6. State News: Sources in repressive states operating under government sanction.
7. Junk Science: Sources that promote pseudoscience, metaphysics, naturalistic fallacies, and other scientifically dubious claims.
8. Hate News: Sources that actively promote racism, misogyny, homophobia, and other forms of discrimination.
9. Clickbait: Sources that provide generally credible content, but use exaggerated, misleading, or questionable headlines, social media descriptions, and/or images.
10. Proceed With Caution: Sources that may be reliable but whose contents require further verification.
11. Political: Sources that provide generally verifiable information in support of certain points of view or political orientations.

Based on their analysis of 34 published academic articles about fake news, Tandoc et al. (2018) have identified a typology of fake news, which includes: news satire, news parody, news fabrication, photo manipulation, propaganda, and advertising/public relations. These are summarized below.

News satire

According to Tandoc et al. (2018), news satire is the most common manipulation of fake news. News satire programmes present the latest news to audiences using humour or exaggeration. What makes satire news programmes different from ordinary news programmes is that they focus on providing entertainment first instead of offering information, and the hosts call themselves comedians or entertainers, rather than journalists or newscasters. Although satire news is often defined as fake news in earlier studies, the notion ‘fake’ only refers to their form. The core of political satire news is based on real events.

News parody

News parody is also referred as fake news in many previous studies. It has some features in common with satire, since both rely on humour to capture audiences’ attention. Unlike satire news, parody news

injects humour with nonfactual information. It does not comment directly on current events through humour, but highlights the absurdity of issues by making up entirely fictional news stories. The most famous example is The Onion.

News fabrication

News fabrication refers to news which is fabricated using the style of a news article in order to create legitimacy. Different from parody, there is no implied understanding between the writer and the audience that the article is false. In fact, its aim is often opposite. The authors of fabricated news have an intention to misguide and as a result post their fake stories on websites, blogs or social media platforms. Since the stories are published by individuals or non-news organizations in the name of authenticity, their use of the style and form of news reports means that it is difficult for readers to verify whether they are real or fake.

Photo manipulation

Unlike the previous text-based fake news categories, photo manipulation describes visual fake news. Image processing has become more achievable and commonplace with the emergence of digital photos, image processing software and the popularisation of technical knowledge. For example, people can now easily change the colour saturation, or background of the image. They are also able to remove or insert a person into a picture.

Propaganda

Propaganda refers to news stories created by political entities in order to influence public opinion. The aim is to benefit public figures, organizations or governments.

Advertising and Public Relations

Advertising or public relations news refers to the fake news used to generate financial gain. This kind of news usually has ‘clickbait’ headlines which are created to attract readers to ‘click’ so that they are automatically directed to a commercial website.

2.2 Factors driving the rise of fake news

Economic factors

Fake news is thriving in the current media environment for a number of reasons. McNair (2018), for example, holds the view that economic factors are behind the contemporary fake news phenomenon, especially as news is increasingly distributed via the Internet, rather than the traditional print media. Online news producers primarily earn their revenue through online advertising. Given that the primary aim of advertising is to expose as many people as possible to the products and services advertised, online news sites with large number of visitors attract the most advertisers. As a result, the most popular websites are those with the more sensational, suggestive or fake content as these tend to attract more viewers. Advertisers, themselves, are not interested in the authenticity or falsity of the content on the page where the ads appear. Hence fake news is monetized (Burkhardt, 2017). Furthermore, since the creation of fake news does not require high-tech coding skills, it is not difficult for individuals and companies to create their own fake news websites (Kshetri & Voas, 2017). News creators can also easily and widely distribute their content to potential readers through social media platforms like Facebook and Twitter (Tarran, 2017). Moreover, the cost of distributing fake news stories online is cheaper compared to the creation of news on an authoritative real news website which requires expert professionals to filter, edit and check the information (Kshetri & Voas, 2017). As well as the low cost of creating fabricated news stories, therefore, fake news can easily generate profits. Research from BuzzFeed, for example, indicates that the clicks from the top 20 fake election stories in 2016 helped create revenue for the digital advertising ecosystem (Tarran, 2017). Interestingly, Gottfried and Shearer (2016) show that 62% of American adults get their news from social media. Hence, creating and spreading fake news through online social networking websites and social media platforms is easy and cheap for individuals and businesses. False news stories can generate huge profits. As a result, fake news is on the increase (Ehsanfar & Mansouri, 2017).

Technological factors

Technological factors can also be attributed to the rise of fake news. The transition of the Internet to the participatory, user-generated Web 2.0 at the turn of the century resulted in the emergence of social media

and social networking technologies, such as Facebook (launched in 2004) and Twitter (launched in 2007). These and other social media platforms have rapidly grown into large multinational corporations which have encouraged billions of people to be involved in a new form of public interaction and dissemination of both personal and public information. Furthermore, the ability for users to edit and easily distribute their own content on these platforms, often in real time, has resulted in the development of user generated news (Born, 2017) and a move away from the mainstream media as the primary sources of news information (McNair, 2018). This shift has seen significant changes in the reading habits of consumers. According to Adu-Sarkodee, Asante and Akussah (2015), social media has changed most people's reading habits, especially the young. They state that people now use social media to obtain information and news rather than through reading the daily newspaper or watching the news on television.

According to Barber (2017) this fragmentation of news sources has also contributed to the rise of fake news. Accompanying the development of technology, many politicians and their political parties have also started to use social media platforms to achieve their goals. Woolley (2016), for example, observes how social bots, software programs created to imitate human users on social media platforms, are used to influence global politics. He finds that in recent years, politicians around the world have utilised these politically-oriented social bots to control public opinion and automatically inject spam into the news stream during political crises, elections and conflicts. In 2008, Barack Obama was said to have won the election using the influence of Facebook (McNair, 2018), but most famously, in 2016, Donald Trump's campaign was mainly carried out through Twitter, and he bypassed the mainstream media, to communicate directly to his existing and potential supporters. Through his use of Twitter, Trump has unprecedentedly created a new style of political communication (McNair, 2018).

2.3 Dissemination of fake news

With Internet access, any individual can now be involved in the dissemination of fake news through a variety of web applications (Shin, Jian, Driscoll, & Bar, 2018). Nelson and Taneja (2018), for example,

show that the number of visits of false news websites from social network sites (SNSs) is much higher than those of the real news web site, and therefore claim that social media plays a significant role in the spreading of fake news.

There have been a number of investigations of fake news stories on different social media platforms to study the process by which such misinformation is disseminated. In their study on the use of social media in the 2016 US presidential election, Jang et al. (2018) analysed 307738 tweets about 60 news stories (30 fake news and 30 real news) on Twitter in order to identify the origin and dissemination patterns of online false information. They used an evolution tree to verify the root of fake news and characteristics of news-spreading process on Twitter. According to their investigation, 87% of fake news stories (26 out of 30) are first tweeted by ordinary users, i.e. users that are not journalists, celebrities, politicians or other verified people. Furthermore, many of these original fake news tweets are not created by the ordinary users. In fact, they found that these users post false news stories which come from other sources and spread them via Twitter. In addition, Jang et al.'s (2018) data shows that 43% of fake news stories (13 of 30) involve links that access unreliable websites. Additionally, none of their sources come from bots or cyborg accounts, and are tweeted by humans. In comparison, 43% of the real news stories reported by the mainstream news media are posted by journalists, news media official tweeters, or political groups, and 57% of true information is initially shared by ordinary users. By using an evolution tree analysis, Jang et al. (2018) find that fake news stories undergo several modifications of content when shared by Twitter users. In contrast, people do not add additional content or make many changes to the original content of factual news. It also appears as if users who share real news stories do not comment on the content and modify the information. Hence, Jang et al. (2018) conclude that users tweet real news stories immediately with shares and retweets shortly after the factual news has been published on online news websites, but fake news stories appear more slowly than real ones and people usually add comments and revisions to the content. This is because false information is not based on real world events, and therefore it does not have the characteristic of timeliness found in the real news. Jang et al. (2018) conclude that "fake news stories may have a longer life expectancy, and their buzz can be revived at any time" (p. 112).

Shin et al. (2018) supports Jang et al.'s ideas. They believe that false information is mutable and malleable as it spreads. Their research also shows that older and more controversial rumours are often repackaged into the "news" and shared by influential Twitter users as a way of gaining visibility. Furthermore, they suggest that most information found on Facebook and Twitter is shared by people on the first day of its publication, while another study suggests that after the original post, false information still exists for several months and continues to appear regularly (Shin, et al., 2018). Vosoughi, Roy and Aral (2018), however, found that false information diffused faster than real news which contrasts Jang et al.'s conclusion that fake news has a longer life expectancy. Vosoughi et al. (2018), also report that falsehoods are disseminated further, deeper and more broadly than truth for all kinds of information. According to their analysis of 126,000 fake news stories that were shared more than 4.5 million times from 2006 to 2017 on Twitter, Vosoughi et al. (2018) note that "the spread of falsehood was aided by its virality, meaning that falsehood did not simply spread through broadcast dynamics but rather through peer-to-peer diffusion characterized by a viral branching process" (p. 359). Their research also categorized their news sources into several types: politics, urban legends, business, terrorism and war, science and technology, entertainment and natural disasters. They found that fake political news and urban legends spread the fastest and most broadly, and that there is a 70% probability of false information being retweeted and shared. Why do people choose to retweet and share fake news? This will be discussed in the following section.

2.4 Sharing of fake news

The number of people using social media to share information is rising. By January 2017, about 2.7 billion people (37 %) around the world were actively using social media (Ghaisani, Handayani, & Munajat, 2017). Furthermore, many studies show that people are increasingly questioning the information provided by mainstream media institutions and government agencies, and that this loss of confidence in the traditional sources of news and information is encouraging them to choose alternative sources, such as those shared by their friends, family and colleagues through social media, no matter

whether the source is true or false (Tarran, 2017). An experiment by American Press Institute demonstrates how the sharing of news can influence audiences' opinions. They found that if individuals see an article shared by people they trust, they are more likely to believe the article is real; conversely, if the same article shared by someone they do not trust, they will be sceptical of that article (American Press Institute, 2017). Similarly, Rochlin points out that Facebook's CEO Zuckerberg has stated that people tend to view and evaluate content depending on which pages they follow and who their friends are (Rochlin, 2017).

Ghaisani, et al. (2017), who analyse the motivation behind sharing information on social media, find that "one's motivation in sharing information in social media is consistent for sensational, casual, political, and experience information, that is to share the positive or negative impression of a thing on the Internet" (p. 535). Donath (2016) indicates that in the world of social media, the purpose of sharing news is not only to provide information, but also to persuade others. Sharing news is used as a way to show one's affinity to a particular group of people. In other words, individuals post links of articles that reflect their tastes and beliefs in order to show their affiliation to their groups. Any real or false stories that match people's social perspective can reinforce their bond with their particular groups. She assumes that while real stories can achieve this goal, false stories can often more powerfully be used to mark one's social identities. Vosoughi et al. (2018) claim that the novelty of fake news stories means that they are more likely to attract a reader's attention and in turn encourage sharing on social media. However, they also find that an individual's response to fake news is more likely to involve surprise or dislike, while their response to the truth is more likely to involve sadness, anticipation, joy and trust. These different responses provide evidence that factors other than novelty might motivate people to share misinformation. Similarly, Nyhan who has about 65,000 Twitter followers suggests that the kind of false information spread throughout the web is often novel and negative; features that typically attract people's attention (Meyer, 2018b), and Meyer (2018a) points out that people want to share information that focuses on new threats, especially negative threats, to others.

Hyman and Jalbert (2017) use *schema theory* to explain why people believe and share misinformation online. In schema theory, a person's activated schema can create attention, encoding and memory.

Hyman and Jalbert think that worldview is a kind of schema which can drive attention, encoding and memory as well. As a result, people tend to seek information that is in keeping with their activated worldview when they are reading the news or browsing social media. Thus, information consistent with their own worldview is more likely to be encoded and connected with a rich and relevant information network. People's worldview will lead them to build their own memory. There is no opportunity for inconsistent information even if it is true in this cognitive environment. Not unlike schema theory, *selective theory* also illustrates the point that people tend to follow media that is consistent with their opinions and beliefs and avoid content that holds opposite views and challenges their positions (Spohr, 2017). Consequently, if misinformation on social media is consistent with people's currently activated worldviews, opinions or beliefs, it will be remembered and shared easily.

Tandoc et al. (2017) mention that misinformation has its own value, in that people may consume and share news, which they do not trust, because it performs some personally useful function. For example, some will share news that they suspect is fake simply because they believe it is interesting enough to share, while others will choose to share news that they suspect is fake because it fits a particular agenda they want to push. In brief, as long as the news conforms to an individual's particular ideology, many do not care whether it is fake or not. Pennycook and Rand (2017) agree with Tandoc et al.'s idea that even fake news has its value. They argue that people believe fake news is accurate if it is in line with their political ideology. Gall (1983) suggests that "people would seek exposure to mass media content that they believed supported their pre-exposure attitude toward the issue or favourite candidate and avoid exposure to campaign communications that disagreed with their predisposition" (p. 2, as cited in Rochlin, 2017). As evidence of this, Shin et al.'s (2018) research finds that most of the people who spread rumours about Obama (a Democratic Party candidate) are republicans (84% vs 16%), while those who spread rumours about Romney (a Republican Party candidate) were mainly from the Democratic Party (91% vs 9%).

In their study of the audiences of fake news, Nelson and Taneja (2018) find that only a small portion of those that read and shared fake news are regular Internet users. They argue that heavy media users have more time to view a diversity of media and also tend to rely on more reliable and established news

sources. In contrast, they suggest that light media users tend to visit the more popular sites; those that often carry fake news. Finally, Rochlin (2017) suggests that a problem directly related to the sharing of fake news is that most people do not read more than the headline of an article and therefore fail to establish the veracity of the article. In fact, according to research by Gabielkov, Ramachandran, Chaintreau and Legout (2016), 59% of all news articles shared on Twitter are not even read before they are shared (Rochlin, 2017). The next section looks at the influences of fake news.

2.5 Influences of fake news

According to Nelson and Taneja (2018), the production of factual news requires myriad resources including journalists, editors, willing sources and time; while in contrast, the creation of fake news simply requires a creative person with an Internet connection. Therefore, Nelson and Taneja suggest it is easy for fake news producers to swamp the news media environment with false information. Furthermore, Figueira and Oliveira (2017) argue that because the dissemination of fake news largely occurs on social networking sites, the scope and impact of information dissemination is greatly magnified and appears at a rapid rate. As a result, fake news can have a real influence on millions of users within minutes in many different ways (Shin, et al., 2018).

A new survey by the Pew Research Centre (Barthel, Mitchell, & Holcomb, 2016), for example, which includes 1002 U.S. adults, finds that two-thirds of the participants think that fake news has a major impact on the news as it can result in confusion about current events, issues and basic facts. According to Nelson & Taneja, (2018), one effect of this confusion is that it makes people continually question the veracity of all published news. Tandoc et al. (2018) also claim that fake news can cause specific actions. As an example, they refer to the events of December 4, 2016, when a man entered a pizza restaurant called Comet Ping Pong armed with an assault rifle in Washington. He was motivated by a news story on right-wing blogs and social media. The news reported that this pizza restaurant was the headquarters of an underground child sex ring operated by the presidential candidate, Hillary Clinton, and her former campaign manager, John Podesta. He decided to investigate this news by himself, after he walked into the restaurant, he fired shots at the ceiling of the store. Fortunately, no one was hurt. This was only one

of the problems that followed the posting of this fabricated news story across different social media sites (Lopez, 2016). James Alefantis, owner of the pizza store said that he received hundreds of death threats such as “I will kill you personally” on Twitter and Facebook. He contacted the FBI and local police, and also asked Facebook, Twitter, YouTube and Reddit to delete the posts in order to combat the fake child sex ring story, but the story kept spreading and developing. The incident is now commonly referred to as the Pizzagate conspiracy theory (Kang, 2016).

Fake news also has an impact in the economic area. According to Vosoughi, Roy and Aral’s (2018) report, “false rumours have affected stock prices and the motivation for large-scale investment” (para. 1). For instance, on April 23, 2013, the official twitter account of The Associated Press was hacked and a fake news story that Barack Obama was injured in an explosion at the White House was posted. Reuters estimated that the value of the S&P500 alone temporarily lost \$136.5 billion (Domm, 2013). In another example of fake news influence, false reports about the exchange rate of RMB against the US dollar triggered severe financial panic in China and disrupted Chinese financial markets (Zhu, Wu, Cao, Fu, & Li, 2018). Similarly, the Journal of Accountancy claims that fake financial news is influencing American’s financial decisions. (Lea, 2017), and the US Securities and Exchange Commission (SEC) stated that some fake financial news made their readers believe that the article’s analysis of investment sites was fair and independent, however the authors of the news articles in question were secretly receiving compensation for selling company stocks (Vosoughi et al., 2018).

Tandoc et al. (2017) claim that thousands of readers are regularly misled by fake news as it spreads virally around the world. False news, for example, can lead to the misallocation of resources in terrorist attacks and natural disasters. It also can result in inconsistencies in business investment and misinformed elections (Vosoughi et al., 2018). As mentioned in Chapter 1, Allcott and Gentzkow (2017) suggest that Donald Trump was elected to the U.S. presidency due to the influences of fake news in 2016. A study, for instance, which explores 156 fake news stories conservatively estimates that the average American saw one to three false stories during the month before the 2016 election (Meyer, 2018a). In addition, in the last three months of the U.S. presidential election, the most popular fake election news on Facebook attracted more attention than news stories from the mainstream news media,

such as the New York Times, the Washington post, the Huffington Post and NBC news (Silverman, 2016). Furthermore, these fake news stories were considered credible by many readers (Silverman & Singer-Vine, 2016).

Interestingly, the false information which people most talked about from the 2016 U.S. election tended to favour Donald Trump instead of Hillary Clinton (Silverman, 2016). According to the data from BuzzFeed, seventeen of the twenty best-performing fake U.S. election stories in 2016, were either openly supportive of Donald Trump or critical of Hillary Clinton. Two of the most popular of these were “Pope Francis Shocks World. Endorses Donald Trump for President. Releases Statement” (960,000 Facebook Engagements) and “WikiLeaks CONFIRMS Hillary Sold Weapons to ISIS...Then Drops Another BOMBSHELL! Breaking News (789,000 Facebook Engagements) (Silverman, 2016). Berghel (2017) concludes that “social media channels share some responsibility for the effects of the 2016 political misinformation cycles. At least at the national level, these nonsense stories were heavily biased in favour of extreme agendas and were, for the most part, vicious, partisan, and targeted” (p. 81). Given the potentially major influence of fake news, it is necessary to consider how misinformation in the present social media environment might be reduced.

2.6 Combating fake news

West (2017) states that “Fake news and sophisticated disinformation campaigns are especially problematic in democratic systems...” (para. 2) and that discussions about how to solve the problems of fake news without harming the interests of digital media are increasing. He states that it is essential that governments, enterprises and individuals are engaged in a concerted effort to solve these problems. Jang et al. (2018), Dorman (2017), Glenn Kessler (2016) all provide some suggestions on how to fight fake news. They advise that it is important for audiences to authenticate the source author by using search engines and fact-checkers to verify. Also, social media should develop algorithms to filter fake information. Furthermore, literacy interventions should be implemented to help individuals improve their ability to verify fake news.

According to the investigation of The Gallup Roll, many Americans doubt the accuracy of their news. The percentage of public trust in mass media decreased from 53% in 1997 to 32% in 2016. More seriously, most people in the United States believe that the main news agencies usually publish false information. Thus, in order to increase public trust and combat fake news, West (2017) gives some ideas for governments, businesses and individuals to consider. Firstly, governments should promote independent, powerful and professional journalism, because the public needs journalists to help them understand complex developments, and handle the changing nature of social, economic and political events. In addition, governments should prevent the suppression of the news media's ability to accurately report the news. They also need to avoid checking the content of information and let networking sites take responsibility for false information (West, 2017). In fact, some governments have already taken actions to fight false information. In June 2017, Germany's parliament adopted a law to regulate popular websites like Facebook, YouTube and Google by forcing them to delete obviously harmful and illegal content within 24 hours. Those that do not obey will receive financial punishment. Singapore has also claimed that their government will introduce similar ways to combat fake news (Born, 2017).

West (2017) also points out that the news industry needs to offer credible high-quality news in order to build public trust and attract more audiences. In the past few years, the number of subscribed online readers of many mainstream news organisations has increased and this could help improve the financial situation of these organizations and their ability to combat fake news (West, 2017). Furthermore, news agencies should work to help expose fake news to the public. Professional editors and reputable fact-checkers could help the news organizations to achieve this goal. Non-profit organizations such as Politifact, Factcheck.org, and Snopes could assist readers in judging the accuracy of news stories (West, 2017).

In order to combat fake news, Tongco (2016) argues that all social media platforms should have an editorial team to search and evaluate popular news articles, and provide their users with information about the credibility and integrity of certain resources and websites. In some cases this is already beginning to occur. The search engine Google, for example, is launching the Google News Initiative

(GNI) in order to help journalism flourish in the digital age, as it is becoming increasingly harder to identify what is real on the Internet. Their goal is to improve and enhance the quality of information, promote sustainable growth through the development of business models, and give news agencies power through technological innovation. Google also focuses on fighting false information in breaking news events. Their system is trained to verify their news sources or recognize the inaccurate content of these events. They also cooperate with news organizations directly in order to crack down fake news. Additionally, Google and Stanford University are working together to launch a project called MediaWise to help young people distinguish between real and fictitious news stories on the network and improve their digital information literacy (Philipp, 2018). YouTube has also announced that they have invested \$25 million to promote authoritative news sources (Nicolaou, 2018) and Facebook is attempting to work with the Associated Press, FactCheck.org and PolitFact to evaluate and verify false information. Whenever they notice misinformation, they will either remove the content or tell their users the information is false (Tett, 2018). Lipkin the executive director of the National Association for Media Literacy offers another way for the media to combat fake news. They could build a rating system to increase the credibility of news stories (Tongco, 2016).

According to West (2017), It is important for individuals to know how to judge the credibility of information. It should be a high priority to inform people about information literacy. Everyone should pay attention to various news sources and be suspicious of what they read and watch. Rochlin (2017) also claims that “the goal should not be to hide fake news and report fake sites, but to instill a system of education and advocacy, which will empower the population with the literacy and knowledge to identify misinformation” (p. 391). Indeed, there are many people who lack the knowledge to recognize fake news online. In El Rayess et al.’s (2018) study, they selected a group of undergraduate students at Notre Dame University, and investigated the students’ ability to distinguish fake from real news. 80% of the students said that they would check the news before they shared it. However, more than 80% of students could not recognize an advertisement labelled “sponsored content” from a real news story. Furthermore, although some students knew it was sponsored content, they still believed the source was a real news article. The students were found to be overconfident about their skills of checking and evaluating the

credibility of information. Wang (2017) suggests a reason for their overconfidence was the students' belief that they are good at technological things and familiar with the web environment (As cited in El Rayess et al., 2018). El Rayess et al. (2018) concluded that students lack the skills to identify and evaluate the trustworthiness of information, especially in the fake news era. Thus, schools or other educational institutions should pay attention to teaching their students how to verify and critique online information.

Besides learning media literacy in school, people can become more media literate on their own (Tongco, 2016). Tandoc et al. (2017) suggest that people can evaluate the trustworthiness of one source or message through two steps: an *internal step* and an *external step*. The internal step involves checking the title and content first, based on their own judgement, experience and knowledge. Next, they should check whether the information comes from a reputable website or institution. Furthermore, readers can judge the tone and features of the news text itself. If this internal step does not establish the veracity of the news item, they should carry out the external step. This should involve passively or actively seeking validation from their social domain or other formal sources (Tandoc et al., 2017). Lipkin (as cited in Tongco, 2016) also provides some ideas to help individuals become discerning news consumers. Firstly, audiences should read the content before sharing a news story. He says that "people should think critically, understand the bias, and make educated decisions about media they consume and share" (Tongco, 2016, para. 9). Secondly, readers should not only engage with the surface level of the story, but critically ask oneself some basic questions, such as how I know this news story is real. According to Lipkin's advice, it is better for readers to find two credible sources to verify the story. If there is no other reputable source, then they should not share the news story on social media.

2.7 Challenges

Although it is necessary to fight fake news, there are still many difficulties and challenges. Donath (2016) claims that while the obvious way to combat fake news is fact-checking, it can often be ineffective because many audiences of fake news are now sceptical of mainstream media, and believe that all stories contradicting their beliefs are partisan and deceptive. Furthermore, even when individuals

start to develop digital media literacy, different people have different levels of ability for evaluating information. De Keersmaecker and Roets (2017) believe that it is easy to spread misinformation, but hard to correct. They think that people's ability to judge the quality and veracity of information is related to their cognitive ability. Their research shows that the responses of people with lower levels of cognitive ability to the news are inferior to those with higher cognitive ability, and that the former's attitudes to the legitimacy of the news is influenced by the initial wrong information. While it is true that many social media platforms have launched algorithms to filter and check false information, Michaeli (2018) mentions that fake news websites will reappear in a different form with rapid speed, faster than they can be recognised; just like a game of whack-a-mole. As algorithms are verifying the misinformation, the fake news has already been posted on Twitter and forwarded many times. The article "the science of fake news" by Lazer et al. (2018) points out that individuals often appear to only remember the information in the news article or their feelings about the information and ignore the context in which they come across the article. Hence, even after fact checking, the repetition of wrong information will convince people that fake news is true (Lazer et al., 2018). The issue of Pizzagate also reinforces the notion that although many media reported the truth about the incident, and the owner of the restaurant asked police and other social media platforms to regulate and remove the fake news, it still kept spreading on social media networks (Kang, 2016). Mallam Bolaji Abdullahi, a member of the All Progressives Congress (APC), says that new media is vital to the development of democracy, thus it is important to regulate new media and deal with fake news. However, the regulation of false information should not erode new media space. She notes that "we should strike a balance between regulation of the new media and emasculation of the space" (Vanguard, 2018, para. 18). OPAN (The Online Publishers Association of Nigeria)'s president holds an opinion that it is difficult to regulate the new media due to its open and liberal nature (Vanguard, 2018). ATTN interviews with the executive director of the National Association for Media Literacy, Michelle Ciulla Lipkin, suggests that people should know that every media has bias. The media can decide to report constructed stories depends on who hires them, but this does not mean dishonesty, it only reports a story from one angle. Prejudice is not the same as lies. The media can sneak a lie into a story in a real context and this situation is more insidious. Thus, the future of media and the role of fake new, is especially difficult to ascertain (Tongco,

2016).

CHAPTER THREE: METHODOLOGY

3.0 Introduction

The previous chapter reviewed the current scholarly literature on fake news. It identified fake news as being created for economic profit, for facilitating a political agenda, or for some other specific purpose. According to these studies, the influence of fake news has been felt in a number of areas, including the 2016 American presidential election. As a result, researchers are increasingly discussing and analysing various different aspects of the fake news phenomenon, particularly within the context of social media. Some have attempted to identify patterns related to the spreading and sharing of fake news; others have studied the purpose and influence of fake news, while some have identified how people recognise and combat fake news.

In order to develop a deeper knowledge of fake news and perhaps help people fight the impact of fake news in the current social media environment, it is necessary to establish what influences people's ability to judge fake news. Is it, for example, a person's gender, age, educational background, or other background attribute? As a result, this study seeks to answer the following research question:

What background attributes, for example, age, education, gender, amount of time spent on social media might influence people's ability to recognise whether the online news is fake or real and why?

In order to find out the answers to this research question, this chapter introduces the methodology and methods used in the study. Firstly, it introduces the applied pragmatist research paradigm underpinning this study and explains the reasons for its use. Following this, it discusses the mixed methods approach used to answer the research question. A definition of mixed methods research, the advantages and disadvantages of the mixed methods approach, and an explication of the convergent parallel mixed method design used for this approach is included in the discussion. Next, the data

collection procedure is illustrated and followed by details of the sampling strategies and the participants' background attributes, after which the three research instruments which include the Fake News Test, the background questionnaire, and participant interview are examined separately, along with a discussion of their benefits and shortages. In addition, the tools used to analyse the different data sets are presented. Finally, a consideration of ethical issues is provided followed by a discussion of reliability and validity of the research.

3.1 Philosophical worldviews

A worldview is understood more generally as “a basic set of beliefs that guide action” (Guba, 1990, p. 17), while in the research context, Creswell (2014) defines worldview as “a general philosophical orientation about the world and the nature of research that a researcher brings to a study” (p. 6). According to Creswell (2014), there are four kinds of research worldviews: postpositivism, constructivism, transformative, and pragmatism.

The worldview of pragmatism underpins this study. Pragmatism comes from a philosophical movement initiated by the American philosopher Charles Sanders Peirce. It was introduced to the field of research methods around 1861, when Peirce used a “triadic scheme” approach in scientific study. A number of scholars have suggested that pragmatism is best supported by mixed methods research (Tashakkori & Teddlie, 2003).

Creswell (2014) makes a number of points to prove the relationship between pragmatism and the use of mixed methods. Pragmatists are not governed by the use of any particular method to carry out their research, but emphasise the research problem in the first instance and try to use all possible methods to understand the problem. What they seek are methodological tools and approaches that are actually useful and work at the time. As a result, pragmatism is not necessarily wedded to any philosophical view or reality. Under the philosophical basis of pragmatism, individual researchers are free to choose

the best suited research method, techniques and procedures to achieve their needs and purposes. Also, pragmatists do not consider the world to be absolutely unified. Given this view, researchers can collect and analyse data through a mixed method approach rather than using a single method (Creswell, 2014).

3.2 Mixed methods approach

3.2.1 Definition

Different research questions require different analytical methods and it is important to find appropriate ways to deal with different kinds of data. There are three main methodological approaches quantitative, qualitative and mixed method (Creswell, 2014; Dörnyei, 2007). According to Babbie (2010), “quantitative research focuses on gathering numerical data and generalizing it across groups of people or to explain a particular phenomenon” (para. 1), while, on the other hand, qualitative research pays more attention to participants’ feelings and thoughts so that researchers can gain a better understanding of underlying meanings (Austin & Sutton, 2015). Since both methods have their own advantages and shortages, mixed methods has increasingly become another option used by scholars to carry out research. The idea of mixing methods originated in 1959. At that time, Campbell and Fisk applied more than one quantitative method to analyse psychological traits. Their “multitrait-multimethod” matrix encouraged others to use different forms to collect data (Creswell, 2003; Tashakkori & Teddlie, 2003). Around the late 1980s, mixed method approaches started to develop and by the early 1990s, the concept of integration of different kinds of research designs occurred (Creswell, 2014). There are many other terms that are used to describe mixed methods approach, such as integrating, synthesis, quantitative and qualitative methods, multimethod, mixed-methodology and so on (Creswell, 2014). Dörnyei (2007) has stated that “mixed methods research is a new and vigorously growing branch of research methodology, involving the combined use of qualitative and quantitative methods with the hope of offering the best of both worlds” (p. 20). As mentioned above, a mixed methods approach is based on pragmatic knowledge claims. It employs both quantitative

method (closed-ended measures) and qualitative method (open-ended observations) to collect data either simultaneously or sequentially. Also, the numeric information and text information gathered through data collection procedures contributes to the integration of the final database. The core of the mixed methods research is that the corroboration and triangulation of quantitative and qualitative findings can more comprehensively answer the research question than the use of a single method (Creswell, 2003; Creswell, 2014).

3.2.2 Advantages and disadvantages

3.2.2.1 Advantages

Dörnyei (2007) believes that, mixed-methods research, for the most part, integrates the strengths of both quantitative method and qualitative method. In short, the benefits of a mixed –methods approach are:

Foster strengths and circumvent weaknesses

Researchers can use the advantages of quantitative methods to overcome the disadvantages of qualitative methods and vice versa (Dörnyei, 2007). Creswell (2014) also agrees that mixed methods approach can bring out the strengths of both qualitative and quantitative research and minimize the limitations of both methods. For instance, qualitative research can be too contextual and its samples are not always very representative, however when combined with quantitative research, any sampling bias can often be eliminated. Furthermore, quantitative research usually focuses on numerical information and lack of detailed text information, thus sometimes providing one-dimensional findings. Qualitative data can add more information about participants' feelings and the situations attached to their lives to compensate for the one-dimensionality of quantitative data (Dörnyei, 2007).

Understand complex issues

According to Dörnyei (2007), researchers can better understand a complex phenomenon through the integration of numerical data and textual data. He notes that “words can be used to add meaning to

numbers and numbers can be used to add precision to words” (p. 45). Johnson and Onwuegbuzie (2004) also suggest that when researchers use only a single method, there might be some missed insights, while mixed methods approach can obtain a broader understanding of the phenomenon being investigated. Creswell (2014) points out that a mixed methods approach can provide a more complete understanding of the phenomena in question, because the results from one database can assist researchers to explain the results from the other database. Tashakkori and Teddlie (2003) state that “mixed methods research can answer research questions that the other methodologies cannot” (p. 15). As they noted, some scholars have suggested that qualitative research questions are exploratory, while quantitative research questions are confirmatory. However, other scholars, such as Tashakkori and Teddlie (1998), Erzberger and Prein (1997) and Punch (1998) do not agree with the dichotomization of research questions (As cited in Tashakkori & Teddlie, 2003). Tashakkori and Teddlie (2003), for example suggest that researchers can explore confirmatory and exploratory questions at the same time to confirm and generate theory in a study by using a mixed methods approach.

Increase validity and reliability

Mixed methods approach allows researchers to use one database to check the accuracy or validity of the other one (Creswell, 2014). In addition, Dörnyei (2007) states that related evidence drawn from multiple methods can increase the generalizability, in other word, external validity of the findings.

Acceptability

Last but not the least, results of mixed methods approach are more acceptable than results of a single method approach for a larger audience (Dörnyei, 2007).

3.2.2.2 Disadvantages

There are also some issues with mixed-method research. For example, Johnson and Onwuegbuzie (2004) state that it is not easy for individual researchers to conduct both quantitative and qualitative

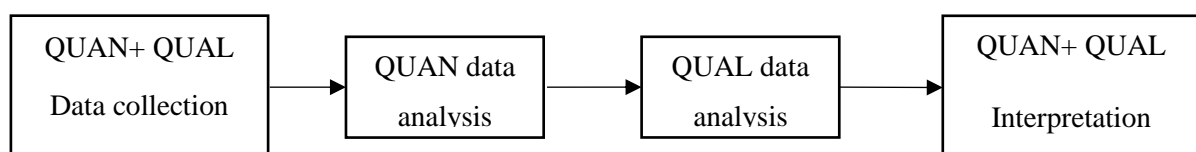
research together. It might needs a research team to concurrently apply two or more than two approaches in the research. They also state that researchers are required to study how to use mixed methods approach in an appropriate way. Similarly, Hesse-Biber and Leavy (2006) argue that most researchers are not able to professionally deal with both quantitative and qualitative data. If the researchers are not familiar with both methods, there may be some shortages in the use of mixed methods (as cited in Dörnyei, 2007). In addition, mixed methods research is usually more time consuming and more expensive than a single method study (Johnson & Onwuegbuzie, 2004). Lastly, Dörnyei (2007) raises the question of “whether there is really a principled approach to guiding the variety of combinations” (p. 46).

3.2.3 Convergent parallel mixed methods design

Creswell (2002) identified three types of mixed methods research design: triangulation, explanatory, and exploratory. Triangulation was employed in this mixed methods research. Creswell (2002) explains triangulation as when “the investigators collect both quantitative and qualitative data, merge the data, and use the results to best understand a research problem” (pp. 564-565, as cited in Tashakkori & Teddlie, p28, 2003).

In this study, the researcher gathered quantitative and qualitative data concurrently. Both quantitative data and qualitative data have the same weight and are analysed separately and then brought together to interpret the research question (see Figure 3.1).

Figure 3.1: Convergent parallel mixed methods design



3.3 Data collection procedures

Sampling strategies and participants

This study primarily employed Convenience sampling to select participants. Convenience sampling is a non-probability sampling approach where participants are selected due to their accessibility and proximity to the researcher (Evan & Bryan, 2013). Researchers use this technique in their research because it is easier, faster and more convenient to collect data from a certain amount of participants within limited research time and cost (Lee, Wu, Huang, & Lee, 2014). The Convenience sampling approach in this study involved sending emails to friends and acquaintances to ask if they would like to participate in the research, or asking them in person. Furthermore, because the research also included a focus in determining the influence of features such as age, and gender on the ability to recognise fake news, a degree of Quota sampling took place. Quota sampling is a sampling strategy which focuses on finding participants with particular features until the researcher obtains enough for the purpose of the research (Evan & Bryan, 2013). In this research, participants with certain backgrounds were selected to maintain a relatively balanced sample of groups represented. In total, there were 89 participants in this research: 43 males and 45 females.

3.4 Research instruments

The research comprised of three research instruments for the collection of data, i) a test that asked participants to identify whether 14 news items were fake or real, ii) a questionnaire that asked participants about their personal and background details; for example, gender, age, hours spent on social media and educational background, and iii) and an interview which asked open-ended questions to participants about their social media usage. These are discussed in detail below.

3.4.1 Test

According to Johnson and Turner (2003), “tests are commonly used in quantitative research to measure attitudes, personality, self-perceptions, aptitude, and performance of research participants” (p. 310). They claim that the most commonly used test in data collection is a pure quantitative test. This kind of test is standardized and completely close-ended. Participants are required to examine the items in those tests using their own judgement. Johnson and Turner (2003) identified some benefits and weaknesses of using tests to collect data. Tests can offer useful measures of the different characteristics of participants and provide a high measurement validity. Tests can also provide “hard” quantitative data and the subsequent data analysis can be relatively easy. In terms of weaknesses, a test may be expensive to administer, it may not be suitable for a local population, or it may present a bias toward a particular group of people.

In this study, the Fake News Test asked participants to examine extracts from 14 news stories reproduced from online news organisations or social media platforms and determine whether these news stories were fake or real (see Appendix B). The extracts typical included the headline, the leading text of the article and an image. In total, seven of the 14 news stories were fake and seven were real. The fact check website Snopes (<https://www.snopes.com/>), which identifies the legitimacy of news stories on social media was used to help guide the decision as to which news stories were selected for the questionnaire. A range of well-known and lesser known news stories were selected. For example, two of the fake news stories ‘Elderly woman accused of training her 65 cats to steal from neighbours’ and ‘17-year-old teenager sues his parents for being born white’ were in the top 50 fake news stories of 2017 (BuzzFeed, 2017). Furthermore, in order to avoid a singularity of news type, news stories from different news categories were selected for the Fake News Test (Table 3.1). To prevent the participants from referring to the Internet to answer the questions, The Fake News Test was carried out on paper in front of the researcher. Moreover, and given the Convenience approach for selecting participants, answers to the questions were not revealed until the data collection process was finished, in case some participants discussed the results of the questionnaire with other potential

participants. A more detailed discussion regarding the selection of each news article will accompany the results of the Fake News Test in Chapter Four.

Table 3.1: The range of news categories in the Fake News Test questions

News item	News category
Study Shows Aluminium Was Present In Baby Alfie Evans' Brain	Medical
Elderly Woman Accused of Training Her 65 Cats to Steal from Neighbours	Social (Top 50 fake news on Facebook in 2017)
17-year-old Teenager Sues His Parents for Being Born White	Ethnicity (Top 50 fake news on Facebook in 2017)
Cadbury Products Contaminated with HIV	Food
Fox News Banned as 'Propaganda' in Australia and New Zealand	Media (Local news item)
Donald Trump Won the Nobel Peace Prize	Political
Florida Passes Bill Legalizing Recreational Use Of Marijuana	Municipal
President Trump Revoke Gun Background Checks for Mentally Ill People	Political
McDonald's Restaurants Flipping Their Iconic Golden Arches Upside Down for Women's Day	Food
An Arms Dealer Advertised a Weapon for Its Ability to Fit into a Small Backpack	Social

Rattlesnake Selfie" Results in a \$153K Medical Bill	Medical
United Airlines Deny a Passenger's Request to Fly with an Emotional Support Peacock	Social
"City of Seattle Sweetened Beverage Recovery Fee"	City
Hawaii Volcano Destroys 26 Homes, Spews Lava 200 Feet in Air	Disaster

3.4.2 Background attribute questionnaire

Questionnaires are one of the major methods for collecting research data. They typically involve a 'self-report data collection instrument' that research participants are required to complete (Johnson & Turner, 2003). A typical questionnaire collects personal information or data about social units, such as the family or school. When each individual participant is asked to answer the same questions, and the coding system of their responses is also the same, the questionnaire is referred to as a standardized questionnaire (Siniscalco & Auriat, 2005). Questionnaires are often useful for measuring participant attitudes and obtaining other information from participants. They are also not particularly expensive to produce and the turnaround is generally quick. Furthermore, for well-constructed and well-tested questionnaires, the measurement validity is relatively high. Moreover, closed-ended questionnaires have a low drop rate and make the analysis of data easier. However, questionnaires also present some disadvantages as well. For example, validation is required when using a questionnaire to collect data. Completed questionnaires might contain missing data, and when questionnaires contain open-ended items, the responses may be vague and take time to analyse (Johnson & Turner, 2003).

The background attribute questionnaire for this study involved 10 single choice or multiple choice questions that asked participants for information about their age, gender, occupation, highest

educational qualification, frequency of actively reading news, primary news source, time spent on social media each day, primarily used social media platform, the number of news types regularly read and level of computer skill. These particular areas were included in the questionnaire for the following reasons.

Age and level of computer skill was included because these background attributes are often mentioned in reports discussing fake news. Notley and Dezuanni (2017), for example, pointed to a news report whose headline stated that “most young Australians can’t identify fake news online”. It has also been claimed that although young people have better technology skills than their parents, they still feel confused when required to judge whether a news item is fake or not (Figueira & Oliveira, 2017). An Internet survey which included 1041 participants in the United States found that young people also spent a significant amount of time on the Internet, and that this time was mostly spent on social media (Fleurbaey, 2018). In addition, according to Fleurbaey (2018) while television still dominates the daily news cycle, online media and social media have become more important than traditional print media for the dissemination of news. He also finds that females are more likely to use radio, television, newspaper and magazines than males, and people with a higher educational background depend less on television news sources. Given such observations, background attributes, such as time spend on social media, primarily used social media, primary news source, gender, highest educational qualification were selected as variables for the questionnaire. Three other variables, occupation, frequency of actively reading news and preferred news types, that the researcher considered relevant to the ability to identify whether the news was fake or not were also included in the questionnaire.

3.4.3 Interview

The third research instrument included in this study was the participant interview. According to Johnson and Turner (2003), there are three types of interviews: *pure qualitative interview*, *informal conversational interview* and *standardized open-ended interview*. The pure qualitative interview is a

kind of typical in-depth interview that is unstructured, exploratory, and open-ended. The informal conversational interview is completely unstructured, and the interview questions will be formed during the interview process. The standardized open-ended interview is based on pre-established open-ended questions, whose wording and order are not changed in order to make the interview between participants consistent. Interviews have a number of strengths. First of all, they help to measure attitudes and most other areas of interest. They also allow the interviewer to carry out a more in-depth investigation of the information provided by respondents, than a questionnaire would allow. This is because face to face interviews enable participants to clarify their ideas and perspectives to the researcher in their own words, and the researcher is able to query further certain salient points that occur in participant responses (Harris & Brown, 2010). In addition, for closed interviews, the explanatory validity is good and the drop rate is low. Furthermore, interviews have a relatively high response rate and they are useful for exploration and validation. On the other hand, interviews also have a number of weaknesses. Firstly, in-person interviews are expensive and time-consuming, they are not seen as anonymous by participants, and open-ended items need more time for data analysis (Johnson & Turner, 2003).

This research applied a standardized open-ended interview. After completing the test questionnaire and background questionnaire, participants were asked 10 open-ended interview questions in order to collect more specific information about the participant's use and consumption of social media, such as their sharing and engagement with online news, including fake news. Information gathered from the interview regarding participant's motivation for reading the news, their views on fake news, the way they check and evaluate news sources and whether they use social media to share the news was able to help the researcher explore the research question in depth. The list of open-ended questions can be found in Appendix B.

The interview questions were ordered in a rational sequence. For example, after asking participants about their definition of fake news, the researcher asked about their experiences of encountering what

they thought was “fake news” on social media and whether they believed that fake news could influence people’s lives. After first completing the background questionnaire and fake news questionnaire, each participant was then asked to answer the same open-ended interview questions. The interview was recorded by the researcher and these recordings were subsequently transcribed.

3.5 Data analysis

The collected data was analysed quantitatively using statistical software, SPSS (Statistical Package for the Social Sciences) and qualitatively, using the qualitative analysis software NVivo. Firstly, the overall results of test questionnaire were examined. Next, the participants’ background attributes were examined in relation to their scores in the Fake News Test. After that, one-way ANOVA testing was conducted to evaluate the statistical significance of these findings. Lastly, the participants’ interviews were analysed according to the quantitative results and their Fake News Test scores.

3.5.1 Test questionnaire

The results of the Fake News Test included the overall mean and standard deviation for the number of questions correctly answered and the percentage distribution of correct answers. Next, each individual news item in the Fake News Test was analysed using pie graphs to show the percentage of correct and incorrect answers. These results were considered in the context of the specific news item.

3.5.2 Quantitative data analysis

The data from the Fake News Test and the background questionnaire were statistically analysed using IBM SPSS. This included the use of both descriptive statistics, as well as a one-way ANOVA analysis to establish the existence of any relationships between the participants’ scores in the Fake News Test with the participants’ various background attributes. The descriptive statistical results involved information about the mean, standard deviation, standard error and confidence interval for the categorical variables related to each of the background attributes. The one-way ANOVA involved

significance test, a Post Hoc Test and description of effect size, to examine whether there was any notable statistical significance between the categorical variables related to each of the background attributes.

3.5.3 Qualitative data analysis

The participants' attitudes to fake news were established using a qualitative analytical approach, which looks for patterns in the participants' responses to the open-ended interview questions. To achieve this, the transcribed interview data was analysed through NVivo qualitative software through a process of coding, labelling and categorisation. To start with, the researcher familiarised herself with and reflected on the data collected from the interviews. This process was followed by an initial coding stage where relevant chunks of data was given descriptive codes. After this initial coding stage, all codes were reorganised into categories, often based on keywords or recurring salient themes that appeared in the groups of data (Dörnyei, 2007) - and which also resonated with ideas from the theoretical literature. Finally, a secondary level of coding occurred which thematically regrouped and renamed initial codes. Importantly, and within the context of a mixed methodological approach, the statistical findings from quantitative data analysis helped direct the researcher towards relevant features in the qualitative interview data. These were then qualitatively examined to produce a more in-depth understanding of the relationships between the background attributes of the participants and their ability to recognise whether the online news is fake or real.

3.6 Data reliability and validity

Some scholars suggest three approaches to check the reliability of an analysis: the investigator's position, triangulation and audit trail (Zohrabi, 2013). Mertens and Hesse-Biber (2012) note that "triangulation is a measurement technique often used by surveyors to locate an object in space by relying on two known points in order to 'triangulate' on an unknown fixed point in that same space" (p. 75). Similarly, in research, triangulation means the use of more than one approach to investigate a

research problem. Triangulation, therefore increases the confidence of the research findings by obtaining more comprehensive information through the combination of two or more methods (Heale & Forbes, 2013).

This research, as a mixed method study, uses a triangulated approach which include both questionnaires and interviews to obtain data from participants. Hence, the use of different sources in this study to collect a variety of quantitative and qualitative information can contribute to the study's reliability. In order to reduce the potential inconsistencies that might occur when different interviewers interview a range of different participants, in this study, the same interview questions were asked by the same interviewer. The recorded verbal interviews are transcribed in words and stored in an interview file. Also, in order to achieve the procedure of a reliable audit trial, the data collection procedure, data analysis method and results are presented clearly and sequentially in this report.

From the processes of data collection to data analysis and interpretation, researchers try to establish validity (Zohrabi, 2013). Bryman (2001) explains validity as referring to “the issue of whether an indicator (or set of indicators) that is devised to gauge a concept really measures that concept” (p. 170). Internal validity mainly focus on the congruence of research findings with reality and it can be tested by six ways: triangulation, member checks, long-term observation at research site, peer examination, participatory or collaborative modes of research and researcher's bias (Zohrabi, 2013). Triangulation is the most common strategy to determine the internal validity (Merriam & Tisdell, 2016). To achieve internal validity, triangulation is used in the present study. To enhance the effectiveness of the research, multiple approaches for gathering information from several different perspectives were employed, after which the findings can be confirmed by examining the quantitative and qualitative data together (Zohrabi, 2013). Zohrabi (2013) notes that “external validity is concerned with the applicability of the findings in other settings or with other subjects” (p. 259). Given that the Convenience sampling and Quota sampling techniques employed in this study are two

kinds of nonprobability sampling techniques, the sample may or may not be representative of the population, therefore the external validity could be affected by the sampling strategies in this study.

3.7 Ethical issues

Privacy and confidentiality are respected throughout the research process based on the ethical rules issued by the AUT University. Due to ethical concerns, minors were not included as participants.

During the data collection procedure, the Participant Information Sheet was presented to all the participants first to let them know about the purpose of this study, what they were required to do and how to keep their privacy. After reading and understanding the information sheet, participants were asked to sign a Consent Form that was approved by the AUT University. They were then able to complete the Fake News Test, answer the background questionnaire and participate in the interview. Participants' names will not appear on the Fake News Test, background questionnaire, or in transcripts of the interview. Instead, numerical pseudonyms will be used and these will not be associated with the name of an individual participant in any document. As a result, the identity of all participants will remain confidential. All recordings of interviews will be erased once they are transcribed and checked by the researcher.

3.8 Chapter summary

In summary, this methods section has introduced and justified the mixed methodological philosophical worldview underpinning the study. Following the definitions, benefits and weaknesses of a mixed methods approach, the mixed method research design was described. After that, the data collection procedure was introduced. Convenience sampling and Quota sampling strategies were used to select the 89 participants that took part in the study. Then the three research instruments employed in this research were discussed; a test that scores the participants' ability to recognise whether a news item is fake or real, a questionnaire that identifies the background information of participants, and an

interview which captures the participants' thoughts about, and experiences with, fake news. Next, the tools and approaches used to analyse the different sets of quantitative (test and questionnaire) and qualitative data (interview) were discussed, and how the triangulation of these two methods contributed to the reliability of the findings. Finally, ethical considerations were discussed to establish the study's respect to the participants' privacy and confidentiality. The following chapters will discuss the results of the data analysis.

CHAPTER FOUR: QUANTITATIVE RESULTS

4.0 Introduction

This chapter presents the results of the quantitative analysis. Firstly, the overall results of the Fake News Test are presented, followed by a discussion of the individual results for each question. This discussion also accounts for the inclusion of the question in the Fake News Test. After that, and following a brief overview of the participants' responses to the background attribute questionnaire, the descriptive statistics identifying the relationship between the different background attributes and Fake News Test responses are presented. Next, a one-way ANOVA analysis of variance is applied to examine which background attributes significantly influence participants' ability to recognise whether the news is fake or not. This includes a Post Hoc test to compare and establish the particular significance of the categorical variables (e.g. 18-24, 25-34) in each of the background attributes (e.g. age). Finally, a brief summary is provided.

4.1 Results of the Fake News Test

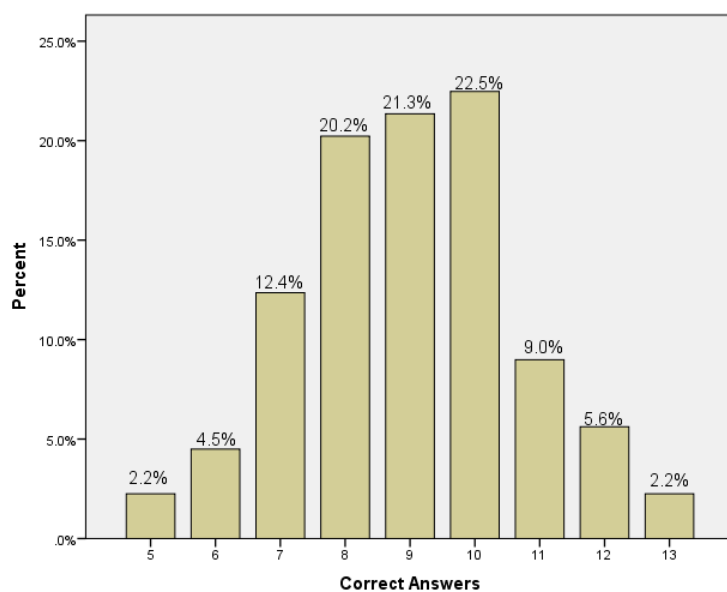
4.1.1 Introduction

The Fake News Test involved 14 questions in which the participant had to decide whether the news presented was true or false. Each question involved both the text of the article, which usually included the headline and summary of the main event, as well as an accompanying image. Seven of the news items included in the test were reproductions of fake news stories and seven were reproductions of true news stories. The descriptive statistics for the Fake News Test are presented in Table 4.1.1 and the distribution for the percentage of correct answers in the test is presented in Table 4.1.1.

Table 4.1.1: Mean and standard deviation for the number of questions correctly answered in the Fake News Test

	N	Minimum	Maximum	Mean n. of correct answers	Std. Deviation
Total correct	89	5	13	8.99	1.716
Fake correct	89	.00	7.00	4.3820	1.34423
Real correct	89	1.00	7.00	4.6067	1.34518

Figure 4.1.1: The percentage distribution of correct answers for the Fake News Test



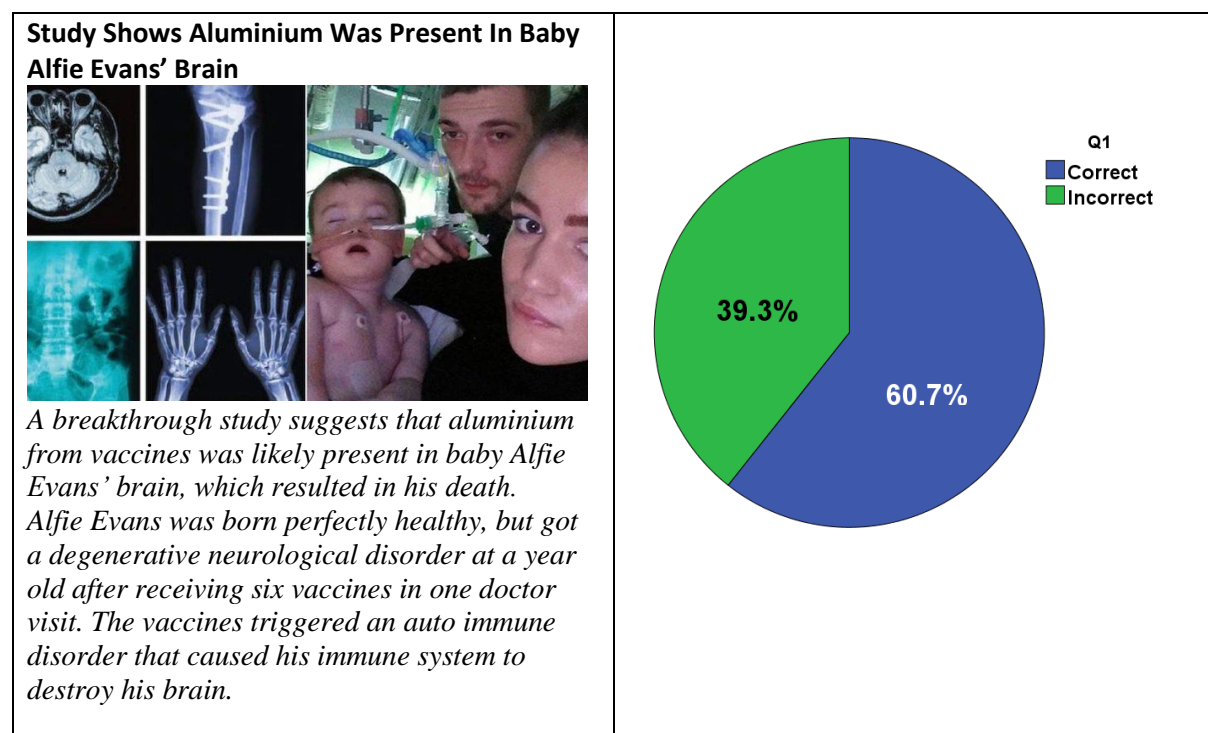
In total, 89 participants took part in this study. Table 4.1.1 shows that the mean (M) number of all correct answers is 8.99 with a standard deviation (SD) of 1.716. The mean (M) number of correctly answered questions containing fake news is 4.38 with a standard deviation (SD) of 1.34 and the mean (M) number of correctly answered questions containing real news is 4.61 with a standard deviation (SD) of 1.35. As can be seen in Figure 4.1.1, 2.2 percent of participants had at least 5 correct answers and 2.2 percent of participants had the highest number of correct answers (13 out of 14). More than half of the participants correctly answered between 8-10 number of questions (20.2% for 8, 21.3% for 9, and 22.5% for 10). 39.4 percent of participants scored less than the mean. No participant correctly answered all of the 14 questions.

4.1.2 Analysis of each individual news questions

As mentioned, the test contained seven fake and seven real news sources retrieved from social media platforms and online websites, and all checked by the well-known fact-check website, Snopes. Given that the participants will regularly encounter a variety of news sources, the researcher intentionally selected the 14 news stories from a range of different news categories (see Section 3.4.1).

Furthermore, because this study aims at testing participants' ability to identify the veracity of online news stories, both incredible and credible fake and real news were selected, as were news events participants might both be familiar with and lack knowledge of. The following discusses each of the questions contained in the Fake News Test, identifying the decision behind their selection and the percentage of participants who correctly identified the news item as either false or true.

Question 1

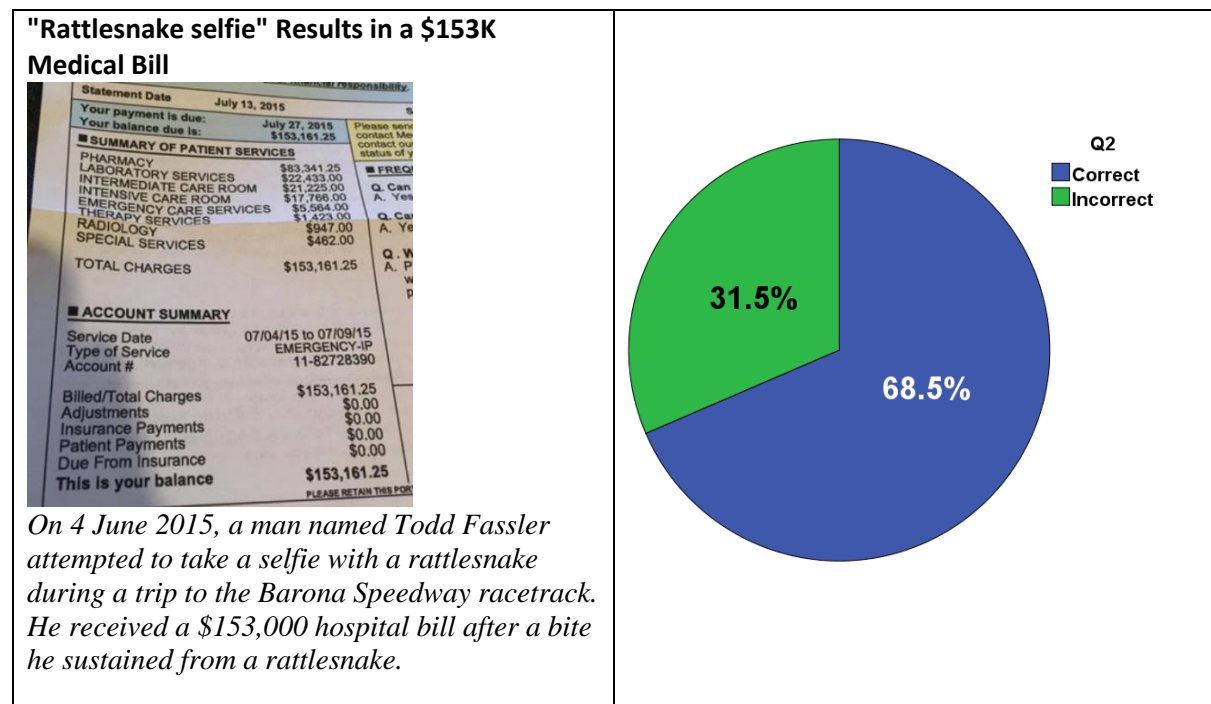


Question 1 is a fake news item related to medical science and it was retrieved from the renowned fact check website- Snopes¹. The researcher included this news item because immunisation is a frequent and controversial topic in the news, with many people arguing that immunisation presents a number

¹ <https://www.snopes.com/>

of health dangers, despite repeated official evidence to the contrary. The pie chart of Q1 presents that although 60.7 percent of participants correctly judged the news, 39.3 percent viewed this fake news item as real.

Question 2



Question 2 is a real news retrieved from CBSNEWS. Due to the increasing number of fake news stories, it becomes difficult to identify the more incredible news as real. This news item was selected because the incredible size of the hospital bill and strange context from which it resulted is difficult to distinguish as genuine in the contemporary news environment. As shown in the pie chart for Q2, 68.5 percent of participants correctly answered this news question and 31.5 percent judged this news as false.

Question 3

Trump Undid Obama Rule That Added Mentally Ill People to Gun Check Register



Trymaine Lee
@trymainelee



President Trump calls for focus on mental health after 18th mass shooting of 2018.

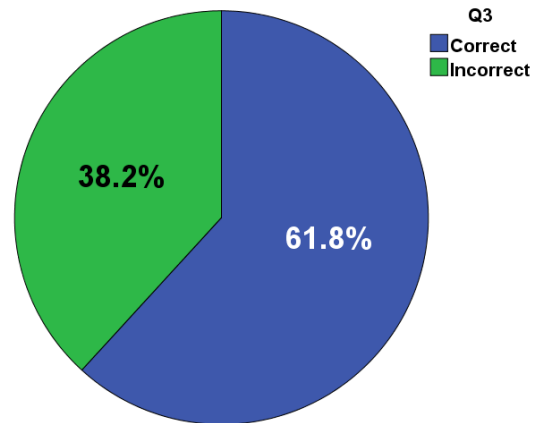
But, wait...

Trump signs bill revoking Obama-era gun checks for mental illness [nbcnews.to/2lmCRGB](https://www.nbcnews.com/2lmCRGB) via @nbcnews
4:34 AM - Feb 16, 2018



Trump signs bill revoking Obama-era gun checks for mental il...
The new law nullifies an Obama-backed rule that added people with mental illnesses to the national background check database.
[nbcnews.com](https://www.nbcnews.com)

In February 2017, President Trump repealed an Obama-era regulation that would have made it easier to block the sale of firearms to people with certain mental illnesses.



Question 3 is a real political news item retrieved from Twitter. This news was selected for the reason that Trump is always a controversial politician and there are many fake news items about him. The pie chart of Q3 tells that 61.8 percent of participants answered this news question correctly and 38.2 percent answered wrongly.

Question 4

Fox News Banned as 'Propaganda' in Australia and New Zealand



Bonnie Swadling
@bonnie_swadling

New Zealand and Australia have banned Fox News saying it does not fit in their democracies. They say it is propaganda. Smart countries. The U.S. is sinking fast under the Dictatorship of Trump and the Republicans in the eyes of the world.

4:07 PM - Jan 25, 2018

1,932 1,481 people are talking about this

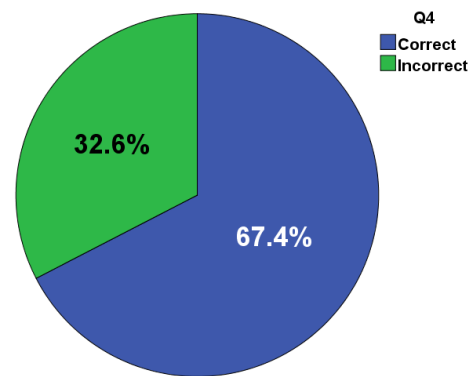


Daria
@ukfan01

@FoxNews is banned in Australia and New Zealand because it is classified as propaganda.

7:40 AM - Jan 26, 2018

See Daria's other Tweets



Question 4 is a fake news item related to news media itself that was retrieved from Twitter. The researcher choose this news item because it mentions the country New Zealand where the participants were selected. The pie chart of Q4 presents that 67.4 percent of participants judged this news correctly and 32.6 percent judged it wrongly.

Question 5

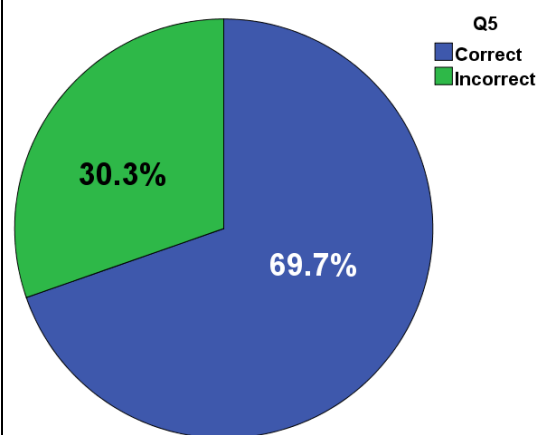
ELDERLY WOMAN ACCUSED OF TRAINING HER 65 CATS TO STEAL FROM NEIGHBORS



845K

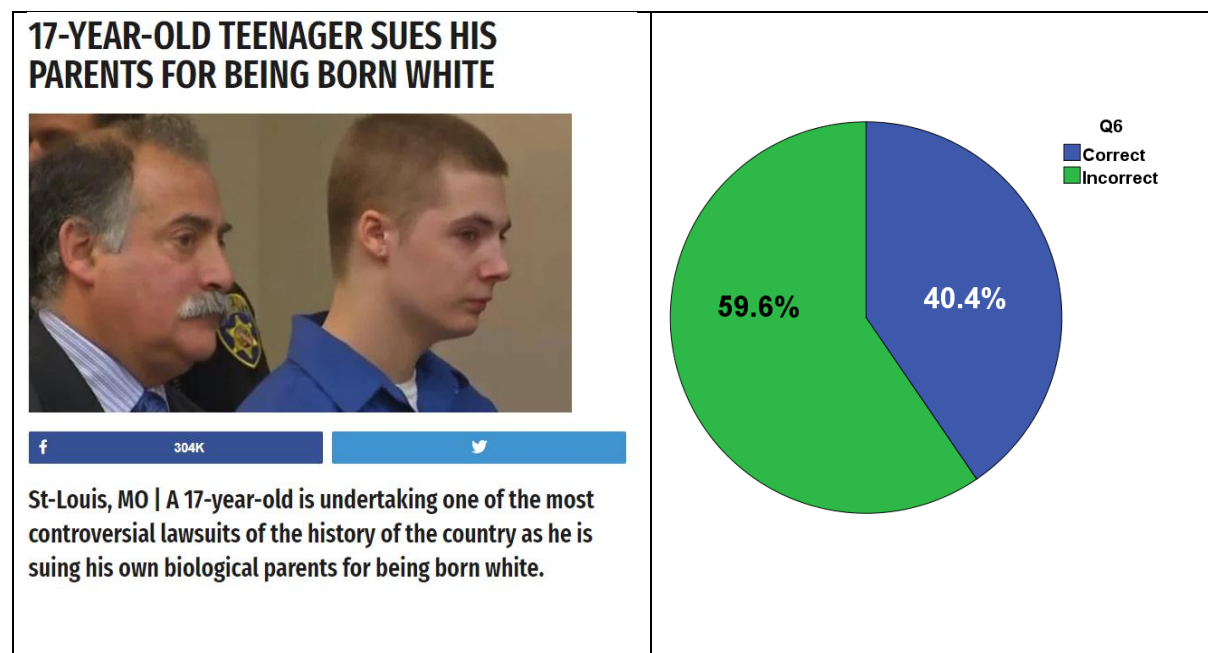


Columbus, Ohio | An 83-year old woman was arrested this morning and accused of training dozens of cats to steal jewelry and other valuables from her neighbors.



Question 5 is a fake news item retrieved from Facebook. The researcher selected this news item because it was in the top 50 fake news stories of 2017 according to BuzzFeed's² database. It can be seen that 69.7 percent of participants correctly identified this news item as false, and 30.3 percent believed this fake news item was real.

Question 6



Question 6 is a fake news item related to racial issues and according to BuzzFeed², it is also a top 50 fake news story of 2017. It was retrieved from Facebook (Buzzfeed). The participants response to this question is different to their response to the other top 50 fake news stories, in that only 40.4 percent of participants correctly identified the news as fake, while more than half (59.6 percent) thought this news was real.

Question 7

² https://github.com/BuzzFeedNews/2017-12-fake-news-top-50/blob/master/data/top_2017.csv

McDonald's flips golden arches in honor of International Women's Day

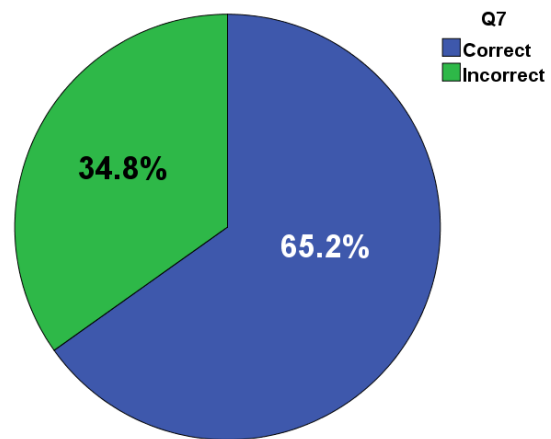


McDonald's 
@McDonaldsCorp

In the U.S. we're proud to share that 6 out of 10 @mcdonalds restaurant managers are women. Join us in recognizing the extraordinary contribution of women at McDonald's on #IWD2018: [McD.to/6014DTdTK](https://mcd.to/6014DTdTK)

7:05 AM - Mar 9, 2018

83 31 people are talking about this



Question 7 is a real news retrieved from Twitter. The researcher choose this news item because McDonalds would be a familiar brand to all participants. As shown in the pie chart of Q7, 65.2 percent of participants identified this source correctly and 34.8 percent identified it incorrectly.

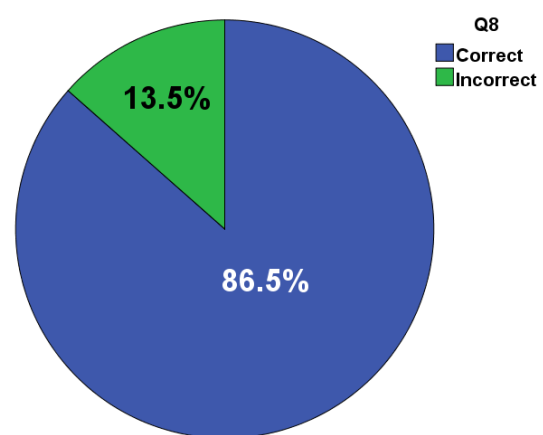
Question 8

UPDATE: Trump Has The Votes-Wins Nobel Peace Prize

May 3, 2018 • Flagg Eagleton • Pickled Pig's Lips

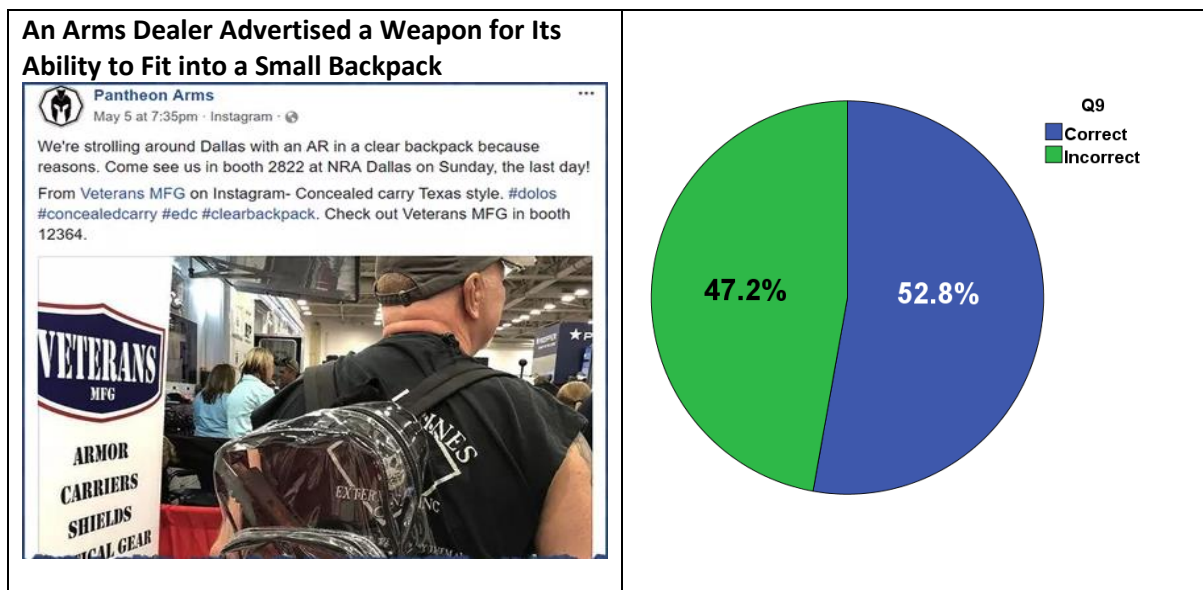


The voting for the 2018 Nobel Peace Prize has ended, according to our source inside CERN in Norway. It took just an hour for the voting to make its way around the famous "Circle of Nobels" with a clear majority for US President Donald Trump. Nobel Society Laureate Coordinator Art Tubolls told BBC-14A:



Question 8 is a fake political news retrieved from a news website called DailyWorldUpdate³. The reason that this news item was selected is the same as Q3, in that Trump is a frequent topic of fake news, however unlike Q3 which was unexpectedly true, this story is fake. The pie chart of Q8 presents that the majority of participants (86.5 percent) answered this news question correctly. Only 13.5 percent of them incorrectly answered the question.

Question 9



Question 9 is real news retrieved from Instagram. The researcher choose this news because it is unthinkable to see an arms dealer advertising weapons in a transparent backpack. As a result, participants may be confused about the legitimacy of this news item. As presented in the pie chart of Q9, the number of participants that correctly and incorrectly judged this news is almost equal.

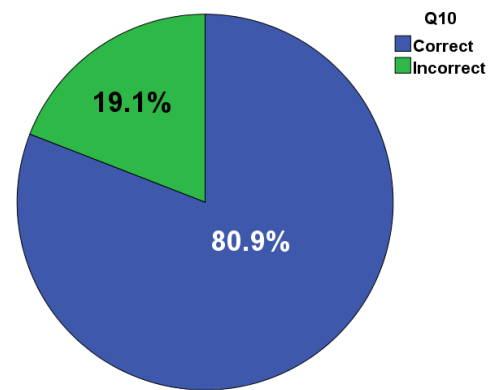
Question 10

³ <https://dailyworldupdate.us/2018/05/03/update-trump-has-the-votes-wins-nobel-peace-prize/#snopes>

Hawaii Volcano Destroys 26 Homes, Spews Lava 200 Feet in Air



Hawaii's erupting Kilauea volcano has destroyed homes and forced the evacuations of more than a thousand people.



Question 10 is a real news retrieved from a news website-Theledger.com⁴. It was selected because at the time of the study, it was a current news item. As can be seen, most of the participants (80.9 percent) believed that this news was real, and only a few (19.1 percent) wrongly identified this news item as false.

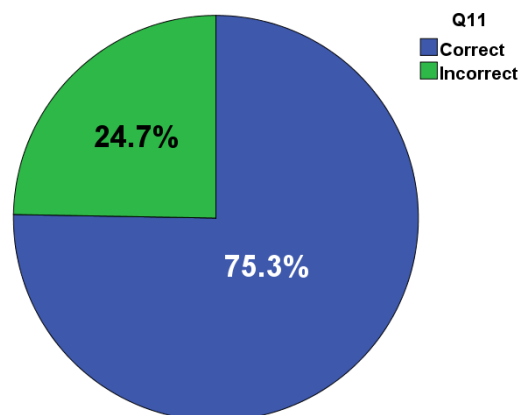
Question 11

Cadbury Products Contaminated with HIV



This is the guy who added his infected blood to Cadbury products. For the next few week do no eat any products from Cadbury, as a worker from the company has added his blood contaminated with HIV (AIDS). It was shown yesterday on BBC News. Please forward this message to people who you care.

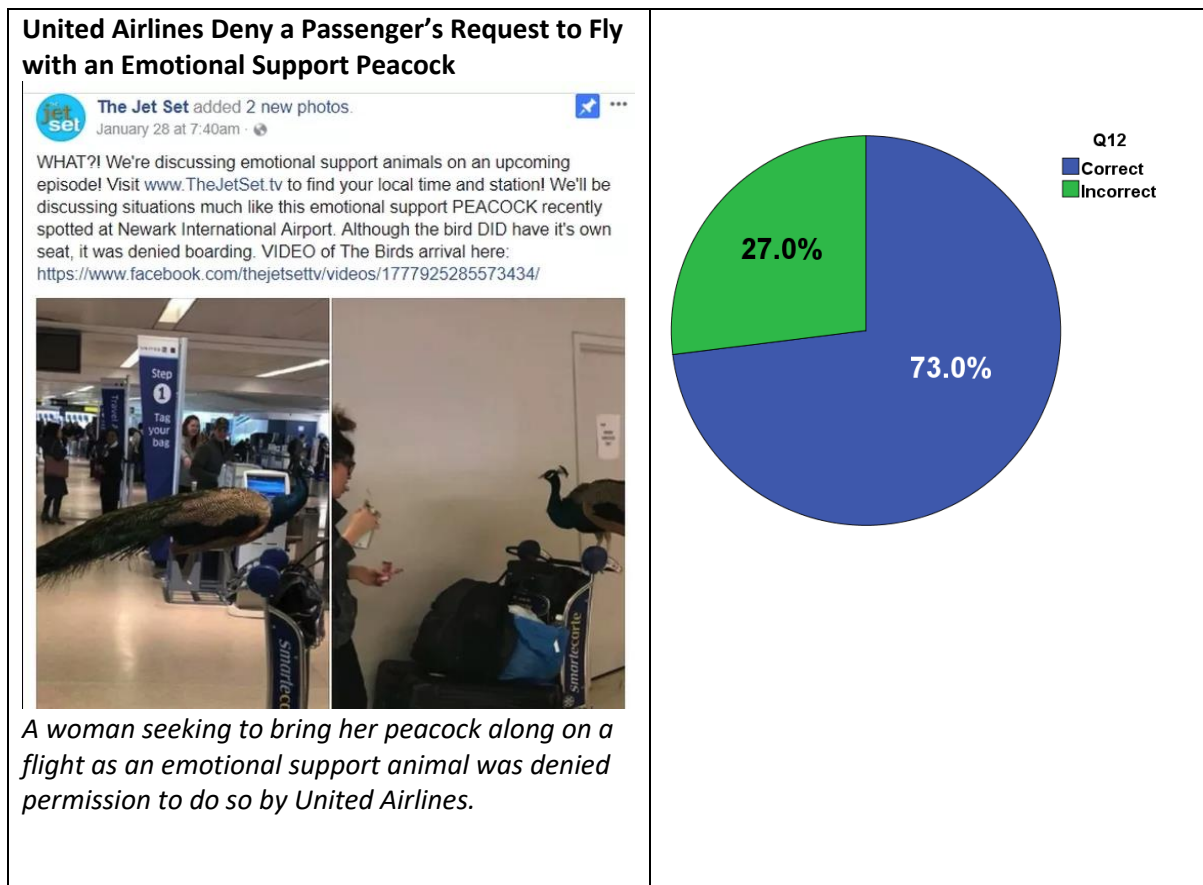
A worker at Cadbury plant was arrested for contaminating the company's products with HIV-infected blood



⁴ <https://www.theledger.com/news/20180506/hawaii-volcano-destroys-26-homes-spews-lava-200-feet-in-air>

Question 11 is a fake news retrieved from Snopes¹. The reason that this news item was chosen is that it was felt important to include a sensational news item that is very predictably fake in the test. The results of this news question in the pie chart of Q11 shows that three-quarters of the participants correctly recognized it as fake, while a quarter viewed this fake news as real.

Question 12



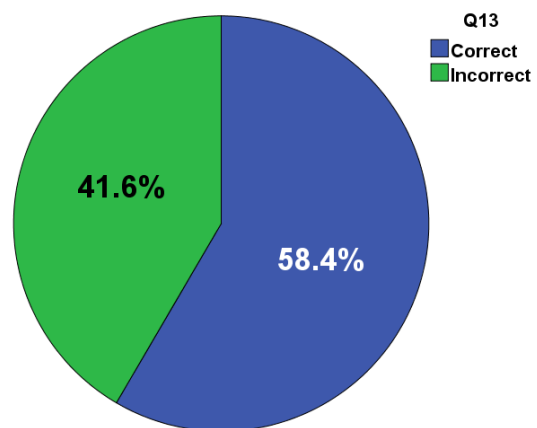
Question 12 is real news retrieved from Facebook. The researcher choose this news item because while it appears extraordinary, emotional support animals were a topical discussion at the time of the study. 73 percent of participants correctly identified this news item as real, while 27 percent of them did not.

Question 13

"City of Seattle Sweetened Beverage Recovery Fee"



In January 2018, social media users began pondering a photograph seemingly showing a variety pack of Gatorade brand sports drink offered for sale at a Costco warehouse store in Seattle, priced at \$26.33. What threw viewers for a loop was that the price of the drink itself was only \$15.99, with another \$10.34 (a markup of 65%) being added to the cost for something identified as "City of Seattle Sweetened Beverage Recovery Fee"



Question 13 is a real city news retrieved from Washingtonpolicy.org⁵. It was picked for the reason that although it is true, and a topical issue, the size of the recovery fee might be viewed as implausible.

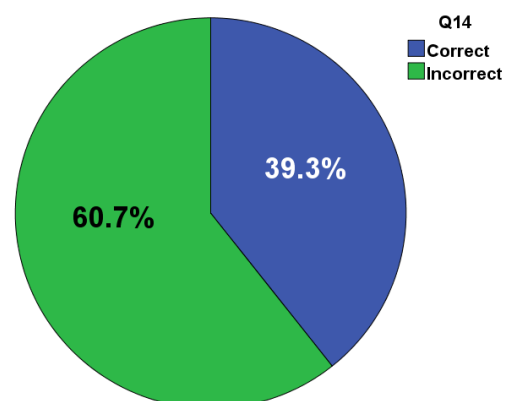
58.4 percent of participants correctly answered this question and 41.6 percent did not.

Question 14

Florida Passes Bill Legalizing Recreational Use Of Marijuana



Orlando, Fl. – Weed smokers rejoice, The state of Florida can now be added to the growing list of US



⁵ <https://www.washingtonpolicy.org/publications/detail/city-of-seattle-sweetened-beverage-recovery-fee>

states that have passed bills to legalize the use of marijuana. The bill to legalize marijuana for medical and recreational use in the state was first presented at the state capital back in July is expected to be in place by Easter. Lawmakers have finally given the go-ahead citing it will jump-start the economy and create new jobs.

Question 14 is fake news retrieved from Snopes¹ as well. The researcher selected this news item because it is increasingly legal to use marijuana in some places in the United States and was a topical issue at the time of the study. Only 39.3 percent of participants believed this news was real, while approximately 60 percent indicated it was false.

4.1.3 Overall analysis of Fake News Test

Figure 4.1.2: Percentage of correct and incorrect answers for each individual question

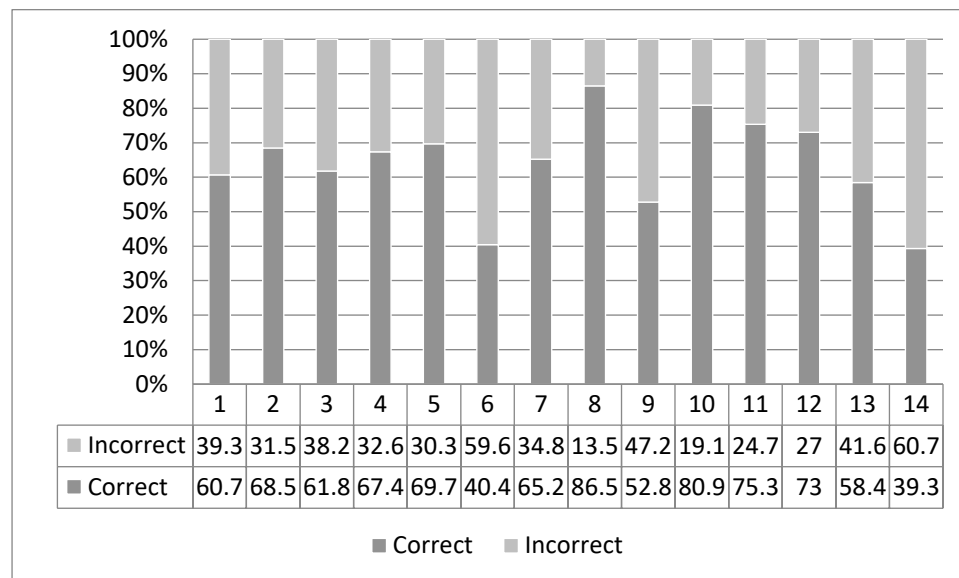


Table 4.1.2: Minimum, Maximum, Mean and Standard Deviation for the percentage of questions correctly answered and incorrectly answered in the Fake News Test

	N	Minimum	Maximum	Mean	Std. Deviation
Correct	14	39.30	86.50	64.2786	13.60086
Incorrect	14	13.50	60.70	35.7214	13.60086

Table 4.1.2 identifies the mean (M) percentage for correctly answered questions as 64.28 ($SD=13.6$) and the mean (M) percentage for incorrectly answered questions as 35.72 ($SD=13.6$). Taking into consideration the M percentage and SD for correctly answered questions ($64.27+13.6=77.87$, $64.27-13.6=50.67$), all but four of the questions were correctly answered within the standard deviation of 50.67 to 77.87. Those out of this range were Q6, Q8, Q10 and Q 14. Reasons why these four questions may have had an unusually higher number of correct or incorrect responses than the majority of other questions is discussed below.

Q6 “17-year-old Teenager Sues His Parents for Being Born White”

59.6 percent of participants identified this fake news as real. The news item itself said that the event was one of the most controversial lawsuits in the history of the country concerned (the United States). It is possible that respondents wrongly identified this news as real due to their geographical location in New Zealand, and the commonly received view in New Zealand that this type of excessive lawsuit frequently occurs in the United States, a country with multiple cultures and complex problems centred around race and identity.

Q8 “Trump has the votes-wins Nobel Peace Prize.”

86.5 percent of respondents judged this fake news as fake. This unusually high level of accuracy is possibly due to the many controversial news and comments surrounding the US president Donald Trump, and also that following his meeting with Kim Jong Un, a call for the US president to be awarded the Nobel prize was widely ridiculed in the press.

Q10 “Hawaii Volcano Destroys 26 Homes, Spews Lava 200 Feet in Air.”

The disaster that this real news item refers to was current at the time of the study and widely discussed in the news. The news item also describes the disaster in a plausible way without exaggeration. Due to these reasons it is likely that most of respondents (80.9 percent) were able to correctly identify it as true.

Q14 “Florida passes Bill Legalizing Recreational Use of Marijuana.”

At the time of the study, a number of states in the United States were passing laws to make the use of marijuana legal. It is likely that participants mistakenly assumed that Florida was one of these states. Leading to 60.7 percent of participants identifying this fake news as real.

4.2 Analysis of the participants’ background attributes

4.2.1 Introduction

This section discusses the results of the quantitative analysis, which statistically examines the relationship between background information about the participants and their ability to correctly identify whether the news items in the Fake News Test were fake or real. This section will firstly introduce the background attributes of all participants. Then it will present the descriptive statistics for each attribute.

4.2.2 Overview of the participants’ background attributes

As indicated in Chapter 3, data about each participant’s background was collected using a background questionnaire, carried out immediately after the participant had completed the Fake News Test. Table 4.2.1 lists the different background attributes, and the categorical variables within each of the background attributes, that were included in the questionnaire and were the statistical focus of the quantitative component of this study. Table 4.2.1 also indicates the number of participants that are represented in each of the categorical variable groups.

As can be seen in table 4.2.1, with the exception of the 55 and over age group (N=11, 12.4%), the number of participants in each of the age groups was approximately 20. In terms of gender, the participants consisted of 42 males (47.2%), 45 females (50.6%) and 2 gender non-binary participants (2.2%). For the attribute of occupation, the three major categories were students (N=24, 27.0%),

clerical (N=23, 25.8%) and professional and technical jobs (N=22, 24.7%). In terms of qualification, approximately 40 percent of participants had completed a Bachelor's degree (N=29), about 30 percent had completed a Master's or Diploma (N=26), 20 percent had not completed any qualification since leaving High School (N=18), while 6 had a doctorate (6.7%).

Most participants actively read the news daily (N=70, 78.7%) and more than half of their primary news sources were online news websites (N=49, 55.1%). The three most frequently used social media platforms were Facebook (N=19, 21.3%), Instagram (N=14, 15.7%) and WeChat (25, 28.1%). A majority of participants spent no more than 3 hours each day on social media and had basic, or better than basic, computer skills. Many participants obtained their news from more than a single source.

Table 4.2.1: Participants profile

Background attributes	Frequency (N)	Percent (%)
Age (N=89)		
18-24	20	22.5
25-34	21	23.6
35-44	19	21.3
45-54	18	20.4
>55	11	12.4
Gender (N=89)		
Male	42	47.2
Female	45	50.6
Other	2	2.2
Occupation (N=89)		
Student	24	27.0
Professional and technical	22	24.7
Higher administrator	4	4.5
Clerical	23	25.8
Service	6	6.7
Other	10	11.2
Highest Qualification (N=89)		
High School		2
Bachelor's	18	0.2
Master's and Diploma	29	43.8
PhD	26	29.2
	6	6.7
Frequency of actively reading news (N=89)		

Do not actively read	5	5.6
Hourly	3	3.4
Daily	70	78.7
Weekly	10	11.2
Monthly	1	1.1
Primary news source (N=89)		
Traditional news sources		
Online news websites	19	21.3
Social media platforms	49	55.1
Other	15	16.9
	6	6.7
Primary social media platform (N=89)		
Do not use	4	4.5
Facebook	19	21.3
Twitter	3	3.4
Instagram	14	15.7
YouTube	10	11.2
Google	4	4.5
WeChat	25	28.1
Weibo	8	9.0
Other	2	2.2
Time spent on social media (N=89)		
Do not use	3	3.4
<1 Hour	22	24.7
1-2 Hours	29	32.6
2-3 Hours	16	18.0
3-4 Hours	9	10.1
>4 Hours	10	11.2
Number of news types regularly read (N=89)		
1	29	32.6
2	19	21.3
3	19	21.3
4	14	15.7
5	5	5.6
6	3	3.4
Computer skill level (N=89)		
Fundamental		
Basic	5	5.6
Intermediate	22	24.7
Advanced	26	29.2
Proficient	29	32.6
	7	7.9

4.2.3 Descriptive statistics identifying relationship between background attributes and Fake News Test responses

This section contains descriptive statistics which report on the relationship between the participant's

background attributes and their responses to the Fake News Test. The statistics for each of the background attributes will first involve a table describing the mean number of correct answers in the Fake News Test for each categorical variable, followed by statistical details of the standard deviation, standard error and confidence interval. After this, a plot graph displaying a graphical representation of the mean number of correct answers in the Fake News Test for each categorical variable will be presented.

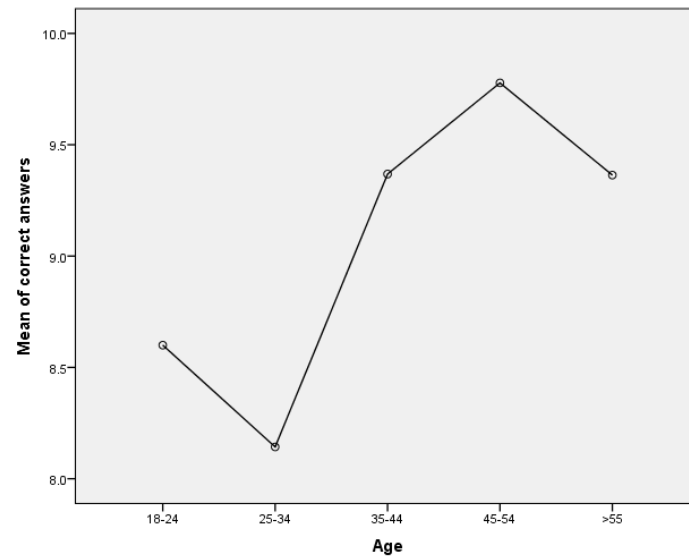
4.2.3.1 Age

Table 4.2.2: Correct answers in the Fake News Test for the background attribute Age

	Number of participants	Mean n. of correct answers	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
18-24	20	8.60	1.353	.303	7.97	9.23	6	11
25-34	21	8.14	1.824	.398	7.31	8.97	5	12
35-44	19	9.37	1.571	.360	8.61	10.13	7	13
45-54	18	9.78	1.437	.339	9.06	10.49	7	12
>55	11	9.36	2.111	.636	7.95	10.78	6	13
Total	89	8.99	1.716	.182	8.63	9.35	5	13

As can be seen in Table 4.2.2, the lowest mean number of correct answers in the Fake News Test is 8.14, received by the 25-34 age group ($SD=1.82$), while the highest mean number is 9.78, received by the age group 45-54 ($SD=1.44$). The mean number for other 3 age groups are: 18-24 ($M=8.60$, $SD=1.35$), 35-44 ($M=9.37$, $SD=1.57$), >55 ($M=9.36$, $SD=2.11$). The overall mean number of correct answers for the 89 participants is 8.99. Figure 4.2.1 shows a line graph indicating the mean number of correct answers in the Fake News Test for the five different age groups. It indicates a large difference between 25-34 and 45-54 age groups.

Figure 4.2.1: Means plot graph for *Age*



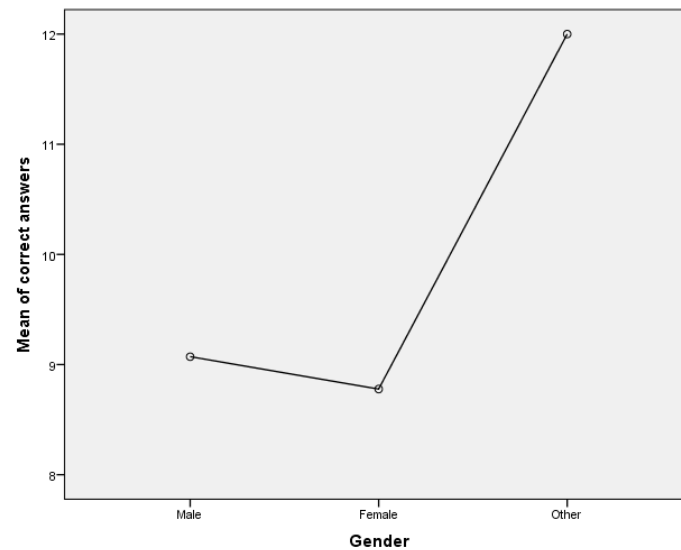
4.2.3.2 Gender

Table 4.2.3: Correct answers in the Fake News Test for the background attribute *Gender*

	Number of participants	Mean n. of correct answers	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Male	42	9.07	1.404	.217	8.63	9.51	7	12
Female	45	8.78	1.882	.280	8.21	9.34	5	13
Other	2	12.00	1.414	1.000	-.71	24.71	11	13
Total	89	8.99	1.716	.182	8.63	9.35	5	13

Table 4.2.3 indicates that the mean number of correct answers for the 42 males ($M=9.07$, $SD=1.40$) who participated in the study is slightly higher than the mean number of correct answers for the 45 females ($M=8.78$, $SD=1.88$) who participated. The mean number of correct answers for other gender group is 12 ($SD=1.41$) which is much higher than other two groups, however there are only 2 participants in this group, and therefore the mean is unlikely to accurately indicate the ability of this wider group to detect fake news. Figure 4.2.2 provides a line graph indicating the mean number of correct answers in the Fake News Test for the three gender groups.

Figure 4.2.2: Means plot graph for *Gender*



4.2.3.3 Occupation

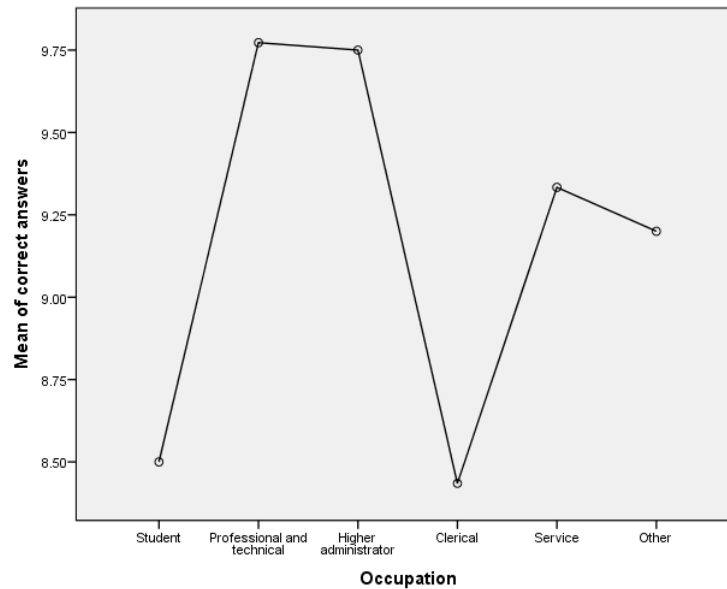
Table 4.2.4: Correct answers in the Fake News Test for the background attribute *Occupation*

	Number of participants	Mean n. of correct answers	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Student	24	8.50	1.383	.282	7.92	9.08	6	12
Professional and technical	22	9.77	1.974	.421	8.90	10.65	6	13
Higher administrator	4	9.75	1.258	.629	7.75	11.75	8	11
Clerical	23	8.43	1.619	.338	7.73	9.13	5	12
Service	6	9.33	1.211	.494	8.06	10.60	7	10
Other	10	9.20	1.932	.611	7.82	10.58	5	12
Total	89	8.99	1.716	.182	8.63	9.35	5	13

As indicated in Table 4.2.4, the mean number of correct answers in the Fake News Test for the Clerical group ($M=8.43$, $SD=1.62$) and Student group ($M=8.50$, $SD=1.38$) is slightly lower compared to the Other group ($M=9.20$, $SD=1.93$), Service group ($M=9.33$, $SD=1.21$), Higher administrator

group ($M=9.75$, $SD=1.26$) and Professional and technical group ($M=9.77$, $SD=1.97$). Figure 4.2.3 presents the line graph for the mean number of correct answers for 6 occupation groups.

Figure 4.2.3: Means plot graph for *Occupation*



4.2.3.4 Highest qualification

Table 4.2.5: Correct answers in the Fake News Test for the background attribute *Highest qualification*

	Number of participants	Mean n. of correct answers	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
High School	18	9.06	1.552	.366	8.28	9.83	6	12
Bachelor's	39	9.05	1.555	.249	8.55	9.56	5	12
Master's and Diploma	26	8.42	1.770	.347	7.71	9.14	5	12
PhD	6	10.83	1.941	.792	8.80	12.87	8	13
Total	89	8.99	1.716	.182	8.63	9.35	5	13

Table 4.2.5 shows that PhD participants received a much higher number of correct answers in the Fake News Test ($M=10.83$, $SD=1.94$) than other three groups, and were especially higher than the Master's and Diploma group ($M=8.42$, $SD=1.77$). The mean number of correct answers for

participants with High School ($M=9.06$, $SD=1.55$) and Bachelor's degrees is almost the same and slightly higher than Master's and Diploma group. Figure 4.2.4 indicates the mean number of correct answers for four highest qualification groups in the line graph.

Figure 4.2.4: Means plot graph for *Highest qualification*

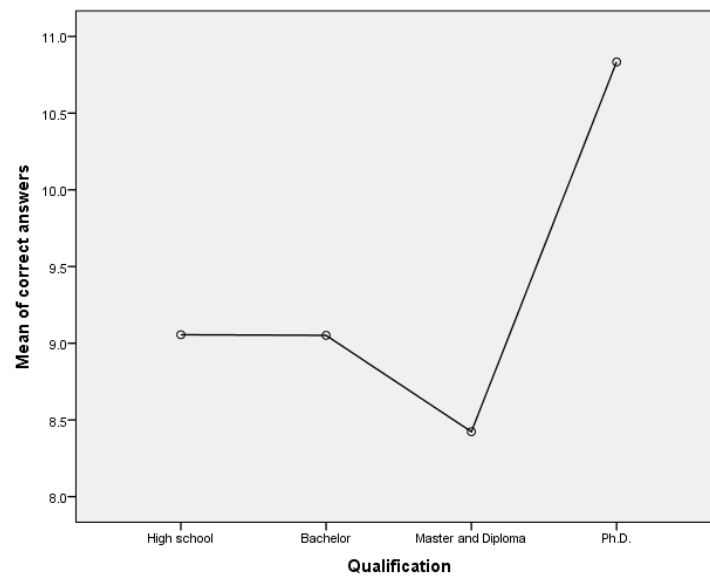
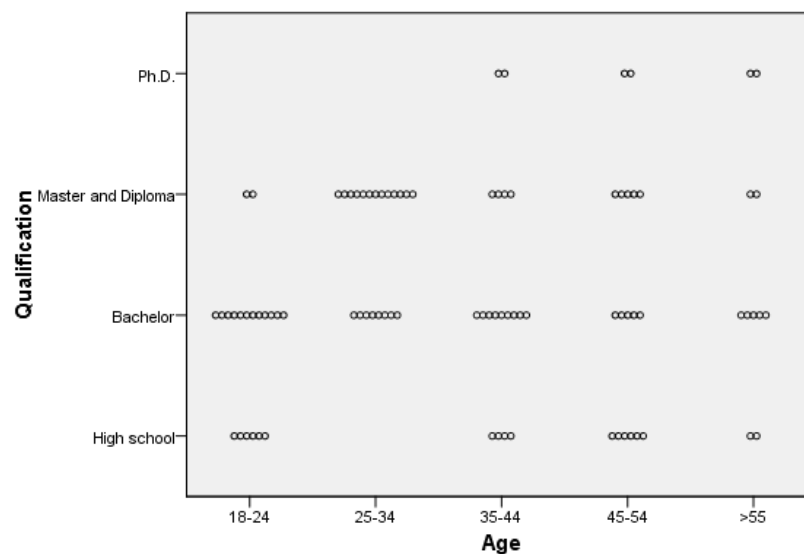


Figure 4.2.5: The relationship of participants between *Highest qualification* and *Age*



The data in Table 4.2.5 and Figure 4.2.4 tends to suggest that higher qualified participants obtain a higher number of correct answers in the Fake News Test, and that Master's and Diploma participants are less likely to recognise fake and real news in the test. However, by using IBM SPSS to examine the relationship between qualification and age, Figure 4.2.5 shows that PhD participants are generally older participants above age of 35 and that 58 percent of the younger participants in the Master's and Diploma group are 34 years old or younger. Section 4.2.3.1 on age revealed that younger participants have a relatively poorer ability at recognising fake news than older participants, and this may help explain why a number of the Master's and Diploma participants obtain the lowest mean number of correct answers compared to the other groups.

4.2.3.5 Frequency of actively reading news

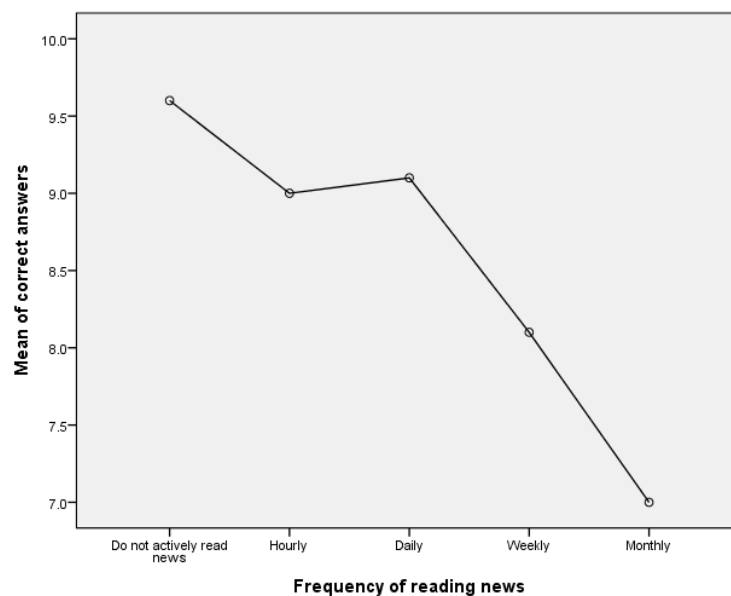
Table 4.2.6: Correct answers in the Fake News Test for the background attribute *Frequency of reading news*

	Number of participants	Mean n. of correct answers	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Do not actively read news	5	9.60	1.517	.678	7.72	11.48	8	12
Hourly	3	9.00	2.646	1.528	2.43	15.57	6	11
Daily	70	9.10	1.669	.200	8.70	9.50	5	13
Weekly	10	8.10	1.792	.567	6.82	9.38	5	12
Monthly	1	7.00	7	7
Total	89	8.99	1.716	.182	8.63	9.35	5	13

As shown in Table 4.2.6, participants who do not actively read the news received the highest mean number of correct answers in the Fake News Test ($M=9.60$, $SD=1.52$). Although this group was only represented by 5 participants, the standard deviation is relatively small, and the overall range of responses in the smallest at 4. Only one participant represented the Monthly group and they received 7 correct answers. It is of interest that the majority of the participants (70 out of 89) actively read the online news daily. The mean number of correct answers in the Fake News Test for this group is 9.10 ($SD=1.67$). Participants who actively read news hourly have almost the same mean number of correct

answers as Daily group ($M=9.00$, $SD=2.65$). For the Weekly group, the mean number of correct answers in the Fake News Test is relatively low ($M=8.10$, $SD=1.79$). Figure 4.2.6 provides a line graph of the mean number of correct answers for the five categorical variables related to the frequency of reading the news. While the Monthly variable should be discounted due to the low number of participants in this group, the graph does suggest that the more time participants actively spent reading the news online, the less capable they were of accurately identifying the news as fake or not.

Figure 4.2.6: Means plot graph for *Frequency of reading news*



4.2.3.6 Primary news source

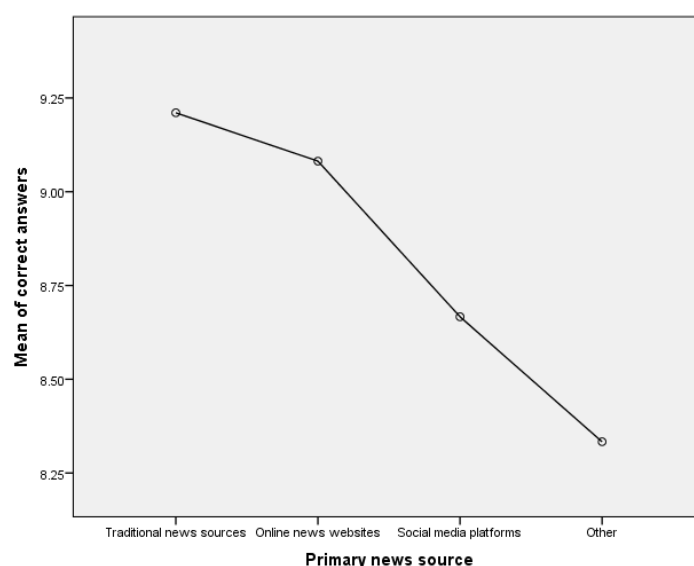
Table 4.2.7: Correct answers in the Fake News Test for the background attribute *Primary news source*

	Number of participants	Mean n. of correct answers	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Traditional news sources	19	9.21	1.398	.321	8.54	9.88	7	12
Online news websites	49	9.08	1.945	.278	8.52	9.64	5	13
Social media platforms	15	8.67	1.291	.333	7.95	9.38	7	12
Other	6	8.33	1.633	.667	6.62	10.05	6	10

Total	89	8.99	1.716	.182	8.63	9.35	5	13
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Table 4.2.7 shows the descriptive statistics for the primary news source of participants. As can be seen in Table 4.2.7, the mean number of correct answers in the Fake News Test for participants who obtain their news from traditional sources is 9.21 ($SD=1.40$), which is slightly higher than those participants who obtain their news from online news websites, such as Facebook ($M=9.08$, $SD=1.95$). Those who obtain their news from social media platforms received a mean score of 8.67 ($SD=1.29$) and those who obtained their news from other sources received a mean score of 8.33 ($SD=1.72$). Figure 4.2.7 provides a line graph indicating the mean number of correct answers for the four primary news source groups. The graph indicates that in this sample of participants, those who usually obtain their news online, are slightly less able to recognise whether news is fake or real.

Figure 4.2.7: Means plot graph for *Primary news source*



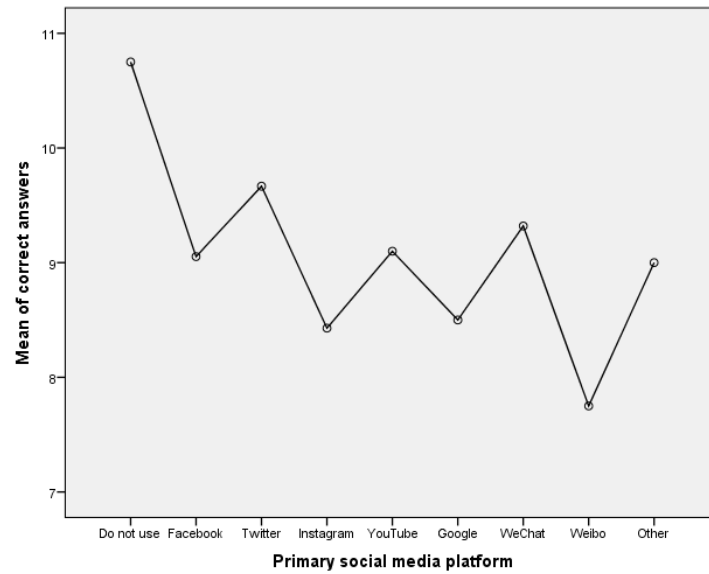
4.2.3.7 Primary social media platform

Table 4.2.8: Correct answers in the Fake News Test for the background attribute for the *primary social media platform* normally used by participants

	Number of participants	Mean n. of correct answers	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Do not use	4	10.75	1.500	.750	8.36	13.14	10	13
Facebook	19	9.05	1.929	.442	8.12	9.98	5	13
Twitter	3	9.67	1.155	.667	6.80	12.54	9	11
Instagram	14	8.43	1.828	.488	7.37	9.48	6	12
YouTube	10	9.10	1.197	.379	8.24	9.96	7	11
Google	4	8.50	2.380	1.190	4.71	12.29	7	12
WeChat	25	9.32	1.520	.304	8.69	9.95	6	12
Weibo	8	7.75	1.581	.559	6.43	9.07	5	9
Other	2	9.00	1.414	1.000	-3.71	21.71	8	10
Total	89	8.99	1.716	.182	8.63	9.35	5	13

Table 4.2.8 indicates the relationship between the social media platforms regularly used by participants (whether they are sourcing news content or not) and the results of the Fake News Test. As indicated in Table 4.2.8, participants who do not use a particular social media platform at all received the highest mean number of correct answers ($M=10.75$, $SD=1.50$), while the lowest mean number of correct answers is 7.75, which was received by the Weibo group ($SD=1.58$). The mean number of correct answers for Twitter group ($M=9.67$, $SD=1.16$), WeChat group ($M=9.31$, $SD=1.52$), YouTube group ($M=9.10$, $SD=1.20$), Facebook group ($M=9.05$, $SD=1.93$) and Other group ($M=9.00$, $SD=1.41$) is higher than 9, while the mean number of correct answers for Google group ($M=8.50$, $SD=2.38$) and Instagram group ($M=8.43$, $SD=1.83$) is lower than 9. Figure 4.2.8 shows a line graph in order to present the mean number of correct answers for the nine groups representing the primary social media platform used by participants.

Figure 4.2.8: Means plot graph for *Primary social media platform* normally used by participants



4.2.3.8 Time spent on social media

Table 4.2.9: Correct answers in the Fake News Test for the background attribute *time participants spend using social media each day*

	Number of participants	Mean n. of correct answers	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Do not use	3	10.00	.000	.000	10.00	10.00	10	10
<1 Hour	22	9.41	1.869	.398	8.58	10.24	5	12
1-2 Hours	29	9.41	1.900	.353	8.69	10.14	5	13
2-3 Hours	16	8.44	1.459	.365	7.66	9.22	6	11
3-4 Hours	9	8.56	1.236	.412	7.61	9.51	7	11
>4 Hours	10	7.80	.919	.291	7.14	8.46	6	9
Total	89	8.99	1.716	.182	8.63	9.35	5	13

As shown in Table 4.2.9, participants who use social media for less than one hour ($SD=1.87$) and between 1-2 hours ($SD=1.90$) each day received the same number of mean answers, $M=9.41$, in the Fake News Test. However, the three participants who did not use social media at all had the highest mean number of correct answers ($M=10$, $SD=0$). Participants who spend 2-3 hours ($M=8.44$, $SD=1.46$) and 3-4 hours ($M=8.56$, $SD=1.24$) on social media each day both received a mean of approximately 8.5. For participants who spend more than 4 hours on social media, the mean

number of correct answers is less than 8, ($M=7.80$, $SD=.92$). Figure 4.2.9 presents a line graph of the mean number of correct answers for the time spent by participants on social media each day. It suggests that the more time spent on social media, the less capable the participants were at correctly identifying the validity of the news in the Fake News Test. In addition, as can be seen in Figure 4.2.10, the relationship between time spent on social media and age was examined through SPSS. The number of participants who spent more than 3 hours each day on social media declined as age increased. Participants over 45 spent no more than 3 hours each day on social media. Furthermore, Figure 4.2.11 presents the relationship between time spent on social media and highest qualification. As shown in Figure 4.2.11, most PhD participants spent no more than 2 hours on social media each day. These tables suggest that there is a relationship between the three background attributes age, time spent on social media and highest qualification.

Figure 4.2.9: Means plot graph for *Time spend on social media each day*

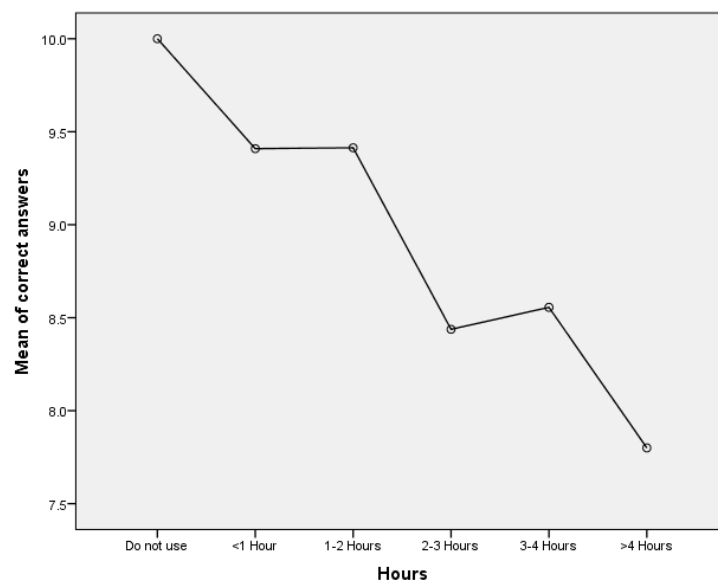


Figure 4.2.10: The relationship of participants between *Time spent on social media each day* and *Age*

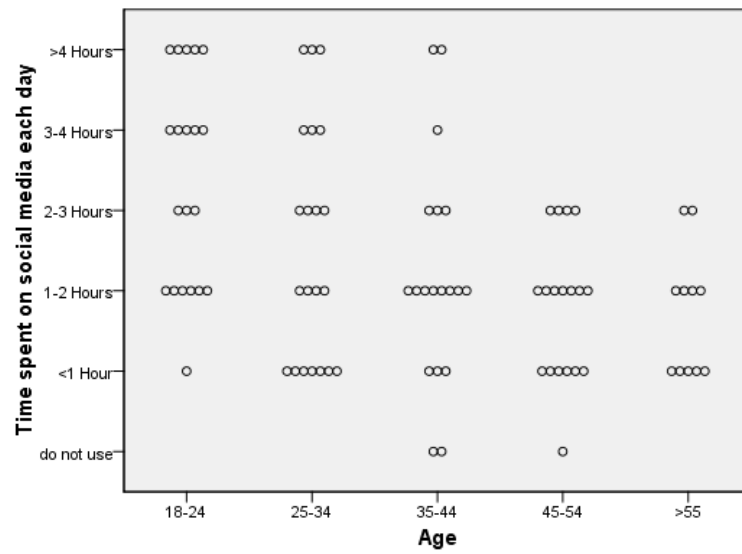
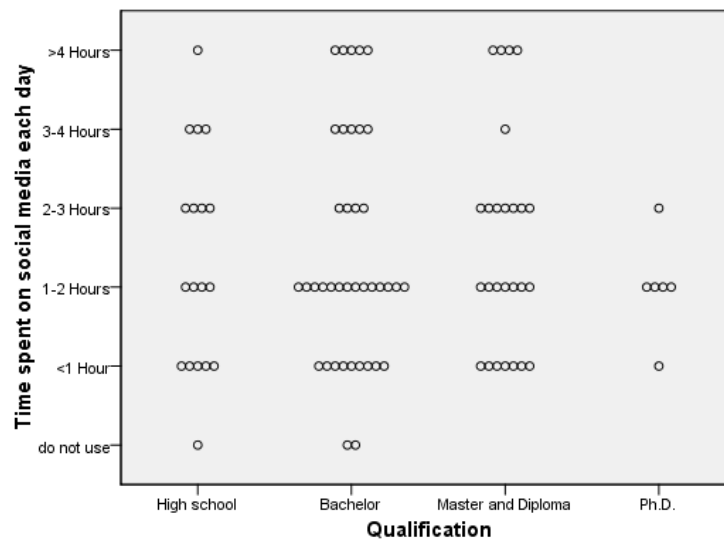


Figure 4.2.11: The relationship of participants between *Time spent on social media each day* and *Highest qualification*



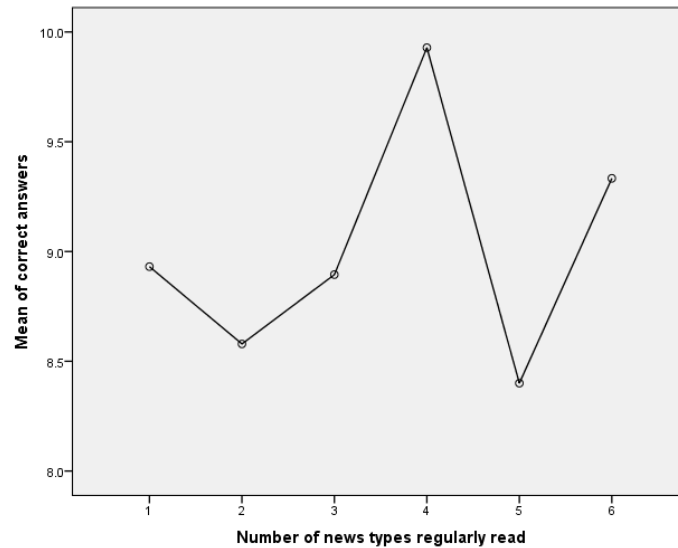
4.2.3.9 Number of different news types regularly read by participants

Table 4.2.10: Correct answers in the Fake News Test for the background attribute for *number of news types regularly read* by participants

	Number of participants	Mean n. of correct answers	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	29	8.93	1.534	.285	8.35	9.51	5	11
2	19	8.58	1.865	.428	7.68	9.48	5	13
3	19	8.89	1.792	.411	8.03	9.76	6	12
4	14	9.93	1.685	.450	8.96	10.90	7	13
5	5	8.40	1.342	.600	6.73	10.07	7	10
6	3	9.33	2.309	1.333	3.60	15.07	8	12
Total	89	8.99	1.716	.182	8.63	9.35	5	13

As can be seen in Table 4.2.10, participants who regularly read four different kinds of news types ($M=9.93$, $SD=1.69$) received the highest mean number of correct answers in the Fake News Test, while participants who typically read five different kinds of news types received the lowest mean number of correct answers ($M=8.40$, $SD=1.34$). The mean number of correct answers received by participants who read six kinds of news types ($M=9.33$, $SD=2.31$) is relatively high compared to those participants that only read one kind of news type ($M=8.93$, $SD=1.53$), two different news types ($M=8.58$, $SD=1.87$), and three news types ($M=8.89$, $SD=1.79$). The line graph in Figure 4.2.11, which indicates the mean number of correct answers for the six preferred news types shows no particular trend.

Figure 4.2.12: Means plot graph for *the number of news types regularly read*



4.2.3.10 Computer skill level

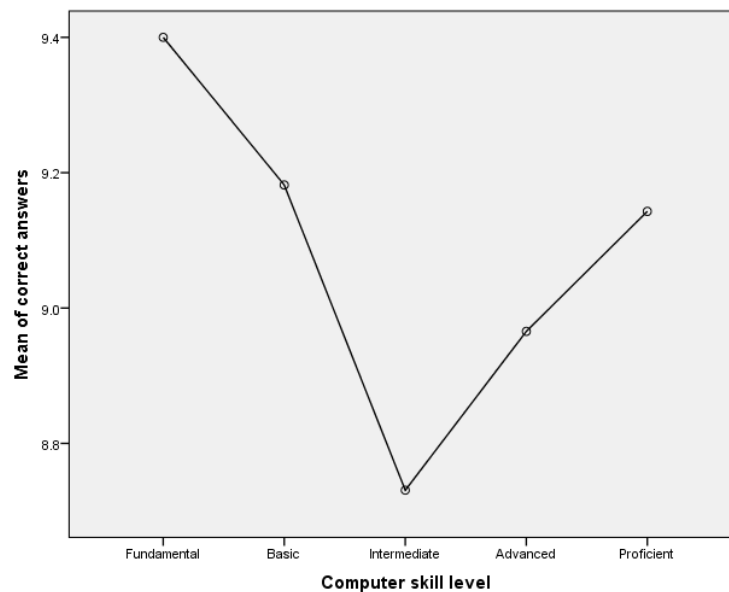
Table 4.2.11: Correct answers in the Fake News Test for the background attribute for *Computer skill level*

	Number of participants	Mean n. of correct answers	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Fundamental	5	9.40	1.140	.510	7.98	10.82	8	11
Basic	22	9.18	1.868	.398	8.35	10.01	5	12
Intermediate	26	8.73	1.538	.302	8.11	9.35	5	12
Advanced	29	8.97	1.936	.360	8.23	9.70	6	13
Proficient	7	9.14	1.464	.553	7.79	10.50	8	12
Total	89	8.99	1.716	.182	8.63	9.35	5	13

As shown in Table 4.2.11, the highest mean number of correct answers in the Fake News Test was received by participants who identified as having only a fundamental computer skill level ($M=9.40$, $SD=1.14$), while the lowest mean number of correct answers was received by participants identifying as having an intermediate computer skill level ($M=8.73$, $SD=1.54$). Figure 4.2.12 provides a line graph indicating the mean number of correct answers for the five computer skill level groups. The graph shows a very slight decrease in the ability of participants to correctly identify fake news as

their skill level increases from fundamental to intermediate followed by a slight rise as their skill level increases from intermediate to proficient.

Figure 4.2.13: Means plot graph for *Computer skill level*



4.3 Evidence of statistical significance of background attributes

4.3.1 Introduction

This section will use the statistical tool, one-way analysis of variance (ANOVA), to identify if any of the differences in mean scores in the Fake News Test exhibited across the categorical variables for each of the background attributes provides evidence of statistical significance ($p < 0.5$). A p value of < 0.5 is typically used in the humanities and social sciences to determine significance and indicates that there is only a 5 percent chance that the results found have occurred by chance. Where statistical significance is found, details of the one-way ANOVA analysis for that background attribute will be presented in detail and discussed.

Table 4.3.1: Significance value for differences in the mean scores of categorical variables for each of the background attributes

Background attributes	F	Sig
Age	3.124	0.019*
Gender	3.682	0.029*
Occupation	2.158	0.670
Highest qualification	3.568	0.017*
Frequency of actively reading the news	1.254	0.295
Primary news source	0.735	0.623
Primary social media platform	1.529	0.160
Time spent on social media	2.414	0.043*
Number of different news types regularly read	1.233	0.301
Computer skill level	0.294	0.881

Note: * $p < .05$

Table 4.3.1 provides the results of a One-way ANOVA analysis of the differences in the mean scores of the categorical variables for each of the background attributes. The table indicates that no significant differences are found in the mean scores of the Fake News Test (i.e. the participants' ability to correctly recognise fake or real news) that are related to occupation, frequency of actively reading the news, the nature of the primary news source, the primary social media platform used, number of different news types regularly read and level of computer skills. In terms of gender, although there was a significant difference in the ability to recognise fake news between male, female and binary gender, as there were only 2 participants from the binary gender groups, this result is not deemed significant for this study. The One-way ANOVA analysis, however, did show a degree of statistical significance regarding the participants' ability to recognise fake news related to age ($p=.019$), highest qualification ($p=.017$) and time spent on social media ($p=.043$). The statistical results of the one-way ANOVA analysis in these three areas will now be described and discussed in detail.

4.3.2 Details of the one-way ANOVA analysis for significant background attributes

4.3.2.1 Age

Table 4.3.2: One-way ANOVA of Age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	33.540	4	8.385	3.124	.019
Within Groups	225.449	84	2.684		
Total	258.989	88			

Homogeneous Subsets

Correct answers

Tukey HSD^{a,b}

Age	N	Subset for alpha = 0.05	
		1	2
25-34	21	8.1429	
18-24	20	8.6000	8.6000
>55	11	9.3636	9.3636
35-44	19	9.3684	9.3684
45-54	18		9.7778
Sig.		.201	.235

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 16.851.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Given that the dependent variable, the Fake News Test scores, was normally distributed for the background attribute of age. The data exhibited a homogeneity of variances, a one-way ANOVA could be conducted to compare the effect of the different age groups on the ability to recognise fake news. As shown in Table 4.3.2, there was a significant effect of age on ability of recognising fake news at the $p < .05$ level for the five groups [$F(4, 84) = 3.124, p = 0.019$]. Post Hoc comparisons using the Tukey HSD test showed that the mean score for age group 25-34 ($M = 8.14, SD = 1.82$) was significantly different than age group 45-54 ($M = 9.78, SD = 1.44$) [$p = 0.021$]. However, age group 18-24 ($M = 8.60, SD = 1.35$), age group 35-44 ($M = 9.37, SD = 1.57$) and age group >55 ($M = 9.36, SD = 2.11$) did not significantly differ from other groups. These results suggest that the ability to recognise fake news is dependent on age, notably that participants between the ages of 45 and 54 are more able to recognise whether the news they read online is fake or real than participants between the ages 25 and 34.

The effect size of the significance (eta squared), that is, its magnitude or importance (Dörnyei, 2007) is measured by dividing the *sum of the squares between groups* by the *total sum of squares* (see Table 4.3.2). In the case of the background attribute age this equates to 0.129. According to Dörnyei, this indicates a large effect suggesting that age is a significant variable in determining whether someone is able to correctly identify whether the news is fake or not.

4.3.2.2 Highest qualification

Table 4.3.3: One-way ANOVA of *Highest qualification*

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	28.967	3	9.656	3.568	.017
Within Groups	230.021	85	2.706		
Total	258.989	88			

Correct Answers

Tukey HSD^{a,b}

Qualification	N	Subset for alpha = 0.05	
		1	2
Master's and Diploma	26	8.42	
Bachelor's	39	9.05	
High School	18	9.06	
PhD	6		10.83
Sig.		.740	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 13.970.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Given that the dependent variable, the Fake News Test scores, was normally distributed for the background attribute of qualification. The data exhibited a homogeneity of variances, a one-way ANOVA could be conducted to compare the effect of the different qualification groups on the ability to recognise fake news. Table 4.3.3 shows that there was a significant effect of qualification on ability of recognising fake news at the $p < .05$ level for the four groups [$F(3, 85) = 3.568, p = 0.017$]. Post Hoc comparisons using the Tukey HSD test showed that the mean score for the Master's and Diploma group ($M = 8.42, SD = 1.77$) was significantly different than PhD group ($M = 10.83, SD = 1.94$) [$p = 0.017$]. While, the Bachelor's group ($M = 9.05, SD = 1.55$), and the High School group ($M = 9.06, SD = 1.55$) did not significantly differ from other groups. The effect size is 0.112 which suggests that qualification is

a significant variable in determining whether someone is able to correctly identify whether the news is fake or not.

Thus, the results show that participants with PhD degrees are more able to recognise whether the news they read online is fake or real than participants with Master's and Diploma degrees. However as indicated above in Section 4.2.3.4, 58 percent of the participants in the Master's and Diploma group are under the age of 34, suggesting that the age of many of the participants in this group may also be a factor in their ability to evaluate whether the news they read online is fake or real.

4.3.2.3 Time spent on social media

Table 4.3.4: One-way ANOVA of *Time spent on social media*

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	32.876	5	6.575	2.414	.043
Within Groups	226.112	83	2.724		
Total	258.989	88			

Correct Answers

Tukey HSD^{a,b}

Hours	N	Subset for alpha = 0.05 1
>4 Hours	10	7.80
2-3 Hours	16	8.44
3-4 Hours	9	8.56
<1 Hour	22	9.41
1-2 Hours	29	9.41
Do not use	3	10.00
Sig.		.070

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 8.735.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Given that the dependent variable, the Fake News Test scores, was normally distributed for the background attribute of time spent on social media and the data exhibited a homogeneity of variances, a one-way ANOVA could be conducted to compare the effect of the different times that participants spent on social media and their ability to recognise fake news. As shown in Table 4.3.4, the time

participants spent on social media had an effect of recognising fake news at the $p < .05$ level for the six groups [$F(5, 83) = 2.414, p = 0.043$].

However, the Post Hoc comparisons through the Tukey HSD test identified that there was no pairwise significance between any of the six groups. This is because the Tukey follow-up test is a conservative test that looks for significance difference between pairs of means rather than significant groups of means. As Simon (2005) points out:

“it might be that the first mean does not differ significantly from the third mean and the second mean does not differ significantly from the fourth mean, but maybe an average of the first and second means differs significantly from an average of the third and fourth means. Or maybe the fourth mean is slightly smaller than the other means, but not enough to be statistically significant for any pair. But when you average the other three means, you get enough precision to get a statistically significant difference from the fourth mean” (para. 4).

Hence, while the Tukey post-hoc test does not indicate pairwise significance for the background attribute time spent on social media, the one-way ANOVA test does show that time spent on social media significantly contributes to the ability to determine whether the news is fake or not. This is supported by the strong effect size of 0.127.

4.3.3 Section summary

The results of quantitative analysis indicate that age ($p = .019$), highest qualification ($p = .017$) and time spent on social media ($p = .043$) are significant in identifying whether an individual is able to determine whether the news is fake or not. Furthermore, Post Hoc comparisons of the different background attributes showed that participants from age group 45-54 have better ability of recognising fake news than age group 25-34. The ability of PhD participants is better than other groups, especially the Master's and Diploma group, and participants who spent more time on social media every day are less likely to recognise whether the news is fake or not. However, as mentioned above, consideration must also be taken into account that there is a relationship between these three background attributes. For example, no participants over 45 spend more than 3 hours on

social media each day, no PhD participants spend more than 3 hours on social media each day and no PhD participants are under 35.

CHAPTER FIVE: QUALITATIVE RESULTS

5.0 Introduction

This section analysed the 70 interviews carried out with the same participants as those that took part in the quantitative data analysis. As indicated in Chapter 3, the qualitative software application NVivo was used to code the data into first and second level nodes so that patterns and observations regarding the participants' engagement with social media and awareness of fake news might be revealed. The interview questions used to gather this qualitative data focused on exploring how well the participants understand the phenomenon of fake news, whether they evaluate the authenticity of news sources and check the content of news stories, how often they believe that they encounter fake news and how they respond to it, whether they are aware of the consequences of fake news, and whether they ever share news through social media. A list of the interview questions could be found in Appendix B. Given the statistical significance, identified in the previous chapter sections of *age*, *level of qualification* and *time spent on social media* on the participants' ability to successfully recognise whether a news item is fake or real, attention would be paid to these three attributes in the first part of this qualitative data analysis. The second part focused on comparing the responses of participants who correctly identified whether the news was fake or real in at least 11 of the questions in the Fake News Test with the responses of participants who were only able to correctly identify whether the news was fake or real in up to 7 of the questions. This may provide further insights into the different values and views of those who are better able to recognise whether the news is fake or not, and those who are less able to recognise the validity of the news.

5.1 Qualitative data analysis based on age, highest qualification and time spend on social media

This section focuses on an analysis of the interview data which takes into consideration the participants' age, level of qualification and time spent on social media, all attributes which were identified as statistically significant in the quantitative stage of this study. However, before looking at responses

and real news. This subsection will focus on analysing the qualitative data using the attribute age to identify the different responses between these younger and older participants.

5.1.1.1 Views and attitudes towards fake news

First of all, a large number of participants below the age of 34 did not appear to have much knowledge about fake news, for example, its definition, patterns of spreading and sharing, underlying motivations, development and so on (Tandoc et al., 2018; Affelt, 2017; Ghaisani et al., 2017; McNair, 2018). As seen in the following extracts from the qualitative data, many simply said that fake news is produced as clickbait and is primarily designed to make money for websites (Extracts 1-3). Others simply associated fake news with the US president Donald Trump, who is consistently reported as referring to the news media as fake news (Extract 4). Their views on fake news suggest that younger participants below the age of 34 have only a surface level understanding of fake news and merely view its purpose as making money, or as somehow related to Donald Trump. Also, it seems that those younger participants lacked an interest in fake news.

- 1) *Fake news is news created to catch people's attention in order to make money.*
- 2) *It needs eyes and clicks to make money.*
- 3) *People use it as a "clickbait". You put something interesting that people want to read.*
- 4) *Donald Trump.*

However, participants above the age of 35 were more likely to understand the complex underlying issues concerning fake news and were able to more analytically discuss the phenomenon. According to Pennycook and Rand (2018), people believe in fake news because they are just being lazy to think. Their research shows that analytical people are less likely to believe fake news headlines than non-analytical people. For example, a participant from the 45-54 age group, which as mentioned, exhibited the best ability for recognising fake news in the test, was able to articulate the relationship between the increasing financial pressure on news organisations, technological developments, and the increasing

difficulty to identify fake news (Extract 5). In addition, his answer implies that he views fake news as an ever increasing problem:

5) What I think is that it's going to become harder and harder to distinguish between fake news and real news because we'll have in the future, bots which can recreate stories. The pressures on conventional news organizations and investigate journalism which is being progressively undefined and undermined, plus new technologies enable to create very convincing video footage that will make it difficult for people to spot fakes.

The participants' comments on the influences of fake news also can identify their attitudes. For example, the majority of participants above 35 believed that fake news may negatively impact on peoples' lives or result in social panic (Extracts 6 and 7). Some also hold the view that fake news confuses the ability to easily distinguish real and false information (Extract 8).

6) Definitely. Fake news may negatively influence people's lives.

7) Fake news can lead to panic.

8) Yes. I think so. It's pretty hard to distinguish fake news from real news.

Participants under the age of 34 often thought fake news either simply had an influence on a particular population group, for example, the elderly (Extract 9), or had no social influence (Extract 10) or impact at all (Extract 11).

9) Especially for elders. They trust the news, they think the information report in news must be true.

10) It's not a big problem if fake news are not causing massive panic or damaging any individual's interest.

11) I don't think so. Fake news always has always existed, but it never really influences the world.

Interestingly, the younger participants also exhibited a confidence about their own ability to distinguish fake and real news. Similarly, in El Rayess et al. (2018), young student participants from Notre Dame University were overconfident about their ability to check and evaluate the credibility of news information, however their findings show that most of the students were not good at recognising fake news. It might be argued that younger participants' overconfidence in their ability to identify fake news and to think critically might ultimately result in a worse capacity to recognise fake news.

5.1.1.2 Judging and checking news sources and content

The majority of participants whether young or old responded that they evaluated the credibility of a news source based on well-known and reliable news organizations, familiar publishers, the authority of journalists, and so on (Extracts 12, 13, 14, 15). Most of them read the online news from reliable news organisations, such as CNN, BBC, and so on.

12) I will look at the source of the news. The big institution or organizations, like Reuters, Xinhua

13) News agency and Associated Press, will be more reliable.

14) News sources that I know like CBC, CNN, BBC etc.

15) From their history, because sometimes you read the news from a certain reporter that you can believe.

Approximately 40 percent of all participants suggested that they would check the news content using search engines, by talking with friends or by cross-checking with other news media (Extract 16, 17). Within this group of participants, those aged below 35 typically choose to use search engines like Google to check and judge the content (Extract 18). According to Steinmetz (2018), people are likely to treat an item that appears regularly in search results as reliable thing. However, search engine results depend on keywords rather than facts. Hence, the younger participants' use of search engines to check the validity of the news might not be a particularly useful or efficient strategy.

16) Every time I read something, I double check it with my friends from the Internet.

17) I will do some cross check or see whether they have adequate evidences.

18) Search on Google.

One third of all participants mentioned that they only evaluated the news based on their personal ‘feelings’ (Extracts 21). However, the majority this cohort (two thirds) could be found in the 35-44 bracket. Their ‘feelings’ or intuitions were often connected to the participants’ experiences or knowledge of current affairs (Extract 19 and 20), suggesting that the older participants’ accumulation of knowledge about the world contributes to their ability to successfully recognise the difference between fake and real news.

19) Based on my own experiences and feeling.

20) According to my own feelings and knowledge.

21) According to my own feeling, some sensationalism doesn't feel real.

About 14 percent of all participants said that they did not evaluate or check online news sources at all (Extracts 22 and 23). More than half of those participants were from the 25-34 age group, which also has the lowest mean number of correct answers in the Fake News Test.

22) I never judge the news sources.

23) I have no method.

Arguably, those younger participants who stated that they never checked the validity of online news, might not do so because they believe it has no influence on their personal lives. Indeed, and as

mentioned in Section 4.3.1, six participants from the 18-24 and 25-34 age groups expressed the view that fake news has no influence on themselves or the world (Extracts 10 and 11).

Furthermore, some of the participants under the age of 34 mentioned that they obtained the news from social media via their family and friends (Extracts 24 and 25).

24) Some of my family and friends post.

25) My family sent me some fake news through WeChat.

As discussed in Chapter 2, if individuals view an article that was shared by people they trust, they are more likely to believe the article is real (American Press Institute, 2017). This may suggest that participants under the age of 34, are less likely to check the sources or content of an online article because most have received these from their family and friends.

5.1.1.3 Sharing news on social media

Surprisingly, more than half of all participants stated that they did not share the online news through social media. Instead most participants responded that they simply read the online news (Extract 26). Many gave the reason that they did not want to disturb or mislead others (Extract 27), while some thought it was pointless to share online news since it was likely that others had already viewed it through any of the available online platforms that include news information (Extract 28).

26) No, I just read the news.

27) No, because I can't tell if the news I've known are totally true, if not it will mislead others.

28) I don't share it, because it feels like there's a lot of access to the news, and I don't have to do it again.

Of the participants that did regularly share the online news, 15 percent of older participants above 35 stated that they shared certain news items might because they believed happy and optimistic news can influence others in a positive way (Extracts 29 and 30). Research from Cornell University found that when Facebook users saw positive items, their feedback was more likely to be positive, while when the content was more negative, users felt depressed as well (Waters, 2015). Participants who liked to share positive news also claimed that they view faked news as a dangerous thing.

29) I would like to share happy and positive news.

30) I share news when I see some news that shocks me or has positive power.

Almost 20 percent of participants under the age of 35 said that they had intentionally shared fake news on social media. They generally stated that they shared fake news for fun (Extract 31). Some, however, stated they did not realise the news was fake when they shared it (Extract 32). As such, it might be argued that younger participants under age 35 do not take the adverse consequences of fake news seriously and view fake news simply as an entertainment tool.

31) Sometimes if the fake news is funny, I will share these news with friends, because they know the news is fake.

32) Yes, I did not know that it was fake news at the first place.

In contrast, participants from the 35-44 age group seem to treat fake news more carefully than the younger participants. They stated that they never share fake news or they try not to share fake news. One participant did not share fake news because he did not want to influence others (Extract 33). Another participant pointed out that he would be very careful about the news items on Twitter because he thought they were often unsourced (Extract 34).

33) Never. It can influence on people's behaviour.

34) I certainly try not to share fake news. I try not to share any of those seems wrong to me, but it's quite possible. I'm more aware that on Twitter, it's easy to share things that might be misleading or factually incorrect about something that's a real news item. I find I'm using Twitter less and more carefully because of some unsourced content.

5.1.2 Highest qualification

In this section, the responses of participants with different qualification levels will be examined. This is because the quantitative data analysis demonstrated that the participants' highest qualification level (i.e. High School, Bachelor's, Diploma/Master's, PhD) significantly affected their ability to recognise fake news. The findings indicate that participants with PhDs are more able to identify fake news than the other three groups, while Master's and Diploma participants are less likely to recognise fake and real news on social media. As pointed out in Chapter 4, many, albeit not all, of the Master's, Diploma and Bachelor's participants were relatively young and this may have also been a factor in their weaker performance in the Fake News Test.

5.1.2.1 Views on fake news

Participants with PhDs held more objective views about fake news and generally had more information about the phenomenon. For instance, PhD participants generally did not simply see fake news as “clickbait” for profit generation, nor did they exhibit an emotional attitude toward fake news. One participant with a PhD, for example, treated fake news as an interesting concern (Extract 35). They also discussed the different types of online fake news such as clickbait and political propaganda.

35) I think that fake news is an interesting problem, because you've got several different things that will happen at the same time, you got basically sites that put up stories essentially for ad revenue and you have propaganda that is camouflaged this sort of news and you have politicians who claim that news they don't like is fake news and the existence of so much propaganda and just made up stories. It's easier for them to attack real news outlets in that way.

The majority of participants with Master's and Diploma degrees, however, only noticed the negative consequences of fake news (Extract 36). Most thought fake news would have a negative influence on, and bring danger to, society, but they did not explain how or why fake news might bring these negative effects (Extract 37).

36) Fake news can bring bad influences.

37) I think fake news is very bad and irresponsible for the public. It can bring terrible influences to people.

Additionally, participants with Bachelor's and High School degrees expressed their opinions on fake news as well, but many of them provided more emotional responses than the other groups of participants in order to show their dislike of fake news (Extracts 38, 39, 40 and 41).

38) Fake news is annoying.

39) It is rubbish.

40) I think fake news is really boring.

41) It is hateful and almost everywhere nowadays.

To summarize, PhD participants were able to analyse fake news in a less emotional more rational way, while it appeared that the other qualification groups were less likely to objectively discuss the problem of fake news. Furthermore, this latter group's views on fake news tended to be more emotional and negative. According to Stark (2018), psychological studies demonstrate that strong human emotions, such as anger and gratitude to others, will appear as trustworthiness to others under certain situations, even if the emotion is not related to trusting relationships. Propaganda campaigns, for example, often try to intentionally inspire people's strong emotions, and it could be argued that fake news does that the

same. Litvak, Lerner, Tiedens and Shonk (2010) suggests that emotional experiences and evaluation of angry decision makers possibly influence their ability to see things objectively and rationally.

As an example, Section 2.5 discussed a fake news item reporting on a pizza restaurant that was the headquarters of an underground child sex ring operated by Hillary Clinton and her former campaign manager. This fake news item stirred up an individual's emotion and lead him to take dangerous action, that is, he fired several shots in a restaurant (Lopez, 2016). Therefore, it might be inferred that PhD participants have a better ability for recognising the difference between fake and real news on social media because they view the news with a less emotional bias.

Whatever the participant's age, their highest education level, or how long they spent on social media, nearly 75 percent of respondents had come across what they thought was "fake news" on social media. However, most of those participants who had seen fake news online choose to ignore it, often viewing it as 'clickbait' (Extracts 42 and 43).

42) I see a lot of clickbait. I ignore it.

43) I have seen many clickbait on social media platforms. I just ignore them.

Interestingly, of the 13 participants who mentioned the difficulties of distinguishing fake news from real news (Extracts 44, 45 and 46), 8 of them (61.5%) were either qualified with a Master's, Diploma or Bachelor's.

44) It's difficult to judge whether the news is fake or not, until somebody claims it's fake.

45) I just feel they are around us and they may be in good disguise so it is always hard to distinguish them.

46) I cannot distinguish between real news and fake news.

As mentioned in the previous section on age, a significant portion of participants who do not check the validity of online news and do not know how to judge or check news sources and content belong to Master's /Diploma group. One participant from the Master's and Diploma group stated that she choose not to judge the online news she encountered, because she felt it was too difficult (Extract 47), and another participant from the same group said that he had no energy to check at all (Extract 48).

47) Sometimes it's not easy to judge. Just not judge.

48) I have no energy to check all the news.

5.1.2.2 Influence of fake news

More than half of all participants who qualified with Master's or Diploma degrees simply stated that fake was problematic, when asked about its potential influence (Extracts 49 and 50).

49) In a very misleading or negative way.

50) It may bring trouble to people.

In contrast to the Master's and Diploma group, participants from the PhD group were able to explain the reasons why people might be influenced by fake news and provided examples. Their answers suggested that they attached a level of importance to the fake news problem. One PhD participant presented her opinion using academic terms, such as 'political polarisation' in order to explain how certain people tend to trust fake news if it supports their particular beliefs (Extract 51).

51) Absolutely. Mostly I think that people tend to believe fake news that confirms or support the things that they already believe. So, it contributes to political polarisation and it used to pop up bias basically raises another bias against groups.

This idea resembles the selective theory discussed in Section 2.4, where it was shown that people tend to follow media that is consistent with their opinions and beliefs (Spohr, 2017). Therefore, perhaps the PhD participants' deeper understanding of concerns and issues regarding fake news facilitates their ability to recognise fake news better than participants from other groups.

5.1.3 Time spent on social media

In the quantitative analysis, the time spent on social media was another significant background attribute related to the participants' ability to recognise fake news. Participants who spent relatively less time each day on social media tended to have a better ability for identifying fake and real news than those who spent a longer time on social media every day. This section examines the participants' responses to in an attempt to identify how time spent on social media affects their ability to successfully recognise whether online news is fake or not.

5.1.3.1 Encountering fake news on social media

Participants who spent longer than three hours on social media were most likely to view the phenomenon of fake news as widely pervasive, frequently using the expressions “everywhere” and “all over” to describe the current state of fake news (Extracts 52, 53).

52) Fake news is all over the social media platforms.

53) They are hateful and almost everywhere nowadays.

It could be concluded from this finding, that with their exposure to a vast amount of news information, either real or fake, these heavy Internet users become less capable of correctly judging the validity of what they read. Steinmetz (2018) suggests that this might be the result of a tendency of such users to view only a small part of the overall text; “when people are always juggling inboxes and feeds and alerts, it’s easy to feel like people don’t have time to read anything but headlines (para. 12).”

It might also be concluded from this finding that that time spent on the Internet does not result in the development of skills for distinguishing between real and false online information online. In Section 2.1.2, Allcott & Gentzkow, (2017) found that fake news spreads easily on social media because social media platforms often lack editorial process for filtering and fact-checking information. Furthermore, old fake news is always repackaged into new fake news (Shin et al., 2018) and according to Pennycook, Cannon and Rand (2018), repetition can influence people's beliefs. This perhaps suggests that repeated information on social media might lead to participants trusting the misinformation they have already seen.

While many of the participants in the study indicated that they had observed what they believed was "fake news" on social media, participants who indicated that they never come across fake news were largely those who spent fewer hours on social media. This does not suggest that this group is not familiar with fake news, but instead the interview findings suggest that less frequent Internet users are more likely to depend on more reliable news sources (Extracts 54, 55 and 56). Indeed, participants who spent less time on social media indicated that they were sceptical of news sources on social media and that their attitudes towards the reliability of news sources was more cautious.

54) No, because I don't look for news on social media.

55) I don't follow Twitter or Facebook, thus unlikely to receive such fake news.

56) Maybe the participants who don't use social media as much largely read more 'reputable' news sources and are therefore not accustomed to viewing fake news. The relative success of this group in the Fake News Test might be due to their familiarity with quality news sources and therefore their related ability to spot less reputable fake news.

5.1.3.2 Ways of checking and evaluating online news

The majority of participants who spent long periods of time on social media were younger participants below the age of 34, and as discussed in Section 4.3.1.1), younger participants show less concern about the issue of fake news. However, a few of these younger participants did identify basic techniques for evaluating the online news, often relating to reading more of the content (Extract 57) (cf. Steinmetz, 2018) or recognising biased reporting (Extract 58).

57) If the headline looks impossible, I will roughly read the content.

58) If the news is too much on one direction, then I will think it's fake.

In contrast, it would seem that participants who spent less time on social media generally spent time evaluating and checking the validity of news sources and content. Accordingly, one participant even showed an understanding of the creation and distribution patterns of fake news, suggesting that fake news was often created from old news stories, or using old images (Extract 59). These participants were mostly older participants, over 35, who took the problems surrounding fake news more seriously.

59) So particular web pages I might not trust as others. Also, particularly when it comes to images being used, often some news sites will recycle images from different events and try to sell it as current. So if it's controversial news topic, I might do image search, just to see if that image has shown up in the past on different websites.

5.2 Comparison of responses between participants with the highest and lowest test scores

This section compares the differences in the interview responses of the 14 percent of participants (15) who correctly identified 11 news items or higher in the Fake News Test, with the 19 percent of participants (17) who could only correctly identify 7 news items or below. The aim of this section is to look for patterns in the qualitative interview data that might further extend the findings found in the initial quantitative and qualitative analyses regarding the influences on an individual's ability to

recognise fake news in online social media. While the analyses above, following the statistical results, foregrounded the participants' age, level of qualification and number of hours spent on social media, this section will attempt to examine whether there are other influences, not contained within these three areas that might impact on the ability of participants to recognise fake news.

5.2.1 Motivation for reading the news

The majority of participants stated that they actively read the online news because they regularly updated their knowledge about the world's current events (Extracts 60, 61).

60) Update with current events, see what's happening locally and globally.

61) To be better involved in the world that I live in and to keep up with current events.

However, in contrast two of the participants who scored ≤ 7 said that they only read the news because the social media platforms they accessed, or their phone itself, automatically gave them news feeds (Extracts 62, 63).

62) Because social media push news to me every day.

63) I don't know. I just open it when I turn on my phone, I can see the news.

There is a suggestion here that those who are less capable of identifying fake news are not necessarily active seekers of online news reports. This is perhaps supported by Gourguechon (2018) who states that "there is a reason to be concerned about people's ability to identify "fake news" as well as - and perhaps more significantly - their motivation to seek out information from reliable sources" (para. 8).

5.2.2 Failure to read and understand content before sharing

One participant who correctly answered 11 questions had observed that those who share online news do not often seem to have read the content thoroughly, suggesting that they are often unaware that they

are sharing fake news. She added that even if they subsequently come to realise that the news they have shared is fake, they then choose not to delete it (Extract 64).

64) I think it's a phenomenon that people don't really understand. And I think it's incredibly dangerous. I don't think people actually read the articles that they are sharing. There is a global spread of information and it just taken for face values and once that person finds out it's not real, some people will delete and apology to their followers but some people just don't want to say it has been wrong.

An incident involving NZ MP Judith Collins supports this participant's view. Judith Collins shared a fake news item on Twitter that was headlined "France Passes Law Saying Children Can Consent to Sex With Adults" which made incorrect statements about France's age of consent laws (Cooke, 2018). After being informed that the news was not real, she still denied she was wrong to do so. Interestingly, Garrick, a journalist of NOTED (2018), reported that "The website [Collins] shared is known for pushing Russian narrative propaganda and was apparently involved in Brexit and US election interference" (para. 2). This reinforces the view that people tend to share content that appears to support their personal values or a particular agenda without checking whether it is true or not. Indeed, if it supports their particular values then they are likely to judge it as true, and are unlikely to read it in any depth before sharing.

5.2.3 Ability to judge the news

There was a marked difference in the interview responses between those who scored poorly in the Fake News Test regarding their ability to judge the news. While some of the participants who received less than seven correct answers in the Fake News Test suggested that they used the source of the online news item to identify its validity, one participant, for example, explicitly indicated that he lacked an ability to judge the online news, stating that he believed all online news he read was real (Extract 65).

65) Actually, when I saw the news, I will trust them.

Some of the other participants who received less than seven correct answers indicated that they tended to judge the validity of the online news through intuition and personal experience (Extracts 66, 67).

66) From my own experiences and knowledge.

67) Intuitively.

Furthermore, two participants with lower test scores explicitly stated that they did not have the fundamental ability to judge and check the credibility of a news source (Extracts 68, 69).

68) I have no method.

69) I don't know.

In contrast, it appears that most participants who scored higher than 11 in the test most regularly judge and check the credibility of online news. They also tend to make use of their own particular trusted online news sources (Extract 70). Some of them also stated that they will double check the validity of online news through a search engine or other media if they are not sure about the news source (Extracts 71, 72).

70) News sources that I know like CBC, CNN, BBC etc.

71) Usually when I really find what's going on in the world, I will go to websites like The New York Times, or the Guardian, or New Zealand Herald.

72) I basically judge it by source that it's to say if I know that the source is a respected news organization, then I generally assume that the news is real even it may has slanted bias to it. If something that seems credible but I can't place the source then I generally try to look it up, like Google it.

However, while participants who correctly answered ≥ 11 questions clearly articulated their use of reputable sources and validity checking, many also mentioned that they draw upon common sense as well (Extracts 73, 74, 75).

73) According to common sense.

74) According to common sense and the reliability of the sources.

75) Common sense and the sources of news as well.

Furthermore, although none of the participants who scored ≤ 7 mentioned ‘common sense’ in the interview, two participants who correctly answered ≤ 7 stated that they use their experiences, knowledge or personal feelings to judge the credibility of news sources (Extracts 75, 76).

75) It usually starts from a kind of feeling that I could tell that it might be wrong because it goes against what I had learnt or what I had known.

76) From my own experiences and knowledge.

According to Erwin and Benjamin (2009), common sense usually refers to “those untutored cognitions, intuitions, or “mental instincts” that are elicited in the course of everyday experience, and help to structure that experience” (p. 399). They excluded some specifically definitions of common sense and described it as “common wisdom” or “common understanding.” Many scholars view common sense as mainly built on accumulated experience (Erwin & Benjamin, 2009). In this study, participants who scored well in the Faker News test probably use “common sense” to indicate the things that do not contradict with their existing experiences of the world. Therefore, this suggests that the ability to recognise whether a news item is fake or real news is connected with people’s accumulated experiences.

5.2.4 Encountering fake news

Almost all of the participants stated that they had encountered fake news on social media, however many stated that they chose to ignore the fake news they encountered (Extract 77). The exception was those participants who scored more than 11 correct answers in the Fake News Test, who indicated that they would comment on it, point out that it was fake, or search for evidence to prove it was fake (Extract 78).

77) I don't respond to them.

78) I make a comment to point out false content and show evidence.

As an example, the participant who obtained the highest number of correct answers in the Fake News Test gave a more specific reactions to fake news he had come across (Extract 79).

79) If I've seen something that being shared and especially it's something that people are sharing as real and it doesn't seem right to me, and I will investigate it and if I find out that it is suspicious, I will share and post about what the problem is. If it is something that just simply seems to be fake news that one person shared I do not knowing, I will add some comments like "hey this is actually not from a news site."

5.2.5 Awareness of the influence of fake news

Participants who scored at both the low and high end of the Fake News Test, suggested that fake news could negatively affect society. However, the responses of participants' with lower scores were general and non-specific. They only identified what might be referred to as the surface effects of fake news and did not explain what these might be in any depth (Extracts 80, 81, 82).

80) Of course. Some fake news can influence the public opinion in a bad way.

81) In a very misleading or negative way.

82) *It distorts people's view of events.*

In contrast, participants who scored higher in the test, were able to articulate the social effects of fake news in more depth and provide reasons as to why people might be influenced by fake news. For instance, one participant used her own family as an example to explain the influence of fake news to indicate how even educated adults could be cheated by fake news (Extract 83).

83) *I have family member who is incredibly conservative and we have very different political views and the facts that this person sends to me are just things that I know is fake news from doing my research, but because of the face value or just read the headline, they take it as fact. These are you know, educated adults, which is scary.*

Referring to one of the fake stories in the test, a participant who obtained 13 out of 14 correct answers suggested why people might be affected by fake news. Her view is related to a theory called confirmation bias (Michael, 2017), which will be discussed further in the next chapter (Extract 84).

84) *I think one has to take account is that people are usually influenced the way they want to be influenced. I mean that story they had about the tragic Alfie who died because of the vaccine. Anti-vaccines want to believe that kind of things, so I think they read stories with bias. If you want to believe something, you are more like to believe it.*

5.2.6 Sharing of online news

60 percent of participants who scored in the higher group stated that they did not share the news on social media. The majority of those participants gave the reason that they did not use social media platforms like Facebook and Twitter (Extract 85). Hence, they are likely to receive their news from reliable news sources, such as formal online news websites or traditional news channels. One of these

participants said she did not use social media platforms, but if this was the case, she would check the news to ensure its credibility.

85) No. I don't use Facebook or Twitter. Even if I do, I think I will check the source first to make sure.

Conversely, about 60 percent of participants who scored in the lower group share news on social media mostly because they wanted to share something important or interesting with their friends or families (Extracts 86 and 87). Sutradhar (2017) suggests some reasons for the behaviour of sharing on social media. Firstly, people will share the information that they think is useful and valuable. Also, people share something interesting or professional to make themselves look funnier or smarter in order to build a positive image of themselves in other's eyes. Therefore, the motivation for sharing the news of these lower scoring participants might not be the news itself, but to the desire to build a good social image and the development of social affiliation.

86) Yes I did. Because I want my friends to read the news as well.

87) I would like to share interesting news with my friends on social media, because we can talk about the news together.

Interestingly, one participant from higher scoring group had intentionally shared fake news. However this is because he wanted others to help him evaluate the authenticity of the shared news item.

5.3 Chapter summary

This chapter firstly provided a qualitative analysis of the interview data which focused on three background areas, i.e. the participants' age, level of qualification, and time spent on social media, that were all identified as statistically significant for the successful identification of fake news in the

quantitative stage of this study. The main findings from the qualitative analysis relevant to these three areas are identified below:

Age

The key findings which emerge from the analysis of the qualitative data associated with the participants' age indicate that participants over 35 generally exhibit a deeper understanding of the fake news phenomenon. For example, they have greater insights into the definition and categorisation of fake news, the way fake news is produced and the problems it presents. They also seem to take a more serious attitude towards the issues of fake news, and can relate these issues to their own personal experiences. Ultimately, they are more likely to correctly identify whether online news is fake or not, than the participants under 34.

Highest Qualification

Since all of the PhD participants were above the age of 35, their attitudes toward fake news were more thoughtful and perhaps cautious than younger participants, or lower qualified participants. The PhD participants' knowledge of fake news was more considered and extensive and their techniques for evaluating and checking online sources were more skilful compared to participants from other groups.

Time spent on social media

Participants who spent more time on social media were more likely to regularly encounter fake news, without realising that it was fake, thus reducing their ability to recognise whether a news item was fake or real. Also, participants who spent more time on social media seemed less interested in using their online time to establish the credibility of a news item. In contrast, participants who spent less time on social media used credible online news sites to source their news, as opposed to social media platforms, such as Facebook. Alternatively, they took time to check the validity of online news items.

The second component of the qualitative analysis compared the responses of participants who scored more than 11 correct answers in the Fake News test with those participants that scored lower than 7, in order to look for any further patterns in the interview data that might not have been captured in the focus on age, qualifications and time spent on social media. This analysis identified the higher scoring participants as actively reading the news because they want to know about the world, however, lower scoring participants were less likely to actively access online news. In addition, higher scoring participants described fake news from an objective perspective and a deeper understanding, while lower scored participants viewed fake news with more emotional responses and overly simple explanations. Moreover, participants with higher scores evaluated and checked the validity of the news. In contrast, those with lower scores largely used their intuition and knowledge to evaluate the validity of the news without other evidence, and some even stated that they did not know how to judge and check the credibility of the news. Moreover, unlike lower scoring participants who could only see the superficial impact of fake news, the higher scored participants could explain the reasons behind the influences of fake news.

CHAPTER SIX: DISCUSSION

6.0 Introduction

This chapter will discuss the significance of the key findings related to participants' ability to recognise whether the news they encounter online is real or fake. It begins by summarising the overall findings of the quantitative and qualitative analysis. Following that, the findings of previous studies are compared with, and discussed in the context of, the results from this study. Next, the implications of this research are introduced, followed by a discussion of limitations and possible future research. Finally, a conclusion is provided.

6.1 Summary of key findings

In the main, the results of this study suggest that among all the background attributes (age, gender, occupation, highest qualification, frequency of actively reading news, primary news source, time spend on social media each day, primarily used social media platform, number of news types regularly read and computer skill level) examined in the quantitative data analysis of this study, only age ($p=.019$), highest qualification ($p=.017$) and time spend on social media ($p=.043$) were identified as significantly contributing to the participants' ability to recognise whether the news was fake or not. Additionally, according to Post Hoc comparisons, the data showed that participants from the 45-54 age group have a better ability of identifying fake news than age group 25-34, PhD participants have better ability than other groups, especially the Master's and Diploma group, and that the more time participants spend on social media each day, the less likely they are able to recognise whether the news they see online is fake or real. However it was also shown that there is a relationship between these the results that emerged regarding these three significant attributes. Findings in the first section of the qualitative analysis (See Section 5.1) extended those of the quantitative results. First of all, participants over 35 had a more in-depth understanding of the fake news phenomenon (see more details in Section 5.1.1), their attitudes toward fake news were more considered, and they could make

a connection between the issues presented by fake news and personal experience. Secondly, the PhD participants were able to analyse the fake news problems more thoughtfully and cautiously than lower qualified participants, and their ability and skills to check online sources were better than the other less qualified participants. Thirdly, participants who spent more time on social media routinely encountered fake news online and were less likely to check the authority of news sources. In contrast, participants who spent less time on social media often confirmed the news sources of questionable news items.

In addition, section 5.2 compared the interviews between higher scoring (≥ 11) participants and lower scoring participants (≤ 7). The overall findings suggest that participants who scored ≥ 11 in the Fake News Test actively read the news in order to learn more about the world, they were able to more critically describe fake news with an objective perspective, and they also checked the credibility of news sources. In contrast, most participants with a score of ≤ 7 simply provided a surface-level and more emotional understanding and discussion of the consequence of fake news. They also evaluated the credibility of news sources based on intuition without other evidence. Some even questioned the necessity to evaluate online news items or check the validity of their sources.

6.2 Previous studies and related theory

6.2.1 Previous studies

In this research, the findings suggest that participants who spend more time on social media and younger participants are less likely to recognise whether the online news is fake or not. To some extent, these findings are in accordance with Warner-Soderholm et al. (2018) and El Rayess et al. (2018). Warner-Soderholm indicates that younger and heavy users of social media are more likely to trust the content on social media. However, they also conclude that females are more inclined to believe in content on social media, but that result is inconsistent with the finding in this study that there is no difference between a male and female's ability to recognise fake news. While, Nelson and

Taneja (2018) states that only a small portion of those that read and shared fake news are regular Internet users. Their findings are in contrast to the results of this study. El Rayess et al. (2018) indicate that student participants in their study exhibited a “lack of skills to evaluate the trustworthiness of information, especially in the fake-news era” (p. 156). Results in this research also demonstrate that younger participants which include a large part of students are not able to identify fake news particularly well. Furthermore, in the qualitative data analysis of this research, participants who were able to analytically talk about the definition, influence and development, etc. of the fake news phenomenon obtained relatively higher scores in the Fake News Test. This result is consistent with the findings of a study by Pennycook and Rand (2017) which analysed who falls for fake news. Their results indicate that “the propensity to think analytically plays an important role in the recognition of misinformation” (p. 2).

6.2.2 Related theory and terminology

6.2.2.1 Confirmation bias

In the interview, a participant gave her explanation of why some people can be influenced by fake news (Extract 84).

(84) People are usually influenced the way they want to be influenced. I mean that story they had about the tragic Alfie who dead because of the vaccine. Anti-vaccines want to believe that kind of things, so I think they read stories with bias. If you want to believe something, you are more like to believe it.

Her opinion tends to relate to a term called ‘confirmation bias’. Michael (2017) defines confirmation bias as:

....seeking and gathering data, information, and knowledge that support a particular belief—that is, we often go to an extraordinary length to justify (confirm) our assumptions, but we seldom try to disprove, contradict, or falsify cherished beliefs. The tendency to ignore negative instances, not attending to information that does not support a purported position, is detrimental to the generation of new knowledge (Michael, 2017, p. 131)

Similarly, as Shahram (2015) explains, when people want an idea or a concept that is in accordance with their beliefs to be true, they eventually treat it as true. Furthermore, they will stop collecting information when they find evidence that confirms their view is true, and ignore or reject information that conflicts with their beliefs. One PhD participant suggested that confirmation bias contributes to political polarisation in the interview. In Pennycook and Rand's study (2017), they found that people will convince themselves that news which fits their political ideology, even when it is implausible, is true. In Chapter 2, an example showing how people tend to share fake news that favour the politicians they support, or are critical of politicians they oppose. For example, Shin et al. (2018) find that most of the people who spread rumours about Obama (a Democratic Party candidate) were republicans (84% vs 16%), while those who spread rumours about Romney (a Republican Party candidate) were mainly from the Democratic Party (91% vs 9%).

Given the findings of this study, it could be argued that some of the participants evaluated the news through a confirmation bias. For example, in section 4.1.3, it was shown that most participants correctly identified the fake Trump news as fake, but nearly 40 per cent of participants wrongly identified the real Trump news as fake. It is likely, that given the New Zealand public generally have negative views about Trump, many of the participants believed that news items related to Trump were likely to be fake.

6.2.2.2 Common sense and intuition

Many participants mentioned that they judged the validity of the news through common sense and intuition. Erwin and Benjamin (2009) defined the term common sense as “understood, in its most elemental form, to refer to those untutored cognitions, intuitions, or ‘mental instincts’ that are elicited in the course of everyday experience, and help to structure that experience (p. 399)”. They claimed that common sense plays an important role in decision-making. Based on their ideas, people are not able to make sense of anything without a variety of “principles of common sense” which cannot be proved (Erwin & Benjamin, 2009).

Herbert Simon, who was the Nobel laureate, argues that intuition also plays a crucial role in decision-making (Patton, 2003; Erwin & Benjamin, 2009). Kahneman (2003) noted that intuition refers to the “thoughts and preferences that come to mind quickly and without much reflection” (p. 431, as cited in Goodwin, 2009). According to these scholars, the differences between common sense and intuition are first of all, intuition is instantaneous, rapid and unconscious, while common sense is quick, but requires some thought (even superficial analysis). In addition, the reason for intuitive judgement may be purely instinctive, such as “I know it is right” or “I think it is right.” (Goodwin, 2009). In the context of this study, it could be argued that the older participants used “common sense” to make decisions regarding the validity of the news items in the Fake News Test, while the younger participants largely used ‘intuition’. In quantitative analysis, the older participants obtained relatively higher scores than the younger participants (see Section 4.3.2.1), and in the qualitative analysis it was found that older participants usually used their personal experiences to evaluate the news (see Section 5.1.1). In contrast younger participants were found to judge the validity of the news quickly using their ‘intuition’, that is, instinctively, without applying any conscious reasoning.

6.3 Implications, limitation and future study

6.3.1 Implications

This study provides further information from which to understand the way that the validity of the news in the current media environment is evaluated. Although fake news is not a new problem, it has become a central issue since the 2016 United States presidential election. To date, research on fake news has focused on a range of different issues, such as the sharing and spreading of fake news (Vosoughi, Roy & Aral, 2018; Jang et al., 2018; Shin et al., 2018; Jang et al., 2018), the economics of fake news (Kshetri & Voas, 2017; Lea, 2017), the influence of fake news (Lopez, 2016; Allcott & Gentzkow, 2017), the audiences of fake news (Nelson & Taneja, 2018; Pennycook & Rand, 2017), combating fake news (Burkhardt, 2017; Affelt, 2017; West, 2017), and so on. However, there are few studies about how people evaluate the validity of fake news and what influences their ability to recognising the online news as fake or not. An exception is El Rayess et al. (2018), who analysed the ability of undergraduate students from Notre Dame University to determine whether a news item was fake or not. However, the current study focus not only on students' ability, but includes participants with different characteristics, such as age, gender, occupation, educational background, time spend on social media and so on.

Fake news can cause confusion about current events and encourage people to carry out harmful actions, for example, the gunshot event in a pizza restaurant during the US presidential election in 2016 (Tandoc et al., 2018). Fake news also can affect a country economically or socially. Due to the reason that more and more people use social media and other online sources to access their news information, and that these online sources are largely the places where fake news is located, it is important to explore how people can distinguish between real information and misinformation online. This research aimed at identifying the important attributes related to people's ability to determine the difference between fake and real news. The findings might encourage educators to introduce the skills

required for evaluating the validity of the news to those at relatively young age. El Rayess et al. (2018) suggest that it is important to teach media and information literacy to students. They conclude that tertiary educators should not simply focus on academic literacies such as plagiarism, understanding referencing and citing, but also pay attention to teach students how to evaluate and examine the authority of information and information sources. I would add that this should include the online news.

This study also implies that people need to limit the time they spend on social media every day as its findings show that participants who spent more time on social media are more likely to have worse ability of recognising fake news. Furthermore, Section 4.2.3.8 shows that many of the participants who spent long periods of time on social media each day were relatively young. Thus, young people may need to manage their online time more appropriately.

6.3.2 Limitations and future studies

This study has a number of limitations. Firstly because of the limited time and funding available, the number of participants - although enough to identify statistical significance - was not particularly large. Furthermore, although the convenient sampling approach used to gather the sample size made the collection of data more accessible and allowed the research to be completed in the time available, it is not a random sampling strategy. Therefore, it may not be possible for the results to be generalised to a larger population. Moreover, if the time had allowed, it may have been useful for the researcher to ask the participants specific reasons about why they recognised each news item as false or real in the Fake News Test in order to understand more about their decisions. Notwithstanding its limitations, this study does suggest that it is necessary for younger people and people who spend a lot of time on social media, to be more careful when they come across, or share the news online.

Future research could improve this study by including more participants, and by using different sampling strategies in order to improve the generalisability of the research. In addition, more studies

could focus on analysing how to improve people's ability to recognise fake news on social media. By providing educators with an appropriate design for teaching participants the specific linguistic, visual and rhetorical patterns of fake news, knowledge of the fake news phenomenon and so on, researchers could evaluate and compare whether such techniques are useful for improving people's ability at identifying fake news.

6.4 Conclusion

To conclude, this study began by highlighting the importance of analysing the fake news phenomenon. This included a definition of fake news, an introduction of the rise of fake news, followed by a discussion of the sharing and spreading of fake news, its influences, and the challenges of combating fake news. The study then went on to explore the main research question, that is, what background attributes maybe influence people's ability to recognise whether the online news they read is fake or real, and why. To achieve this, the relationship between participant's background attributes and their ability to successfully identify news items as real or false was investigated, using the research instruments of a Fake News Test, a questionnaire identifying their particular background attributes and a post-test interview. Participants for this mixed methods approach were selected using Convenience and Quota sampling strategies. The data was analysed using a graphical analysis, descriptive statistics, One-way ANOVA, NVivo coding and classifying. The quantitative component of the study found that three background attributes - age, highest qualification, and time spent on social media - were statistically significant in participants' ability to determine whether the online news was fake or real. The qualitative analysis supported and extended the quantitative results by indicating that for older participants, higher qualified participants, and participants who spent less time on social media, understanding the complexity of the fake news phenomenon (i.e. the specific influences and reasons behind it), more personal experiences, a more serious attitude towards the fake news problem, better skills at evaluating online news sources and the motivation for reading the news maybe resulted in a better ability to recognise whether the news was fake or not. This was in contrast

to participants who scored poorly in the Fake News Test, who were relatively lower qualified or younger, and who spent more time on social media. These latter participants were only able to describe the fake news phenomenon at a superficial level. They also exhibited a more careless attitudes about fake news and some even saw fake news as entertainment. Finally, they were less skilful at evaluating online news sources and less motivated to regularly read the news.

The results of this research have some implications for consumers of online news and for educators. It might remind all to be vigilant about online news sources, and for educators, in particular, to teach their students how to recognise fake news in the current social media environment. Because of the limitations to do with the overall number of participants, a future study might focus on bigger sample size to improve the generalisability of the research. Also, future research could explore how to improve people's ability to evaluate the validity of the news they source online.

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APPENDIX B: Tools

a) Fake News Test

Read the news items below and decide whether each one is fake or real. Identify your choice by ticking the correct box below each item.

<p>1. Study Shows Aluminium Was Present In Baby Alfie Evans' Brain</p> <p>YourNewsWire.com News. Truth. Unfiltered.</p> <p>HOME NEWS HEALTH SCIENCE/ENVIRONMENT TECHNOLOGY ENTERTAINMENT CONSPIRACIES CONTACT US</p> <p>CONTACT US TERMS OF USE PRIVACY ADVERTISE</p> <p>HEADLINES [May 2, 2018] Washington D.C. Daycare Caught 'Pimping Children' - Pedophile Ring SEARCH</p> <p>Study Shows Aluminium Was Present In Baby Alfie Evans' Brain</p> <p>May 2, 2018 Sean Adi-Tabatabai News, UK 2</p>  <p>A breakthrough study suggests that aluminium from vaccines was likely present in baby Alfie Evans' brain, which resulted in his death.</p> <p>Alfie Evans was born perfectly healthy, but got a degenerative neurological disorder at a year old after receiving six vaccines in one doctor visit. The vaccines triggered an auto immune disorder that caused his immune system to destroy his brain.</p>	<p>2. "Rattlesnake selfie" results in a \$153K medical bill</p> <p>NEWS SHOWS VIDEO CBSN MORE</p> <p>By BIANCA SEIDMAN CBS NEWS July 27, 2015, 6:19 PM</p> <p>"Rattlesnake selfie" results in a \$153K medical bill</p>  <p>File photo of a Southern Pacific Rattlesnake CBS</p> <p>Share / Tweet / Reddit / Flipboard / Email</p> <p>For a man in San Diego, getting bitten by a rattlesnake was just the beginning of his problems. The life-threatening encounter was followed by a shocking medical bill: \$153,000 for his treatment.</p>
<p>Fake <input type="radio"/> Real <input type="radio"/></p>	<p>Fake <input type="radio"/> Real <input type="radio"/></p>
<p>3. Trump Undid Obama Rule That Added Mentally Ill People to Gun Check Register</p> <p>Trymaine Lee @trymainelee</p> <p>President Trump calls for focus on mental health after 18th mass shooting of 2018.</p> <p>But, wait...</p> <p>Trump signs bill revoking Obama-era gun checks for mental illness nbcnews.to/2ImCRGB via @nbcnews</p> <p>4:34 AM - Feb 16, 2018</p>  <p>Trump signs bill revoking Obama-era gun checks for mental il...</p> <p>The new law nullifies an Obama-backed rule that added people with mental illnesses to the national background check database.</p> <p>nbcnews.com</p>	<p>4. Fox News Banned as 'Propaganda' in Australia and New Zealand</p> <p>Bonnie Swadling @bonnie_swadling</p> <p>New Zealand and Australia have banned Fox News saying it does not fit in their democracies. They say it is propaganda. Smart countries. The U.S. is sinking fast under the Dictatorship of Trump and the Republicans in the eyes of the world.</p> <p>4:07 PM - Jan 25, 2018</p> <p>1,932 1,481 people are talking about this</p> <p>Darla @ukfan01</p> <p>@FoxNews is banned in Australia and New Zealand because it is classified as propaganda.</p> <p>7:40 AM - Jan 26, 2018</p> <p>See Darla's other Tweets</p>

In February 2017, President Trump repealed an Obama-era regulation that would have made it easier to block the sale of firearms to people with certain mental illnesses.

Fake ☐

Real ☒

Fake ☐

Real ☐

5. Elderly woman accused of training her 65 cats to steal from neighbors

ELDERLY WOMAN ACCUSED OF TRAINING HER 65 CATS TO STEAL FROM NEIGHBORS



845K



Columbus, Ohio | An 83-year old woman was arrested this morning and accused of training dozens of cats to steal jewelry and other valuables from her neighbors.

Fake ☐

Real ☒

6. 17-year-old teenager sues his parents for being born white

17-YEAR-OLD TEENAGER SUES HIS PARENTS FOR BEING BORN WHITE



304K



St-Louis, MO | A 17-year-old is undertaking one of the most controversial lawsuits of the history of the country as he is suing his own biological parents for being born white.

Fake ☐

Real ☐

7. McDonald's flips golden arches in honor of International Women's Day



McDonald's
@McDonaldsCorp



In the U.S. we're proud to share that 6 out of 10 @mcdonalds restaurant managers are women. Join us in recognizing the extraordinary contribution of women at McDonald's on #IWD2018: [McD.to/6014DTdTK](https://t.co/6014DTdTK)

7:05 AM - Mar 9, 2018

83 31 people are talking about this

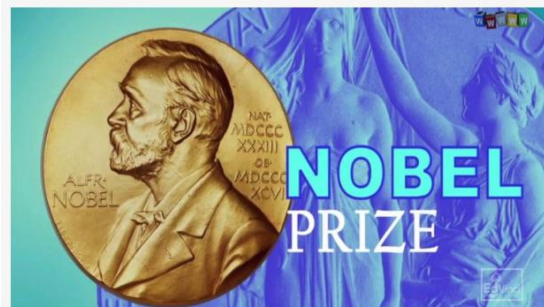
Fake ☐

Real ☒

8. Trump Has The Votes-Wins Nobel Peace Prize

UPDATE: Trump Has The Votes-Wins Nobel Peace Prize

May 3, 2018 • Flagg Eagleton • Pickled Pig's Lips



The voting for the 2018 Nobel Peace Prize has ended, according to our source inside CERN in Norway. It took just an hour for the voting to make its way around the famous "Circle of Nobels" with a clear majority for US President Donald Trump. Nobel Society Laureate Coordinator Art Tubolls told BBC-14A:

Fake ☐

Real ☐

9. An arms dealer advertised a weapon for its ability to fit into a small backpack (AR is a kind of gun)


10. Hawaii Volcano Destroys 26 Homes, Spews Lava 200 Feet in Air

Pantheon Arms
May 5 at 7:35pm · Instagram · 🌐

We're strolling around Dallas with an AR in a clear backpack because reasons. Come see us in booth 2822 at NRA Dallas on Sunday, the last day! From Veterans MFG on Instagram- Concealed carry Texas style. #dolos #concealedcarry #edc #clearbackpack. Check out Veterans MFG in booth 12364.



Fake ☐ **Real** ☐



Hawaii's erupting Kilauea volcano has destroyed homes and forced the evacuations of more than a thousand people.

Fake ☐ **Real** ☐

11. Cadbury Products Contaminated with HIV



This is the guy who added his infected blood to Cadbury products. For the next few week do no eat any products from Cadbury, as a worker from the company has added his blood contaminated with HIV (AIDS). It was shown yesterday on BBC News. Please forward this message to people who you care.


a worker at Cadbury plant was arrested for contaminating the company's products with HIV-infected blood

Fake ☐ **Real** ☐

12. United Airlines Deny a Passenger's Request to Fly with an Emotional Support Peacock

The Jet Set added 2 new photos.
January 28 at 7:40am · 🌐

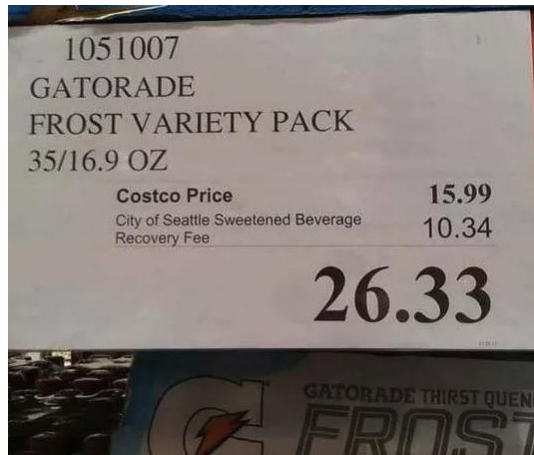
WHAT?! We're discussing emotional support animals on an upcoming episode! Visit www.TheJetSet.tv to find your local time and station! We'll be discussing situations much like this emotional support PEACOCK recently spotted at Newark International Airport. Although the bird DID have it's own seat, it was denied boarding. VIDEO of The Birds arrival here: <https://www.facebook.com/thejetsettv/videos/1777925285573434/>



A woman seeking to bring her peacock along on a flight as an emotional support animal was denied permission to do so by United Airlines.

Fake ☐ **Real** ☐

13. "City of Seattle Sweetened Beverage Recovery Fee"



In January 2018, social media users began pondering a photograph seemingly showing a variety pack of Gatorade brand sports drink offered for sale at a Costco warehouse store in Seattle, priced at \$26.33. What threw viewers for a loop was that the price of the drink itself was only \$15.99, with another \$10.34 (a markup of 65%) being added to the cost for something identified as ""City of Seattle Sweetened Beverage Recovery Fee"

Fake ☐

Real ☐

14. Florida Passes Bill Legalizing Recreational Use Of Marijuana



Florida Passes Bill Legalizing Recreational Use Of Marijuana

By Taylor Davis Last updated Mar 17, 2018



Orlando, FL. – Weed smokers rejoice, The state of Florida can now be added to the growing list of US states that have past bills to legalize the use marijuana.

The bill to legalize marijuana for medical and recreational use in the state was first presented to the state capital back in July is expected to be in place by Easter. Lawmakers have finally given the go-ahead citing it will jump-start the economy and create new jobs.

Fake ☐

Real ☐

b) Background questionnaire

1. What is your age?

- ☐ 18-24 ☐ 25-34 ☐ 35-44 ☐ 45-54 ☐ 55-64
☐ Over 65

2. What is your occupation? (Please state) _____

3. What is your gender?

- ☐ Male ☐ Female ☐ Other (Please state _____)

4. What is your highest educational qualification?

- ☐ High School ☐ Bachelor's ☐ Master's ☐ Other (Please state _____)

5. How often do you actively read the news (either online or in the print media)?

- ☐ Hourly ☐ Daily ☐ Weekly ☐ Monthly
☐ Other (Please state _____)
☐ I do not actively read the news

6. What is your primary source for getting the news (tick only one)?
- ☐ Television ☐ Radio ☐ Print newspaper ☐ Online news websites
☐ Social media platforms (Please identify _____) ☐ Other (Please identify _____)
☐ I do not read/watch the news

7. How many hours each day do you spend on social media in total?
- ☐ < 1 hours ☐ 1-2 hours ☐ 2-3 hours ☐ 3-4 hours ☐ 4-5 hours
☐ > 5 hours
☐ I do not use social media

8. Which social media do you primarily use? (Tick only one)
- ☐ Facebook ☐ Twitter ☐ Instagram ☐ YouTube
☐ Google+
☐ Other (Please state _____) ☐ I do not use social media

9. What type of news do you prefer to read?
- ☐ Politics ☐ Sports ☐ Economics ☐ Entertainment
☐ Social Events
☐ Science ☐ Health ☐ Other (Please state _____)

10. What level are your computer skills?
- ☐ Fundamental skills (Typing, Mouse)
☐ Basic computing and applications
☐ Intermediate computing and applications
☐ Advanced computing and applications
☐ Proficient computing, applications, and programming
☐ Other (Please state _____)

c) Interview

1. Why do you read the news?
2. How do you judge a credible news source?
3. What are your views on “fake news”?
4. Have you come across what you thought was “fake news” on social media? If so, how do you respond to it?
5. Do you think “fake news” can influence people’s lives? If so, in what way?

6. Do you ever share news on social media? Why or why not?
7. Have you ever shared “fake news”? Why or why not?
8. Do you ever add your own opinion or comments when you share the news on social media? If so, what type of comments do you add?
9. Do you check the content before you share news on social media? Why or why not?
10. How do you check the content?

d) Consent form

Project title: Influences on the recognition of fake news.

Project Supervisor: Dr Darryl Hocking

Researcher: Yunong Li

- ☐ I have read and understood the information provided about this research project in the Information Sheet dated dd mm yy .
- ☐ I have had an opportunity to ask questions and to have them answered.
- ☐ I understand that the interviews will be audio-taped and transcribed.
- ☐ I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.
- ☐ I understand that if I withdraw from the study then I will be offered the choice between having any data that is identifiable as belonging to me removed or allowing it to continue to be used. However, once the findings have been produced, removal of my data may not be possible.
- ☐ I agree to take part in this research.
- ☐ I wish to receive a summary of the research findings (please tick one): Yes ☐ No ☐

Participant's signature:

.....

Participant's name:

.....

Participant's Contact Details (if you wish to receive a summary of the research findings):

.....

.....

.....

.....

Date:

*Approved by the Auckland University of Technology Ethics Committee on 27th June, 2018 AUTEC
Reference number 18/243*

e) Information sheet

Date Information Sheet Produced:

07/06/2018

Project Title

Influences on the recognition of fake news.

An Invitation

Hi, I am Yunong Li, a graduate student from AUT. I am doing my final Master's thesis about fake news on social media. You are invited to take part in this study. This information sheet explains the purpose of the research. If you have any questions about anything, please ask me. Your participation is voluntary and you can decline to participate without giving a reason. Whether you chose to participate or not will neither advantage nor disadvantage you.

What is the purpose of this research?

This research investigates what influences people's ability to recognise fake news on social media. The increase in fake news is seen as a major issue in our society, however to date there is very little

research about fake news. My study will contribute to the emerging research being carried out in this area. This research will also contribute to my Master of English and New Media Studies qualification.

How was I identified and why am I being invited to participate in this research?

You have been invited to participate in this research as a friend or acquaintance of the researcher, as well as a probable reader of online news. You are also over 18, as minors are not included in this research. It is important to note that there will be no disadvantage at all if you choose not to take part.

How do I agree to participate in this research?

Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. You are able to withdraw from the study at any time. If you choose to withdraw from the study, you will be offered the choice between having any data that is identifiable as belonging to you removed or allowing it to continue to be used. However, once the findings have been produced, removal of your data may not be possible.

What will happen in this research?

If you are interested in participating in my research, I will first ask you to sign the Consent Form. Then, I will ask you to look at 14 short extracts from online news sites and identify whether each one is fake or not. After this, I will ask you to complete a 10 question multi-choice survey about your background and social media use. Finally I will ask you some interview questions about fake news. I will record your interview answers so they can be transcribed for my research. The whole process should take between 10-20 minutes of your time.

What are the discomforts and risks?

Participants are not likely to be at risk in this research.

What are the benefits?

The data obtained from you can help me to analyse what influences people's ability to distinguish between fake and real news on social media. The findings will contribute to the emerging research on fake news and may be useful in the fight against fake news, which is seen by many as a threat to democratic processes.

How will my privacy be protected?

Your name and personal details will not be included anywhere on the fake news identification questionnaire, survey, interview recording, or transcription of the interview. I will also keep all information related to your participation in the research confidential. The interview recording will be erased once the interview is transcribed.

What are the costs of participating in this research?

There are no costs involved with participating in this research.

What opportunity do I have to consider this invitation?

You have two weeks to consider this invitation.

Will I receive feedback on the results of this research?

If you are interested in the results of this research please place your contact details on the consent form and I will email you a summary of the findings.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Darryl Hocking

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTC, Kate O'Connor, ethics@aut.ac.nz , 921 9999 ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Yunong Li

crh5778@autuni.ac.nz

Project Supervisor Contact Details:

Dr Darryl Hocking,

dhocking@aut.ac.nz

921 9999 extension 6802.

Approved by the Auckland University of Technology Ethics Committee on 27th June, 2018, AUTC Reference number 18/243.