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How did fake news affect health communication during the COVID-19 pandemic in China?

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ABSTRACT

COVID-19, or more correctly the novel coronavirus SARS-CoV-2, developed into a pandemic within a short space of time. With no effective drugs or vaccine available in the first phase of the pandemic, the Chinese government turned to mitigation measures such as using masks, closing schools, self-isolating, telecommuting, and practicing of social distance. People found refuge on the internet and social media applications; however, there occurred a proliferation of fake news surrounding COVID-19 on social media platforms, which has exercised a degree of negative impact.

This paper attempts to explore the extent to which fake news is spread in social media by collecting fake news on the platform Weibo (China's Twitter) during the first wave of the COVID-19 pandemic (23/1/2020-27/7/2020). Based on this, it explores the negative consequences that fake news can exert on the field of health communication. The study will combine quantitative and qualitative discourse analysis in order to provide an in-depth analysis of fake news on Weibo. The findings demonstrate that fake news is mainly constructed by selecting hot topics at different times in order to attract audiences and increase click-through rates. In doing so, fake news also deceives, reinforcing its impact on audiences by obscuring sources and key information while using leading words and visual messages.

Keywords: COVID-19, Social media, China, health communication

CONTENTS

1.0 INTRODUCTION

Audience trust in the media is declining. The proportion of audience with high trust in media organisations was only 16% in 2017 (Swift, 2017). Meanwhile, the term "fake news" has in recent years become a buzzword, carrying with it complicated implications and nuances. In 2016, "fake news" was listed as the term of the year by the Oxford English Dictionary and was also subsequently listed in 2017 by the Collins Dictionary (Kalsnes, 2018). The expansion of fake news in the 2016 US election meanwhile sparked a debate about the nature of truth (Waisbord, 2018) and provoked discussion over the definition of fake news. On the one hand, fake news refers to false information. On the other hand, fake news has been utilised since 2016 as a mainstream political tool worldwide to attack different opinion (Silverman, 2016; Habgood-Coote, 2019). In the UK, the government understands the task of combatting fake news as part of its national security; in France, President Macron has said that he will give the news media more power to regulate fake news (Ingram, 2018). In China, the issue of fake news is persistent. Both disinformation and misinformation have significantly increased in social media, which prompted government to introduce the Regulation on the Administration of Internet News Information Services. Currently, fake news has become a global phenomenon and a hot topic in political, academic, and economic fields across the world (Wang et al., 2020). The research on fake news is also proliferating, grappling with key issues, including its definition (Kalsnes, 2018; Tandoc Jr et al., 2017; Gelfert, 2018;

Waisbord, 2018), influence (Bakir and McStay, 2017; Vargo et al., 2018; Keersmaecker and Roets, 2017), spread (Allcott and Gentzkow, 2017; Apukea and Omar, 2020). and solution (Bakir and McStay, 2017; Lee, 2018). While fake news is not an entirely new phenomenon, the scenario of fake media reporting on the 2016 US presidential elections effectively signalled the "rise of the disinformation society" (Pickard, 2016). Since then, the term “fake news” has evolved as a political instrument, which is now used to classify disinformation and misinformation (Albright, 2016). More worryingly still, fake news has at times appeared to exceed real news in terms of its authority (Gelfert, 2018). Currently, the influence of fake news continues to grow, from the politics to the culture, economy, public health and other social areas (Tsfati et al., 2019) and has risen to prominence as a concern for journalism globally (Lee, 2018).

In 2020, the COVID-19 virus struck China. As CGTN (2020) states, “Wuhan, a metropolis of 11 million residents in central China's Hubei Province, would become the epicenter of the new coronavirus”. On 31 January 2020, the World Health Organization (WHO) (2020) declared it a Public Health Emergency of International Concern (PHEIC). As of 24 March 2020, the virus had been responsible for over 16,600 deaths and over 380,000 confirmed infections worldwide, of which over 10,000 were severe cases.

Social media, which refers to web-based services that enable users to communicate

with other users via internet platform, has within the last decade emerged as a powerful health communication platform (Capurro et al., 2014). With increasing numbers of people worldwide who rely on social media for news, these medium act as a tie between people and information, condensing traditional and new media into one platform (Glynn et al., 2012). Due to the support provided by the internet in this manner, social media forces health workers to move beyond the linearity of traditional communication frameworks and to re-evaluate the position of their audience members as receivers who are empowered by social media platforms to amplify, modify, and generate original messages (Berlo,1960). In the internet age, social media has become a powerful tool for information sharing, offering fertile soil for the spread of fake news (Duffy et al., 2020). Considerable quantities of fake news are disseminated on social media platforms and have more potential than ever to attract attention (Silverman, 2016). The World Health Organization (WHO) tweeted in 2020 that "we are not just fighting the pandemic; we are also fighting an infodemic". It appears that global journalism has been infected with the "fakeness pandemic" (Wang et al., 2020). The necessity of limiting one's social interaction in real life during the pandemic has driven higher social media usage than ever before. At the same time, the new virus, coupled with the various restrictive regulations that have subsequently been imposed on citizens, has provoked panic and uncertainty (Moscadelli et al., 2020), generating a sharp increase in the demand for relevant information. Under these conditions, fake news has spread widely through social media and has interfered with the communication of accurate outbreak information.

Sina Weibo is a social media site launched by Sina.com to offer micro-blogging. Its users can publish information through web pages and mobile apps and can also upload images and videos for instant sharing and virtual interaction. The site is best known as the Chinese Twitter (Yang et al., 2020). As one of the most prevalent social media sites in China, it provides an opportune space for the spread of fake news. According to Weibo's First Quarter 2020 Unaudited Financial Results (2020), the site is responsible for 550 million monthly active users. The large proportion of the population that is frequently exposed to informarionn distribution via Weibo identifies the utility of the platform for investigating the distribution of fake news in practice. This paper therefore places Weibo at the centre of its investigation into fake news.

Since 2020, research on the issue of fake news during the COVID-19 pandemic covers the impact of fake news on public health (Naeem et al., 2020; Moscadelli et al., 2020), on people's mental health (Montesi, 2020) as well as the motivations for sharing fake news (Apukea and Omar, 2020). Existing research is largely taken from the viewpoint of Western countries, such as Italy and Spain, with studies focusing more on fake news on social media platforms. To provide a more non-western perspective, this paper intends to explore the dissemination of fake news on Weibo in China during the height of the COVID-19 pandemic. By collecting fake news that was published on Weibo during this period, this paper will adopt a quantitative content analysis and discourse analysis in order to explore the dissemination of fake news and

to analyse the impact of its dissemination on health communication. This focus will allow for broader conclusions to be drawn on the influence of fake news on health communication in China. The article is divided into four sections, the first section of which will provide an overview of the existing literature on fake news. This will also include its definitions and history, fake news communication in social media, and fake news in China. The second part will introduce the methodology of this research, including content analysis and discourse analysis, while providing an in-depth explanation of its methodology, including analyses of fake news published on Weibo and the role of thematic analysis in this research. Following this, the findings of this investigation will be discussed. Finally, conclusions are drawn from the research findings.

2.0 LITERATURE REVIEW

In this section, previous studies and a number of established theories related to fake news will be discussed and analysed. The literature review will provide an overview of the history and definition of fake news as well as its development and impact in the age of social media. In addition, this section will discuss the relationship between the Chinese media system and fake news.

2.1 The history and conceptualization of fake news

2.1.1 Fake news: a long history

While fake news propagated widely over the course of the 2016 US elections and has, according to Burkhardt (2017), become a buzzword in recent years, rumours and

disinformation have long existed in society, even before the emergence of "true" and "objective" news. Fake news is certainly not a new phenomenon (Soll, 2016). Its origins can be traced back to before the invention of the printing press (Burkhardt, 2017), while the phrase “fake news” can itself be traced back to the 1890s Kalsnes (2018). Preceding the 1890s, this phenomenon attracted a variety of names, such as “anecdota”, “pasquinade”, and “canard” (Darnton, 2017). Since its emergence, fake news has also tended to exhibit lurid and exaggerative qualities, employed in order to provoke passions and bias, which has acted as a fuse for inciting violence (Soll, 2016). Looking back at its historical development, fake news is mainly employed in aid of persuasive and political propaganda, yet the approach for producing fake news has only focused on creating false information or communicating partial truth. In the era preceding the invention of the printing press, in which it was exceedingly difficult to verify the facticity of information, false information was used to affect people's thoughts and beliefs (Burkhardt, 2017). Procopius, a historian in sixth century AD published false slander about the Emperor Justinian, which succeeded in damaging the Emperor's reputation (Darnton, 2017). In 1439, Johannes Gutenberg, a German goldsmith, created the printing press (Miller, 2019), which empowered people to not only communicate real news through print but also false information (Burkhardt, 2017). In 1755, for instance, the Lisbon Earthquake was advertised as divine punishment for evildoers instead of being correctly identified by the church and European governments as a natural disaster (Soll, 2016). At that time, pamphlets were also produced in Portugal “claiming that some survivors owed their lives to an

apparition of the Virgin Mary" (Soll, 2016). In this era, fake news was utilised in order to prompt the sales volume of newspapers (Kalsnes, 2018). A notable example of this dervies from a news story about murder inquiries which was disclosed by reporters in 1857 and which attracted a significant audience. Tate (2017) points out that the news was nothing more than a well-constructed piece of fake news:

> The freelancers, with the aid of a hospital contact, had allegedly gathered together body parts from the dissecting rooms...with an accomplice positioning the grisly haul in a spot where it was sure to be found. The "liners" had their lengthy hand-written report of the sensational find ready to distribute to the capital's papers the moment the police became involved (Tate, 2017, para. 3).

This act of counterfeiting was accompanied by an attractive profit, which "earned hard-up freelance reporters a share of the equivalent of a year's wages" (Tate, 2017). In this age, fake news was described as "yellow journalism", not only enhancing but going as far as creating sensationalist stories in order to increase newspaper sales. (Soll, 2016)

Historically, fake news also has capacity to become a political tactic. During the war of the Roman Republic, fake news was employed by Octavian in order to attack his rival (Carson, 2019). Similarly, during World War I, fake news was employed as a propaganda by the British government, who communicated misleading information in order to influence people and incite extreme emotions (Fox, 2020), while fascist

regimes in World War II utilised false information in order to control public opinion (Carson, 2019). And fake news in this context is more like a political propaganda (Fox, 2020). In 1933, one of the actions of the Nazi Party was to build "the Reich Ministry for Popular Enlightenment and Propaganda" (Fox, 2020). During World War II, the Nazi Party controlled German news outlets and employed them to report the fake news in their favour (Miller, 2019).

By controlling media institutions and spreading fake news, Hitler's Nazi Party wsa able to successfully curb Communist support and ultimately initiate the genocide of the Jewish population (Miller, 2019). This demonstrates that fake news has been exploited by leaders and their political parties in order to spread views in their favour in the World Wars. In defeated Germany, the far-right continues to employ fake news in order to cover up the defeat (Fox, 2020), which demonstrates that fake news as a political machine persists today (Soll, 2016). It is therefore easy to conclude that fake news occupies a long history. However, today digital media and news are employed widely, which provides a powerful tool for fake news (Soll, 2016). In the internet era, fake news exerts a profound influence, spreading both widely and rapidly, and it will continue to present increasingly serious consequences as communication techniques develop (Burkhardt, 2017).

2.1.2 What is "fake news"?

It is useful to assess the definition of fake news with respect to the nature of traditional journalism (Tandoc Jr et al., 2018). News can essentially be understood as

a product of journalism, which provides "independent, reliable, accurate, and comprehensive information" (Kovach and Rosenstiel, 2007). Gans (1980) suggests that the production of news arises from different sources which are abstracted, refined, and transformed by journalists to ensure that information is made appropriate for its audience. For journalists, adhering to the standards of journalism, which includes commitment to "authenticity" and "accuracy", is synonymous with professional quality (Tandoc Jr et al., 2018). Therefore, although journalists are subjective in their production of news (White, 1950), they strive to produce, rather than falsify, news (Schudson, 1989). This notion indicates the paradoxical nature of the phrase "fake news", as news is inherently based on factual truth rather than falsehood (Tandoc Jr et al., 2018). Hence, it is necessary to consider the word "fake" in order to understand fake news (Gelfert, 2018). In the art market, the value of fakes is dependent on the original pieces that they are imitating (Gelfert, 2018). From on this perspective, fake news is also produced in the form of professional journalism. Thus, Gelfert (2018) suggested that the key word of fake news is "design" insofar as fake news deliberately presents false information as news in a manner similar to a well-designed story (Gelfert, 2018). While Waisbord (2018) has treated fake news as stories comprising the characteristic of traditional news reports, but with an intention to mislead their audience, Allcott and Gentzkow (2017) defined it simply as news stories or articles which are intentionally false and will deceive an audience. Indeed, news stories without factual basis are fabricated and false and yet can have an influence on their audience (Tandoc Jr wt al., 2018). Fake news can essentially be seen as information

that is fabricated for the purpose of confusing and deceiving audiences into accepting false information (McGonagle, 2017).

However, fake news should not be treated as merely "false", "fraud" or "sham" (Habgood-Coote, 2019). The term can instead be understood as a neologism, which has unique implications (Habgood-Coote, 2019). Its level of authenticity is a standard measure by which to define "fake news", depending on the degree of truthfulness to classify as completely false or partially fabricated (Bakir and McStay, 2017). According to Wardle (2017), fake news can be classified into seven key types: misleading content, news satire, imposter content, completely fabricated information, false connection, false context, and manipulated context. The concept of fake news can vary based on these different categories, which not only refer to "fabricated information". Based on this explanation, fake news also includes the stories which involve partly false content, classified by the term "half-truth". "Half-truth" refers to some information which describes partly true content used in support of false facts, or some views which incorporate in part authentic arguments and in part wrong opinions (Clem, 2017). Communication of half-truths also represents a form of fake news. According to Tandoc Jr et al. (2018), fake news always hides underneath the true news such as the form and content of true news, thereby gaining credibility from audience. "News satire" could be regarded as a half-truth news. "News satire" is a kind of "mock news program", which employs comedy or overstatement in order to communicate news to audiences (Tandoc Jr et al, 2018). A typical example is *The Daily Show*, produced by Jon Stewart, which mixes humour, news reports, and

political dialogue (Baym, 2005). Although *The Daily Show* provides a channel for U.S audiences to gain political insight (Baym, 2005), the show is seen as fake news because it sensationalises by mimicking news reports (Brummette et al., 2018). News satire mixes accurate, factual news with false information, highlighting how half-truths can also represent fake news.

According to Allcott and Gentzkow (2017), as news websites make a profit from advertising based on the number of clicks, one of the key incentives for generating fake news is the opportunity fors profit. Online news tends to devote more efforts to gaining click rate than to the accuracy of news (Bakir and McStay, 2017). During the 2016 US elections, some people earned considerable money by publishing fake political news. Such success has helped to generate "a lucrative incentive structure for "fake news" publishers" (Braun and Eklund, 2019). Based on this motivation, the term "fake news" could additionally be considerate as "completely false information … created for financial gain" (Silverman, 2017). The second motivation is the factor of ideology, which means that some politics and their adherents attempt to utilise fake news to secure support for their political standpoint (Allcott and Gentzkow, 2017). The Trump phenomenon presents a pertinent example of this, which could be seen as "fake speech" related to political lies (Corner, 2017). During the 2016 US elections, various fake news websites like endingthefed.com were created and gained 159 million views with the average adult reading 1.14 fake articles (Allcott and Gentzkow, 2017). With the proliferation of these websites, fake stories will make an impact on audience and even influence the public agenda (Vargo et al.,

2018). Thus, fake news can be utilised in order to support the perspective of politics. From these incentives, fake news is a tool produced in order to influence people's emotions and political faith (Gelfert, 2018).

In recent years, fake news has gained a new meaning as "an international political catchphrase "(Lees, 2018). Silverman (2017) points out that the meaning of "fake news" has been altered since the 2016 US elections: "Donald Trump — master of branding — redefined the term to mean, effectively, news reports he didn't like" (Silverman, 2017). It has been claimed that Trump assaults and defames news media and political opponents by use of this "discourse of fake news" (Farhall, et al., 2019). Meanwhile, numerous governments and countries, including the Philippines, Poland, and France, have engaged in a narrative which utilises the term "fake news" to discredit perspectives that oppose their own (Lees, 2018). Following the 2016 US elections, a considerable number of news websites denigrated mainstream news media by using "fake news" (Waisbord, 2018). From this perspective, Fake news refers to the phrase used by governments to condemn news reports conflicting with their publicity (Corner, 2017). Van der Linden et al. (2020) points out that when Trump told reports, "You are fake news", the term "fake news" became an adjective or noun to accuse the dissident views, which can be defined as "fake news effect". That is to say, fake news is employed as a tool for some political campaigns, comprising an opposition to digital capitalism, a censure of right-wing politics and media, and a criticism of liberal and mainstream journalism (Farkas and Schou, 2018). These extension implications identify that the term "fake news" is widely employed in the

digital age and has become a negative and defamatory phrase in some areas, especially in politics (Habgood-Coote, 2019). The extended understanding of fake news accounts in part for the confusion surrounding this phrase (Habgood-Coote, 2019). The initial meaning of fake news originates simply from the words “fake” and “news”. The phrase fake news has however taken on a diverse definition based on various motivations involving complex economic and political factors.

There exist two broad means by which to define fake news. The first outlines the basic concept of fake news as false, deceitfully presented information, while the second addresses its capacity as a political tool used to criticise dissident views. By focusing on fake news in public health issues, this study and its subsequent analysis will be based on this first definition of fake news.

2.2 Fake news in social media

2.2.1 Social media as a platform for fake news

Fake news nowadays spread both more rapidly and widely as a result of the widespread use of social media and subsequently exerts an increasingly strong influence. Considerable amounts of fake news stories are disseminated on social media and can gain notoriety by accessing large social media audiences (Silverman, 2016; Vargo et al., 2018). Essentially, digital media has constructed a complete ecosystem, which expands, democratises, and strengthens the scope for fake news

(Bakir and McStay, 2017). The propagation speed and range of fake news through digital media are currently unparalleled compared to any other time in history (Burkhardt, 2017). The widespread and frequent use of social media today provides a conducive environment for fake news. One of the most obvious characteristics is the low costs of producing information, which increases the profit of fake news while decreasing the role that is played by news credit (Allcott and Gentzkow, 2017). Bakir and McStay (2017) highlights immediacy as a factor prompting the proliferation of fake news through digital media. Indeed, in the digital age, news reporters are required to publish news of the day within 24 hours, which substantially limits the time available for fact-checking and source-checking (Bakir and McStay, 2017). Information fragmentation is another characteristic of social media which makes fake news spread widely, as it is difficult for audiences to distinguish the veracity of information, which is presented in the form of short, fragmented stories (Allcott and Gentzkow, 2017). Under these circumstances, users will be caught up in the chaos owing to mass and fragmented information in social media thereby ignoring the truth of news, which increases the difficulty in controlling online fake news (Wang et al., 2020). Additionally, social media provides an approach for users to share content with others. By sharing fake news unwittingly in social media, the link of fake news will gain plenty of hits and disseminate broadly (Brummette et al., 2018). In the internet age, social media has become a prevalent means of information sharing, providing fertile soil for the dissemination of fake news (Duffy et al., 2020). Furthermore, users may impress the misconceptions because of the algorithms in social media, which will

push the information according to users' browse records, comments (Bakir and McStay, 2017). This phenomenon is described as an echo chamber, which refers to the ability to persistently lead audiences to similar information, thus reinforcing a single limited perspective, thereby exaggerating the impact that fake news can have (Bakir and McStay, 2017). Hence, the impact of false information online is ever increasing.

2.2.2 Fake news surrounding COVID-19 in social media

With social media providing a fertile environment for the spread of fake news, this has caused various negative effects in relation to COVID-19. Collecting data and analysing with "Partial Least Squares", Apukea and Omar (2020) researched the purpose of fake news sharing during the pandemic. They found that social media users believe that sharing information may be a form of altruism in helping others (Apukea and Omar, 2020). Under these circumstances, fake news is communicated widely in social media for it is difficult for users to distinguish the real and false information (Apukea and Omar, 2020). To explore the effect of fake news on public health, Naeem et al. (2020) collected 1225 pieces of fake news shared about COVID-19. They found that the proliferation of fake news during the epidemic has seriously affected public health awareness and they suggested that health information stakeholders and journalists should assist people with identifying fake news. Meanwhile, Moscadelli et al (2020) analysed the COVID-19 fake news stories shared in Italy and demonstrated that fake news stories about the outbreak were more likely

to be spread and shared. Montesi (2020) pointed out that the damage of COVID-19 fake news is impalpable and immoral. Additionally, the idea of an "information epidemic" has been widely discussed during COVID19. Some scholars (Naeem and Bhatti, 2020; Mesquita et al. 2020) pointed out that fake news spread in social media during COVID-19 may cause "infodemic", which will make a negative impact on the development of society, health care system, or public health. Naeem and Bhatti (2020) discussed the relations between "infodemic" and "fake news". They also provided different approaches for detecting false information while Alvarez-Risco et al. (2020) focused on Peru's approach to combatting the information pandemic.

2.3 Fake news in China

Plenty of the discussion about fake news has based on Western world, with Anglo-American press system representing the largest concern for journalism worldwide (Guo, 2020a). Due to the censorship and party-controlled media system, the issues arising from press in China should be discussed in a specific context (Guo, 2020a); one must understand the Chinese media system before discussing the issue of fake news in China (Wang et al., 2020). Hallin and Mancini (2004) propose four dimensions for analysing the press systems of different countries. These include the development of media markers, political parallelism, journalistic professionalism, and government intervention (Hallin and Mancini, 2004). This approach places emphasis

on the media market and journalistic professionalism which is relevant when analysing most Western media, where there is relatively little interference in journalism (Zhao, 2011). Unlike western countries, the Chinese government has assigned the mainstream media the role of "mouthpiece" (Zhao, 2011), with the result that the Chinese media has a high degree of political parallelism (Hallin and Mancini, 2004). Under these circumstances, the state is an unavoidable factor in the formation of the Chinese press system (Zhao, 2011). Developing from a planned economy to a market economy, journalism in China has changed since 1980s (Lee, 2006). This change cause Chinese journalism gradually become marketisation and professionalization (Hassid, 2011). Nowadays, the simultaneous role of the state and the market has provided the Chinese media with a pattern for propaganda and commercialisation (Zhao, 2000). This dichotomy between state and market means that the Chinese media exhibits a similar "professionalism" to the British and American media while simultaneously being distinct from the Western media (Wang et al., 2020). Thus, it is necessary to discuss the Chinese media from both a market-oriented and professional perspective.

Based on the above statements, in studying of fake news in China, two types can be distinguished between two types. The first relates to false and deceptive news reports. This type of fake news is similar to the first level of definition of fake news which was addressed in the previous section. The second type, specially, called “online rumour” (wang luo yao yan in Chinese), which refers to online fake news in Chinese

context. Notably, while both types belong to the study of fake news, the first type of "fake news" (*xu jia xin wen* in Chinese) in the Chinese context is centrally concerned with news produced by professional media organisations (Chen, 2002). This is because platforms that disseminate information outside of the official list (mainly websites) are not recognised as journalists and have no qualification to produce news but merely to recreate recognised media (Guo, 2020a). Based on this, false or unsubstantiated information, mainly appearing on websites and social media, are defined as online rumours (Guo, 2020b). This study focuses on fake news in social media, which in the Chinese context may be termed “rumours".

3.0 Methodology

3.1 Research Questions, Aims, and Objectives

The main research question:

Q1: How did fake news affect health communication during the COVID-19 pandemic in China?

Research sub-questions:

Q 2: What are the characteristics of the spread of fake news relating to COVID-19 on Weibo? Include a discussion of the relationship between the topic and key words identified among fake news on Weibo and their time of publication.

Q 3: How was Weibo fake news faked during the height of the COVID-19 pandemic?

Q 4: How did Chinese Weibo officials identify and respond to fake news?

Research Aims

The aims of this research are:

1.To explore the extent to the proliferation of fake news by means of collecting fake news on Weibo (Chinese Twitter) during the COVID-19 pandemic. On this basis, it explores the negative effect of fake news on the field of health communication.

2. To contribute to filling the research gaps and to encourage further research in this field of study.

Research Objectives

In order to achieve the aims of the research, the following objectives have been set:

1. To examine the common topics of fake news in Weibo about health communication during the COVID-19 pandemic.

2. To analyse the fake news surrounding COVID-19 topics and key words.

3. To select a number of fake news items for specific analysis.

3.2 Research Methods

3.2.1 Content analysis

This study will engage content analysis in order to demonstrate the spread of fake news and content distribution on Weibo during the COVID-19 pandemic. Content analysis is considered an efficient and popular research methods in analysing media and communication content by systematic and quantitative analysis (Hansen and Machin, 2019). According to MacNamara (2003), content analysis is utilised in order to analyse the text, including interviews, the content of news media and advertising, and the narrative of movies and TV programs. Media content analysis could be regarded as a specialised sub-set of content analysis, which represents a mature, systematic research methodology (MacNamara, 2003). Content analysis was introduced as a media study method by Lasswell in 1927. According to Lasswell (1952), content analysis is a technique that describes the given topic objectively and accurately in the given place and at the given time. In the media and in mass communication research, content analysis, which makes information its focus, can be seen as the "fastest-growing technique over As Riffe et al. (2014) note, content analysis is a research method that allows for exploration of the meaning and context of communication content:

> Quantitative content analysis is the systematic and replicable examination of symbols of communication, which have been assigned numeric values according

> to valid measurement rules and the analysis of relationships involving those values using statistical methods, to describe the communication, draw inferences about its meaning, or infer from the communication to its context, both of production and consumption. (Riffe et al., 2014, 19)

The quantification of texts through content analysis allows for a systematic, intuitive view of the characteristics and dimensions of texts, which allows for the exploration of their social impact as well as the links between texts and reality (Hansen and Machin, 2019). According to Hansen and Machin (2019), content analysis can clearly show "the indication of relative prominences and absences of key characteristics in media texts" (Hansen and Machin, 2019). Combining the social contexts, the indications will help to answer the research questions posed here. Therefore, this study will use quantitative content analysis to explore the research questions posed.

3.2.2 Discourse analysis

This study will also include some discourse analysis in order to address issues that are difficult to address with quantitative content analysis. While content analysis may provide research with a systematic, quantitative view of media content, it struggles to address the broader social implications of content (Hansen and Machin, 2019). By contrast, discourse analysis can further explain the questions of this study through quantitative content analysis.

> Discourse analysis, to begin with a claim of broad consensus, poses the question of how to analyse culture as a question of behavioural variables or objective social structures, but as a question of understanding culture 'from within', providing the cultural analyst with a concrete object of investigation - the text. Its premises draw upon Wittgenstein's 'language games' and upon Foucault's theory of 'discourse' both of which view language as a constitutive component of the social world. (Chouliaraki, 2008, para 674)

The term 'discourse' encompasses various definitions and interpretations. In the constructionist method, as Phillips and Hardy (2002) noted, "without discourse, there is no social reality, and without understanding discourse, we cannot understand our reality, our experience or ourselves". This means that discourse reflects a false reality that may be constructed, and which consequently misleads people's understanding and perception of society (Chouliaraki, 2008).

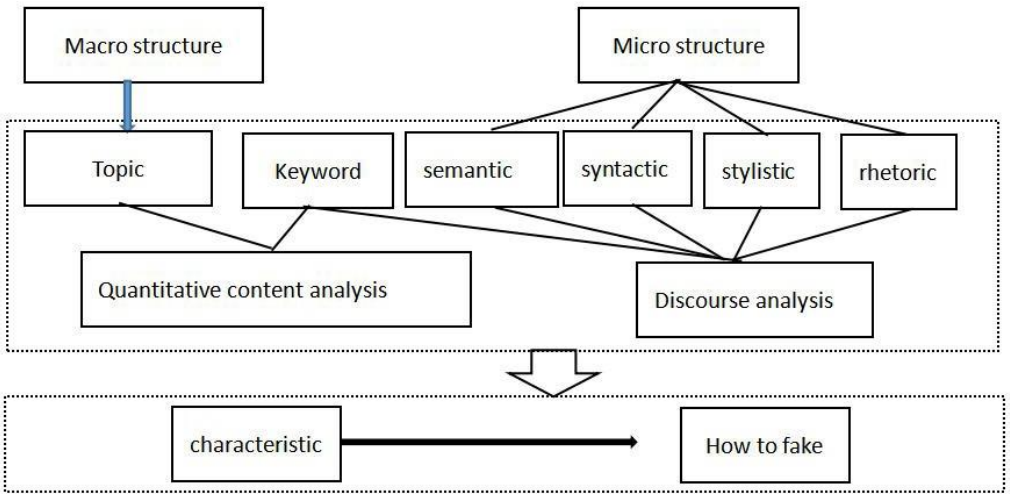
In the 1970s, Van Dijk began to use news discourse as an object of analysis, assessing the relationship between context and news in terms of both the production and cognitive understanding of news. In recent times, discourse analysis has grown into an interdisciplinary field, while the breadth and depth of research has evolved with it. In order to analyse media text, discourse analysis as a qualitative analysis has the capacity to focus on and search for underlying meanings in the text, revealing possible

significance, connections, or foreshadowing (Van Dijk, 1980). Any media language can be analysed within the framework of three key structures: macro-structure, micro-structure, and super-structure (Van Dijk, 1997). Macro-structure can be considered as thematic and global, given it broad focus on the topic or summary of meaning (Pratiwi and Refnaldi, 2018). A text's topic is typically the easiest part to locate, as it is typically signalled by the text's title, abstract, or summary, which alone may reveal the meaning of a text (Van Dijk, 1980). At the next level, the macro-structure then interprets the headline and content themes, while the micro-level considers semantic, syntactic, stylistic, and rhetoric aspects of the text (Aini and Widodo, 2018). Van Dijk (1993) argues that by analysing the microstructure of discourse, it is possible to explore both the persuasive power and deeper meaning of news stories. Meanwhile, the super-structure of the news text demonstrates the universality of this pattern by establishing whether the news text conforms to pre-existing patterns (Van Dijk, 1997). Essentially, super-structure identifies the main part of the news story and the way that it is arranged or organised (Van Dijk, 1997). Fake news can be considered as a source that features all of the general characteristics of 'news', given that it is produced by the imitation of news stories (Glfert, 2017). Therefore, this study will also use Van Dijk's framework of news analysis in order to assess selected fake news stories.

3.2.3 Theoretical framework

Two different types of research methods have been considered above. The quantitative

content analysis attempts to establish systematic and intuitive quantitative results by classifying and coding a sample of fake news stories on Weibo from a macro perspective according to their key themes. Additionally, the statistics and coding of themes provide a basis for the macro-structure perspective of the discourse analysis while laying the foundation for further analysis. The discourse analysis will select specific fake news stories as samples of 100 fake news stories and from these produces detailed analysis with use of a macro-structure and micro-architecture analysis model. By combining quantitative content analysis with qualitative discourse analysis, the paper seeks to establish a theoretical framework based on Van Dijk's framework for the analysis of news in conjunction with other theories. The result ultimately aims to clarify the types, characteristics, and means by which fake news affected health communication during the height of the COVID-19 pandemic in China, and to provide some basic framework for identifying and responding to future fake news.



3.2.4 Data Collection

As one of the most prevalent social media platforms in China, Weibo (Chinese Twitter) offers an appropriate environment for the spread of fake news. According to Weibo's First Quarter 2020 Unaudited Financial Results (2020), there are 550 million monthly active users on Weibo. This number of active users indicates that a considerable proportion of the Chinese population uses Weibo in order to acquire the information. Hence, this paper will focus on the fake news on Weibo.

This paper will use a quantitative and qualitative analysis. During the data collection phase, this research assembles 100 COVID-19 fake news stories relating to health communication that were published on Weibo during the height of the COVID-19 pandemic in China (23/1/2020-27/7/2020). Based on different events during the pandemic, it is further divided into four time periods:

1) 23 January 2020 – 6 February: Wuhan issues "Circular No. 1" and the city is temporarily closed at 10:00 on the same day; WHO claims that the COVID-19 is a "public health emergency of international concern". Infection cases gradually rise and begin to expand nationwide. Mobile cabin hospitals are constructed in Wuhan.

2) 6 February 2020 – 20 March 2020: The outbreak is gradually stabilising; The Chinese New Year holiday is over, and people get back to work and study.

3) 18 March 2020- 8 April 2020: Infection cases have gradually declined; The lockdown has ended. There is a gradual increase in overseas COVID-19 cases.

4)After 9 April 2020: COVID-19 has expanded overseas; Beijing becomes the city second hardest hit by COVID-19.

In order to collect both fake news relating to COVID-19, this paper utilises CHECKED (https://github.com/cyang03/CHECKED), a Chinese COVID-19 social media dataset, which contains all archived material about COVID-19 published on Weibo between December 2019 and August 2020. The CHECKED is based on Weibo's Community Management Center, an official service that detects disinformation and misinformation on Weibo, allowing for fake news to be effectively identified and collected. This dataset thus provides a clear picture of both fake news, focusing on the period of lockdown in Wuhan. For example, on 19 February 2020, the user "Political and Economic News" published a microblog stating that "if people are infected with COVID-19, the lung tissue that is damaged will not recover and will form scar tissue with no lung function even after healing". This information was subsequently identified as fake news by the vice president of the Chinese Academy of Engineering, who outlined that lung function is able to return following infection and may even lead to full recovery. In addition to focusing on pandemic fake news from this dataset, this study will analyse the Weibo tweets with the highest number of retweets, comments, and likes.

In order to explore the propagation of news, this research study will classify fake news by the various topics that were frequently discussed on Weibo during the

pandemic. These topics include 病毒传播(virus transmission)、治疗(treatment)、预防(prevention)、复产复工 (resumption of work and production)、疫情反弹(rebound of the epidemic), and 病症 (symptoms). Key words based on popular events and terms used during the pandemic include: 瑞德西韦(remdesivir), 病床(hospital bed), 酒精(surgical spirit), 检测(testing), 隔离(isolation,口罩(mask), and 钟南山(Zhong Nanshan).

3.2.5 Data pre-processing

The 100 Weibo false news stories were assigned topics according to their content. These include 病毒传播(virus transmission)、治疗(treatment)、预防(prevention)、复工复产(resumption of work and production)、疫情反弹(rebound of the epidemic), and 病症 (symptoms).

Seven key words were established: 瑞德西韦(remdesivir), 病床(hospital bed), 酒精(surgical spirit), 检测(testing), 隔离(isolation,口罩(mask), and 钟南山 (Zhong Nanshan). The key words included in each story were recorded.

In order to facilitate the analysis of Chinese COVID-19 fake news on Weibo, the 100 fake news items that were collected were first differentiated and coded according to their content, differentiating between news topic, key words, and the presence or absence of pictures and videos, and each Weibo tweet was tagged according to the code. The coding table is shown in Table 1.

Table 1 China COVID-19 Fake News Coding Sheet

Dimension	Item	Description	Indicator	Coding
Topic	Virus transmission	Phenomenon of coronavirus transmission	COVID-19 Transmission media, routes of transmission, speed of transmission	①
	Treatment	Measures to eliminate or reduce the symptoms of COVID-19	Equipment, measures, drugs, doctors, methods for the treatment of COVID-19.	②
	Prevention	Measures to stop the spread of the coronavirus	Equipment, materials, methods, measures, medicines to stop the spread of coronavirus.	③
	Resumption of work and production	Businesses that ceased operations due to the COVID-19 reopen	How to prevent the spread of viruses after work starts	④
	Rebound of the epidemic	COVID-19 patients increase again after decrease	Location, number of people, trends, causes of the COVID-19 rebound	⑤
	Symptoms	Symptoms of COVID-19	Specifically describe COVID-19 symptoms	⑥
Key words	Remdesivir	A drug with antiviral activity	The effects of remdesivir, US offers remdesivir for China, remdesivir usage	①
	hospital bed	Hospital beds for COVID-19 patients	Type of beds, number of beds, shortage of beds	②
	surgical spirit	For the prevention of coronavirus	Shortage of surgical spirit, usage of surgical spirit	③
	testing	The process of screening humans for coronavirus	Tools, drugs, methods for testing	④
	isolation	Separate people who carry or may carry the virus from healthy	Policies, measures, times and places of isolation	⑤

		people and avoid contact		
	mask	A measure to prevent infection with COVID-19	Mask production, mask supply, mask function, mask usage	⑥
	Zhong Nanshan	China's leading specialist in respiratory diseases	Zhong Nanshan's Actions and Words on COVID-19	⑦
Picture and video	Including picture			①
	Including video			②
	No picture or video			③

3.2.5 Credibility

Demonstrating the credibility of data collection is one factor that can support a researcher's ultimate argument for the reliability of a study (Rourke & Anderson, 2004). Selecting the most appropriate data collection method is critical to ensuring the credibility of content analysis (Rourke & Anderson, 2004). CHECKED, the Chinese COVID-19 dataset, contains an archived collection of all tweets officially identified by Weibo as false and inaccurate from January to August 2020. As this study focuses on content related to health communication during the COVID-19 pandemic, a significant amount of time was spent screening fake news through the dataset in order to select fake news related to health communication. In addition, this study required significant time to identify the key words and themes of fake news and their coding.

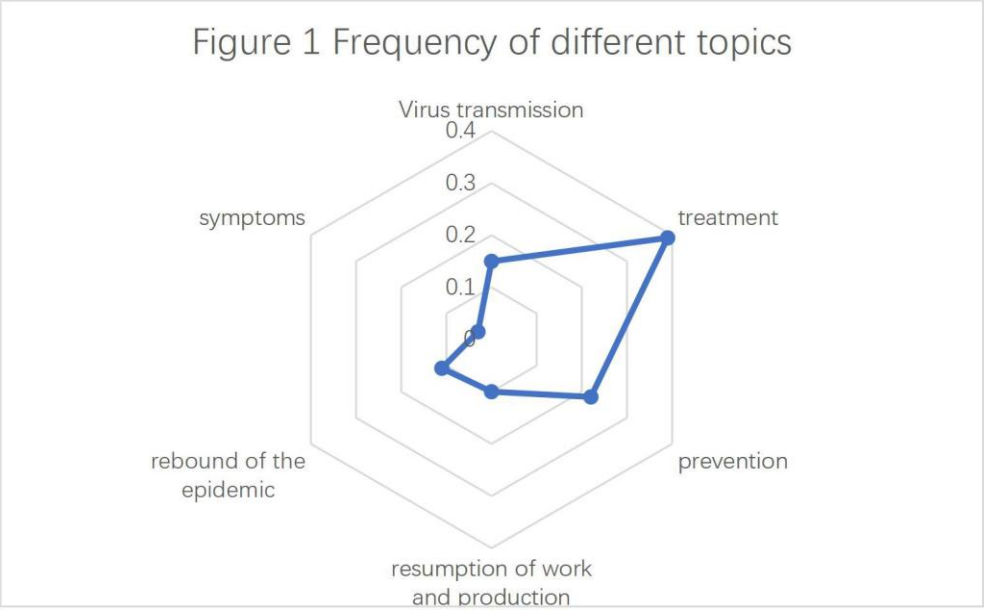
4.0 Findings

4.1 Data analysis

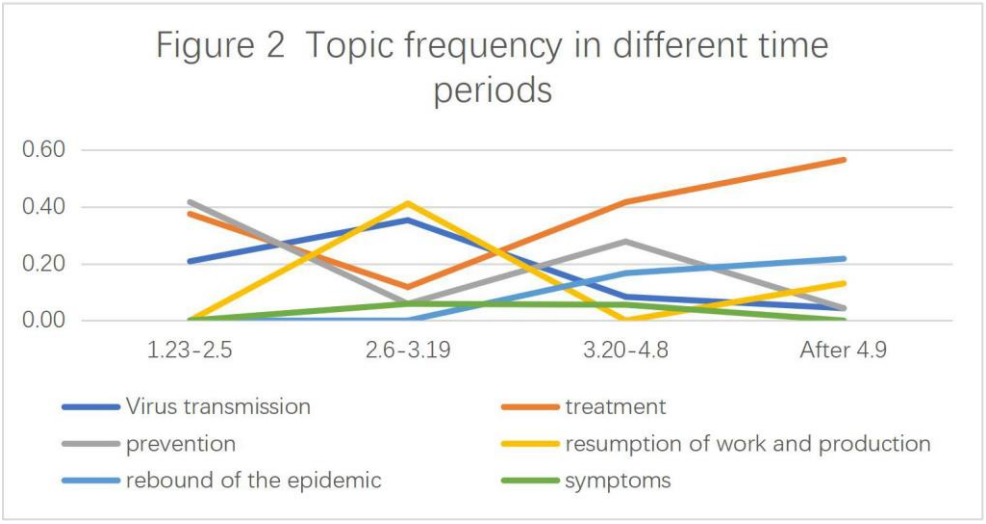
An analysis of the frequency and relative frequency of different topics and key words will aid an understanding of the main topics and key words used in fake news relating to the pandemic, as well as of the demonstrated preferences of fake news makers.

4.1.1 The frequency of different topics

From the 100 fake news samples, we find 39 instances of the word ‘treatment’, with a relative frequency of 0.39, followed by 22 instances of the word ‘prevention’ with 22 and a relative frequency of 0.22. The word ‘symptoms’ is used least and was only identified in 3 items, with a relative frequency of 0.03. The frequency and relative frequency of different topics, as shown in Figure 1, indicates that the frequency of occurrence decreases the closer you get to the centre. This implies the tendency of the fake news makers to appeal to an audience that is more concerned with treatment, prevention, virus transmission, and the rebound of the epidemic, and that creating this type of fake news is more likely to have a social impact.



Comparing different time periods, the relative frequency of fake news from January 23 to February 5 was 0.24, while from February 6 to March 19 it was 0.17. From March 20 to April 8, it was 0.36, and after April 9 0.23. It can therefore be surmised that fake news mainly concentrated in the period from March 20 to April 8. Trends in the frequency of false news by topic and time period are shown in Figure 2.



As the figure demonstrates, the key words ‘prevention’ and ‘treatment’

account for the main focus from 23 January to 5 February, ‘resumption of work and production’ and ‘virus transmission’ from 6 February to 19 March, ‘treatment’ and ‘prevention’ from 20 March to 8 April, and ‘treatment’ and ‘virus transmission’ from 9 April to 27 July.

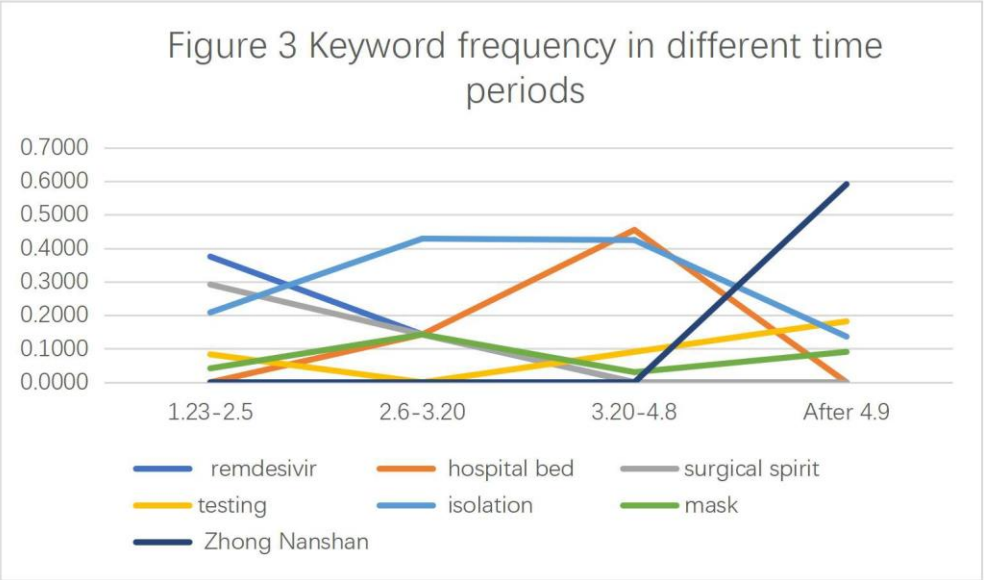
Among the various topics present in fake news, treatment and prevention are among the topics that were more frequently faked

and were even popular during overlapping time periods. February 2020 proved to be the worst time for COVID-19 in China: people were still only poorly informed about COVID-19, they could no longer socialise, and they had to rely on the internet for information. This challenging period coincided with a surge of information on Weibo surrounding the prevention and treatment of COVID-19. The overwhelming amount of information available on social media makes it difficult for users to distinguish authenticity. For example, a false news about the “United States supplying China with an effective drug to treat COVID-19" spread wildly on Weibo in February 2020. In addition, Figure 2 demonstrates that the authors of fake news take into account hot topics at different times when producing fake news. Wuhan was closed from 23 January 2020 and the dates 23.1-5.2 also represent the worst period of the epidemic in China. During this period, a large number of COVID-19 infections were reported across China, causing a degree of panic. At this stage the Chinese media focused mainly on how to prevent this unknown virus, and as the outbreak became more serious, there were numerous stories about how

to contain the coronavirus. With the end of the Chinese New Year holiday, the period from 2.6 to 3.19 saw people thinking about how to get back to work, with " resumption of work and production " being one of the most important topics for media and audiences. The outbreak in China stabilised after 20.3-8.4, but with outbreaks abroad, the Chinese media once again turned their attention to how to control the spread of COVID-19. From 9 April to 27 July, imported cases of COVID-19 began to provoke renewed fears while Beijing became the second hardest hit by COVID-19. The spread of the virus and possible treatments once again dominate media coverage. It can be seen that the authors of these disinformation also had the hot topics of the day in mind when producing the fake news, which gave this disinformation a higher click-through rate.

4.1.2 Frequency of different key words

The trends in the frequency of fake news by key word at different times are shown in Figure 3.



The frequency of key words can be seen to correlate with frequency of fake news topics. As Figure 3 indicates, the frequency of the word ‘isolation’ was consistently higher. This is an accurate reflection of the fact that isolation represents one of the single reliable means to protect against and interrupt the spread of COVID-19. From 23 January to 5 February, the most frequently used key word was ‘remdesivir’, while “surgical spirit” came second. It was during this period that rates of infection exploded in China and occupied the limelight in society. During this time, people had to maintain social distance while anticipating the arrival of a drug to cure the virus. Moreover, by comparing Figure 2, the popular topics in this time period were "treatment" and "prevention". Remdesivir is presented in fake news stories as a drug that can cure COVID-19, while surgical spirit can be used as s disinfectant to prevent COVID-19. As a result, these two words became high-frequency key words during this period, corresponding exactly to the hot topics discussed at the time. Similarly, from 6 February to 19 March, isolation became the most frequent

key word, far surpassing other key words. This key word also corresponds to the high frequency topic of the period "resumption of production and work". From 20 March to 8 April, “isolation” was consistently a frequently occurring key word, but the key word in highest frequency was “hospital bed”. It is worth noting that the frequency of 'hospital bed' peaks at this time and decreases thereafter. Meanwhile, after 9 April the key word “Zhong Nanshan” witnessed a gradual increase and became a high-frequency key word, which far exceeded the frequency of other key words. Zhong Nanshan is an expert in respiratory diseases in China, becoming a famous figure in the fight against SARS in 2003. In the perception of the Chinese people, Zhong Nanshan is an authority on respiratory infectious diseases. The resurgence of the outbreak in China after 9 April 2020 generated a new awareness of the transmissibility of the COVID-19 virus and further increased fears. Using Zhong Nanshan's authority, fake news writers could add credibility to their fabricated stories.

4.2 Level of attention

The comment index, retweet index, and ‘like’ index can reflect the level of attention from an audience. However, these three indicators do not belong to the same metrics. In order to comprehensively evaluate attention levels across different topics and key words using the same metrics, this research utilises the linear normalised comment index, retweet index, and ‘like’ index to synthesise the output of COVID-19 fake news attention index, which is subsequently used to reflect the influence of COVID-19 fake news on the audience of Weibo.

a. Normalised index calculation formula:

$$x' = \frac{x - \min(x)}{\max(x) - \min(x)}$$

In the formula, x' stands for the linear normalised index, while x represents the number of comments, retweets and likes.

b. The attention index is expressed as a linearly normalised mean of the comment index, retweet index, and like index:

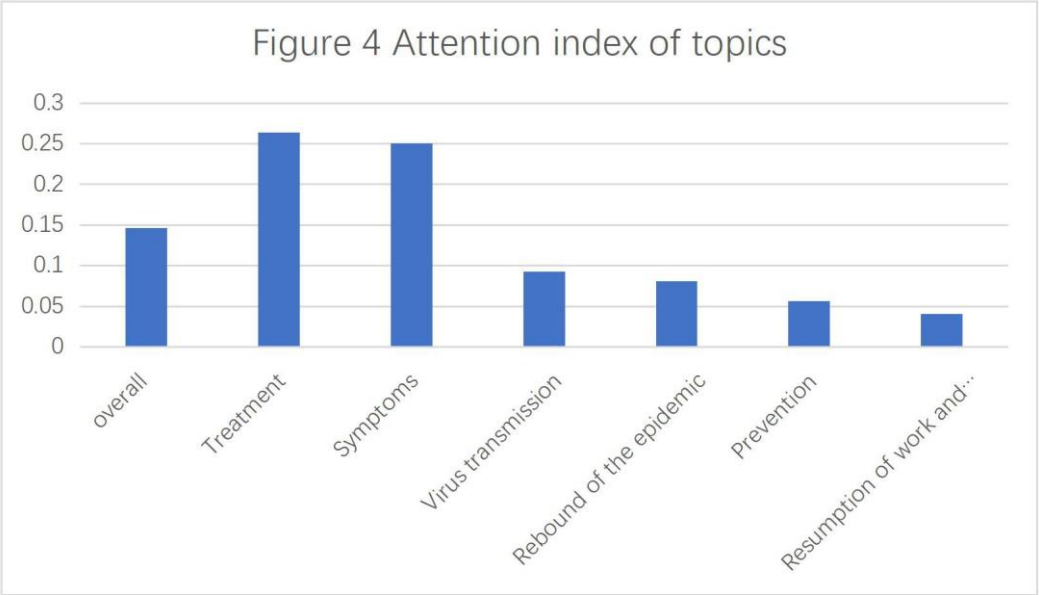
$$DOFI = \frac{\sum_{i}^{n} (C_i + T_i + B_i)}{n}$$

In the formula, DOFI represents the attention index, Ci represents the comment index of the ith fake news, Ti represents the retweet index of the ith fake news, Bi presents the like index of the ith fake news, and n represents the number of fake news.

4.2.1 Attention of different topics

According to the analysis of the above method, the overall average attention index of fake news is 0.1459. Looking at different topics, we observe that the attention index is 0.2637 for treatment, 0.2504 for symptoms, 0.0923 for virus transmission, 0.0806 for rebound of the epidemic, 0.0563 for prevention, and 0.0402 for resumption of work and production. Figure 4 visually reflects the

variation in attention across these various topics.

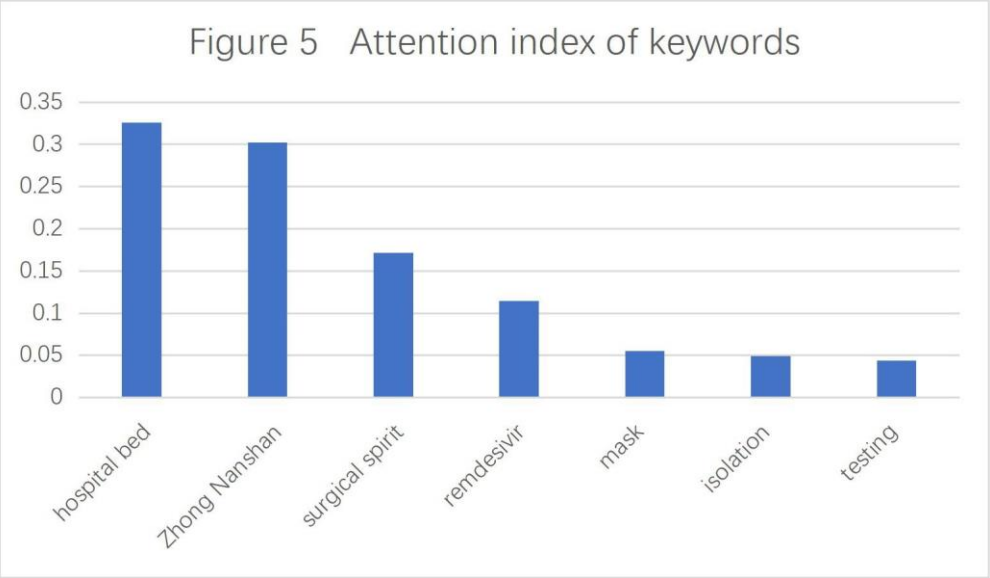


As can be identified below in Figure 4, the audience demonstrated higher concern over treatment and symptoms than other topics of the COVID-19 virus, with a higher attention index than the overall average attention index, and very little attention about the resumption of work and production. As noted by Repnikova (2018), Chinese citizens' concern and discussions on topical social issues are often aimed at seeking a “sense of security" (*an quan gan* in Chinese), such as food safety issues (Repnikova, 2018). COVID-19 infection rates and prolonged lockdown have increased the fear of the virus. Under these circumstances, searching and reading the wealth of information on how to prevent and treat COVID-19 seems to be a way for Weibo users to feel less scared and more secure.

4.2.2 Attention to different key words

The attention indices for different key words are: 0.3257 for ‘hospital bed’,

0.3023 for ‘Zhong Nanshan’, 0.1715 for ‘surgical spirit’, 0.1143 for ‘remdesivir’, 0.0555 for ‘mask’, 0.0487 for ‘isolation’, and 0.0441 for ‘testing’. Figure 5 visually presents this variation in attention between these different key words.



As can be seen in Figure 5, the audience showed more concern about ‘hospital bed’, ‘Zhong Nanshan’, and ‘surgical spirit’ for the COVID-19 fake news. The main reason for this is that the phrases ‘hospital bed’, ‘Zhong Nanshan’, and ‘surgical spirit’ are all directly correlated to the audience's concern about the treatment of COVID-19. As the statement above highlights, Zhong Nanshan is particularly well-recognised as an expert in COVID-19 by the Chinese public and has consequently been receiving a large amount of attention within the country. In addition, Weibo users expressed a high level of interest in fake news containing the key word "hospital bed". Various regions of China, especially Wuhan, experienced a shortage of hospital beds during the early days of the epidemic, which can sufficiently explain the interest in fake news

related to hospital beds.

4.2.3 The relationship between the frequency of fake news and audience attention

In this research study, different topics and key words are classified into three groups — low, medium, and high — according to their frequency and attention index, and assigned a value of 1,2, and 3 respectively. A comparative analysis chart is then created in order to analyse the two factors together and to examine their consistency.

As can be observed below in Figure 6, the high frequency fake news topics are treatment and prevention, where treatment is consistent with the audience attention index, while prevention receives low levels of attention.

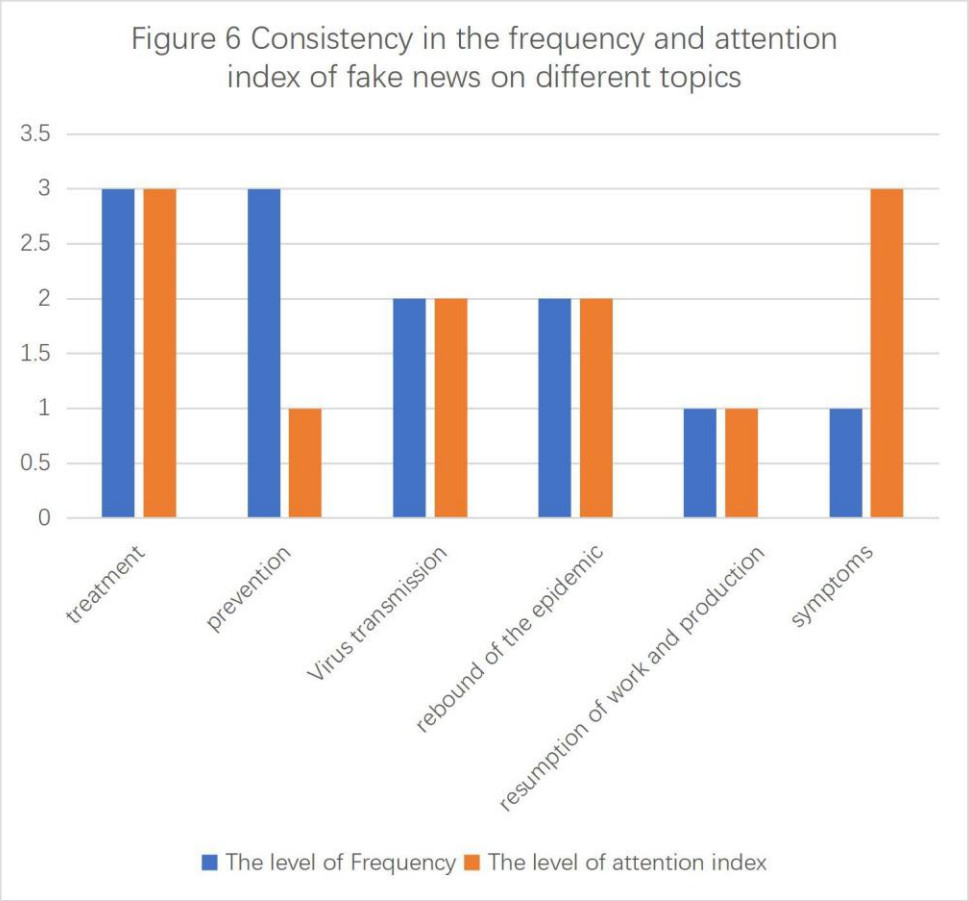
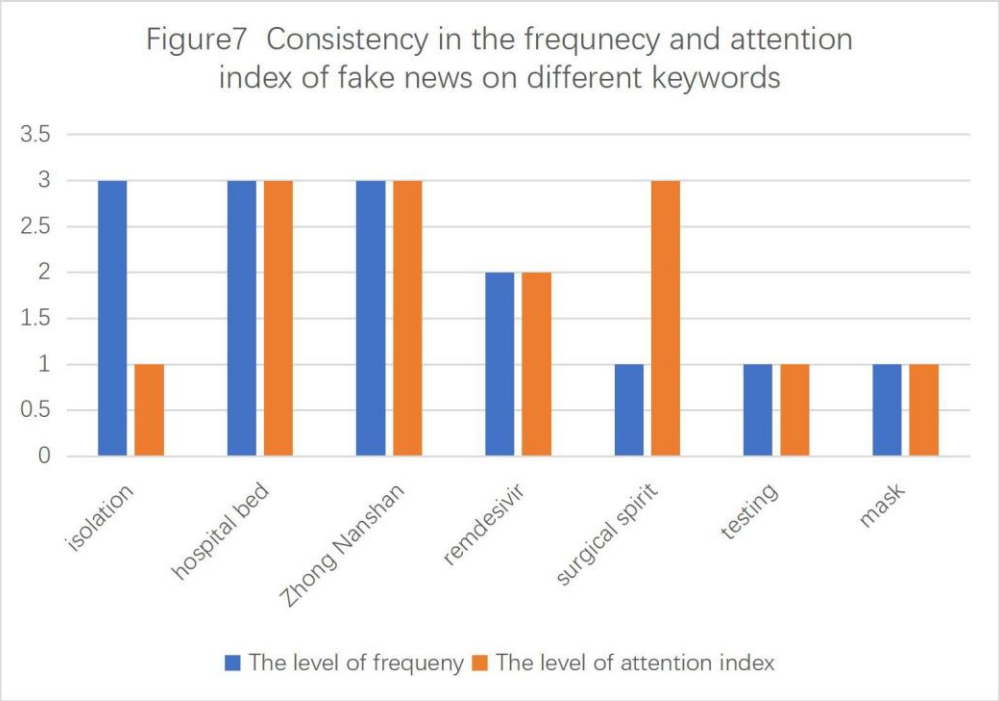


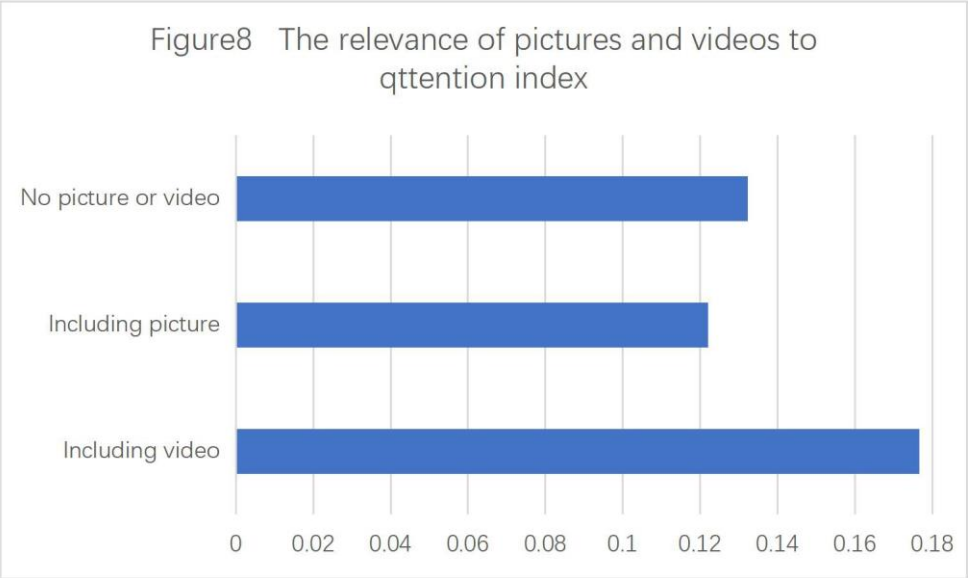
Figure 7 identifies the consistency of the frequency and attention for the same key words, from which it can be seen that the only high-frequency key words that received a high level of attention from the audience were the terms 'hospital bed', and 'Zhong Nanshan', with 'remdesivir' receiving moderate attention and isolation receiving very little.

The consistency of frequency and attention can be used to demonstrate that fake news writers and publishers try to envisage attracting the attention of their audiences, but that audiences have their own motivations. Furthermore, in China, isolation is paid for by the state, so if infected with a COVID-19, the public is supportive of isolation for a while and is not concerned by it.



4.2.4 Pictures and videos

The 100 messages were divided into three 3 categories: those with pictures, those with videos, and those with no pictures or videos. The relevance of pictures and videos to public attention was then examined according to the attention index. The attention index for videos was found to be 0.1767, for pictures 0.1220, and for no videos or pictures 0.1323.



From these findings, it is interesting to note that fake news with video receives more attention, while fake news with pictures receives less attention. One explanation for this phenomenon is that video acts as a dynamic visual feature to enhance the credibility of the content. Indeed, with rapidly advancing technology, picture faking is becoming easier, and people may think more critically the authenticity of fake news which only has pictures.

4.3 Discourse analysis

To compensate for the limitations of content analysis, this study will select a few fake news items with high numbers of retweets, comments, and likes and conduct discourse analysis in order to further explore the research questions.

US will provide drugs for COVID-19 to China

Similar fake news stories spread wildly through Weibo in February 2020. The

most talked about story relates to the success of a US pharmaceutical company in developing Remdesivir, a drug that was purported to be able to treat COVID-19. The news story also relayed how the United States intended to authorise the use of this drug in China for the treatment of COVID-19. Here is the content of the fake news story:

> From Gilded's new drug Remdesivir has successfully cured the first COVID-19 patient in the US. The US Public Safety and Health Department has now agreed, with special approval from Trump, to exempt the drug from patent and disclose the molecular structure of the drug to China on an urgent basis until 27 April, meaning that China does not need to obtain permission from the US patent during this period to directly copy the drug for the urgent treatment of patients whose lives are at stake! (Weibo, 2020)

According to the coding of the quantitative content analysis, this fake news story belongs to the topic "treatment" and includes the key word "remdesivir". From the perspective of macrostructure, the main content of this fake news story is that the US will provide China with the drug "remdesivir", which can cure COVID-19. The main thrust of the news not only included the fact that "remdesivir can treat COVID-19" but also, crucially, emphasises that "the US will supply the drug to China". The first sentence of this fake news story highlights that the

US-developed drug remdesivir has “successfully” cured COVID-19 patients, a statement which makes audiences highly likely to wish to read more. The story also contains the medical name "remdesivir" alongside the official labels of "U.S. Department of Public Safety and Health" and "Gilded Corporation” to add authority and credibility to the story. The drug remdesivir has been employed against the Ebola virus, a fact largely unknown to most Weibo users. This fake news story highlights the successful "cure" of "COVID-19 patients" by "remdesivir". Such information was more likely to be believed by users in February 2020 when the epidemic was more severe. As information from social media, this fake news story contains few words and sentences. The text contains certain insertions for additional clarification: “with special approval from Trump”. The fake news story uses more complex sentences and is more coherent. Moreover, this fake news story employs tendentious terms in order to lead its audience to agree with the content and viewpoints. The word “special”, for example, emphasises the fact that the United States has deliberately provided China with remdesivir, and thus cultivates an image of the United States as a strong, responsible, and considerate country. The use of the term “at stake” to refer to patients infected with COVID-19 meanwhile emphasises the seriousness of the current epidemic in China. This Weibo post received 158 comments, including "Praise the US government", "Can the epidemic end now?”, and "Community of Shared Future for Mankind!" showing that the fake news story succeeded in deceiving most of its readers. Meanwhile, individual comments

questioned the source of this information, while the author of the fake news said that the information originated from Bloomberg, an authoritative source that again adds credibility to the story to dispel readers' doubts. In fact, the Global Times of this fake news story demonstrates that it falsifies both the effectiveness of remdesivir and "US provides remdesivir to China". As the Global Times identifies, although Bloomberg mentions the effectiveness of remdesivir in treating COVID-19, there are no news reports of the drug curing COVID-19 patients and the information about the US supplying this drug to China is non-existent (Global Times, 2020). This fake news story, though almost entirely fabricated, succeeded in deceiving its audience in the context of the desperation for COVID-19 treatments. This led "remdesivir" to become a key word with a lot of interest.

This fake news story presents a complete fabrication of facts, deliberately designed to deceive its audience (Bakir and McStay, 2017). The authors fictionalise a source and describe a glowing account of the United States supplying drugs to China, which may have eased concerns about COVID-19. In addition, the author takes advantage of the difficulty of accessing offshore websites in mainland China by incorporating Bloomberg as the fictitious source of information. By exploiting the information gap that exists between China and overseas countries, and which is unique to China's fake news ecosystem, the author makes it difficult for most audiences to verify the story's authenticity. In this example, the story creates an image of the United States as a powerful and

helpful aid worker. Judging by the comments which the story received, this simultaneously created a positive impression of the United States among the audience.

COVID-19 spreads globally, 10 US medical warships have sailed into New York harbour

While COVID-19 infections spread worldwide in March 2020, while China's outbreak eased under widespread lockdown. During this period, Chinese media reports on foreign outbreaks gradually increased, leading audiences to focus more on the global pandemic picture. At that time, a fake news story relaying the United States' response to COVID-19 attracted a large amount of attention:

> Humanity's war on viruses: 10 US medical warships have sailed into New York harbour, each with 1,000 beds and all the medical resuscitation facilities on board, each the equivalent of a Thunder God Mountain hospital. If not for this virus, who would have thought that the United States is so powerful! We always thought that building a hospital in ten days would be awesome, but it turned out that ten ships came at once or were prepared for it. The health care resources in the US are truly amazing (Weibo, 2020).

From a macro-structural perspective, this fake news story describes the preparation of a large number of hospital beds in the United States, designed to prevent inadequate medical resources in the fight against COVID-19. The blog begins with the word "humanity's war" to describe the fight against COVID-19 in various countries. By analysing the semantics, this fake news story emphasises between the lines that US medical resources are very adequate and praises the US for its epidemic-proofing measures. In stylistic aspects, this fake news story uses exaggerated descriptions, such as "humanity's war" and "amazing". Fake news highlights COVID-19 as a problem for all humanity. Among the words of the aforementioned sources, there is no shortage of admiration for the United States as revealed by the remark, " If not for this virus, who would have thought that the United States is so powerful! ", as well as the claim that "The health care resources in the United States are truly amazing". In terms of syntax, the fake news employs complex sentences for contrast ("each the equivalent of a Thunder God Mountain hospital") or to supplement the main content, fleshing out the details of the story and thus making it more believable to an audience. Moreover, in rhetoric aspects, the fake news story describes the fight against COVID-19 as a "war", which graphically suggests the seriousness of the epidemic and echoes the US medical warships. This metaphor reinforces the image of the United States as a country that is rich in medical resources and underpinned by a powerful military force.

This fake news story was commented on and retweeted by a large number of Weibo users, who lamented the abundance of medical resources in the United States. It is worth mentioning that the high attention to "hospital beds" at this period was attributed to this fake news story by exaggerating data on US medical resources. However, *Sina News* claimed that that there were in fact just two US medical ships in total, one each on the East and West coasts, and neither in operation but still conducting maintenance in the military port. This fake news story thus attracting a large number of readers through hugely inflated representations of the true number of hospital beds. This story could be characterised as either "half-truth" news (Clem, 2017) or as “false context”. (Wardle, 2017). According to Wardle (2017), false context news presents genuine information within a misleading context, thereby confusing the audience. In this particular case, the fake news story was adapted from a real news story by altering and exaggerating data in the news in order to create a false information. Additionally, the author employs offshore news as an information source, making it more difficult to verify information.

Zhong Nanshan travels to Beijing after COVID-19 outbreak

Following another outbreak in Beijing in June 2020, fake news regarding infectious disease experts abounded. One such fake news story published on

Weibo reads as follows:

> #Beijing demands that all close contacts be found in the shortest possible time #84-year-old Zhong Nanshan, an academician, set off again for Beijing to face COVID-19, he is not afraid of the dangerous coronavirus, just to cure all infected people, he is the brightest star, kudos to Mr. Zhong! (Weibo, 2020).

This fake news story made the claim that Zhong Nanshan was expected to soon arrive in Beijing to tackle the virus and praised his nobleness in disregarding the dangerous circumstances. The use of the Weibo topic "Identify close contacts as quickly as possible" highlights the urgency of the outbreak in Beijing. This fake news story is very short, offering nothing other than an unsubstantiated claim about Zhong Nanshan's travel plans while drawing on factual characteristics of Zhong Nanshan as "84 years old" and an "academician" in order to praise him. The description also features a hyperbolic reference to Zhong Nanshan as "the brightest star", likening him to a saviour who can "cure all infected people". This rhetoric exaggerates Zhong Nanshan's role as a health worker with its implication that as long as Zhong Nanshan is present, there is no need to fear the virus. The Weibo post also featured a video in which Zhong Nanshan exits a train station wearing a mask. The video was accompanied by text describing how "Zhong Nanshan is going to battle again". By using this means, the video emphasises that

infectious disease expert Zhong Nanshan will arrive in Beijing and people no longer need to worry about a serious epidemic. The video also implies that Zhong Nanshan has arrived in Beijing by highlighting the symbols such as Zhong Nanshan and the railway station while the large red text font intensifies the impression of this message. The story received an impressive 889 comments, 605 retweets, and 20,266 likes. According to this positive response, most readers believed this fake news: “Zhong Nanshan is a hero in the fight against the epidemic”, “As long as Dr. Chung is here, the epidemic will definitely be controlled”. The reaction of readers demonstrates that this Weibo story successfully misled most of its audience. According to a clarification from the Beijing Daily, the video in the news, while accurate, originated from another news report. Unlike the completely false news story, this information employs a video deceptively in order to manipulate the truth of the content, a tactic which was clearly particularly effectively given the widely circulation the story achieved. In addition, as the statement above, Zhong Nanshan is an expert on respiratory diseases in China and made an outstanding contribution to the control of the epidemic during the SARS outbreak in China in 2003. During the COVID-19 pandemic, news with the key word "Zhong Nanshan" was more likely to be noticed and believed by audiences.

According to Tandoc Jr. et al (2018), one of the most common ways that visual fake news is generated is through “misappropriation”. Fake news writers produce

their stories by appropriating unprocessed visual media from other news outlets (Tandoc Jr. et al., 2018). As Tandoc Jr. et al. (2018) observed, “The photo may be factual, but it was misappropriated to support a concocted narrative”. In this case, the method of "misappropriation" was employed, extracting videos from other visual news stories and presenting them alongside fabricated facts in order to deceive the audience. In addition, the fake news story also exploited the popularity of Zhong Nanshan to enhance its persuasiveness, which identifies the use of the so-called “halo effect”. According to Boman et al (1976), the halo effect represents an evaluation bias caused by the issue of an evaluator holding greater concern for the overall impression of each measured attribute, rather than carefully distinguishing between the specific characteristics of each attribute. In this fake news story, in which Zhong Nanshan is labelled as "an expert in infectious diseases" and "the brightest star”, these specific labels substantially incite the audience's trust, while reducing their propensity for suspicion. Thus, the story was produced by unscrupulous methods which included stealing visual texts and exploiting Zhong Nanshan's strong influence and reputation in China to produce a powerfully persuasive fake news story.

5.0 Discussion and Conclusion

Fake news has always been seen as a "disease" in journalism and has been even treated as a “pandemic” alongside the novel coronavirus, COVID-19. While there

exist countless studies on the subject of fake news, including definitions, causes, effects and fact-checking, so far only a limited amount has been undertaken on the spread of fake news in social media during the height of the COVID-19 pandemic, especially with respect to China. In order to delve into the issue of how exactly fake news in Chinese social media influenced health communication during the height of the COVID-19 pandemic in China, this paper poses three sub-questions. This study provides an in-depth analysis of fake news spread in Weibo during the worst period of COVID-19 in China (23/1/2020-27/7/2020). A quantitative content analysis of 100 fake news stories published on Weibo explores the characteristics of health-related fake news stories in social media. A number of the more widely circulated stories are selected for further discourse analysis, thus complementing the conclusions drawn from the content analysis. Based on literature review and findings, this section contributes some valuable findings to the field of study.

This study explored the proliferation of health information through social media, highlighting the influence of the fake news phenomenon on health communication. Fake news does not present an issue uniquely through the medium of social media. However, the analysis demonstrated that fake news finds fertile soil in the Information fragmented social media environment, where an affluence of information sources and social media structures enables false information to reach a large audience (Lazer et al., 2017). Within the analysis examined in this thesis, the massive spread of fake news related to public health in social media represents a substantial component and

one that necessitates specific attention.

Characteristics of fake news in Weibo during the COVID-19 pandemic

Through quantitative content analysis, it is clear that the common themes adopted by fake news writers demonstrate a positive correlation with current hot topics, as writers chase current trends. This phenomenon implies that fake news, like professional news, is produced with timeliness in mind. While fake news is seen as false, fabricated, and deceptive information (Gelfert, 2018; Allcott and Gentzkow, 2017; Habgood-Coote, 2019), fake news thus also mimics the methods and form of professional journalism (Tandoc Jr et al., 2021). As Tandoc Jr et al. (2021) have noted, fake news represents a parody of professional journalism and its content therefore naturally shares certain elements with professional journalism. Thus, fake news from the peak COVID-19 period varied in production and distribution with hot topics at different times. Furthermore, financial gain represents one of the key motives for producing fake news (Allcott and Gentzkow, 2017). Notably, websites and social media platforms rely on clicks and advertising in order to make profits (Allcott and Gentzkow, 2017), which incentivises the author to increase the click rate by producing sensationalist content than to ensuring the integrity of the news content (Bakir and McStay, 2017). Thus, fake news writers during the peak COVID-19 period who created fake news stories on different topics at different times could be considered speculative, producing a variety of stories depending on current sentiment.

Data in this analysis establishes a positive relationship between the attention of a topic and the publication of fake news relating to that topic. Observing the frequency of fake news topics, it appears that fake news on Weibo was focused on four key topics: “treatment”, “prevention”, “virus transmission”, and “rebound of the epidemic”. Due to the high level of fear and uncertainty surrounding COVID-19, fake news on these four topics was widespread on Weibo. The key words "hospital bed", "Zhong Nanshan”, and "remdesivir ", which all correspond to the topic, entered the audience's mind. According to the distribution of topics and key words of fake news in the COVID-19 period, the widespread dissemination of this false information is dependent on hot topics and fears about COVID-19. In addition, audience attention to fake news on different topics and key words reflects the impact of fake news during COVID-19. It is evident that the audience is more interested in fake news on the topics of "treatment" and "prevention". These two topics demonstrate high levels of anxiety in China regarding COVID-19 as a public health issue. False health information is often found during events that are "highly visible, harmful, and practical"(Sommariva et al., 2018). Some of the more representative ones are based on topics such as public health emergencies, healthy eating, self-help when life is at risk, and other practical tips (Zeng and Wang, 2020). According to Repnikova (2018), when Chinese people are faced with social or public health problems, especially those which represent a significant concern to them, information that can solve the problem—whether proven to be true or not—may increase a person’s sense of security.

This would explain the high level of audience interest in fake news surrounding the treatment and prevention of COVID-19 - as a means of allaying fears. Additionally, the widespread dissemination of fake news disrupts the normal exchange of information on social media, making it difficult for more valuable news on the same topic or containing these key words to reach audiences (Sommariva et al., 2018).

It is worth noting that while this study is structured around the definition of fake news as "false information", the term can also imply political considerations. As Van Dijk (2000) noted, media discourse always implies the ideology of the author. Taking this argument further, fake news can be deliberately employed by a writer as a means to express their own ideological and political stance (Allcott and Gentzkow, 2017). Indeed, a political bias is typically inherent in the act of creating fake news and attempting to spread these views to a wider audience (Tandoc Jr et al., 2018). Through the discourse analysis, although these fake news stories focus more on COVID-19 itself, they nevertheless imply a political bias on the part of the author and attract the attention and discussion of the audience. For example, the political image of the United States as depicted by fake news is that of a strong, responsible, and helpful country, which is described, for example, as "providing drugs to China" in order to treat the virus.

Fake news in COVID-19: how to fake information

The discourse analysis of fake news conducted in this study implies that going beyond the analysis of quantity and engagements is a vital step to gaining an in-depth comprehension of fake news from which targeted social media health communication strategies may be developed. Indeed, an analysis of various sources of fake news, texts and audience reactions may aid understanding of how misinformation can proliferate widely and deceive audiences.

The discourse analysis indicates that fake news in Weibo tends to use foreign sources in order to disguise the falsity of the content. Sources are an essential element of news reporting, and reliable sources add credibility to news stories (Wang et al., 2020). However, the vast amount of fragmented information in social media makes it difficult to verify sources and opens up the possibility of spreading fake news (Allcott and Gentzkow, 2017). The identification of a source of information is a necessary element of news communication and is one of the most important conditions for ensuring the authenticity of the news (Tuchman, 2002). Fake news utilises various news elements in order to convey "authenticity" by mimicking professional news formats (Tandoc Jr et al., 2021). Therefore, fake news in Weibo selects foreign sources, as these are difficult to verify in China. The authors of fake news confuse their audiences by using offshore sources to make the fake news look more "credible". For example, the author of the fake news story about the drug remdesivir's ability to treat COVID-19 claims that the news originated from a Bloomberg report. Moreover,

fake news in Weibo also exploits the halo effect, reinforcing the audience's trust in Zhong Nanshan through the act of labelling with exaggerated adjectives, thus increasing the credibility of the fake news. Developments in technology have also provided more avenues for the fabrication of fake news (Bakir and McStay, 2017). Fake news writers use visual sources such as videos in order to make it difficult for audiences to distinguish the truth of the content, thereby reinforcing the impression that the information is true.

These findings accentuate the necessary for health workers and medical practitioners to analyse false information and to formulate health propaganda in early stages of a public health event, which can effectively combat false information. Firstly, the promptly exposure of people to truth can mitigate misconceptions about the virus, including extreme responses of panic or trivialisation. Secondly, an early understanding of rumours that are gaining traction provides social media with information that can be used to quickly identify and flag false information and algorithmically reduce the rate of spread of fake news (Wang et al., 2020). When confronted with a major public health issue, it is necessary for social media to take rapid steps to identify and address false information in order to convey to audiences in a timely manner factual truth among the vast quantity of information on social media. While Facebook has incorporated the work of fact-checkers and experts by introducing strategies to decrease the visibility of misinformation and disinformation on their platforms (Wang et al., 2020), Weibo by contrast relies on reports from its

users and an official social media determination of whether information is accurate. As a social media platform, Weibo lacks a clear or professional standard of methods or criteria with which to verify complex online news or information. This presents barriers to establishing a clear framework for fact-checking on Weibo.

In addition, the data indicates that in some cases the main content of fake news is not effective at engaging the audience and does not present a topic of interest to them. The ineffectiveness can manifest as the result of an overload of competing messages that circulate on social media (Feng et al., 2015), which may reduce the visibility of public health information. "Rumours are part of this highly competitive landscape" (Sommariva et al., 2018). In social media, fake news exists as the by-product of a group of users following the flood of information, which means that health educators should consider the paradox between ensuring that real news can "reach" an audience and the effective "control" of false information (Shi et al., 2016). This trade-off is particularly important with respect to major public health events. Therefore, it is necessary for health workers to distinguish relevant information from background noise or fabricated stories. That is to say, health workers themselves have a responsibility to make efficient use of the uniqueness of these platforms, extending beyond the use of social media pages as "bulletin boards" in order to utilise the capacity of social media users as distributors of accurate messages (Shi et al., 2016).

CONCLUSION

In conclusion, by analysing the characteristics of fake news relating to the COVID-19 pandemic, considering the precise means by which news is faked, this study illuminates how the issue of fake news can affect health communication. The presented research identifies that fake news surrounding COVID-19 on Weibo is employed in order to deceive audiences by (i) matching hot topics of interest to users; (ii) obscuring sources and factual points; and (iii) using leading words and visual texts. Additionally, this series of analyses and discussions reveals some of the characteristics of the topics that are covered in fake news stories on social media platforms. According to Zeng and Wang (2020), health information stands at the intersection between general knowledge and medical expertise, while incorrect "common knowledge" damages an audience's perception of correct health information. Due to the algorithmic technology of social media, audiences are more likely to read similar news content, which can cause them to become trapped in echo chambers (Bakir and McStay, 2017). This echo chamber effect subsequently incites greater awareness of false information among audiences (Bakir and McStay, 2017), which increases their likelihood to ignore genuine health information (Zeng and Wang, 2020). Thus, it can be concluded that for journalists and media organisations alike, there exists an obligation to translate expertise related to disease prevention, detection, and treatment into news that is easily understood by audiences and that can be delivered before fake news becomes widely disseminated (Chan et al., 2020). It is therefore vital for public health and healthcare stakeholders to advocate for and

implement emergency response policies at a system level, which will aid the development of skills required by practitioners, allowing them to respond faster, more effectively, and more cost-efficiently in order to target misinformation or false information challenges. There is room for further research on the impact of fake news on different groups of people in the Weibo.

Focusing on fake news stories surrounding COVID-19 on the Chinese social media platform, Weibo, this study establishes content and discourse analysis in order to explore the characteristics of the dissemination of COVID-19 fake news, and fake news more broadly in Chinese social media, providing a non-Western perspective for fake news research. Given its specific focus, there exist some limitations to this study. First, this study only focuses on one possible definition of fake news, namely as "false information". Within this precise framework, a key alternative definition of fake news, as a political tool employed to criticise oppositional viewpoints, is not discussed.

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APPENDICES

Module Level Ethical Review Form (MLERF)

COMM5600M Dissertation and Research Methods

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