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10th International Conference of Information and Communication Technology (ICICT-2020)

The digital divide behind the news spread of novel coronavirus

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Abstract

At the end of 2019, Novel Coronavirus appeared, accompanied by massive epidemic information which reveals the digital divide of global concern. Through a questionnaire and interviews, the situation of the intergenerational digital divide, provincial digital divide and urban and rural digital divide behind the epidemic can be preliminarily concluded. In addition to the great help provided by new media, traditional media also played an important role in the spread of information about the epidemic. To continue to narrow the digital divide in the spread of information about the epidemic, the government should work to control rumors, and new media and traditional media should cooperate more scientifically in order to give play to their respective advantages. In addition, it is suggested that the elderly should also be helped in terms of their ability of using new media.

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Peer-review under responsibility of the scientific committee of the 10th International Conference of Information and Communication Technology.

Keywords: COVID-19; Digital divide; New media; The rumor

1. Introduction

The definition of "Digital Divide" first appeared in the NTIA's report "Behind the Curve: Defining the Digital Divide": A Digital Divide refers to a gap between those who own the tools of the information age and those who do not.1 Nowadays, the digital divide has become a common concern in many disciplines. The emergence of new media has brought new changes to the digital divide. Although the information access gap has been gradually narrowed, the information use gap is still in increase.2

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According to *The 45th Statistical Report on Internet Development in China* released by China Internet Network Information Center, as of March 2020, netizens aged 20-29 years account for 21.5% of the total, the proportion of 30-39 aged netizens is 20.8%, and the proportion of Internet users aged 50 and above has increased to 16.9% from 13.6% at the end of 2019. And, the Internet continues to penetrate into middle-aged and elderly people.

![Graph showing the spread of COVID-19 media on the whole network](image_url)

**Fig. 1.** The spread of COVID-19 media on the whole network

### 2. Literature review

At present, there are many research topics related to digital divide. One of the focuses of Chinese scholars is on the application level, such as exploring ways to improve the digital divide between eastern and western China or between urban and rural. In their research, most scholars have mentioned a key measure: strengthening the construction of infrastructure and using new media to bridge the digital divide. There are also many scholars who study the factors that influence the formation of digital divide and its influence. Economic development, policy differences and cultural differences are the macro factors that lead to the digital divide. Micro factors are individual personality, age and media quality. The digital divide widens the gap between rich and poor and then affects social equity. In addition, there are a few relevant theoretical studies. The intergenerational digital divide between the elderly and other age groups often draws researchers' attention. Meanwhile, the reports concerning above research topics generally lay emphasis on their focuses on new media or artificial intelligence.

### 3. The research methods

Combined with interviews, this paper mainly adopts literature and questionnaire as its methods. The study was conducted from February 3 to 12, 2020. There are full examination of and analysis on relevant literature. 307 copies of questionnaires were distributed through the network by random sampling method, and a total of 307 were recovered. In this study, 3 urban residents aged over 60 and 8 urban residents aged over 50 were interviewed via telephone or Internet to learn about their access to COVID-19 information. The questionnaire collected a sample of 21 people over the age of 50. The study interviewed five residents in Hubei provinces, as well as 10 Chinese residents from outside Hubei province (including Sichuan, Guangdong, Yunnan, and Shanghai, etc.) and asked them and those around them about their intentions to contact the information about the epidemic, their receptions of it, and their attitudes to its spread.
4. The research finding

In the COVID-19 epidemic, there is no obvious digital gap between men and women, and the digital access gap between middle-aged and young people has been significantly narrowed.

4.1. The intergenerational digital divide behind the COVID-19 epidemic

The intergenerational access gap is narrowing as a whole. 65.14% of the respondents were informed of COVID-19 for the first time in January 2020, and 33.55% were informed of COVID-19 for the first time at the end of 2019 (the first outbreak was discovered on December 12, 2019, so relevant reports were not earlier than that point). It can be seen that the emergence of new media makes the cost of obtaining information become lower. The better-educated and wealthier classes are no more likely to be informed earlier than the less-educated and poorer classes.

However, different groups differ in the attitude towards it and the desire to actively know more about it after they receive the information. This reflects the attention gap of different groups to socially important events. At the same time, there are differences in terms of age groups. Young people pay more attention to events of life and entertainment. A number of inspiring videos and relaxing videos about the epidemic appeared in Bilibili whose target users are mainly young people, the number of which significantly surpasses that of serious reports and science videos. The themes of Tik Tok videos on the epidemic are broader, aimed at people of all ages, ranging from funny videos to serious videos and sensational videos.

Combined with the results of interviews and questionnaires, it can be inferred that the elderly (especially the elderly who do not use the Internet) have narrower channels to obtain information, have less information, pay less attention to information, and are less willing to actively search for information.

After the COVID-19 outbreak, the instant messaging application constitute the main source for the public to receive and spread epidemic information. All participants obtained epidemic information from instant messaging application, and more than half of them obtained epidemic information from online news apps and TV. Considering the interview content, the digital divide between middle-aged and young people is mainly reflected in the access to information and the willingness to acquire different types of information. Young people use a variety of online platforms such as websites and apps. In addition to WeChat, Tik-Tok and other platforms with a wide audience, they also appreciate network platforms of minority culture and subculture. Young people are exposed to a wider range of culture, so they get more information about the epidemic from various fields in a comprehensive way with more diverse perspectives. In addition to popular network platforms, middle-aged people do not know much about many niche network circles and have no desire to use them. Therefore, the information of middle-aged people is not as comprehensive as that of young people, and thus have a unified perspective on the epidemic events, which actually does not necessarily lead to less possession of information about the epidemic for them.

![Fig. 2. (a) Distribution of public access to epidemic information; (b) The public's understanding of the epidemic information](image-url)
Some groups focus only on information relevant to them, such as how to combat the virus. Other groups actively work to gain deeper information, such as the specific biomedical knowledge of the virus. Public's professional knowledge of the virus is significantly insufficient compared with individual protective measures and governmental control measures.

The gap between generations is blurred, and young people also drive the spread of rumors. According to the questionnaire, 15.31% of respondents believed all the information on the Internet and 45.60% believed all the information on the traditional media. The proportion of people who have a fixed message channel and only trust that channel and the proportion of those who are willing to try various channels almost evenly split. In addition, 54.4% of respondents do not fully believe reports about the epidemic in traditional media. This shows that public's skepticism towards the media has increased and the credibility of traditional media has decreased.

The digital divide between different classes is also more conspicuous. Young, middle-aged and old people of the same class share similar attitudes towards rumors. For instance, they tend to do faster and more accurate judgment of rumors and are less willing to spread rumors. Age is not the point in this case.

In the epidemic, the public's intention of information dissemination is obvious. In the questionnaire, 90.88% of respondents are willing to spread the epidemic prevention information they believe useful to others, mainly through instant messaging apps. The reasons are mainly as follows: concern for the health of relatives and friends, and enhancement of one's own presence in the network circle of acquaintances.°

In recent years, there has always been a stereotype that the elderly is more likely to believe in rumors and be deceived than the young. However, through interviews, the author found that in the face of COVID-19, there is no significant difference in the attitude towards rumors of different age groups. Young people also believe in rumors and share them with others to some extent. Here are some reasons. Firstly, the content of rumors usually related to people’s physical health, and rumors of this kind are common and abundant. Secondly, authenticity of rumors are hard to judge, their contents are always half-truths. The "partial truth" often comes earlier than the official news, making it indistinguishable for people. Thirdly, rumors with low practical expense are more likely to win people’s trust.° The contents of the epidemic rumors mainly carry information related to people's daily lives, such as food and travel, and the transmission forms are mainly texts, pictures and videos.°

4.2. The digital divide between urban and rural areas has been narrowed while the digital divide between provinces has been widened

During the COVID-19 outbreak, users' initiative to search for information has been significantly improved, indicating that the digital access gap behind national social events is narrowing.

The role of traditional media is prominent, interpersonal communication and grassroots management are conspicuous. This study found that there is no significant difference in the amount of information acquired by urban and rural residents about major social events, and there is no significant difference in the time point to get information, which may largely benefit from traditional media from the author’s perspective.°

Although individuals have great freedom in the use of new media and they can choose the channels they want to pay attention to and obtain the information they want, some important information misunderstood as unimportant or ignored by individuals is easy to be blocked intelligently. This is likely to cause new media users to miss some important news. For example, the macro coverage of the epidemic in new media has done a good job, but in the era of excessive information, the detailed prevention and control measures adopted in towns, rural areas and communities will not draw enough attention from the new media, so local residents may ignore information about the specific prevention and control measures of their own communities. In the COVID-19 outbreak, traditional broadcasting with loudspeakers has played an important role in rural areas, towns and even some second- and third-tier cities. Through direct sound transmission, residents of more communities can get to know and pay attention to the prevention and control notice of their own districts.
The phenomenon of inter-provincial digital divide has emerged. According to the interviews, there is an inter-provincial digital divide in this epidemic. First of all, geographical distance affects psychological distance. In the early stage of the epidemic, areas with low-level economy that are relatively far away from Wuhan or with a small number of migrant workers from other provinces, did not care about the epidemic, or did not know about the epidemic and its specific situation. Provinces close to Wuhan, which has a large number of returnees, were more concerned about COVID-19.13

With the geographical spread of COVID-19, the epidemic information frequently appeared in the media, and the government departments also began to take corresponding control measures, which led to various degrees of rejection and resistance from the returnees from Wuhan in many provinces and even caused indiscriminate personal attacks. Such phenomena lead to psychological problems to some Wuhan residents, resulting in their actual rejection behaviors in daily lives, such as deliberately avoiding checking the offensive comments on and ridiculous videos about Wuhan people.14 Some Wuhan interviewees mentioned their whole families would deliberately avoid the epidemic information flooding into their life due to their excessive psychological stress and panic. In addition to checking necessary information every day, they would like to avoid information about the epidemic as much as possible, especially negative ones such as medical disturbance and abuse suffered by Hubei people.

In addition, viewed as the source of the epidemic, coupled with the severity of the epidemic, Hubei people, especially Wuhan residents pay special attention to the epidemic prevention and control news and the assistance information from other regions. Generally, they pay more attention to these than residents in other provinces. At the same time, Wuhan residents extremely concern for the epidemic. Apart from the information related to Wuhan, they will also actively search for news about the epidemic from other provinces and even foreign countries. The attention of residents from other provinces can be basically summarized as the following order: local epidemic situation ≥ the prevention and control measures available to individuals > the prevention and control measures available to local departments > the epidemic situation in Wuhan or Hubei province > other information.15

5. Improvement strategy

5.1. Provide support to the elderly

The elderly has weak healthy condition and low immunity, and the most important thing for them in the epidemic is to improve their understanding of information and their awareness of prevention and control about the epidemic. Therefore, their desire for and ability of digital using should be improved. It is not enough to rely only on their self-consciousness.16 Actually our society should provide help for the elderly, guiding them to learn to use digital tools,
broaden their access to the network world. An example is to develop applications and websites suitable for the elderly, connecting them to the outside society more harmoniously.

The network circles favored by different age groups is always different, and the applications and websites used also change accordingly. But at the same time, there are also network platforms suitable for people of all ages, such as the instant messaging tool - WeChat. Therefore, new media platforms should figure out the reasons why middle-aged and old people prefer traditional media so as to find simple and straightforward ways to increase their interest in reading news on new media.

Furthermore, considering the fact that young people are far away from the era of traditional media, new media should try to develop an information release mechanism that meets the demands of all age groups. Or, it is advisable to use the big data technology to achieve customized push notifications for users. For example, for the elderly who are used to watching TV news, it is suitable to push news left unreported on TV. For young people who don't watch TV news, it is reasonable to combine TV news with online ones in push notifications.

5.2. Connect traditional media and new media

Traditional media and new media should be linked together, and both of them should strengthen mutual communication and cooperation, giving a full play to the advantage of traditional media in reporting serious and important issues such as government measures. The advantages of new media platforms are to explore so as to better reflect the personal attitudes of netizens and the rich details of events, arousing netizens' attention to events and inspiring netizens to interpret events from more perspectives. Try to avoid overlapping issues, or at least avoid overlapping stories and details from both sides.

In addition, the role of traditional media in bridging the digital access gap between urban and rural areas should be noted exemplified by the role of traditional broadcasting in COVID-19. According to the 44th Statistical Report on Internet Development in China, there are significant differences in the size of urban and rural Internet users. In June 2019, the size of rural Internet users in China was 225 million, accounting for 26.3% of the total. The number of urban Internet users is 630 million, accounting for 73.7% of the total. In the countryside, however, television and radio still play a more important role than in cities.

5.3. Government departments continue to make efforts

The government should guarantee the openness and transparency of information about the epidemic in a timely manner. To achieve this, it is necessary to make use of the real-time advantage of new media in information release. With the help of new media and the Internet, the spread speed and scale of rumors can show grow exponentially. Because of the free release mechanism of new media, the generation of rumors is unpredictable, and it is difficult to curb the rumor at its source. Therefore, the function of rumor dispelling of the official media should be enhanced. In coping with specific events, rumor groups should be set up when necessary to exclusively monitor rumors and try to delete and refute rumors once they appear or spread early. As the timeliness of traditional media is often weaker than that of new media, its rumor-dispelling function can be appropriately weakened and used as the assistance of official new media in rumor-dispelling, giving more room for other information and disclosing more specific and basic information about the epidemic on traditional media.

The central government and the local governments should play different roles in guiding public opinions. By insisting on releasing information in a timely manner, the central government will be able to dispel departmental rumors. As for the emergence of regional rumors, it is local management departments that should be relied on. Grassroots governments should improve their ability to monitor rumors and refute rumors in a more timely manner and follow up reports properly.

6. Conclusion

The popularity of new media has narrowed the digital access gap in the epidemic. Furthermore, the intergenerational digital divide has become less protruded. The urban-rural digital divide is also shrinking, but the provincial digital divide is emerging. Traditional media, such as radio, have played an important role in spreading
information about the epidemic. It is suggested that the government should actively play its role in controlling the generation and spread of rumors. The development of new media platforms and functions suitable for the elderly is advised to improve their willingness to use new media. It is important to fully understand the advantages of traditional media and new media respectively and to combine the two together to work for the narrowing of the digital divide. This paper also predicts that in the future, relevant research will focus on exploring the causes of the digital divide and further solutions of the digital divide.

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