

Research on the Integrated Applicability of TPB Model in False Information Error Correction

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ABSTRACT

With the rapid development of information dissemination, the proliferation of false information has had many negative effects on society. This study focuses on the integration and applicability of the planned behavior theory (TPB) model in false information error correction. Through the analysis of the core elements of the TPB model, namely behavioral attitude, subjective norms and perception behavior control, it explores its role in explaining the participation of individuals in false information error correction. At the same time, the challenges faced in the process of model integration and the corresponding strategies, as well as the differences in the applicability of the model in different scenarios, aim to provide theoretical basis and practical guidance for effectively curbing the spread of false information and improving the enthusiasm of the public to participate in error correction. Research shows that the TPB model has a certain explanatory power in false information error correction, but it needs to be optimized and expanded according to the actual situation to better play its role.

KEYWORDS

False information error correction; Planned behavior theory; Model integration; Applicability

1 Introduction

As a bad information that can be proven to be wrong, false information is spread widely with the help of the openness, ease of use and timeliness of social networks. In this way, the manufacturer deliberately misled readers, bringing far-reaching negative effects to individuals and even the whole society, and hindering the ecological governance of online information content. Unless otherwise stated, the social networks or networks mentioned in this article refer specifically to online social networks (OSN).

2 Introduction

2.1 The social harm of the spread of false information on social networks is far-reaching

With the rapid development of Internet technology and the explosive growth of network information, attention has become a scarce resource. In order to compete for users' attention, various media use sensational, exaggeration and even fiction to attract attention, resulting in a decline in the quality of online information content. At the same time, driven by political or economic interests, some forces secretly manipulate public opinion and worsen the media public opinion environment. In addition, the cognitive psychological vulnerability in human information dissemination has also accelerated the spread of false information.

The spread of false information on the Internet is very harmful, seriously threatening the security of the network ecosystem, bringing economic losses, psychological distress and personal safety threats to users, impacting the authority and credibility of the government, and easily causing social panic. As early as 2013, the World Economic Forum listed false information as one of the top ten global risks and major social threats. The 2021 report pointed out that the proliferation of false information makes it difficult for the public to effectively discuss and reach consensus on major issues. For example, the frequent tragedy of "information infectious diseases" during the COVID-19 pandemic also hinders vaccination and economic recovery. The 2022 and 2023 reports also emphasized that false information is an invisible risk and will exacerbate social polarization. The widespread spread of false information on the Internet has a profound negative impact on individuals and society, which is not conducive to the ecological governance of online information content. Therefore, accurately suppressing the spread of false information in social networks has become an important task that needs to be solved urgently.

2.2 The development of social networks has exacerbated the spread of false information

Social networks are mediated by the Internet and map (or extend) traditional social networks to information networks in the information field. Their topological structure is composed of user collections and inter-user relationships, including three elements: relationship structure, network group and network information, which correspond to the carrier, subject and object of the network respectively. These three elements are interdependent: the relationship structure provides a

underlying platform and infrastructure for the interaction of network groups; network groups can influence the evolution of relationship structure and the dissemination of network information; the dissemination of network information can induce the behavior of network groups and affect the evolution of relationship structure.

With the support of network technology and intelligent devices, social networks have shown significant advantages in terms of ease of use, timeliness, openness and interactivity, and have rapidly emerged as the main channels for people to express their views, discuss social public events and receive massive information. In a short period of time, more and more individuals and organizations have joined social networks through online real-name authentication and interacted with other users online to improve their influence on the network. In recent years, with the continuous growth of the number of Internet users, social networks have achieved rapid development. According to the statistics of Internet World Stats, as of the end of June 2022, the number of global Internet users exceeded 5.3 billion (specifically 5385793406), and the penetration rate reached 67.9%. According to the statistics of the average monthly active users of 12 social networks in the second quarter of 2023, Facebook has the largest monthly active users, reaching 3.07 billion; among domestic social networks, WeChat has the highest monthly active users, exceeding 1.26 billion, QQ and WeChat is 606 million and 1.262 billion respectively.

On August 28, 2023, the 52nd Statistical Report on the Development of China's Internet released by the China Internet Information Center showed that as of June 2023, the number of netizens in China reached 1.079 billion, and the Internet penetration rate was 76.4%, compared with It increased by 0.8 percentage points in December 2022; the number of mobile netizens was 1.076 billion, accounting for 99.8% of the total netizens, an increase of 11.09 million compared with December 2022. The proportion of using desktop computers, laptops, tablets and TVs to access the Internet is 34.4%, 32.4%, 28.64% and 26.8% respectively, which shows that mobile phones are the main devices for Chinese netizens to access the Internet. People output or obtain information through mobile phones to access the Internet; the number of instant communication users reaches 1047 billion, accounting for 97.1% of the total number of netizens, an increase of 8.86 million compared with December 2022.

Table 1 The proportion of Internet users in the world

World Region	Population estimation	Proportion of population	Internet user	User percentage	Average growth rate	User percentage
Asia	43.52	54.9%	29.17	67.0%	2452%	54.2%
Africa	13.96	17.6%	6.02	43.2%	13233%	11.2%
Europe	8.37	10.6%	7.47	89.2%	611%	13.9%
Latin America	6.64	8.4%	5.35	80.5%	2858%	9.9%
North America	3.73	4.7%	3.48	93.4%	222%	6.5%
The middle East	2.68	3.4%	2.07	77.1%	6194%	3.8%
Australia	2.68	0.5%	0.31	70.1%	301%	0.6%
Total	79.33		53.86	67.9%	1392%	100%

With the continuous expansion of the scale of netizens, the amount of information in social networks has also continued to rise. A large amount of data has been generated on mobile and web terminals. People are in the era of information overload, and the social network service platform is the main source of information overload. For example, a survey by the New Media Research Institute of Peking University found that during the COVID-19 pandemic, 92% of the interviewed users obtained epidemic information through social media (or instant messaging tools) such as WeChat and Weibo.

Under the background of information overload, many social media and Internet users deliberately distort the facts, spread and disseminate false information in order to attract attention, which is also the inevitable result of social network platforms paying more attention to attracting users rather than the quality of information content in information distribution algorithms. In addition, due to certain political or economic interests, the phenomenon of underground public opinion manipulation is not uncommon, and the act of providing paid services to manipulate public opinion is endless, which also contributes to the widespread spread of false information in social networks. In addition to these external factors that lead to the proliferation of false information on the Internet, the one-sidedness of network users' own cognition has also played a role in promoting the situation. Due to the homogeneity of social networks, it is easy to form a community structure, the dissemination of information (including false information) forms a closed loop, resulting in the so-called echo chamber effect, which further leads to the inability of users to fully recognize things and become vulnerable and powerless in the face of the spread of false information. Therefore, the emergence and development of social networks have accelerated the spread of false information, expanded its dissemination scope, and brought a great impact to society.

3 Questionnaire analysis

3.1 Investigate the basic situation

This survey aims to understand the public's willingness to correct false information and its related factors. 390 valid questionnaires have been collected through the questionnaire star online research platform, covering multiple dimensions such as civic responsibility, social expectations, personal ability, guilt, knowledge level and active correction behavior, for relevant publicity and education. And policy formulation provide reference basis.

3.2 Analysis of the main survey results

3.2.1 Awareness of civic responsibility

Most of the respondents believe that it is the responsibility of citizens to correct false information. Among them, 71.79% of the respondents chose "agree" (4 points) and "strongly agree" (5 points), indicating that the public generally agrees that individuals have the responsibility to correct misinformation in the dissemination of information.

Table 2 The proportion of each number of people in the questionnaire

Options(on a scale of one to five,with expectation)	1 point	2 points	3 points	4 points	5 points
Ratio	8.97%	10.77%	8.46%	32.82%	38.97%

3.2.2 Social expectation situation

43.85% of the respondents believe that the people around them expect them to correct false information, which shows that society attaches great importance to the accuracy of information. There is a positive relationship between the sense of ability and the expectations of others. Among those who believe that they have the ability to judge the truth of the information, 43.48% said that the people around them expect them to correct the false information. The sense of responsibility is strongly related to the expectations of others. Among those who believe that correcting false information is a citizen's responsibility, 61.18% said that people around them expect them to correct false information.

Table 3 The proportion of each number of people in the questionnaire

Options(on a scale of one to five,with expectation)	1 point	2 points	3 points	4 points	5 points
Ratio	11.03%	5.9%	15.38%	23.85%	43.85%

3.2.3 Personal ability assessment

42.05% of the respondents gave the highest score of 5 points for their ability to judge the truth of information, which shows that the respondents generally have high confidence in their ability to judge information.

3.2.4 Guilt

37.44% of the respondents said that they would feel very guilty (5 points) if they did not correct false information, indicating that most people had a strong sense of responsibility for correcting false information. The sense of ability is related to guilt. Among the respondents who believe that they have the ability to judge the truth of the information, the rate of choosing 5 points is as high as 59.76%, that is, those who have the ability to correct false information are more likely to feel guilty. The sense of civic responsibility affects the sense of guilt. Among the respondents who believe that correcting false information is a civic responsibility, the proportion of 5 out of respondents who choose 5 has reached 52.63%, indicating that the stronger the sense of responsibility, the more obvious the sense of guilt.

3.2.5 Knowledge level cognition

Most respondents believe that they have the knowledge to identify false information. 42.56% choose 4 points and 27.44% choose 5 points, showing that most people have a positive attitude towards their own ability. Ability judgment is positively related to knowledge identification. Among the respondents who chose 4 points and 5 points in terms of ability to judge the truth of information, the proportion of sufficient knowledge is obviously higher, especially among the respondents who chose 5 points, 65.24% believe that they have the ability to judge the truth of information. People who believe that it is their responsibility to correct false information are more confident in identifying false information. Among these respondents, the proportion of 4 and 5 points is higher.

3.2.6 Actively correct behavioral tendencies

68.72% of the respondents were willing to take the initiative to comment or report false information (choose 4 points and 5 points), showing the public's attention and positive attitude towards false information. People with judgment ability are more inclined to report false information. Among the respondents who believe that they have the ability to judge the authenticity of information, the ratio of choosing 4 points and 5 points is significantly higher than that of other options, indicating that there is a positive correlation between ability and willingness to act. Those who believe that it is their responsibility to correct false information are more active in reporting. The ratio of 4 and 5 points selected by these respondents is significantly higher than that of other options, reflecting the correlation between sense of responsibility and willingness to act.

4 Statistical analysis

4.1 Frequency analysis

Table 4 Statistical analysis results of questionnaires count

		The people around me expect me to correct the false information I see	have the ability to judge the authenticity of information and effectively correct it	I have sufficient knowledge to identify false information	I'll will feel guilty if I don't correct the false information	I'll proactively comment or report the false information if I see it
Number of cases	Effective	7	7	7	7	7
	Hiatus	0	0	0	0	0
Standard Deviation		3.41375	2.42018	12.88877	5.49352	13.06104
Variance		11.654	5.857	166.120	30.179	170.591
Minimum		1.00	2.00	4.00	3.00	5.00
Maximum		11.03	9.49	42.56	20.00	43.85
Percentile	25	7.9500	5.9000	23.8500	10.7700	27.4400
	50	8.9700	6.6700	26.1500	14.6200	33.5900
	75	10.7700	8.4600	38.9700	17.4400	42.0500

4.2 Overall attitude and cognitive level

(1) The overall awareness of citizen responsibility of the survey subjects is at an upper-middle level, and most people recognize that it is a civic responsibility to correct false information.

(2) The evaluation of the survey subjects on their own ability to judge and correct the truth of information varies greatly. Some people have sufficient confidence, and some people lack confidence.

(3) There is an obvious gap in the knowledge reserve of the survey subjects in identifying false information, and the distribution of knowledge levels is relatively scattered.

4.3 External expectations and personal feelings

(1) There are great differences in the expectations of people around for different individuals to correct false information, and the expectations of different individuals in the social environment are different.

(2) The degree of guilt caused by not correcting false information varies significantly among different individuals. Some people have a strong sense of guilt, while others are relatively weak.

4.4 Actual action tendency

The tendency of the survey subjects to take the initiative to take action in the face of false information is obviously different. Most people have a certain willingness to take action, but some people still have a low willingness to act.

4.5 Strong positive correlation conclusion

When people around expect individuals to correct false information, the possibility of individuals taking the initiative to comment or report false information is very high, and the expectations of people around them have a significant role in promoting the actual actions of individuals.

Individuals' confidence in their own ability to judge and correct the truth of information is highly consistent with their knowledge reserve. The richer the knowledge, the stronger their belief in their own ability to correct.

The expectations of people around them will strengthen the individual's sense of moral responsibility, making the

Table 5 The proportion of questionnaire relevance

correlation		The people around me expect me to correct the false information I see	I have the ability to judge the authenticity of information and effectively correct it	I'll will feel guilty if I don't correct the false information	I have sufficient knowledge to identify false information	I'll proactively comment or report the false information if I see it
The people around me expect me to correct the false information I see	Pearson correlation	1	.626	.890**	.599	.992**
	Significance (dual tailed)		.133	.007	.155	.000
	Number of cases	7	7	7	7	7
I have the ability to judge the authenticity of information and effectively correct it	Pearson correlation	.626	1	.478	.995**	.524
	Significance (dual tailed)	.133		.278	.000	.228
	Number of cases	7	7	7	7	7
I'll will feel guilty if I don't correct the false information	Pearson correlation	.890**	.478	1	.424	.893**
	Significance (dual tailed)	.007	.278		.343	.007
	Number of cases	7	7	7	7	7
I have sufficient knowledge to identify false information	Pearson correlation	.599	.995**	.424	1	.496
	Significance (dual tailed)	.155	.000	.343		.258
	Number of cases	7	7	7	7	7
I'll proactively comment or report the false information if I see it	Pearson correlation	.992**	.524	.893**	.496	1
	Significance (dual tailed)	.000	.228	.007	.258	
	Number of cases	7	7	7	7	7

At the 0.01 level(dual tailed),the correlation is significant.

individual feel guilty for not correcting false information, and then more inclined to correct false information.

Guilt is an important driving force for individuals to actively correct false information, and individuals who feel guilty are more likely to take the initiative to take action against false information.

4.6 Conclusions of other related relationships

There may be a certain relationship between the expectations of people around them and individual ability and knowledge reserve, but this relationship is not statistically significant, and it is not clear that there is a close relationship between the two.

There may be a connection between individual ability, knowledge reserve and the actual action of actively commenting or reporting false information, but the correlation has not reached a statistically significant level, and it is difficult to determine its closeness.

There may be a certain relationship between guilt and individual ability and knowledge reserve, but it is not statistically significant, and it cannot be confirmed that there is a close relationship between the two.

5 Conclusion

Through the analysis of the applicability of the planned behavior theory (TPB) model in false information error correction, combined with questionnaire research and statistical analysis, the following conclusions are drawn:

The study verified the explanatory power of the core elements of the TPB model on the error correction behavior of individual false information. In terms of behavioral attitude, 71.79% of the respondents agree that correcting false information is a citizen's responsibility, and this perception is significantly related to active error correction, indicating that the public's positive attitude towards error correction is an important foundation for promoting practice. At the subjective normative level, social expectations are strongly positively correlated with active error correction behavior (correlation coefficient 0.992**), and an intermediary role is formed through guilt (correlation coefficient 0.893**), indicating that the expectations of people around will drive individual actions through moral emotions. At the level of perceptual behavior control, individual judgment ability is highly related to the level of identification knowledge (correlation coefficient 0.995**), and both of them have a positive impact on the willingness to correct errors, showing that ability perception is the key premise for individuals to put them into action.

Statistical analysis further reveals the complex relationship between variables: the strong correlation between social expectations and guilt and active error correction behavior reflects the dual impact of group pressure on moral self-discipline and practical behavior; while the relationship between social expectations and personal ability and knowledge level is not significant, which suggests the relative relationship between subjective norms and individual control. Independence. In addition, the high discreteness of social expectations and active error correction behavior (the standard deviation is 12.88877 and 13.06104 respectively) shows that there are significant differences between individuals in the perception of external expectations and the implementation of actions, and it is necessary to pay attention to individualized influencing factors.

In summary, the TPB model is partially applicable in the error correction of false information, but its element interaction has a special scenario. Research provides a theoretical basis for improving the public's enthusiasm for error correction: it is necessary to optimize practice by strengthening citizens' awareness of responsibility, creating a social error correction atmosphere, and improving individual information literacy. At the same time, it is necessary to design more targeted intervention strategies for the discrete characteristics of variables. Future research can expand the sample size, refine the model in combination with different scenarios, and enhance its realistic guidance value.

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