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Verifying Online Health Rumors on Social Media: An Empirical Research Based on the Stimulus-Organism-Response Framework

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Full Research Paper**Verifying Online Health Rumors on Social Media: An Empirical Research****Based on the Stimulus-Organism-Response Framework***Ying Liu¹, Yi Jiang^{1*}, Shuang Zhang¹, Zhenkun Wei¹*¹ School of Economics and Management, China University of Geosciences, China

Abstract: Many health rumors often appear on social media. The widespread spread of these rumors not only damages the reputation of social media platform, but also has a serious impact on individuals and society. Therefore, the research on the spread of health rumors has attracted academic attention. Based on the stimulus-organism-response framework, this study investigates the mediating role of people's perception for verifying rumors, especially adding the variables of social consistency to explore the interacting effect on the intention to verify. An experiment was conducted to test the research model and the empirical result indicated the positive effect of perceived authenticity and perceived importance and the negative effect of perceived trust on verifying rumors. Besides, social consistency will moderate positively the effect of perceived trust and moderate negatively the effect of perceived importance. Compared to the wish rumors, the dread rumors will produce higher perceived importance and perceived trust. This study provides theoretical implications and practical guidance for online rumor research and practices.

Keywords: Online rumors, Verifying behavior, Covid-19, the S-O-R framework

1. INTRODUCTION

The internet provides convenience for users to quickly obtain rich health information and has become the main choice for people to search for health knowledge. However, hidden dangers also arise, such as the proliferation of online health rumors. All kinds of articles about health and disease often appear on social media. The fuzziness of the source and content of these articles often makes it difficult for the information receiver to select the truth from them^[1]. When health-related rumors spread wantonly and become a "virus", it will cause users unnecessary anxiety and bring trouble to their lives. Some alarmist health rumors will arouse the public's psychological panic and destroy the social trust system^[2]. For example, in the period of COVID-19, the rumor "taking Isatis Root Granules, a kind of medicine for clearing heat, would play a role in reducing and eliminating the virus" caused a big amount of discussion on the internet, and then caused people to hoard related medicine for speculation. Therefore, the research on the spread of health rumors has attracted the attention of the academic community.

Rumor studies have argued that the main motive of rumor sharing is fact-checking^[3]. When people perceive the rumor as important, they share it with others in an attempt to verify its truthfulness. On the Internet, people verify facts not only by sharing information but also by seeking additional information on social media^[4] or by searching websites^[5]. Thus, rumor verification and rumor sharing should be treated separately. However, prior research mainly focused on people's sharing behaviors from the effect of message label and message valence and relatively there is a lack of research on rumor verification. Thus in this study, we try to unfold the process of verifying rumors and clarify the main motivations and their interactive relationships.

Compared with the traditional media, such as newspapers and television, rumors on the social network have

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a more complex content structure and communication modality, especially during health crises. First, online rumors are often disseminated with a characteristic of ambiguity, by concealing the actual information sources and the total news clue [6]. It is one of the core essences of distinguishing rumors from true news. However, this distinction might be unobserved in social networks in that internet users have been used to fragmented online content [7]. And then it comes to an opportunity for “rumors” to hide and tamper with part of real information through digital media, which is not easily detected by internet users.

Second, especially during health crises, individuals with an excessive health concern hold an obsessive belief that they will have a serious illness soon. Research has shown a link between health anxiety and a need for health information. As online health information is often incomplete and ambiguous, they may need to spend an excess of time confirming the validity of the information [8].

Third, with the popularity of social media, it enlarges consumer sovereignty and gives users full opportunities to voice. The evaluation of news on social networking sites, WeChat circle of friends, microblog, blog, and other media have had a great impact on people's concept and cognition. When people face unverified information regarding the practice of medicine and healthcare, online reviews may affect people's confirmation behavior. Previous studies on rumor have argued that the main factors of rumor creation. Even with the emergence of social media, the research on online rumors just regarded social network as an external environment of rumor transmission to check the role of the above factors on online behaviors.

In all, the lack of understanding the above three natures of online health rumors on the social network makes it difficult to clarify what motivates people to verify the rumors. Hence, this paper seeks to explore how the ambiguity of rumors take effect on the verifying behavior on the social network by influencing people's perception.

To address the above research question, the target is divided into the two-fold objective: the construction of an integrated model demonstrating the process of rumor verifying and the empirical analysis of components' interactive effect during this process. Theoretically, the need to understand how people's perceptions elicited by the health rumors affect the verifying behavior leads us to the Stimulus-Organism-Response (S-O-R) framework. Although the S-O-R model takes a rather broad approach, it provides an adequate theoretical framework for this study. According to the S-O-R framework, environmental prompts are the starting point of an intentional or unintentional psychological or behavioral process. Specifically, stimuli from environmental prompts affect individuals' internal cognitive and affective states, including their perceptions, experiences, and evaluations, which in turn affect their behavior. Given that rumors' natures work as an important social interactivity environmental stimulus that provides viewers unique information perception, it is logical to apply the S-O-R model as the theoretical framework for studying this phenomenon. Further empirically, to test how the factors interactively operate, we collected the data sets through an experiment with a questionnaire survey during the period of COVID-19.

This study extends prior research in several key ways. First, we expand the rumor research, by identifying the mediating role of people's perception, which uncover their interrelated relationship during the verifying rumors. Secondly, we specially explored the characteristics of the content ambiguity in comparison with prior research on rumors' type, to reflect effectively the changing principle by the embedded digital tools, revealing the conditions under which people's verifying behaviors in a social environment. Third, our study integrated the S-O-R model and social network research into the context of rumor. which contributes to the rumor research by dissecting the microscopic and potential structure behind the contents. Finally, we provide practical insights and algorithm ideas related to AI-enabled rumor recognition for social platform managers to reduce the possibility of sharing unverified information.

2. LITERATURE REVIEW AND THEORETICAL DEVELOPMENT

2.1 Online Health Rumors and Emergency

Nowadays, with the development of new media and social platforms, the speed of information dissemination has been accelerated and the scope of information dissemination has been expanded. Based on the theory of Peterson and Gist, a rumor is an unproven explanation or reason for something of public concern. Roger, an American scholar, defined health communication as transforming medical research results into common medical knowledge known to the public and improving the life quality and health level of a country or region through changing attitudes and behaviors. At present, the academic research on rumors mainly focuses on the generation stage of rumors and the influence of the characteristics of rumors on user behavior, but there is no detailed understanding of the inner role and perception of users.

By far, the academic research on rumor mainly focuses on the characteristics of rumor itself. The dimension of rumor stimulus includes two variables: content fuzziness and content source, both of which are characteristics of rumor content.

The fuzziness of rumors plays an important role in the public's perceived uncertainty, perceived importance and perceived trust, while the internal process of the public plays a crucial role in the cognition and dissemination of rumors. Yi et al. studied the inner experience of users when crisis events occurred through the humor model in his research, using perceived sincerity and perceived severity as mediators of the research in his article [9]. Therefore, rumor fuzziness has a significant impact on users' inner perception, and the research on this is of great significance to the understanding of users' reactions in the process of rumor spreading.

In the researches on different types of rumors, most of them are classified according to the internal reaction of the audience after receiving the rumor stimulation. They play a key role in the chain of rumor propagation, and their internal reaction has an impact on the communication intention. Individual participation forces people to trust and share [10]. Fear-type rumors lead to people's willingness to trust and share more than hope. Bordia proposed a categorization of claims (rumor interactive analysis system) and found the difference between horror rumors and hope rumors in content categories related to anxiety [6]. Scholars have shown that fear-based rumors and hope-based rumors have different effects on users' behaviors.

However, existing studies have not yet solved the influence of the psychological process on user behavior or even its important role in the whole rumor propagation process. The current studies have not yet explained it from the perspective of the rumor propagation process. At the same time, the current research on user psychology has not been carried out in the context of emergencies and medical and health events. Therefore, it is necessary to conduct a study on user psychology to have a deeper understanding of the rumor spreading process, which needs to be refined.

In addition, users' social networks are complex and diverse, and their social properties also have an impact on their inner perception and behavior. Heshan Sun believes that in the process of technology acceptance, users often imitate others in social contact and degrade the information and cognition they have acquired so as to maintain consistency with their social partners in social contact [11]. This is the way that users tend to conform to social behavior due to herd behavior (herd mentality). In this case, the individual behavior characteristics, the evolution of views and the process of information transmission in social networks have become the research spots in the interdisciplinary field. Therefore, it is necessary to use a psychological research model to study user perception, to have a deeper understanding of the whole rumor propagation process.

2.2 The S-O-R Framework

In order to study the influence of users' inner perception on user behavior and rumor propagation, the S-O-R framework is adopted, which provides a sufficient theoretical framework for the purpose of this study. The S-O-R framework was first proposed by environmental psychologists Mehrabian and Russell [12]. It is based on the

influence of different environmental stimuli on people's cognition, emotion and behavior. This model has been widely used in the study of social behavior by focusing on the influence of people's inner perception and emotion on people's behavior. Victor R. Prybutok, using the S-O-R framework, proposed that the sense of immersion and perceived interest are two important mediating variables, and explained the theoretical mechanism of how social existence, as an environmental and social factor, affects audience loyalty [13]. However, the SOR model has not been used to explain the rumor propagation process.

In this study, the S-O-R model is applied to study the spreading process of network health rumors in the context of public health emergencies. Stimulation is a rumor generating mechanism. For rumor stimulation of different types or fuzziness, users will feel different values in their hearts, so as to influence user behavior and communication process. Meanwhile, social consistency, as an important environmental stimulus, will trigger the psychological process of individual response. Considering that user's psychological perception is an important part of rumor propagation, it is reasonable to take the S-O-R model as a theoretical framework to study this phenomenon. In summary, the SOR model provides a structured guide to building a comprehensive model that opens up the black box of how Internet rumors affect the public and drive them to react differently.

Based on the S-O-R framework, this study proposed the research model as shown in Figure 1 and describe how rumor type and ambiguity influence the intention to verify through the perceptions. In the next section, we develop the hypotheses to explore the relationship between the features of online rumors and rumor verifying behavior.

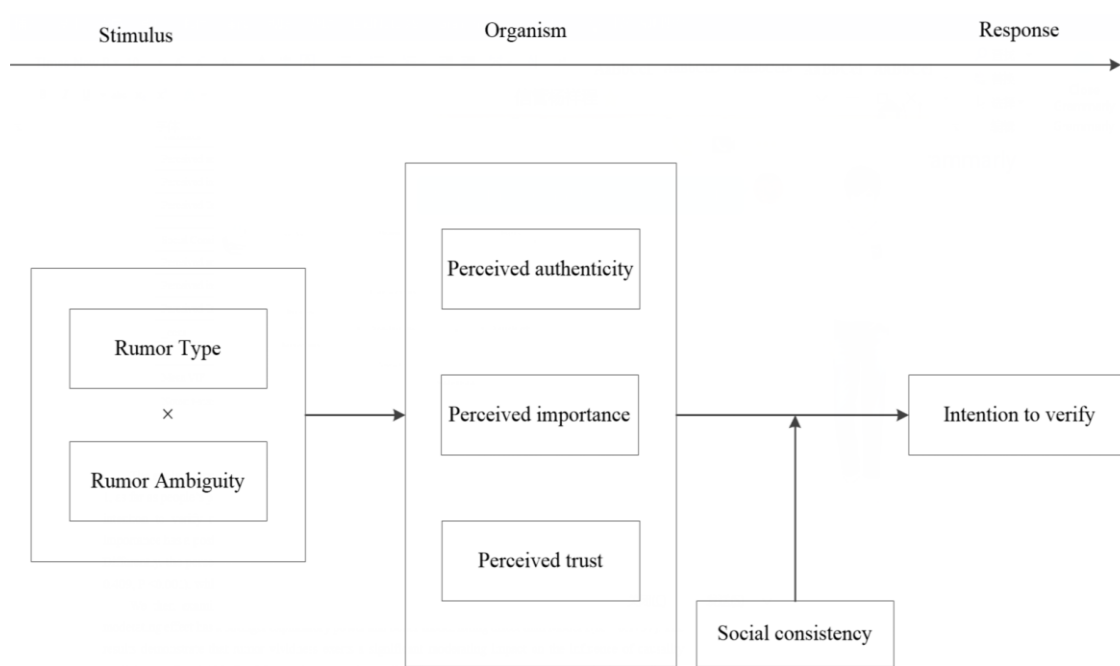


Figure 1. Research framework

The individual's confirmed intention emphasizes a trust tendency, and individuals who have a low degree of trust in uncertain information will have a stronger confirmed intention. Perceived authenticity measures the relevant knowledge an individual possesses, including scientific knowledge, experience, reliable information, etc. For example, for cancer-related rumors, ordinary people may have a stronger intention to confirm than professional doctors, or people who have had similar experiences will easily judge the authenticity of uncertain information, and the corresponding verification intention may not be very strong. As such, we hypothesize:

H1: The individual confirmed intention is positively related to the perceived authenticity.

Oh and Lee proposed that perceived message importance was associated with intentions to verify and share. People often pay more attention to things that are of interest to them or that are important to them and take corresponding measures and actions to achieve their expectations^[14]. The same is true for the role of rumors, such as uncertain information. For the rumors in the COVID-19 epidemic used in research, the unique environment has brought a certain degree of anxiety to individuals, and the manifestation of importance will also be strengthened. Collectively, we hypothesize that:

H2: The individual confirmed intention is positively related to the perceived importance.

Perceived trust reflects the individual's acceptance of rumors. Individuals with low levels of trust in rumors are more likely to ignore the rumor, and individuals with high levels of trust in uncertain information are more willing to produce certain confirmation intentions to satisfy themselves. Verification requirements. However, Chua shows that most of the experimental participants with medical background did not show the intention to confirm the rumor information^[10]. Based on these reasons, we propose:

H3: The individual confirmed intention is negatively related to the perceived trust.

Perceived authenticity means people's perceptual evaluation of the authenticity of rumors. The arrival of the information explosion era has greatly reduced the importance of information authenticity, and in the context of the COVID-19 epidemic, sharing information can play a role in alleviating anxiety. But even so, as a person in a social network, the authenticity of the information shared still has a certain social significance for him^[15].

The individual's perception of importance not only affects the confirmation of intention but also stimulates a strong intention to share. People tend to share information that they think is important to friends or relatives and other people they care about. The important information here is often not only important to yourself but also to people around you and the surrounding environment.

People tend to have more confidence in what they believe in to support their ideas and tend to convey their opinions through sharing. This means that trust can promote the individual's intention to share uncertain information to a certain extent, thereby further affecting the spread of rumors. Therefore, for rumors, such specific uncertain information, the perceived trust of individuals will promote the sharing intention and show a certain positive correlation trend, then we propose:

H4a: Social consistency moderates positively the effect of perceived trust on the intention of verify.

H4b: Social consistency moderates negatively the effect of perceived importance on the intention of verify.

H4c: Social consistency moderates positively the effect of perceived authenticity on the intention of verify.

Rosnow et al suggest that under the influence of importance or belief, dread rumors are transmitted more often than wish rumors even with controls for other characteristics^[16]. Prashant studied the influence of dread rumors and wish rumors on anxiety and find their differences between anxiety-related content categories^[6]. Under normal circumstances, we tend to believe that dread rumors can more easily resonate with the audience. The tense atmosphere brought by dread rumors makes people believe in the authenticity of the event, and can also attract the attention of individuals^[17]. In addition, people have a mentality of believing what they have rather than what they don't. Therefore, dread rumors can also make individuals feel more trustworthy. Consistent with the consensus reached in prior literature, we expect that:

H5: Compared to the wish rumors, the dread rumors will produce higher perceived authenticity, perceived importance and perceived trust.

When people accept a dread rumor, their first response is panic and suspicion. At this time, people tend to think more rationally about the stimuli brought by external information. In this case, the cause and effect of rumors

is more important than the source. Vague causal logic can give individuals a higher sense of trust and dependence than information with source ambiguity. As Michael A. Kamins mentioned in their research, bad rumors are more trustworthy when the logical expression is uncertain and have a greater impact on the spread of rumors in social media ^[18]. Hence, we propose:

H6: When the rumors are of the dread type, the causal ambiguity of the rumors (compared to the source ambiguity) can produce higher perceived trust.

The individual's perceived authenticity is embodied in the individual's degree of certainty about the content of the rumors. It is hoped that wish rumors can give people a pleasant belief than dread rumors, but at this time individuals will also pay more attention to the source of information. Compared with the causal ambiguity of rumors, individuals may be more sensitive to rumors of uncertain sources, because the causal logic of the source is easier to judge in a short time. Unrestricted information sources can avoid the individual's suspicion to a certain extent, otherwise, the individual will pay too much attention to the source of rumors and affect the spread of rumors. Therefore, the uncertain source of information can make the individual have higher perceptual certainty. Then we propose the following hypothesis:

H7: When the rumors are of the wish type, the source ambiguity of the rumors (compared to the causal ambiguity) can produce higher perceived authenticity.

3. METHODOLOGY

3.1 Study design

To test our hypotheses and explore the impact of different types and ambiguity of rumors on users' confirmed and sharing intention under different variables, an experimental survey was conducted. To design the rumor content in the experimental questionnaire, we first selected real-time rumor refutation information from January 18, 2020 to March 15, 2020 on the "Authentic Platform" which is a national platform dedicated to news verification in China, and then adopted the web crawler technology to collect relevant data. Finally, the main field contents include title, date, verifier, type of verifier, conclusion, rumor type and URL.

A total of 494 rumor data were collected and coded independently by 5 members in 0-1 coding mode to determine whether the information was wish or dread and whether it was source ambiguity or causal ambiguity. Only the rumors that were coded consistently by 5 members were used as the experimental design. In the end, there were 5 rumors of Causal ambiguity×Wish type, 5 rumors of Causal ambiguity×Dread type, 7 rumors of Source ambiguity×Wish type, and 8 rumors of Source ambiguity×Dread type. To ensure the consistency of the number of rumors in each group, three of them were selected for the experimental design. Finally, the 12 rumors after screening were designed into four questionnaires with 3 rumors for participants to browse according to the classification of rumors stimulation.

3.2 Stimuli

We employed a 2 (ambiguity: source vs. causal)×2 (type: wish vs. dread) factorial design. A total of 4 situation questionnaires were formed: Causal ambiguity×Wish type、Causal ambiguity×Dread type、Source ambiguity×Wish type、Source ambiguity×Dread type. As shown in Tabel 1, a total of 12 rumors during the outbreak of COVID-19 epidemic were used as questionnaire questions. Five-point scale (strongly disagree, disagree, general, agree, strongly agree) developed by Likert was used to measure the parameters.

Table 1. Rumors selected as the experimental stimuli

Rumors stimulate	Rumor content
Causal ambiguity × Wish type	Drinking brown sugar, ginger, shallot and garlic boil water, you will not be infected with the COVID-19 epidemic.
	Since February 3, 3 million masks have been put into 1000 pharmacies in Beijing every day.
	Chengdu citizens can make an appointment to receive masks on the Tianfu Citizen Cloud APP on February 4.
Causal ambiguity × Dread type	Someone in the car from Xiantao, Hubei Province, escaped after being detected high temperature.
	Five people traveling from Wuhan to Shanghai stayed in Jianguo Hotel and all were infected.
	Sichuan highway has been closed.
Source ambiguity × Wish type	The COVID-19 epidemic can be protected by making use of diapers.
	The COVID-19 epidemic can be effectively prevented and treated with antibiotics.
	The COVID-19 epidemic can be prevented by taking vitamin C effervescent tablets.
Source ambiguity × Dread type	The COVID-19 epidemic will outbreak seasonally like the influenza virus.
	The tap water is disinfected with the upper limit standard and chlorinated and should be left standing for at least two hours.
	The COVID-19 epidemic will spread through seafood.

3.3 Participants and procedure

A total of 210 participants were recruited for this experiment, and the network questionnaire was used to conduct the experiment. Table 2 shows detailed descriptive information about participants. We deemed college students represent a large portion of Web users and the sample used in our study is feasible. Of the 210 participants, 43 percent were men. Most of the participants (76 percent) were between 19 and 35 years old.

We set up a virtual social network environment, obtained 12 rumors after screening through the pre-coding, then searched for relevant information on Weibo and other social platforms, finally collected the main dissemination content. Taking into account the differences in information comments and user attention from different sources, each piece of rumor information was manually commented on, and screenshots were processed by imitating social platform design information as the content viewed by participants in the formal experiment.

Before the start of the experiment, we informed the participants that they will receive a small gift at the end of the experiment to encourage them to take part in the experiment seriously. At the beginning of the experiment, participants were randomly assigned to one of four rumor scenarios, they were instructed to browse 3 rumors in the specific rumor scenario and answered relevant questions respectively. We changed the questionnaire title to "Research on the Influencing Factors of Online Information Dissemination", and gave simulated scenarios to better reflect the individual's psychological reaction process during the severe period of the new coronary pneumonia epidemic, and try to avoid the impact of time delay on the experimental results. The specific content of the scenario simulation in the questionnaire is: "Looking back in time, assuming that you are an ordinary citizen who is forced to stay at home due to a severe epidemic, and you pay attention to the trend of the epidemic every day. You need to be rational about the credibility of the following Weibo information, think about how this information will affect your life, and make response and decision accordingly." Participants need to imagine that they are in such an environment, trace the time back to the more serious stage of the epidemic, and answer basic personal information such as gender, age, and education level.

During the experiment, we will not tell the participants that the contents of the questionnaire items are "rumors" or "unsubstantiated information", so as not to affect the results of the research due to the ambiguity of the subjects. The entire experimental survey was supervised and directed by five research assistants. In addition, the questionnaire items used in the experiment were modified after the preliminary survey.

3.4 Measurement

Perceived authenticity is to measure whether participants have the relevant background knowledge to help identify rumors. When there is a certain knowledge background or relevant experience, individuals can often make rational judgments about uncertain information. Refer to the scale of RL Rosnow^[16], we measured the perceived uncertainty by "I have relevant knowledge (such as: scientific knowledge, experience, reliable information, etc.) to judge the authenticity of this information".

Perceived importance represents the importance of an individual to uncertain information, which is divided into three dimensions, we measured the perceived importance by "I think this information is important to me" and "The information is important to people around me".

Perceived trust refers to the tendency and dependence of an individual on rumors. It is measured by two items of "I believe this information" and "I will rely on this information to make subsequent decisions" with reference to the Chua, A&Banerjee's scale^[10].

Social consistency means that people have the same tendency towards a certain comment or event in social networks. It is measured by two items of "When I read the comments of netizens on the information, I think the netizens' views on the authenticity of the information are the same as my own." and "When I read the comments of netizens on the information, I think the netizens' attitude toward the information is consistent with my attitude".

Intention to verify is measured by three items: "I will browse related websites to judge the authenticity of this information", "I will pay attention to the latest development of this information" and "I will go to other websites to find useful information".

4. DATA ANALYSIS AND RESULTS

We evaluated the convergence effect of the items based on the discriminant validity and convergence validity of the research tool. The convergence validity is tested in two steps. First, Cronbach's alpha values of intention to verify (ITV), perceived trust (PT), social consistency (SC) and perceived importance (PI) are 0.896, 0.849, 0.937 and 0.891, respectively, greater than 0.8. Second, all project factor loads exceeded 0.63 (Table 2).

Table 2. Item loadings (KMO=0.825)

	Cronbach alpha	Intention to Verify	Perceived Trust	Social Consistency	Perceived importance	Perceived authenticity
ITV1	0.896	0.931	0.138	-0.001	0.121	0.079
ITV2		0.906	0.112	-0.027	0.117	0.207
ITV3		0.736	0.149	0.027	0.558	-0.033
PT1	0.849	0.111	0.870	0.330	0.132	0.010
PT2		0.150	0.835	0.263	0.261	0.015
SC1	0.937	0.020	0.254	0.939	0.060	0.005
SC2		-0.044	0.281	0.917	0.147	-0.010
PI1	0.891	0.294	0.538	0.238	0.661	0.116
PI2		0.402	0.519	0.190	0.636	0.077
PA1	-	0.174	0.028	-0.005	0.052	0.979

196 data were used for regression analysis, and an overview of linear regression results is shown in Table 3, summarizing the main findings of the three models tested, Model 1 only considers the main effect, Model 2 add the moderator to Model 1, Model 3 add the interaction term between the moderator and the independent variable to Model 2. To guarantee the statistical correctness of each model, variance inflation factor(VIF) test is carried

out for each model, multicollinearity problems is not a problem, as the maximum VIF index calculated was 1.71 for the research variables, it is far less than the standard value of 10.

Table 3. Results of linear regression

Variables	Model 1	Model 2	Model 3
Perceived authenticity	0.196(2.98)**	0.193 (2.99)**	0.166(2.39)**
Perceived importance	0.882(8.61)***	0.914(9.07)***	0.878(8.68)***
Perceived Trust	-0.409(-4.05)***	-0.286(-2.68)***	-0.246(-2.23)*
Social Consistency		-0.254(-3.11)**	-0.184(-2.12)*
Perceived authenticity × Social Consistency			-0.046(-0.53)
Perceived importance × Social Consistency			-0.367(-2.39)**
Perceived Trust × Social Consistency			0.367(2.64)**
_cons	1.265(4.47)***	1.585(5.37)***	1.448(4.90)***
R ²	0.375	0.405	0.43
Mean VIF	1.78	1.79	2.08

Notes: t-statistics in parentheses. ***p<0.001; **p<0.01; *p<0.05

The explanatory power (R²) of Model 1 is 0.375. In terms of the results of the estimated coefficients in Model 1, as far as people's perceptions are concerned, the perceived authenticity has a significant positive impact on the intention to verify rumors ($\beta = 0.196$, $P < 0.01$), which supported hypothesis H1. Similarly, the perceived importance has a positive impact on rumor verifying ($\beta = 0.882$, $P < 0.001$). Thus, hypothesis H2 is also accepted. Differently, the perceived trust has a statistically significant negative impact on rumor verifying behavior ($\beta = -0.409$, $P < 0.001$), which means the hypothesis H3 is supported.

We then examined the moderating effect of social consistency through model 3. And Model 3 with moderating effect has a stronger explanatory power and better model fitting effect than Model 1 (R² = 0.43). The results demonstrate that social consistency exerts a significant moderating impact on the influence of perceived importance ($\beta = -0.367$, $P < 0.01$) and perceived trust ($\beta = 0.367$, $P < 0.01$) on rumor verifying. As depicted in Figure 2 and Figure 3, at high levels of social consistency, the effect of perceived importance on verifying rumors will decrease while the perceived importance's effect will increase. This means that the social consistency can take different moderations on the process of rumor verifying behavior, H4a and H4b are supported. And the moderating effect on the influence of the perceived authenticity is not significant ($\beta = -0.046$, $P > 0.05$), H4c is not supported.

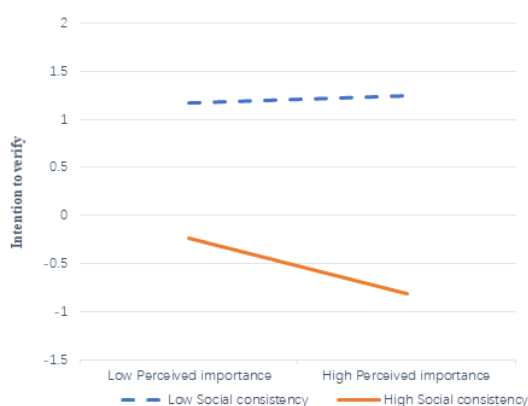


Figure 2. The moderation effect on the perceived importance

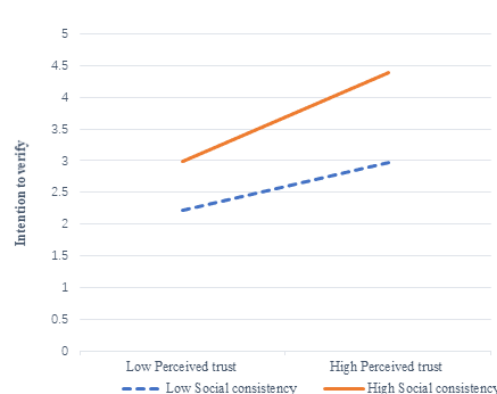


Figure 3. The moderation effect on perceived trust

We used an independent sample t-test to verify H5. The results indicated that the dread rumors were generally perceived as conveying a more increasing in the perceived authenticity ($M_{\text{dread}} = 3.33$, $M_{\text{wish}} = 3.17$, $p > 0.05$), perceived importance ($M_{\text{dread}} = 3.20$, $M_{\text{wish}} = 2.75$, $p < 0.001$) and perceived trust ($M_{\text{dread}} = 2.85$, $M_{\text{wish}} = 2.53$, $p < 0.001$). Except for the perceived authenticity, the other two perceptions will increase when people face dread rumors and H5 can be partially supported. Similarly, to test H6 and H7, we used the independent sample t-test in the dread rumor group and the wish rumor group respectively, in order to check the different effects of the source ambiguity and the casual ambiguity of rumors. The results indicated that when the rumors are of the dread type, the causal ambiguity of the rumors (compared to the source ambiguity) can produce higher perceived trust ($M_{\text{source}} = 2.68$, $M_{\text{causal}} = 3.03$, $p = 0.008$). When the rumors are of the wish type, the source ambiguity of the rumors (compared to the causal ambiguity) can produce higher perceived authenticity ($M_{\text{source}} = 3.34$, $M_{\text{causal}} = 3.01$, $p = 0.02$). H6 and H7 are both supported.

5. DISCUSSION AND IMPLICATIONS

The starting point of this paper is to understand: 1) How people's behavior of verifying online health rumors is triggered through the perception of rumors with social consistency. 2) The impact of different rumor type and ambiguity on personal perception. According to experimental data, most of the proposed hypotheses were supported. The experimental results show that people's intention to verify the online rumors is related to perceived authenticity and perceived importance positively, and perceived trust influences the verifying behavior negatively. This is because perceived trust reflects the individual's acceptance of rumors. Individuals with low levels of trust in rumors are more likely to ignore the rumor, and individuals with high levels of trust in uncertain information are more willing to produce certain confirmation intentions to satisfy themselves.

The experimental results also show that the social consistency exerts a significant moderating impact on the influence of perceived importance and perceived trust on rumor verifying. In other words, at high levels of social consistency, the effect of perceived importance on verifying rumors will decrease while the perceived importance's effect will increase. Besides, dread rumors may create more psychological perceptions, and when the rumors are of the dread type, the causal ambiguity of the rumors (compared to the source ambiguity) can produce higher perceived trust. When the rumors are of the wish type, the source ambiguity of the rumors (compared to the causal ambiguity) can produce higher perceived authenticity.

5.1 Theoretical implication

The theoretical contributions of this study mainly include the following three aspects: first, there is less research on online health rumors during the crisis. Although previous literature has confirmed that the credibility of rumors' type significantly affects the spread of rumors, the ambiguity of rumors has no impact on the spread intention. This study divides the ambiguity of rumors into sources ambiguity and causal ambiguity and confirms that they have a different impact on the perceptions with different types of rumors, which provides a reference for the follow-up research variables of online health rumors.

Second, based on the S-O-R framework, this study considers the mediating role of perceptions on the intention to verify rumors, and confirms that people's willingness to verify information from different psychological sources. This suggests a potential mechanism that might explain the inconsistent findings on the relationship between rumor natures and people's responses in prior studies.

Third, about the interactive role of social influence in shaping user verifying, this study confirms that social consistency has a direct effect on the verifying intention of health rumors, and also have a moderating effect of the perceived importance and the perceived trust on the intention to verify. Therefore, it reveals the important role of social effects in the spread of health rumors and enriches the research in the field of information processing and

health rumor spread.

5.2 Practical implications

First of all, this paper confirms that users are more likely to verify rumors which contain ambiguities. Therefore, online health community managers should pay attention to the rumors including sources and content, establish a "gatekeeper mechanism", and verify the authenticity of health information sources in time, so as to prevent users from passing off authority or encouraging the masses to lead to the spread of rumors. Medical professionals are urged to actively participate in correcting the wrong health information on the Internet. Ordinary users should also seek multiple sources to verify the correctness of the information, and should not easily believe the health information on the Internet.

Secondly, the results show that fear rumor is easier to influence the people's perception than hope rumor, and users are more willing to spread fear rumor from quantitative sources and hope rumor regardless of source. Therefore, managers should pay more attention to the negative and anxious fear rumors, especially the fear rumors with large reading volume, praise volume and forwarding volume, and verify their authenticity in time, so as to avoid the fear rumors causing panic and anxiety of information receivers. In addition, it is necessary to verify the authenticity of the source of hope rumors with expert authority certification or widely spread, so as to avoid someone pretending to be a professional to confuse the masses.

Thirdly, this study proves that individual perceptions have a significant impact on rumor verifying. Users with low knowledge beliefs are more likely to spread health rumors, especially those with quantitative sources; users with high knowledge beliefs are more likely to spread health rumors with qualitative sources. Therefore, for managers, they should strive to promote the dialogue between authoritative people and laymen on the Internet, and make use of the professional knowledge of medical authoritative personnel to help ordinary users improve their health knowledge level and cultivate strong cognitive beliefs. For ordinary users, when receiving online health information, they should make logical judgments combined with their medical knowledge, and at the same time, they should check with the medical staff.

6. LIMITATION AND FURTHER RESEARCH

There are still some limitations in this study: first, most of the subjects come from universities and their surrounding communities, which may be limited by age and education level, and the future research objects should be selected from different geographical groups; second, this paper considers the emotional types of rumors, and there is other rumors classification, such as long rumors and short rumors, text rumors and picture rumors, etc We can consider the comparative study of multiple rumor classifications at the same time. Third, the spread of online health rumors will also be intervened by the relevant government departments and health departments. For example, the correct health knowledge publicity by the relevant departments through social media and critical education for malicious rumor makers may improve the spread of online health rumors. Future research can be further explored from the third-party intervention in addition to the source, object, and content of the spread ^[19].

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