Configurational Analysis of Factors Influencing the Dissemination of Online Public Opinion on University Emergencies: A Fuzzy-Set Qualitative Comparative Analysis of 32 Cases (Postprint)

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Abstract

[Purpose / Significance] Network public opinion on emergencies is typically uncontrollable. Exploring the influencing factors and configurational effects of network public opinion dissemination for university emergencies can provide a basis for the control and governance of network public opinion regarding university emergencies. [Method / Process] Based on the Five-Force Model of Network Public Opinion and combined with Actor-Network Theory, this study selects opinion leader influence, netizen attention, media participation volume, event duration, university type, and event nature as antecedent variables for the influence generation of university emergency network public opinion events, and employs fuzzy-set Qualitative Comparative Analysis (fsQCA) to analyze 32 university emergency cases from 2019 to 2020. [Results / Conclusion] The study identifies four conditional configurations that generate high influence in university emergency network public opinion. Among them, opinion leader influence and netizen attention play a key driving role in public opinion dissemination; media participation is an important factor in promoting high influence; shorter event duration tends to produce lower impact; and higher event severity is more likely to cause high public opinion influence. Therefore, during the public opinion dissemination process, the roles of opinion leaders and media should be properly leveraged, guidance to netizens should be strengthened, and a sound network public opinion response mechanism should be established.

Full Text

Configuration Analysis of Influencing Factors of Online Public Opinion Dissemination of University Emergencies—Qualitative Comparative Analysis of Fuzzy Set Based on 32 Cases

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Abstract:
[Purpose/Significance] Online public opinions of emergencies are typically uncontrollable. Exploring the influencing factors and configurational effects in the dissemination of online public opinions regarding university emergencies can provide a basis for the management and governance of such opinions. [Method/Process] Based on the five forces model of online public opinion and combined with actor-network theory, this study selects opinion leader influence, netizen attention, media participation, event duration, university type, and event nature as antecedent variables for the influence of university emergency online public opinion events. Using fuzzy-set qualitative comparative analysis (fsQCA), we analyzed 32 university emergency cases from 2019-2020. [Result/Conclusion] The findings reveal four conditional configurations that generate high influence of online public opinions on university emergencies. Opinion leader influence and netizen attention play a key driving role in public opinion dissemination. Media participation is an important factor in promoting high public opinion influence. Shorter event durations tend to produce lower impact, while higher event severity is more likely to cause high public opinion influence. Therefore, during public opinion dissemination, the roles of opinion leaders and media should be properly leveraged, guidance of netizens should be strengthened, and response mechanisms for online public opinions should be improved.

Keywords: university emergencies; online public opinion; influencing factors; qualitative comparative analysis

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Introduction

With the popularization of internet and information technology, people' s communication and interaction methods have undergone tremendous changes, and many have become accustomed to publishing and disseminating information online. According to the 49th "Statistical Report on China' s Internet Development" released on February 25, 2022, by December 2021, China' s netizen population reached 1.032 billion, an increase of 4.296 million from December 2020, with an internet penetration rate of 73.0%[1]. In particular, self-media

applications dominated by ordinary people, such as Weibo, WeChat, QQ, and forums, have developed rapidly. With the help of internet platforms, an increasing number of people are paying attention to social hotspots and focal events, expressing their views through posting, commenting, and forwarding, thereby creating certain social impacts and forming online public opinion.

University online public opinion constitutes an important component of university network culture construction and can reflect hot issues that students care about. General Secretary Xi Jinping has delivered important speeches on campus network culture construction, pointing out that universities need to attach importance to public opinion supervision work and continuously optimize supervision methods based on network technology innovation[2].

University emergencies are usually unpredictable and uncontrollable. In today's era of continuous development of online media, online public opinions triggered by university emergencies also exhibit characteristics of suddenness, complexity, difficulty in control, as well as concealment and emotional tendencies[3]. Universities' primary functions are talent cultivation, scientific and technological development, and social service. The occurrence of emergencies in universities attracts great attention from the public, and public opinion dissemination has a significant impact on university image. At the same time, numerous negative, irrational, and untrue statements may emerge. Therefore, studying the influencing factors behind the dissemination of online public opinions on university emergencies is crucial, as it is the prerequisite and key to improving the governance and guidance of such opinions.

Literature Review

However, based on searches of Web of Science and CNKI, although scholars at home and abroad have conducted corresponding research on university online public opinions[3-5], research on influencing factors of university online public opinion dissemination is relatively lacking among foreign scholars, while domestic scholars have begun preliminary explorations. H. Xia and Z. Yan et al. pointed out that student gender, geographical conditions, and original viewpoints have important influences on the herd effect among student groups in university online public opinion dissemination[6]. H. Y. Wen et al. used a tripartite evolutionary game model to study the influences of internet media, college students, and university management departments on university online public opinion dissemination[7]. Jiang Guangxue et al. noted that the college student group is an important factor affecting university online public opinion dissemination, serving as both the dissemination subject and object[8]. Zhang Yiting et al. constructed a five forces model for university emergency online public opinion based on entropy theory, arguing that the subject, carrier, object, and medium of public opinion jointly affect the ontology[9]. Zhai Jiayu, based on the SIR model (Susceptible Infected Recovered Model), analyzed the influences of four factors—opinion leaders, ordinary netizens, universities, and event information—on university emergency online public opinion dissemination[10]. Du Xiaobin

believed that trust mechanisms, secondary dissemination, and direct immunity characteristics are important factors affecting university online public opinion dissemination[11]. Chen Xiaoyan and He Youshi, based on motivation theory, extracted four factors—emotional venting, entertainment, altruistic motivation, and social interaction—to study their effects on the dissemination of negative online public opinions in universities[12].

Qualitative comparative analysis can discover causal relationships between research objects from sample data, combining the completeness of case analysis with the systematic nature of comparative analysis, providing a third approach beyond qualitative and quantitative research[13]. Currently, qualitative comparative analysis has been widely applied in academia[14-16]. Domestic scholars have begun using qualitative comparative analysis to study online public opinions. For example, Wang Nan and Wang Baohua analyzed the influences of university reputation, event nature, dissemination process, and public opinion response on university image during public opinion dissemination, arguing that the impact of online public opinions on university image results from the superposition of multiple factors[17]. Li Ming and Cao Haijun proposed five variables—event information, publishing subject, information audience, information technology, and information environment—and used csQCA (crisp-sets Qualitative Comparative Analysis) to study the generation mechanism of online public opinions in emergencies[18]. Additionally, Li Ming and Cao Haijun extracted variables from four perspectives—event type, communication subject, communication channel, and information feedback—and used fsQCA (fuzzy-sets Qualitative Comparative Analysis) to analyze 40 emergencies, proposing three paths for government response in emergency online public opinions[19].

By reviewing existing research, we find that current studies on university online public opinions provide a good foundation for this paper, but there remains room for expansion: existing research mainly focuses on the public characteristics and objective dissemination processes of university online public opinions, as well as how to control and govern them. Research on dissemination paths of emergency online public opinions has mostly concentrated on public crisis events, such as public health emergencies, with little attention paid to the interactions among multiple influencing factors in the dissemination process of university emergency online public opinions. Based on this, this study will conduct a configurational analysis of influencing factors and their multiple concurrent configurational effects in university emergency dissemination based on the five forces model of public opinion and actor-network theory, using fuzzy-set qualitative comparative analysis to identify the antecedent conditions and condition combinations that generate influence in university emergency online public opinion events, and deeply study the internal mechanisms of university emergency online public opinion dissemination to provide a basis for its management and control.

Theoretical Framework

Network Public Opinion Five Forces Model

Zhang Yiting et al. believe that university emergency online public opinion consists of public opinion medium, public opinion subject, public opinion object, public opinion ontology, and public opinion carrier. The public opinion medium refers to the activities or events that trigger public opinion; the public opinion subject refers to people who trigger public opinion, such as opinion leaders and ordinary netizens; the public opinion object refers to the target of public opinion; the public opinion ontology refers to the content of public opinion itself; and the public opinion carrier refers to platforms for public opinion dissemination, such as Weibo and WeChat. Based on online public opinion evolution theory and entropy theory, Zhang Yiting et al. established a five forces model for university emergency online public opinion, which is divided into three levels. The core level is the interaction of five forces: subject, carrier, medium, object, and ontology. Among them, the dissipative force of ontology is at the center, influenced by the driving force of the subject, the display force of the carrier, the traction force of the medium, and the influence force of the object[9], as shown in Figure 1 [Figure 1: see original paper].

The five forces model has been applied in online public opinion research. For example, Li Wanlian and Gao Guanghan combined the five forces model with fuzzy-set qualitative comparative analysis to analyze 48 public emergencies, studying the influencing factors and paths of online public opinion heat generation in public emergencies[20]. Liu Chending used fuzzy-set qualitative comparative analysis of 30 education public opinion cases based on the five forces model to explore the generation mechanism of education public opinions under the social network background[21]. Sun Kang, Zhang Chao et al. took the Tianjin Port "8·12" explosion as an example and used the five forces model to analyze the evolution patterns and influencing factors of online public opinions in hazardous chemical incidents[22].

Actor-Network Theory

Actor-network theory was proposed by Latour, primarily studying heterogeneous networks formed by interactions between human and non-human actors[23]. It has several core concepts:

First, actors. Typically, actors refer to people. Unlike some sociologists, Latour's concept of actors is broader, including not only human actors but also non-human actors such as concepts, technologies, ideas, and organisms, which have equal status[24].

Second, mediators. Mediators are always in the actor network; they change, modify, or distort original meanings. Latour believes actors are also mediators. The main difference is that actors emphasize the meaning of their own actions, while mediators focus more on the agency of mediation. Both can change the

inflection points of networks, creating differences.

Third, network. Actions between actors create many connections, forming actor networks. Nodes in the network are actors. This network emphasizes the process of actors interacting, communicating, and changing[23]. The more active the actors and the more frequent their actions, the tighter their connections and the more complex the network formed. In university emergency online public opinions, this can be understood as triggering high heat in public opinion events.

Fourth, translation. Translation refers to actors expressing other actors' viewpoints and opinions in their own language. This is the main interaction method between actors. In online public opinions, netizens express their views on public opinion events through comments and forwarding, which is the process of translation. All actors are in the translation process and are connected through translation, thus constituting the actor network.

Actor-network theory and the five forces model are applicable to the generation of high heat in university emergency online public opinions. First, actor-network theory holds that actors act in networks and cause changes. In university emergency online public opinions, various media that produce and disseminate news, opinion leaders, netizens, and public opinion dissemination carriers (mainly referring to teams behind platforms) are all important human actors, which correspond to the public opinion subject and public opinion carrier proposed by the five forces model. Second, events that trigger public opinions and targets of public opinions are important non-human actors. These human and non-human actors constitute the actor network of university emergency online public opinions through translation. The translation process corresponds to the process in the five forces model where public opinion subject, public opinion carrier, public opinion medium, and public opinion object jointly act on public opinion ontology.

Methodology

Qualitative Comparative Analysis (QCA)

Qualitative Comparative Analysis (QCA) was proposed by Ragin in 1987[25]. It is a case-based theory and research method that emphasizes discovering causal relationships between research objects from sample data through dialogue between empirical data and relevant theory. QCA differs from traditional case studies by combining the completeness of case analysis with the systematic nature of comparative analysis, providing a third approach beyond qualitative and quantitative research[13]. QCA systematically analyzes key factors of events, connections between factors, and various cause combinations that trigger events to deeply understand the complex causal relationships of event generation.

QCA includes three types: crisp-set, multi-value, and fuzzy-set. Crisp-set classifies cases into binary categories (membership or non-membership in a set). Multi-value classifies cases into one of three or four categories. Fuzzy-set allows

researchers to calibrate partial membership degrees in sets, retaining core set theory principles. Instead of simply classifying cases based on condition combinations, it transforms originally equally-spaced data into fuzzy membership scores (values varying between 0 and 1)[26].

University emergency online public opinion belongs to social phenomena, which typically have high complexity and often involve complex causal relationships that are difficult to categorize into binary choices. Cases cannot be simply divided into abstract variable relationships but require multi-level, multi-dimensional comprehensive analysis. Given the suitability between the research question and method, this study selects fuzzy-set qualitative comparative analysis (fsQCA).

Data and Sample Selection

According to QCA requirements for sample selection, this study selected cases from the Zhiwei Data Platform Event Library (https://www.zhiweidata.com/) that meet the following characteristics: having certain 知名度 and having attracted widespread attention; diverse types of public opinions, such as management errors, academic corruption, etc.; differences in event heat. Ultimately, 32 cases from 2019-2020 were selected as the research sample library for university emergency online public opinions (see Table 1).

Variable Selection and Explanation

According to the five forces model of online public opinions, the driving force of the subject, display force of the carrier, traction force of the medium, and influence force of the object affect the heat of public opinion ontology. Latour' s actor-network theory tells us that interactions between actors constitute actor networks. In public opinion activities, dissemination subjects and public opinion carriers are all actors and human actors. University types and event nature are non-human actors, and they constitute the actor network of university emergency online public opinion dissemination through connections.

This study selects condition variables by referring to the five forces model of online public opinions and actor-network theory, while considering the uniqueness of university online public opinions. Ultimately, four categories and six condition variables were determined (see Table 2), with event influence as the outcome variable.

Data Calibration

Before analyzing data using fuzzy-set qualitative comparative analysis, calibration is required to represent set membership degrees. Calibration involves setting three qualitative anchors, also called threshold points: full membership point, crossover point, and full non-membership point. Referring to previous research experience, this study selects the 95th percentile, 50th percentile, and 5th percentile of sample data as the full membership point, crossover point,

and full non-membership point[27]. The full membership point is recorded as 1, the full non-membership point as 0, and the crossover point as 0.5. With these three anchors set, fsQCA 3.0 software automatically converts raw data into fuzzy scores between 0-1. After data calibration, this study uses fsQCA 3.0 software for case configuration analysis.

Specific calibration values are shown in Table 3 . It should be noted that the two variables "university type" and "event nature" cannot be calibrated using percentiles. Therefore, for the "university type" variable, this study's assignment standard is: ordinary universities assigned 0, first-class discipline construction universities assigned 0.5, and first-class university construction universities assigned 1. For the "event nature" variable, this study' s assignment standard is: based on controllability, severity, and impact scope, events are divided into three levels—general, relatively serious, and major. General refers to relatively simple events that may cause casualties or property damage, assigned 0; relatively serious refers to relatively complex events that may cause casualties or property damage, assigned 0.5; major refers to complex events causing serious casualties and other consequences, assigned 1.

Analysis and Results

Single Variable Necessity Analysis

Before conducting truth table analysis with fsQCA, it is necessary to check for necessary conditions. A necessary condition is a condition that must exist for the outcome to occur—that is, without this condition, the outcome would not occur. Single variable necessity analysis can preliminarily identify core conditions that lead to the outcome. In fsQCA, the consistency indicator is used to check for necessary conditions, calculated as follows:

$$\text{Consistency}(Y_i \leq X_i) = \frac{\sum \min(X_i, Y_i)}{\sum \min(Y_i)} \quad \text{(Formula 1)}$$

From a set theory perspective, condition consistency reflects the proportion of the intersection between condition set X and outcome set Y in fuzzy set Y[26]. Typically, variables with consistency greater than 0.8 can be considered sufficient conditions for event occurrence, while variables with consistency greater than 0.9 can be considered necessary conditions[28].

Table 4 shows the single condition necessity analysis results obtained using fsQCA3.0 software. When the outcome variable is set as high event influence, netizen attention (NA) reaches a consistency of 0.97, and media participation (NMP) has a consistency of 0.96. These two antecedent variables have consistency higher than 0.9, while consistency levels of other conditions do not exceed 0.9. Therefore, netizen attention (NA) and media participation (NMP) are necessary conditions for high event influence. Opinion leader influence (IOL) has a consistency of 0.85, exceeding 0.8, making it a sufficient condition for high

event influence. When the outcome variable is set as low event influence, no antecedent variables with consistency higher than 0.9 appear, indicating weak causal relationships between single antecedent variables and low event influence. Among them, ~opinion leader influence (~IOL) has a consistency of 0.86, which can be considered a sufficient condition for low event influence.

Configuration Analysis Results

Fuzzy-set qualitative comparative analysis yields three types of solutions: complex solution, parsimonious solution, and intermediate solution. The complex solution is based on raw data without logical remainders and generally includes more configurations and antecedent conditions. The parsimonious solution conducts counterfactual analysis on raw data, includes logical remainders, and has the fewest configurations and antecedent conditions. The intermediate solution only includes logical remainders with practical significance according to researchers' theoretical and practical knowledge, with reasonable justification and appropriate complexity. Typically, the intermediate solution is superior as it does not allow elimination of necessary conditions[26].

Therefore, this study analyzes the intermediate solution[29] and distinguishes core conditions from peripheral conditions by comparing parsimonious and intermediate solutions: if a variable appears in both solutions, it is a core condition, indicating a strong causal relationship with the outcome and serving as an important condition for the outcome; if a variable only appears in the intermediate solution, it is a peripheral condition with a weaker relationship to the outcome, playing an auxiliary role[26]. According to C. Ragin' s suggestion, in fsQCA3.0, configuration analysis is conducted with a minimum case number of 1 and minimum raw consistency of 0.8[28], yielding the results shown in Tables 5 and 6.

This study follows the result presentation method used by P. C. Fiss[30], where a solid large circle ( ) indicates the presence of a core condition, a solid small circle ( ) indicates the presence of a peripheral condition, a crossed large circle (U) indicates the absence of a core condition, a crossed small circle (U) indicates the absence of a peripheral condition, and blank indicates that the condition may be either present or absent (a fuzzy state). The final condition combination analysis yields four paths leading to high event influence (see Table 5): "NA*NMP*TCU~*NE*" , " *IOL*NA*NMP*ED" , "IOL*ED*TCU*NE*" , *and* " $_{IOL}$NA$_{NMP\sim}$ED $_{TCU}$NE" . Five paths leading to low event influence are identified (see Table 6): "~IOL*NA*NMP$_{ED}$TCU $_{NE}$" , " $_{NA}$NMP$_{EDTCUNE}$" , " $_{IOL}$NA$_{NMPEDTCUNE}$" , " ~IOL$_{NA}$NMP$_{EDTCU\sim NE}$" , and " $_{IOL\sim}$NA$_{NMP}$ED $_{TCU}$NE" .

Conditional Configuration Analysis

The results from condition combinations show that four condition combinations lead to high event influence of university emergency online public opinions. These four combinations are subsets that generate high event influence, with an

overall consistency of 0.846207 and overall coverage of 0.828494, indicating that these four path combinations can explain approximately 82.8% of cases. Among them, opinion leader influence, netizen attention, and media participation are core conditions.

Configuration 1: Netizen Attention * Media Participation * University Type * ~Event Nature. Configuration 1 has a raw coverage of 0.330858, indicating this configuration can explain approximately 33.1% of high event influence cases, with a unique coverage of 0.0958812, indicating about 9.6% of high event influence cases can only be explained by this configuration. In Configuration 1, netizen attention and media participation are core conditions. This configuration indicates that emergencies with high netizen attention, large media participation, and high-level university types (such as first-class university construction universities) will trigger relatively high event influence even if the event nature is not serious. Two cases—Wuhan University' s "kimono cherry blossom viewing" conflict incident (C20) and the incident of an Electronic Science and Technology University teacher belittling the Four Great Inventions (C25)—fit this configuration. Taking Wuhan University' s "kimono cherry blossom viewing" conflict as an example, both netizen attention and media participation were at high levels, with an average of 10 information disseminations per hour during the event and 476 media outlets participating in event dissemination. As a well-known "first-class university construction" university, even though the incident was not of major nature, its event influence index still reached 70.7, ranking fourth in the 2019 case sample library.

Configuration 2: Opinion Leader Influence * Netizen Attention * Media Participation * Event Duration. Configuration 2 has a raw coverage of 0.654288, indicating this configuration can explain approximately 65.4% of high event influence cases, with a unique coverage of 0.220122, indicating about 22.0% of high event influence cases can only be explained by this configuration. In Configuration 2, opinion leader influence, netizen attention, and media participation are core conditions. This configuration indicates that emergencies with high opinion leader influence, high netizen attention, large media participation, and long event duration produce high event influence. Cases such as Zhejiang University' s decision to place a student convicted of rape on probation (C1), the online rumor of a Tsinghua University senior female student being sexually harassed by a junior male student (C2), police notification of two deaths at Sichuan University Jinjiang College (C10), and Chongqing University Museum being accused of having counterfeit collections (C21) all fit this configuration. In this configuration, the presence or absence of university type and event nature variables has little impact on the outcome—that is, these variables may be either present or absent. For example, in the case of Zhejiang University' s decision regarding the student convicted of rape (C1), although the event severity level was not major, opinion leader influence reached 77.23 million followers, netizen attention was very high with 17 information disseminations per hour on average, 314 media outlets participated, and the event lasted 156 hours from occurrence to dissipation. According to Zhiwei Data, its event influence reached 74.2, ranking

first in the 2020 case sample library, demonstrating that the event triggered widespread dissemination and numerous discussions online.

Configuration 3: Opinion Leader Influence * Event Duration * University Type * Event Nature. Configuration 3 has a raw coverage of 0.207292, indicating this configuration can explain approximately 20.7% of high event influence cases, with a unique coverage of 0.0270087, indicating about 2.7% of high event influence cases can only be explained by this configuration. In Configuration 3, opinion leader influence is a core condition. This configuration indicates that public opinion dissemination of university emergencies is influenced by opinion leader influence, event duration, university type, and event nature. In cases where other variables are similar, the higher the values of one or several other variables, the greater the event influence. For example, in the case of Shandong University of Technology students filming and selling cat abuse videos (C3), although the university is an ordinary university, the event had large opinion leader influence (top 5 bloggers' follower sum of 94.86 million), lasted 172 hours, and was of relatively serious nature, resulting in very extensive public opinion dissemination with an event influence index of 68.1. Additionally, in the case of a graduate student suicide at Dalian University of Technology (C6), although the university is also ordinary, the event had large opinion leader influence, lasted 152 hours, belonged to the "first-class university construction" type, and was of major severity, ultimately achieving an event influence index of 64.5.

Configuration 4: ~Opinion Leader Influence * Netizen Attention * Media Participation * ~Event Duration * ~University Type * Event Nature. Configuration 4 has a raw coverage of 0.153275, indicating this configuration can explain approximately 15.3% of high event influence cases, with a unique coverage of 0.0513168, indicating about 5.1% of high event influence cases can only be explained by this configuration. In Configuration 4, netizen attention and media participation are core conditions, while event nature, ~opinion leader influence, ~event duration, and ~university type are peripheral conditions that play auxiliary roles. This configuration indicates that university emergencies with high netizen attention and large media participation will still trigger relatively high event influence even with lacking opinion leader influence, short event duration, and low-level university type. The case of a University of Science and Technology of China student posting inappropriate remarks (C7) fits this configuration. This case had a short duration of 88 hours (only 6 events lasted less than 100 hours), moderate opinion leader influence (top 5 bloggers' follower sum of 63.96 million), belonged to the "ordinary university" type, but had relatively high netizen attention (5 items/hour) and media participation of 100, thus still triggering relatively high event influence with an index of 64.4, ranking 7th in the 2020 case sample library.

Robustness Check

Robustness checking is a crucial step in qualitative comparative analysis that can further verify the reliability of analysis results. Therefore, this study con-

ducts robustness checks on the antecedent configurations for high event influence. Common robustness testing methods in QCA include adjusting relevant parameters within reasonable ranges, such as changing calibration thresholds, minimum case numbers, consistency thresholds, adding or deleting cases, or adding other conditions[31], then re-analyzing the adjusted data and comparing the two configuration analyses. If after adjustment, the number, content, consistency, and coverage of configurations do not change significantly, the analysis results can be considered robust.

This study uses the method of changing consistency thresholds to test result robustness. Changing the original consistency threshold from 0.8 to 0.85 produces configuration paths and analysis results consistent with the original, as shown in Table 7 . The solution consistency and coverage also show almost no difference. Thus, the configuration analysis results of this study have robustness.

Conclusions and Implications

Main Findings

5.1.1 Subjects Play a Key Driving Role in Public Opinion Dissemination

From the condition combination analysis, we know that both opinion leader influence and netizen attention are core conditions for generating high event influence. Opinion leaders and netizens have strong driving effects on public opinion dissemination and are important subjects of public opinion dissemination. Opinion leaders refer to those who have relatively influential voices online, often with numerous followers. Their messages have large audiences and wide dissemination ranges, and their statements influence fans who may be other opinion leaders or ordinary netizens. Their statements also affect the next group of people, forming a relatively complex event dissemination network that expands event influence.

The development of the internet has removed restrictions on public speech regarding time and space. Everyone can spontaneously produce and disseminate content. Ordinary netizens' attention to university emergencies also largely promotes event dissemination. It can be said that netizens and opinion leaders coexist synchronously and influence each other bidirectionally. Events with high netizen attention simultaneously attract opinion leaders'attention, enabling opinion leaders to disseminate events more widely. Opinion leaders' dissemination of events also increases more netizens' attention to them.

5.1.2 Media Participation Is an Important Factor in Promoting High Event Influence

In the internet era, public opinion dissemination occurs not only on traditional media platforms but also on social platforms such as Weibo and WeChat and currently popular short video platforms. These are important carriers for public opinion dissemination and are crucial factors promoting the dissemination

of university emergency online public opinions. From single variable necessity analysis, we know that media participation is a necessary condition for high event influence. As information dissemination media, the press can spread information and guide the public. Similar to opinion leaders, media participation in university emergencies can make event dissemination broader and faster, thereby enhancing event influence.

5.1.3 Events with Strong Medium Traction Tend to Produce Low Influence

In university emergencies, institutions such as governments and universities serve as the medium that exerts traction. In the above qualitative comparative analysis, the antecedent variable of event duration reflects the medium's traction. Event duration refers to the time from event dissemination to final dissipation. Generally, the stronger the medium' s traction, the shorter the public opinion fermentation time, meaning that government, university, and other institutions play a 疏解 role in university emergency public opinions. From condition combination analysis, when the outcome variable is set as low event influence, ~event duration appears as a core condition in three paths (L1, L4, L5). ~event duration corresponds to strong medium traction. Timely participation and guidance by official media can shorten public opinion fermentation time, grasp the initiative in event voice, and to some extent reduce event dissemination and diffusion, thus producing low event influence.

5.1.4 Higher Event Severity More Likely to Cause High Event Influence

University emergencies may cause serious consequences and occur suddenly, requiring certain emergency measures. As important carriers for talent cultivation and academic research, universities receive strong attention from the broad public beyond students. Therefore, these emergencies often ferment quickly, and events with higher severity, larger impact scope, and lower controllability receive higher attention and discussion. Especially when personal safety is involved, such as the online rumor of a South China University of Technology professor sexually assaulting a female student (C4), the drowning death of Kunming University of Technology student Li Xincao (C17), and the arrest of the Peking University student matricide suspect (C18). These events are classified as major in nature, causing relatively serious consequences, and thus receive continuous attention and dissemination from public opinion subjects and carriers, driving public opinion heat to continuously increase and form high event influence.

Practical Implications

The configurational analysis of influencing factors in university emergency online public opinion dissemination has important reference value for public opinion management and governance. Based on the research conclusions, this study offers the following implications:

First, regarding public opinion subjects, subjects have a driving effect on public opinion. First, the role of opinion leaders should be correctly leveraged. Relevant institutions should strengthen communication and cooperation with opinion leaders to guide them to voice correctly and accurately in public opinion dissemination. Second, emergencies are usually uncontrollable, and their dissemination is prone to group polarization[32] while also breeding various rumors. Netizens are important participants in public opinion dissemination, so netizens themselves should improve their network information literacy and treat public opinion events objectively. Relevant institutions should also pay attention to netizens' views and emotions, guide netizens' public opinion dissemination behavior, which is important for public opinion dissipation.

Second, regarding public opinion carriers, media has a very strong guiding effect on public opinion and influences public views and attitudes toward events during dissemination. If media issues factually incorrect or extreme reports, it can trigger extreme public opinion fermentation. Therefore, media should enhance its sense of responsibility in public opinion dissemination. Additionally, the leading role of official and mainstream media should be strengthened to timely release authoritative information and guide public opinion in a positive direction.

Third, regarding public opinion medium, government and university institutions should play a traction role in public opinion dissemination, attach importance to public opinion prevention and control, establish and improve emergency response mechanisms for emergency online public opinions, take timely measures after event occurrence and public opinion fermentation, achieve timely notification, timely voice, and timely response, ensure information openness during the process, and provide solutions to problems.

Limitations

This study has certain limitations in researching influencing factors of university emergency online public opinion dissemination. First, the number of selected university emergency cases is relatively limited, and there is inevitably some subjectivity in case selection. Second, although qualitative comparative analysis involves multiple cases, it is difficult to consider all specific circumstances of each case in the actual analysis process. Therefore, future research should conduct in-depth studies on individual cases and strive to reduce subjectivity in sample selection.

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Tan Chunhui: Provided revision suggestions and guided the logical structuring of the article;
Hao Xiaoyue: Determined the research topic, conducted data collection and analysis, and wrote and revised the manuscript.

Note: Figure translations are in progress. See original paper for figures.