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How to Respond? The Impact of Government Response on Emotions in Emergencies from the Perspective of Configuration

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Abstract: Relieving the emotions of the public through government response is an important part of government emergency management. How governments respond in different situations can avoid stimulating negative emotions during emergencies? This paper analyzes the problem from the perspective of configuration; that is, this paper explores the combined effects of multiple factors on emotions. We construct the theoretical framework “Situation-Responder-Content” from situation, responder and response content, and use the government microblogs ($n=1517$) from 23 major production accidents in China for the discussion with the use of fuzzy set qualitative comparison analysis (fsQCA). According to the results, the effective response types of different agencies in emergencies are summarized. Local authorities can respond in ways that include “Measures type” and “Measures-Emotion type”. Functional agencies can respond through “Measures type”, “Measures-Emotion type” and “Government feature-Driven” type. This study emphasizes that government response in emergencies is a systematic process. Responsive agencies need to release effective information on the basis of fully considering the situation and other factors. Configuration analysis should also be an important direction in government response research, which is helpful to the practice of government response in emergencies.

Keywords: government response; emotions; emergency; configuration analysis; situation-responder-content



Citation: Shi, S.; Wang, G.; Zhang, L. How to Respond? The Impact of Government Response on Emotions in Emergencies from the Perspective of Configuration. *Systems* **2024**, *12*, 183. <https://doi.org/10.3390/systems12060183>

Academic Editor: William T. Scherer

Received: 15 April 2024

Revised: 14 May 2024

Accepted: 22 May 2024

Published: 23 May 2024



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1. Introduction

In recent years, all kinds of emergencies have occurred constantly all over the world [1]. Besides the losses of life and economy [2], negative emotions, such as anger, fear and anxiety, are also common consequences [3–5]. Although negative emotions generated during emergencies may have positive effects [6], the negative effects are more obvious. Negative emotions can lead to serious mental health problems, such as a loss of self-regulation, prolonged emotional exhaustion and suicidal behavior [7,8]. It can also cause collective irrational behaviors and psychological resistance of the public [9,10], which could cause behavioral noncompliance and affect the process of handling emergencies. Meanwhile, the development of social media platforms promotes the generation and diffusion of emotions [11,12]. When emergencies occur, more and more people receive the information about emergencies and express their views and emotions through social media [13]. Now, emotions have been recognized as the pivotal factors influencing the outcomes of emergency management [14]. As the key part of emergency management, government response helps to relieve negative emotions [13]. Therefore, it is important to explore the impacts of government response on emotions in emergencies.

1.1. Government Response

Government response is generally considered to have two aspects: action response and discourse response [15]. Discourse response refers to information and communication

through e-government platforms [16], such as email, official websites and social media platforms. The popularization of social media allows for two-way communications between government agencies and the public at a low cost [17]. So, government response in this study is the information release by government agencies through internet platforms which can also be called government information release (GIR). It can be seen as a part of crisis communication.

Information from government response helps inform the public about what is happening, what action is being taken, what action needs to be taken and why, which can reduce the uncertainty and panic [18]. Studies have pointed out that effective government response strategies can stimulate positive emotions of stakeholders and then determine positive behaviors [13,19]. Government agencies should reasonably arrange the content in order to monitor the results of public opinion, innovative the forms of expression and use emotional elements to limit the transmission of negative emotions [13]. Now, government agencies at all levels are expected to roll out scientific and reasonable emergency response plans as well as the corresponding government response strategies to appease negative emotions [20]. Meanwhile, the impacts of government response on emotions have received widespread attention.

1.2. Relations between Government Response and Emotions

Emotions, as the measure of effectiveness of government response, have been studied extensively [21]. Previous studies point out that the effects of information on emotions depend on three basic factors: messenger, audience and information attributes [22,23]. It also applies to government response. First, who responds has significant impacts. Orders by female political leaders contain more elements of sympathy and confidence, which significantly improves public confidence [24]. Responders who are explicitly trained can better achieve emergency management goals such as restoring trust and institutional reputation [25]. Second, in terms of audience, gender, age, occupation, disaster experience and personal risk knowledge level will significantly affect risk perception [26], which will make the public feel negative emotions [27].

Finally, information attributes, that is how the response is formulated, include the forms, strategies and content of government response. Information forms, such as labels, pictures and videos, are increasingly used and play important roles in relieving negative emotions [28]. In content research, existing studies have found that information about the risk and reassuring the public is effective in alleviating the negative emotions of the public [29,30]. Compared with rational information, information with emotional appeal has a more obvious impact on the audience sometimes [31]. In addition to the above, the specific emergency situation could also influence the effects. Situational Crisis Communication Theory (SCCT) emphasizes the use of different strategies in different situations [32].

Although plenty of studies have explored the impact of government response on emotions in emergencies, there are still gaps. First, most studies have examined the effect of individual content (or strategies) on emotions. Government response may consist of several types of content (or strategies) at the same time. It is necessary to examine the impacts of multiple content combinations. Second, besides government response, other factors also affect emotions. However, the existing research has generally studied each aspect in isolation. How can different agencies respond in different situations to relieve negative emotions? We need to discuss the combined effects of multiple factors. However, few studies have explored the problem from this perspective. This is the purpose of this study. Because of the inability to define the audience on social media platforms, this study will analyze the situation from three aspects, response content (what is said), responder (who has responded) and response situation, to discuss the impact of different government responses on emotions in different situations.

The remainder of this paper is organized as follows. The theoretical analysis will build the theoretical model. The next section presents the data and methodology, which will introduce the data source and research method. Then, the section of the results presents the

empirical results. The section of the discussion offers implications and limitations. The last section is the conclusion.

2. Theoretical Analysis

2.1. Content

This paper intends to divide the content of government response based on framing theory. The use of framing in the communication field concerns “selecting and highlighting some facets of events or issues and making connections among them so as to promote a particular interpretation, evaluation, and/or solution” [33]. Framing is a process in which communicators, such as political leaders or journalists, select and organize information and cues to influence how others perceive and interpret an issue [34]. There are different ways to categorize the frameworks in existing studies. For example, Semetko divided messages into five frameworks: conflict framework, human interest framework, economic consequences framework, morality framework and responsibility framework [35]. The “emancipation framework, multicultural framework, assimilation framework, and victimization framework” are used in the study of framing effects about immigration [36]. In Max Havelaar crisis, the messages are divided into “anger framework, exploitation framework, duped framework, scandal framework and profit framework” [37].

This paper divides government response into four frameworks: accident framework, reason and responsibility framework, measures framework and emotional framework. The accident framework describes the severity, scene and consequences of emergencies, that is, what happened. The reason and responsibility framework is the construction of the cause and the distribution of responsibility, that is, why the emergencies happened and the subsequent accountability. The measures framework refers to the measures taken by public agencies and volunteers, which are used to inform the public about the actions taken at present. The emotional framework represents the expression of emotions.

Different frameworks can cause different emotional responses [36]. The measures framework provides the information to the public about the rescue effectiveness and what action is being taken. The public expects action from government agencies in emergencies. So, the measures framework could meet public expectations, help to eliminate uncertainty and relieve negative emotions. In terms of the emotional framework, the emotional infection theory points out that the emotions of publishers can infect the audience through information dissemination and make their emotions converge [38,39].

The accident framework, which could tell the public what happened, can improve the understanding of the public about emergencies and eliminate the uncertainty. However, it also means huge losses in major emergencies, which may arouse negative emotions, especially in emergencies caused by human factors. Finally, because of the long investigation time, government agencies cannot provide the survey results in time. So, the use of the reason and responsibility framework cannot meet public requirement, which will stimulate negative emotions.

Although each framework influences emotions differently, every piece of information can contain multiple frameworks at the same time. The effects that mixed-use frameworks have on emotions need to be further analyzed.

2.2. Situation

The situation is the external condition of government response and can be measured by emergency characteristics [40]. In this paper, it includes emergency severity and stage. Severity refers to the seriousness of an emergency. It may trigger negative emotions [41]. Generally, the more serious the emergency, the higher the heat, which means the more serious the consequences and the more significant the negative impact on emotions.

In terms of emergency stage, there are different classifications, such as four-stage [42], six-stage [43] and others [20]. The change in emotions is affected by emergency evolution. First, since emotions are the basis of public opinion, the evolution of social public opinion means a change in emotions; so, emotions have obvious stage characteristics. Second,

government agencies respond differently at different stages [44], which may influence emotions. Therefore, emotions are affected by emergency stage.

2.3. Responder

As mentioned in Section 1.2, who responds affects emotions significantly. In emergencies, trust plays the key role [44]. Compared to other information sources, government agencies enjoy a higher level of public trust during emergencies, especially in China. The more the public trust the government, the lower the risk perception and the lower the arousal of negative emotions [27]. In China, trust of the public in high-level governments is higher than that in low-level ones [45]. So, response from higher-level agencies has greater positive impact on emotions than it does from lower-level ones.

Meanwhile, the Chinese government is a complicated collection of multiple departments, rather than a monolithic rational actor [46]. Different departments have their own incentives and behavior patterns [47]. Previous findings have found that different responsive departments have different methods and qualities of response [48]. It will affect emotions. In addition, the trust of different departments may also influence the public's emotions.

The question is how the response of different government agencies in different situations can avoid negative emotions in emergencies. In order to solve this problem, it is necessary to study it from the perspective of configuration. The content of government response is the result of the combination of four frameworks. Meanwhile, emotions can also be treated as the outcome of the combination of the content, situation and responder. According to the analysis above, this paper builds a theoretical analysis framework "Situation-Responder-Content" (Figure 1). In addition, the combination of the three factors is helpful to analyze the government response type under different conditions. So, this study is also helpful to summarize the types of government response.

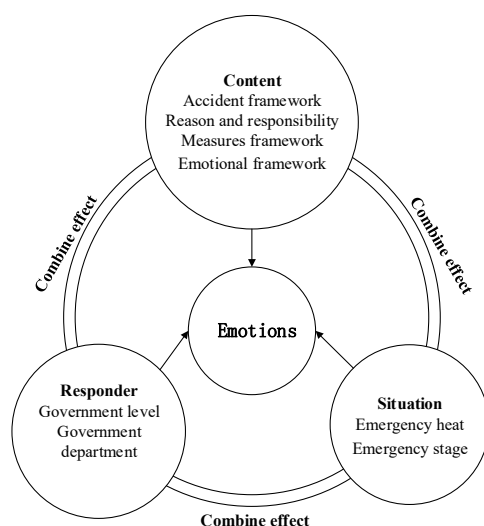


Figure 1. Theoretical framework.

3. Data and Method

3.1. Data Sources

This study takes production safety accidents as an example. Production safety accidents are a typical type of emergency. Besides serious consequences and high frequency, production safety accidents are the focus of the government because of strong human factors. Human factors are the main causes of production safety accidents [49]. The lack of effective government supervision is the core factor [50]. It may stimulate strong negative emotions toward production companies and governments [51]. Government agencies need to respond effectively to relieve negative emotions and maintain their reputation. Taking this type of emergency as the case study is also helpful for government response research.

In China, the State Council shall supervise the handling of major production safety accidents. Therefore, this study first selected cases by checking whether the emergencies were listed for supervision by the Ministry of Emergency Management of the People's Republic of China (http://www.mem.gov.cn/gk/sgcc/sggpdqbqk/index_29.shtml, accessed on 10 April 2024). Secondly, the cases were further selected according to the “zhiweidata” (<https://ef.zhiweidata.com/>, accessed on 10 April 2024), which is a professional public opinion monitoring platform in China. This platform provides indicators of emergencies, including public opinion trends, emergency heat and others. Among the indicators, the emergency heat value ranges from 0 to 100 points. The higher the heat, the more serious the emergency. Because government agencies may not respond to low-heat accidents, this paper took 60 points as the standard, deleted the cases with less than 60 points and obtained a total of 23 cases from 2019 to 2021. Sina Weibo, a Chinese version of Twitter, was used as the platform to obtain the response content through manual collection. Finally, a total of 1517 government microblogs for emergencies were obtained. In addition, the corresponding comments were also collected.

3.2. Methods

3.2.1. Manual Text Analysis

Due to the small number of texts, we adopted manual text analysis methods. This study divided government response into four frameworks: accident framework, reason and responsibility framework, measures framework and emotional framework. When the text involves “major emergency”, “emergency has caused XX deaths” or “there is a large amount of toxic substances at accident scene”, it can be judged that the text uses the accident framework. Text can be considered to use the reason and responsibility framework when “investigation team has been set up to investigate” occurs. When a text describes the measures and rescue effectiveness, it can be seen as using the measures framework. If there are emotional expressions, the text can be determined to use the emotional framework. The coding method is shown in Table 1. Two researchers were selected as coders, and about 15% of the samples were selected for the reliability test. The coding reliability coefficient exceeded 80%, which means the results were credible. Then, the remaining texts were encoded according to the above method.

The frequency of the frameworks from high to low is measures framework (89.32%), emotional framework (64.80%), accident framework (31.18%), and reason and responsibility framework (15.49%). Specifically speaking, the measures framework is the most frequently used framework. Then, the emotional frame is the second most frequently used framework, containing eight emotions: firmness of rescue (45.88%), warmth and respect (18.39%), close relationship with the people (13.12%), resolutely rectify (10.61%), condole and pray (9.23%), blame firmly (6.72%), confidence (2.77%) and excitement (2.37%), which all can be treated as positive emotions. The reason and responsibility framework is the least frequently used framework. In this framework, the proportion indicating the investigative actions is 95.74%, the proportion indicating the survey results is 10.64% and the proportion indicating responsibility assignment is 21.28%. Therefore, this framework can be viewed as “declarative response”, which cannot provide the information that would satisfy the public.

Table 1. The code of the government response content.

Primary Category	Secondary Category	Text Example
A	Accident level	Major production accidents; especially major emergencies.
	Accident scene	Low visibility; there is a lot of toxic gas; photos and videos about the emergency scene.
	Casualty statistics	5 victims were found; 18 members of the team were killed.
	Material damage	34 collapse points; the explosion affected 16 surrounding businesses.
R	Conduct accident investigation	Initiate an investigation; file a case for investigation.
	Reason explanation	Illegal factory production.
	Punish responsible person	The persons involved are under criminal detention; 5 days of administrative detention according to law.
M	Rescue operation	Government quickly launched rescue operations; rescue forces were dispatched to the quake zone.
	Rescue force mobilization	On-site professional strength of 300 people; all kinds of equipment, including 40 sets.
	Describe the rescue work site	Firefighters are cleaning up the scene of the fire; pictures and videos show the rescue scene.
	Rescue effectiveness	31 people have been rescued; all those trapped were rescued; the scene has been cleared.
	Follow-up reform	Carry out various forms of work safety inspection; carefully check for security hazards.
E	Condole and pray	Grieved; may peace be with you;
	Firmness of rescue	do everything possible; never give up hope.
	Close relationship with the people	To protect the lives and property of the people; not a member of the public should be missed.
	Warmth and respect	Come on; the loveliest person; salute the hero.
	Blame firmly	Zero tolerance; severely punish according to law.
	Resolutely rectify	Recall a painful experience.
	Confidence	Will win; together we work.
	Excitement	A miracle of rescue! Good news!

Note: A—accident framework; R—reason and responsibility framework; M—measures framework; E—emotional framework.

3.2.2. Qualitative Comparative Analysis (QCA)

To analyze the combined effects of multiple factors from the perspective of configuration, this study adopted qualitative comparative analysis (QCA). This approach recognizes the potential for causal complexity underlying the phenomena, including how multiple factors are together linked to an outcome and that there may be multiple pathways linked to the particular outcome [52,53]. The first step in QCA is to define sets that represent outcomes (non-negative emotions) and explanatory conditions (situation, responder and response content). The definition of the process is described below.

(1) Outcome: emotions

Emotions are the outcome of this study. This paper took emotions contained in public comments of each microblog as the analysis object and identified emotions through manual text analysis methods. Machine computing is an important method for emotions analysis and has been widely used. But the results of machine computing are more abstract. For

example, although both the dissatisfaction of individuals which has no correlation with the government and dissatisfaction with the government which is harmful to government can be seen as negative emotions, they cannot be equated. In addition, there may be strong controversy in the public comments. The emotion polarity calculated through machine computing can be judged by the emotion value. However, controversy in the comments means that the response is ineffective. Therefore, classifying emotions through manual analysis can make the results more realistic.

According to the content, this article firstly divided the public comments into eight categories: negative comments, positive comments, neutral comments, controversial comments, help-seeking comments, no comments, condolences and pray, and selective censorship. Negative comments mainly contain negative emotions, such as anxiety, shock, fear, anger toward government agencies and other negative emotions. Positive comments mainly include the appreciation and blessing of the rescue personnel, the joy of the rescue success and the emotion of being moved. Neutral comments mean that there is no obvious emotional orientation in the comments, such as suggestions made by the public during the rescue process. Controversial comments are comments that contain different opinions distinctly, which means that there is no public consensus. Condolence comments are public expressions of condolence for persons who have died in emergencies. Prayer comments are public expressions of good wishes to the trapped people and rescue personnel. Help-seeking comments mean that there is a large amount of help-seeking information in the public comments, which contain anxiety. Selective censorship refers to the phenomenon that only some neutral or positive comments are published, which indicates that there may be more negative emotions expressed in the comments. Some microblogs even banned public comments. This could also lead to public discontent. No comment indicates that the public did not respond to the government microblog, but it means that emotions have calmed or shifted to some extent. The aim of government response is to alleviate and reverse negative emotions, so no comment and neutral comments can be seen as the achievement of the goal. Then, according to the negative comments, controversial comments, help-seeking comments and selective censorship, emotions were classified into negative emotions. The others were classified into non-negative emotions. Because the purpose of this study is to discuss how government response can avoid stimulating negative emotions, non-negative emotions were recorded as 1, negative emotions were recorded as 0.

(2) The conditions of the content

Content can be measured by the framework used in the government microblogs. If a microblog uses the accident framework, the accident frame was coded as 1, otherwise it was coded as 0. The same is true for the other frameworks.

(3) The conditions of the situation

Emergency characteristics represent the situation, including emergency heat and emergency stage. Emergency heat can be obtained from the “zhiweidata” platform, which ranges from 60 to 100 points. In terms of stage, we divided the emergency stage category into four stages according to the public opinion trends first: development stage, eruption stage, fluctuation stage and extinction stage, which is consistence with common division. However, not all emergencies go through four stages. Some emergencies have no development stage clearly, and some emergencies do not have a clear distinction between the fluctuation stage and the extinction stage. So, stages need to be combined. The development stage and the outbreak stage can be combined into the early stage, which was recorded as 1. The fluctuation stage and the extinction stage were combined into the late stage, recorded as 0. This classification is also conducive to the presentation of the subsequent results.

(4) The conditions of the responder

Responder was measured by government level and department. Governments in China can be divided into county-level, prefecture-level and provincial-level. According to the QCA assignment method, county-level was coded as 0, prefecture-level was coded

as 0.5 and provincial-level was coded 1. In terms of department, governments can be divided into different departments. Meng divided responsive departments into six parallel typologies [51]. According to the Emergency Response Law of the People's Republic of China, after an emergency has broken out, the local government that performs unified leadership duties or organizes the handling of an emergency shall immediately organize relevant departments, mobilize emergency rescue teams and take measures. So, emergency management is a process in which relevant departments act together under the command of the local people's government. So, the government can be divided into local authority and functional agency. Local authority means the local people's government in China, recoded as 1. Functional agency represents the department responsible for a specific function in emergencies, for example, fire department, police department, traffic police department and emergency management department in this study, recorded as 0. The definitions of the variables are shown in Table 2.

Table 2. Variables' definition.

Variable Name		Variable Definition	Min	Max
Content	Emotions	1 = Non-negative emotion 0 = Negative emotion	0	1
	A	1 = Yes, 0 = No	0	1
	R	1 = Yes, 0 = No	0	1
	M	1 = Yes, 0 = No	0	1
	E	1 = Yes, 0 = No	0	1
Responder	Government level (GL)	0 = County level 0.50 = Prefecture level 1 = Provincial level	0	1
	Government departments (GD)	1 = Local authority 0 = Functional agency	0	1
Situation	Emergency stage	1 = Early stage (ES) 0 = Late stage (LS)	0	1
	Emergency heat (EH)	Emergency heat scores	60	86.5

Note: A—accident framework; R—reason and responsibility framework; M—measures framework; E—emotional framework.

According to the variables' type, this paper chose fuzzy set qualitative comparison analysis (fsQCA). Before analysis, the data were calibrated and transformed to a range from 0 to 1. This study mainly refers to emergency heat. All of the points of emergency heat were transformed into 0.05, 0.5 and 0.95 to indicate whether this point is "fully out" (less than 0.05), "more out than in" (0.05 to the average value), "more in than out" (the average value to 0.95) or "fully in" (more than 0.95). We used the fsQCA 3.0 software to conduct our analyses.

4. Results

The analysis process of fsQCA is as follows. First, the necessity analysis is conducted to assess whether a condition is necessary for the outcome. Second, one conducts the configurational analysis by using the truth table and obtains the paths that meet the requirements. Finally, one conducts the results analysis.

4.1. Necessity Analysis

The results of the necessity analysis are shown in Table 3. A condition is necessary if it must be present for the outcome to occur. Consistency thresholds for necessity analyses are typically pegged above 0.9. Table 3 reveals that no variable has a consistency higher than 0.9, which means that neither the presence nor absence of any of the conditions in

our model is necessary for non-negative emotions, which reinforces the expectation of complex causality.

Table 3. Necessity analysis results.

Variable	Consistency	Coverage
A	0.297	0.801
~A	0.702	0.859
R	0.137	0.745
~R	0.863	0.859
M	0.891	0.839
~M	0.109	0.858
E	0.653	0.847
~E	0.347	0.830
GL	0.667	0.849
~GL	0.332	0.826
GD	0.304	0.713
~GD	0.696	0.913
EH	0.490	0.837
~EH	0.510	0.845
ES	0.335	0.854
LS	0.665	0.835

Note: A—accident framework; R—reason and responsibility framework; M—measures framework; E—emotional framework. The ~ refers to the opposite of the condition.

4.2. Results Analysis

The sufficiency analysis is conducted by using the truth table approach, which constructs and analyzes a data matrix referred to as a “truth table” that includes 2^k rows (k = number of explanatory conditions; i.e., $2^8 = 256$). The configurations whose case number is less than 5 are removed. And we employed 0.75 as our threshold for the consistency threshold. If the raw consistency is more than 0.75, the configuration is assigned “full-membership”, otherwise “non-membership”. We chose intermediate solution as the final solution, which can be seen in Table 4.

Table 4. Configurations for achieving non-negative emotions.

Agency	Code	Configurations	Row Coverage	Consistency
Local authority	1	~R*M*~GL*~EH*LS	0.123	0.834
	2	A*~R*M*E*~EH*LS	0.023	0.836
No difference	3	A*~R*M*E*GL*~EH	0.049	0.868
	4	~R*M*E*GL*~EH*ES	0.061	0.939
Functional agency	5	A*E*GL*EH	0.152	0.916
	6	A*R*M*E*GL	0.035	0.841
	7	A*M*E*GL*LS	0.062	0.878
	8	~R*M*~E*GL	0.143	0.941
	9	~A*~R*M*GL	0.320	0.932
	10	~R*M*GL*LS	0.261	0.923
	11	~A*~R*~E*GL*~EH	0.062	0.937
	12	~A*~R*GL*EH*LS	0.158	0.935
Solution coverage			0.644	
Solution consistency			0.900	

Note: A—accident framework; R—reason and responsibility framework; M—measures framework; E—emotional framework. The * means “and”, which indicates that the condition exists simultaneously. The ~ refers to the opposite of the condition.

Table 4 shows that 12 configurations of situation, responder and content are consistently linked to non-negative emotions, which cover 64.4% of all texts (solution coverage is 0.644). All configurations are sufficient to stimulate non-negative emotions in 90% of

texts (solution consistency is 0.90). In order to make the conclusion clearer, we adjusted the results according to the department (seen in Table 4). No difference (configurations 3–4) means that the configurations are suitable for both local authority and functional agency.

4.2.1. Local Authority

The solutions suitable for local authority are configurations 1–4, which can be divided into the following two types.

First is the measures type (configurations 1). This type is suitable for low-level (county-level) local authorities to use in the late stage of low-heat emergencies. After initial emotional catharsis, emotions of the public are stabilized, and public attention has gradually turned to the treatment of personnel and post-disaster reconstruction. By responding with the measures framework as the core strategy, local authorities can meet public expectations and demands. At the same time, due to the low heat of the emergencies, public attention gradually turns to other hot events in the late stage, which helps to reduce the difficulty of government response.

Second is the measures–emotion type (configurations 2–4), which is the combination of the measures framework and the emotional framework. This type is suitable for local authorities to use in low-heat emergencies. Local authorities can choose more specific responses according to government level and emergency stage. Taking configuration 4 as an example, it is suitable for municipal-level and provincial-level local authorities to respond in the early stage of low-heat emergencies. The emergency heat is low, the degree of emotional fluctuation is low and local authorities are under less pressure to respond. In terms of contents, the use of the measures framework not only informs the public about the rescue actions, but also informs the public of specific rescue results, which is conducive to alleviating negative emotions. The measures framework also includes public welfare actions of volunteers, which helps to create a rescue atmosphere of “when difficulties arise in one place, aid comes from everywhere”. Compared with the measures type, this type puts more emphasis on relieving emotions through emotional infection: when carrying out rescue operations, it emphasizes the firmness of action; when trapped people are successfully rescued, the agencies will express excitement, joy and appreciation for rescuers. Local authorities also appreciate the charitable actions of volunteers. The expression of these emotions will arouse positive emotions among the public.

4.2.2. Functional Agency

The response types suitable for functional agency are configurations 3–12, and these configurations have the same responder, which are the municipal and provincial functional agencies. The specific analysis is as follows:

First, the measures type, including configurations 8–10, is clearly characterized by the measures frame. It should be noted that this type avoids the use of the reason and reasonability framework. In terms of the scope of application, this type has a high coverage and relatively few other conditions, indicating its high universality. Specifically, functional agencies, such as the fire department, have no obvious responsibility relationship with emergencies, mainly undertake rescue work and respond to the public about the rescue progress. So, the use of the measures framework could meet the information requirements about the rescue and stimulate positive emotions. When there are obvious rescue results, the public will show intense joy and salute the rescue workers, especially when the trapped people are rescued successfully.

Second is the measures–emotion type, including configurations 3–7, which has been analyzed in Section 4.2.1. It will not be discussed in detail here.

Finally, the government feature-driven type includes configurations 11–12. The common feature is that configurations do not use the accident framework and the reason and responsibility framework. From the perspective of framework use, this type has a high degree of coincidence with the measures type and the measures–emotion type. In addition, there are two specific response methods that needed further clarification. The

first is unframed expression, which mainly includes rumor-refuting and popular science. Rumor-refuting can reduce the false information and uncertainty, which helps to stabilize emotions. The responses about popular science are mainly to tell the public how to take action when emergencies occur and improve the understanding and knowledge of the public about emergencies. In addition, using emotional frameworks alone could also affect emotions positively. For example, when the number of dead is large, some functional agencies hold a large-scale mourning activity for the deceased on the seventh day of the accident to express its condolences, which can arouse public emotional resonance.

This paper performed sensitivity analyses for different consistency thresholds to ensure the robustness of the results. We altered the consistency threshold from 0.75 to 0.8. As reported in Table 5, the results show minor changes related to the number of configurations, solution coverage and solution consistency, indicating that the results are robust.

Table 5. Robustness test results.

Code	Configurations	Row Coverage	Consistency
8	~R*M*~E*GL*~GD	0.143	0.941
9	~A*~R*M*GL*GD	0.320	0.932
5	M*E*GL*~GD*~EH	0.152	0.916
11	~A*~R*~E*GL*~GD*~EH	0.062	0.937
1	~R*M*~GL*GD*~EH*LS	0.123	0.834
12	~A*~R*GL*~GD*EH*LS	0.158	0.935
4	~R*M*E*GL*~EH*ES	0.061	0.939
6	A*R*M*E*GL*~GD	0.035	0.841
10	~R*M*GL*~GD*LS	0.261	0.923
7	A*M*E*GL*~GD*LS	0.062	0.878
3	A*~R*M*E*GL*~EH	0.049	0.868
2	A*~R*M*E*GD*~EH*LS	0.023	0.836
Solution coverage		0.644	
Solution consistency		0.900	

Note: The code is consistent with Table 4. A—accident framework; R—reason and responsibility framework; M—measures framework; E—emotional framework. The * means “and”, which indicates that the condition exists simultaneously. The ~ refers to the opposite of the condition.

4.3. Summarization

So far, we have discussed the impact of government response on emotions during emergencies from the perspective of configuration. The response types are categorized according to the responder and situation, and the results are shown in Table 6. Different agencies can choose different types according to different situations in emergencies. For example, in the late stage of a low-heat emergency, county-level local authority can respond through the measures type or the measures–emotion type, which cannot stimulate negative emotions. Other local authorities can only use the measures–emotion type in the same situation. Similarly, different levels of functional agencies could choose different response types.

It should be noted that there is no effective response types in some situations. Local authorities do not have effective response types in high-heat emergencies. The reason is that we took production safety accidents as an example. The outbreak of this type of emergency is often closely related to the lack of effective government supervision [52]. The public will express dissatisfaction with the local authority. High heat means high losses, which also means high negative emotions toward the local authority. Therefore, the response of the local authority cannot affect public emotions positively. Besides local authorities, county-level functional agencies have no effective response type. The reason lies in the low response rate. According to the statistical results, the proportion of texts of county-level, prefecture-level and provincial-level is 4.42%, 36.18% and 59.40%, respectively. The response rate is low, which means the response system is not perfect in low-level governments and makes it difficult to summarize the effective response type. In addition,

this study is a summary based on past government microblogs. Beyond the contents used in this study, there are plenty of government response types that can impact emotions positively. This needs to be further explored.

Table 6. Government response type.

Responder		Early Stage		Late Stage	
		Low Heat	High Heat	Low Heat	High Heat
Local authority	County-level	—	—	M type M-E type	—
	Prefecture-level	M-E type	—	M-E type	—
	Provincial-level	M-E type	—	M-E type	—
Functional agency	County-level	—	—	—	—
	Prefecture-level	M type M-E type G type	M type	M type M-E type	M type G type
	Provincial-level	M type M-E type G type	M type	M type M-E type	M type G type

Note: For ease of presentation, event heat is divided into low heat and high heat according to the calibrated event heat mean. M—measures framework; E—emotional framework. G represents government feature-driven type. The—represents no type.

5. Discussion

5.1. Theoretical Implications

The results of this study serve to extend and build upon previous findings. During emergencies, people engage in information seeking actively [54]. Social media platforms have become the dominant source. Providing information to people through response is already an important responsibility of government agencies. It helps to relieve negative emotions. Plenty of studies have examined the impact of government response on emotions from the perspective of different factors in isolation. Compared to most of the previous research, the first innovative point of this paper is the analysis from the perspective of configuration. Through the theoretical framework of “Situation-Responder-Content”, from the situation, responder and response content, we learned how government agencies respond effectively in different situations. The results mean that government response in emergencies is a systematic process and responsive agencies need to consider multiple factors. In fact, some studies have begun to explore the combined effects of multiple factors. SCCT emphasizes which communication strategies should be used in different situations [31,33]. Campos analyzed the combined effects of different situation features on emotions [55]. The combined effects of different emotions and frameworks have also been addressed [56,57]. This study is relatively more comprehensive. Examining the combined effects of different factors can provide more contextual conclusions, which can provide effective guidance for practical application. This should be one of the priorities of future research.

It should be pointed out that although this study only discusses production safety accidents, it is still of great significance. The purpose of this study is not only to discuss the response types of different government agencies, but also to emphasize the significance of analyzing the combined effects of multiple factors from the perspective of configuration. This paper is just a preliminary study and helps expand the study of other types of emergencies in the future.

Secondly, this study also provides a general way of framing from the perspective of frame theory. Existing studies are often conducted on a specific emergency [29–31]. Framework division often lacks uniform standard due to different situations. It cannot provide universal conclusions. The problem also makes it difficult to study the differences

in government response in emergencies. As mentioned in Section 2.3, the government is a complicated collection of multiple agencies [46]. Different agencies have their own behavior patterns. Differences in duties, public trust and other aspects may cause different agencies to release different information, which will influence the public. So, a difference analysis helps us to grasp the logic of government response. Although this article does not discuss this aspect in depth, the method of framing in this study provides a basis for future research. It is conducive to expand the research boundaries of government response and improve the effects of government response.

Finally, this study serves to expand on emotional research. Emotions of the public are one of the anchors to explain emergencies [58]. More and more scholars have analyzed the spread and evolution of emergencies from the perspective of emotions [59,60]. Responders, such as government agencies and enterprises, are expected to engage in the necessary emotional communication during emergencies. Meanwhile, not just in the field of crisis communication has academia become increasingly passionate about emotions in politics and human society [61]. Emotions have also been seen to be central to the capacity building of policy intermediaries and to the success of public policies [62]. Ignoring emotions in political contexts has detrimental consequences [63]. Many studies are encouraged to look toward the direction of emotion analysis. This study regards emotions as objects and a means of governance, consistent with the trends of emotional research, and helps to enrich the area.

5.2. Policy Implications

This study also contributes to the improvement in government response ability in practice. Specifically, the implications manifest in the following aspects:

First, government agencies need to strengthen the monitoring of public opinion, track and analyze public opinion and emotions, judge the trend of public opinion over time, analyze public demand and provide effective guidance for the follow-up work. To achieve this purpose, governments could cooperate with professional public opinion monitoring agencies.

Second, governments should improve their response mechanism. On the one hand, government agencies need to improve the response system to enhance the response rate, especially at the county level. On the other hand, responsive agencies should release different information according to their duties and the specific situations. Although the conclusions of this article could provide guidance, government agencies still need to explore more response types which can influence emotions positively. In addition, optimizing response content is important. The results show that the reason and responsibility framework can be viewed as “declarative response”, which cannot provide the information that would satisfy the public. Government agencies should explore how to express satisfying information.

Finally, government agencies need to be more efficient in their daily governance. As mentioned above, the high liability associated with emergencies causes the local authorities to be unable to communicate effectively with the public in high-heat emergencies. The agencies need to strengthen supervision and improve the level of governance in daily life. This is conducive to reducing the probability of an emergency, improving the level of public trust and increasing the positive impacts of response on emotions in emergencies.

5.3. Limitations

Although this study offers valuable implications, there are still shortcomings. First, the analytical method needs to be further improved. In the process of framing and emotion classification, this study adopted a manual text analysis method. Although the rationality was discussed, the accuracy of the data still needs to be improved. Second, the variable selection has limitations. Government response includes the form, content and other aspects of response. However, this article only studied the response content and ignored the others. Meanwhile, as the outcome, emotions in public comments cannot fully represent public emotions generated by government response. Responses online tend to be persistent. There

is no guarantee that the emotions present in the network are the results of the response at any given time. So, we chose the emotions contained in comments of each microblog as the outcome. Finally, no mechanism analysis was performed in this paper. The data obtained from the internet cannot be used as the mechanism variable. Therefore, it is impossible to analyze the influence mechanism. The above problems are the focus of further research.

6. Conclusions

In this paper, we explored how government agencies' response in different situations can avoid negative emotions in emergencies. Based on 1517 government microblogs during 23 production safety accidents, this study constructed the theoretical model of "Situation-Responder-Content" and discussed the impact of government response through fsQCA. The results show that emotions are the outcome of multiple factors in emergencies. According to the results, this study summarized the response types of different agencies in different situations. It not only provides guidance for government response in practice, but also enriches the research on government response. Government response in emergencies is a systematic process. It is necessary to analyze the combined effects of multiple factors from the perspective of configuration in future research.

Author Contributions: Conceptualization, S.S., G.W. and L.Z.; methodology, S.S. and L.Z.; software, S.S.; validation, S.S. and G.W.; data curation, S.S. and L.Z.; writing—original draft preparation, S.S.; writing—review and editing, S.S. and G.W.; supervision, G.W. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Data Availability Statement: The raw data in this study is obtained by manual search. These data were derived from the following resources available in the public domain: the Ministry of Emergency Management of the People's Republic of China, http://www.mem.gov.cn/gk/sgcc/sggpdbqk/index_29.shtml, (accessed on 10 April 2024); zhiweidata, <https://ef.zhiweidata.com/> (accessed on 10 April 2024); Sina Weibo, <https://weibo.com/> (accessed on 10 April 2024).

Conflicts of Interest: The authors declare no conflicts of interest.

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