

Social Exposure and the Formation of Public Opinion in Online Incidents: An Empirical Study Using Weibo Data

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Abstract. In the current social media environment, online events are often accompanied by cyber violence, infringing on individual rights and threatening social order. Social exposure, as the key factor in bringing events into public view, directly shapes public opinion through mechanisms such as trending topics, media reports, and opinion leaders. This study combines literature analysis with empirical data, using web crawlers to collect public data from Weibo regarding the “Liu Xuezhou incident.” By tracking the evolution of remarks across different exposure stages, it examines the impact of social exposure on the direction of public opinion. The findings indicate that increased social exposure leads to a significant reduction in emotionally charged violent remarks and a rise in rational, supportive commentary. Public attention shifts from personal conflicts to discussions of public issues, such as the protection of minors. Key factors influencing opinion direction include the popularity of information and the credibility of the publisher. The study concludes that social exposure positively guides public opinion toward rationality and public-mindedness, reducing emotional expression and encouraging focus on societal concerns. It offers theoretical insights for online public opinion governance and suggests future research should explore the threshold effects of exposure, the varied impacts of different exposers, and the moderating role of platform algorithms.

Keywords: Social exposure, internet public opinion, public opinion evolution, internet event, rational reflection.

1. Introduction

In the current social media communication environment, the escalation of online incidents is often accompanied by widespread cyber violence. Such phenomena not only directly infringe upon the legitimate rights and interests of individuals but also have a substantive impact on social public order [1]. With the rise of mobile social media, self-media platforms such as Weibo and Tieba have become the main sources of online information release and play an important role in the dissemination of online public opinion [2]. Social exposure, as the core variable for online events to enter the public eye, its diffusion effect formed through channels such as being listed on hot search

lists, official media reports, and dissemination by opinion leaders is directly related to the subsequent development trend of the event, and thus has become the core focus of this study.

This study takes empirical testing as its core orientation and focuses on the following core questions: How exactly does the increase in social exposure affect the evolution of public opinion in online events? To explore this issue, the research will adopt a combined research approach of "literature analysis method + data empirical method" : on the one hand, through the literature analysis method, the theoretical achievements and existing research in related fields such as online public opinion dissemination and social exposure will be systematically sorted out to achieve theoretical traceability and logical construction of the research variables; On the other hand, by using web crawlers to collect relevant event data from the Weibo platform in a targeted manner and tracking the dynamic changes of speech types under different exposure levels, empirical support is provided for the research conclusion. Through a series of research designs and data analyses, this study ultimately aims to clarify the intrinsic connection between social exposure and the trend of online public opinion.

2. Literature review

Some papers presented analysis of high virality of online events, making contributions to this paper. Jiang and Xing argued 74 online events between 2009 and 2016 in Annual Report on Public Opinion in China, examining the active period of the publicity, summarizing the characteristics of these events, which have aroused heated discussion in the media [3]. Ding and Han compared a variety of online events, contending that the high virality could be attributed to multiple factors [1]. Apart from that, there are some papers conducting a systematic analysis of the trajectories of public opinion. Song, Hao and Hu evaluated evolving risks at each phrase of public opinion, with the model further identifying the corresponding spread patterns, enabling predictive classification of future events, ultimately offering strategic recommendations for the way to cope with the online public opinion [4]. Lin, Zhang and Miao reviewed the impacts of online reports and government intervention on the trajectories of public opinion, revealing how early-stage intervention and accurate reporting exert a positive influence on subsiding online controversy [2]. Kubin and Von Sikorski collected data from Twitter and indicated how social media exacerbated ideological and affective polarization among users, with an interrelationship between the trajectories of public opinion and media exposure level, also known as the media exposure effect [5].

Zhong and Zeng employed statistically analyzing, which included the catalysts, affected parties, action modes and outcomes of online events, contending that high-profile public opinion incidents would lead to certain immediate and short-term effects and it would be of limited consequence with the absence of legitimate communication ways [6]. Chen and Lin emphasized the impacts of public opinion on a specific public policy by means of comparatively analyzing two crises of Didi Hitch service [7].

Overall, these studies have assessed the effects of online exposure on a given field. The collected data, however, was dated and research on the trajectories of public opinion regarding online events remains an underexplored area. This paper will examine the relationship between social media exposure and the trajectories of public opinion, aiming to provide strategic support for online platforms to proactively guide public sentiment and positively intervene in future opinion trajectories.

3. Research methods

3.1. Review of current methods

This study aims to examine all research articles related to the role of enhanced social media exposure in shaping public opinion trajectory in online events. Research in this field spans multiple disciplines, including Psychology, Communication Studies, and Political Science. Based on this interdisciplinary interest, a systematic literature search was conducted across academic databases including CNKI and Google Scholar. The search prioritized highly relevant literature, using the following key terms: “exposure”, “online events”, “public opinion trajectories” in Chinese databases, and “media coverage” as well as “public opinions” in international platforms.

The heightened exposure of online events is determined by multiple variables, with celebrity involvement, algorithmic amplification, and rumor propagation serving as key contributing factors [1]. Driven by algorithmic mechanisms, online events, for instance, Weibo's Hot Search feature means heightened exposure. This occurs as algorithms continuously track and analyze online events through monitoring backend data, pushing trending events to user homepages. The following surge in click-through rates and discussions further amplifies exposure, subsequently triggering commentary from high-profile influencers, with their impact on public opinion trajectories being self-evident due to massive fan bases. Consequently, platforms algorithmically prioritize pushing posts with high data activity. However, the public often forms preconceptions influenced by highly exposed posts when accessing online events. In this context, such content tends to be emotion-driven rather than objective assessments, and may even propagate misinformation. Being in homogeneous online groups, users prioritize individual reputation over factual accuracy, leading to conformity-driven dissemination of false information [8]. This blind conformity compels individuals to discard critical thinking, driving them into irrational collective actions, consequently catalyzing the polarization of public opinion trajectories [2].

In complex cases involving cumulative online events, especially when incidents of similar nature and severe societal impact occur within a short period, it would significantly intensify the virality of online events. In 2018, there were two crises of Didi Chuxing Hitch service, which were The May 6 Didi Hitch Murder of a Flight Attendant in Zhengzhou and The August 24 Didi Hitch Murder of a Female Passenger in Yueqing, occurring within three months, whose compounding social impact created a public trust crisis, pushing the discussion about Didi Hitch service to its peak, which could be inferred from the data. The Baidu Search Index for the first incident approached 20,000, while the latter surged to nearly 75,000. After the former incident, corresponding measures were implemented with limited public engagement. In contrast, the subsequent event triggered direct intervention by the Ministry of Public Security, forcing Didi to suspend its hitch service, promoting the introduction of rigorous scrutiny measures like the real-time driver biometric verification. As a result, with an increase in exposure of online events, it could prompt an official response and accelerate safety policy reforms [7]. The massive public engagement sparked by the second incident shifted focus from condemning Didi hitch service to societal safety concerns, with even signs of polarization being shown in public opinion. Yet this heightened exposure also motivated official experts to state their position via social platforms, driving official media to announce the course of action taken in response to these two Didi crises, effectively containing the dissemination of inflammatory rhetoric and false information, which has eventually guided public opinion towards rational thinking on safety policy reforms. The formation of social media influence can be attributed to multiple factors [9]. Influencers on social media can amplify the impact of certain events [10], which could be clearly demonstrated in the above case.

3.2. Weibo data collection

On online social platforms such as Weibo, online incidents can draw the attention of netizens at the first moment and quickly become the focus of public opinion [2]. This study selects the "Liu Xuezhou Incident" as the subject of analysis. The person involved was trafficked when he was young. After his adoptive parents passed away, his life was full of hardships. At the end of 2021, he successfully found his relatives online, but was abandoned by his biological parents due to his demands and was deeply involved in online abuse. Eventually, he took his own life in Sanya in January 2022. In 2025, the self-media involved in the online abuse was ruled to be liable for infringement and compensation. The research utilized an Octopus collector to systematically collect the publicly available Weibo data of this event from December 2021 to March 2022, in order to measure its social exposure and analyze the evolution of online comments.

First, quantify social exposure by collecting a list of posts. The advanced search function of the Weibo platform supports limiting the specific date range of an event by searching for the core keywords of the event, and batch-collects all relevant posts published within the event cycle. The data fields collected in this step include the post body, the release time, the number of forwards, the number of comments and the number of likes. Based on the changes in post data, the overall popularity of the event has been divided into different stages, specifically into the low exposure period, the exposure duration period, and the peak exposure period. Subsequently, collect the comments under the core Weibo posts and analyze the evolution of the remarks. Select several node Weibo posts with extremely high numbers of forwards and comments from the posts at each stage, enter their detail pages to collect all comments, and classify the types of remarks. As shown in Table 1, the fields collected in this step include the content of the comment, the Posting time of the comment, and the number of likes. The aim is to further observe the changes in online violent remarks by analyzing the content of public opinion and emotional tendencies at different stages of events.

Table 1. Sample remarks from different periods

Period	Account Name	Posting Time	Posted Content	Likes	Comment Type
Low Exposure Period	*****	2022/1/19 8:15	"Desperate for fame, aren't they?"	160	Violence
Exposure Duration Period	*****	2022/1/24 21:20	"Rest in peace, I'm sorry."	1090	Sympathy
Peak Exposure Period	***	2022/1/26 10:30	"Legislation must be enacted to severely punish cyberbullying."	9627	Support

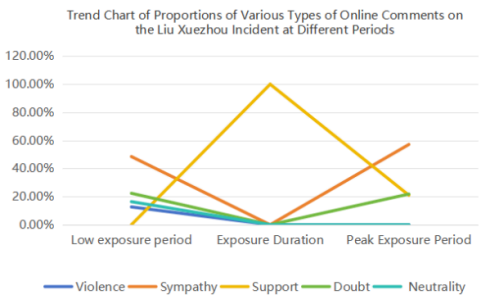


Figure 1. Trend chart of the proportion of various types of online comments during different periods of the "Liu Xuezhou Incident"

As shown in Figure 1, "Sympathy" remarks accounted for the highest proportion at the peak of exposure, reaching 57.14%, followed by "Support" remarks, accounting for 21.01%. However, there

were significant changes in the "Doubt" and "Neutrality" remarks during the low exposure period and the peak exposure period. Among them, the proportion of "Doubt" was 22.39% during the low exposure period and slightly dropped to 21.85% during the peak exposure period. "Neutrality" accounted for 16.42% during the low exposure period and 1% during the peak exposure period. Overall, online remarks exhibit different characteristics and trends at different stages of incident exposure. The peak proportion of "Doubt" remarks during the low-exposure period reflects the insufficient transparency of information in the early stage of the event, and the public has widespread doubts about the authenticity and completeness of the event, which is in line with the characteristics of "ambiguous information and rationality in doubt" in the early stage of public opinion dissemination. As the exposure continues to rise (entering the duration and peak period of exposure), the platform's push notifications, media reports, and the participation of multiple parties in discussions have gradually made the ins and outs of the event clear. The public's access to information has become more sufficient, leading to a weakening of the "Doubt" psychology. Instead, they express emotional empathy for the event subjects through "Sympathy" and convey their stance on reasonable demands through "Support". It shows the promoting effect of increased social exposure on the "rationalization" of public opinion.

4. Research results

The results fully support the core hypothesis that "increased social exposure has a positive regulatory effect on the direction of public opinion in online events". On one hand, after the improvement of social exposure, the proportion of violent remarks in the "Liu Xuezhou incident" decreased from the significant level in the low-exposure period, and the proportions of rational remarks of sympathy and support reached 57.14% and 21.01% respectively at the peak of exposure. This verifies that social exposure can effectively curb emotional venting and promote the transformation of public opinion towards rational reflection by increasing information transparency; On the other hand, with the increase of exposure, the focus of public opinion shifted from questioning Liu Xuezhou's individual behaviors (the proportion of questioning remarks was 22.39% in the low-exposure period) to discussions on public rules such as minor protection and online violence governance. This confirms that social exposure can broaden the boundaries of public opinion discussion, encourage the public to rise from the level of individual conflicts to the level of public issues, and realize the publicization transformation of public opinion.

This study provides many valuable references for future research in this direction. It mainly influences the research on the evolution mechanism of online public opinion and the formulation of practical strategies for public opinion governance. It provides empirical support for subsequent exploration of the interactive relationship between exposure and public opinion, and also provides a clear path for platforms, media, governments and other subjects to intervene in public opinion guidance; Future research should focus more on the threshold effect of social exposure (such as the level of exposure at which the effect of public opinion transformation is most significant), the differentiated impacts of different exposure subjects (official media, opinion leaders, ordinary netizens), and the regulatory role of platform algorithms in the relationship between exposure and public opinion, so as to more accurately grasp the laws of online public opinion evolution and improve the scientificity and effectiveness of public opinion governance.

5. Conclusion

The research results of this study show that after the increase of social exposure, the proportion of emotional and violent remarks in online events decreases significantly, the proportion of supportive and sympathetic remarks with rational reflection increases, the focus of public opinion shifts from individual conflicts to discussions on public rules, and information popularity, publisher's popularity and authority are the core factors affecting the direction of public opinion. Thus, the research conclusion is drawn that social exposure plays a positive guiding role in the rationalization and publicization transformation of public opinion in online events, which can effectively reduce emotional remarks and promote the public to focus on discussing public issues.

By combining literature analysis with empirical research on Weibo data, this study clarifies the internal connection between social exposure and the direction of online public opinion, and provides direct theoretical reference and practical basis for online public opinion governance. It mainly influences the logical formulation of online public opinion governance strategies, prompting governance parties to attach importance to guiding public opinion towards a rational direction by improving the reasonable exposure of events and introducing authoritative subjects to participate.

This study provides many valuable references for future research in this direction. It empirically verifies the "exposure - public opinion direction" correlation, fills the empirical gap in the field, identifies core regulatory variables, and provides a "variable definition - measurement method" framework for subsequent research. At the same time, it is used to more comprehensively predict the evolution law of online public opinion and provide support for more accurate public opinion governance.

Authors contribution

All the authors contributed equally and their names were listed in alphabetical order.

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