Public Opinion Analysis of School Bullying Audience Based on Big Data

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Abstract. School bullying has long been a concern. With the rapid popularity of Web 3.0, the public publishes vicious public incidents of school bullying by minors through platforms such as social media and short video websites. This paper first uses web crawler technology to obtain bullet comments and online comments on four school bullying incidents on short video platforms and adopts SnowNLP and LDA (Latent Dirichlet Allocation) to study the public opinion triggered by the incidents. The word frequency analysis shows that school bullying requires the attention of schools, teachers and parents. Sentiment analysis showed that the majority of the audience was neutral in bullet comments, while online comments had the largest number of audiences with positive attitudes. Social network analysis showed strong correlations between governing by law, bullying honest people, and resistance and schools, teachers, and bullying indicating that people want the law help to solve school bullying, protect the weak, and support the weak in fighting back against school bullying. The thematic analysis shows that the public is concerned about how to solve and respond to school bullying, and to support the reasonable prevention and treatment of school bullying. The analysis shows that the audience has realized that school bullying requires not only the focused attention of schools, teachers, and parents but also the need to protect the weak through the law, rather than allowing the abuser of underage school bullying to escape justice. Third, the public is no longer silent in the face of vicious events, instead seeking ways for the weak to reasonably and legally protect themselves from breaking the law when school bullying first occurs. This also shows that the public is giving sensible solutions through the Internet to help minors face school bullying sensibly so that students know the shame of the abuser and the abused know how to respond. The paper concludes with response measures.

Keywords: School bullying · Audience opinion analysis · Response measures · Big data analysis · SnowNLP

1 Introduction

School bullying by minors causes psychological damage to young people and can even trigger extreme incidents. According to a three-year study on school bullying in six provinces in China, the incidence of school bullying was 32.4%. The incidence of

school bullying has decreased after comprehensive society-wide management, but this phenomenon is still not negligible. And due to the popularity of Internet technology, school bullying includes physical bullying, relationship bullying, verbal bullying, and now cyberbullying. Verbal bullying ranks first, followed by physical bullying, relationship bullying, and cyberbullying [1]. The public is informed about school bullying through social media, short video platforms, and news websites, and posts their opinions to form public opinion through online comments and bullet comments. This paper adopts big data analysis to select the time of school bullying that aroused public concern, uses web crawler technology to obtain online comments and bullet comments, uses text analysis, social network analysis, and cluster methodology to complete the public opinion analysis of school bullying events, and proposes measures to prevent school bullying based on the results.

2   Literature Review

The concept of school bullying was first introduced by Dan Olweus. It refers to the repetition of negative behaviors by students against a specific student or students over a long period of time.[2]. According to Simmons, school bullying is when one or more perpetrators have greater physical or social power than the victim and act aggressively against the victim, either verbally or physically, in a way that is not a one-time event. It must be repeated and habitual to be considered bullying [3]. School bullying is currently divided into two categories, which are direct bullying and indirect bullying. Direct bullying manifests itself as direct physical harm, including kicking, slapping, pushing, and shoving. On the other hand, it also includes an illegal appropriation of other people's property. Direct bullying is long-term and causes injuries that are easily detected. In contrast, indirect bullying is not easily detected. Especially due to the rapid development of the Internet, bullying through the Internet is sometimes not easily detected by schools, teachers, and parents, and abusers usually use this third-party platform to bully. Indirect bullying includes relational bullying in the form of social encouragement, spreading rumors, etc. It also includes cyberbullying through the use of the Internet by posting comments and sending private messages.

School bullying is currently considered to involve three parties, including the victim, the perpetrator, and the bystander [4]. School bullying prevention and management is a hot topic of research, and schools are an important field of opinion in preventing school bullying. Schools should optimize the school environment by strengthening rules and regulations, clarifying the rights and obligations of teachers in managing school bullying, and establishing an interactive mechanism between school and family [5]. Schools need to propose corresponding psychological intervention strategies from three perspectives: classroom atmosphere, school sense of belonging, and moral judgment [6].

3   Method and Data Analysis

On November 4, 2022, 4 videos with high views and reported as school bullying on Bilibil were selected, and 148542 bullet comments and online comments in total were obtained by using web crawler technology. The four videos are 'Introverted student
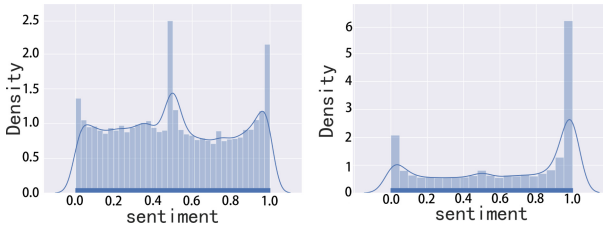
was subjected to school violence, stabbed two people in anger, and the judge shook his head helplessly ', 'An orphan girl came to me for help from school violence, and she was blocked at the door, taken advantage of, beaten by thugs', 'Attention! Lingbi County informed the investigation and disposal of the death of a student in Yugou Middle School ', 'A school violence video exposed in Shanxi province. A boy was forced to the corner, surrounded by some classmates punching and kicking him'.In this paper, text analysis was adopted, and SnowNLP was used to analyze the sentiment and word frequency statistics of the comments and bullet comments of the above videos. SnowNLP uses a sentiment dictionary to complete sentiment analysis. Sentiments are divided into positive and negative, and the return value is the probability of sentiment, and the more the value tends to 0, the more negative it is. On the contrary, the more positive it is. The basic model used in SnowNLP sentiment classification is Bayes model. Naive Bayes is a classification method based on Bayesian decision theory. Naive Bayes is 'naive ' because the whole process assumes that features are independent of each other and that each feature is equally important. In addition, this paper also employs LDA, a document generation model and an unsupervised machine learning technique, to complete the cluster analysis. It considers that a document is composed of multiple topics, and each topic corresponds to a different word. A document is constructed by first selecting a topic with a certain probability, and then selecting a word under that topic with a certain probability, thus generating the first word of the document. This process is repeated continuously to generate the text clustering of the whole article.

Figure 1 shows the word cloud images of bullet comments and online comments. It can be found that first of all, the high-frequency words that appear in both bullet comments and online comments include school, teacher, parents, and violence. This indicates that the public believes that school bullying has a tripartite relationship with schools, teachers, and parents. Second, school bullying is a violent incident that occurs in school and among students, so, naturally, high-frequency words such as violence, school, and bullying appear. Third, the occurrence of words such as legitimate defense and law in word cloud images is noteworthy. The public believes that school bullying should not only rely on the supervision and education of parents, schools, and teachers, but also be solved through legal means. It also indicates that the public's attitude towards school bullying is changing from the former belief that school bullying is only an internal incident in schools to the fact that school bullying is subject to legal supervision.

Fig. 1. Word Cloud Images of Bullet Comment (left) and Online Comment (right)

Fig. 2. Sentiment Histograms of Bullet Comment (left) Online Comment (right)

Figure 2 shows the results of the sentiment analysis. In bullet comments, most people expressed a neutral attitude, some expressed a positive attitude, and the majority of people in the comments expressed a positive attitude about the matter. However, there is still a large number of people who express their emotions about such events in a very bland way.

The paper used social network analysis to analyze vocabulary correlation (Fig. 3 and Fig. 4). The results show that in bullet comments, the trend of opinion expression centers on children and management, indicating that the public believes school bullying can be prevented through the education of children and some legal means. Three central point's appear in the online comments, namely teachers, schools, and bullying, which express that the main factors for the emergence of school bullying are teachers, schools, and students. In particular, the public believes that the perpetrators of school bullying want to bully others for fun.

Cluster analysis was used to divide the text into five categories, and the ranking indicates that school bullying is still the most popular public concern in terms of phenomena, solutions, and response. Social attitudes indicate that the public believes resistance is an important way to stop school bullying (Table1). School bullying is in dispute indicates that the public believes the boundary between legitimate defense and other behaviors in school bullying needs to be clearly defined from a legal perspective. The fourth and fifth ranked topic words indicate that in the face of school bullying, the public is shifting from passive tolerance to active response within the law.
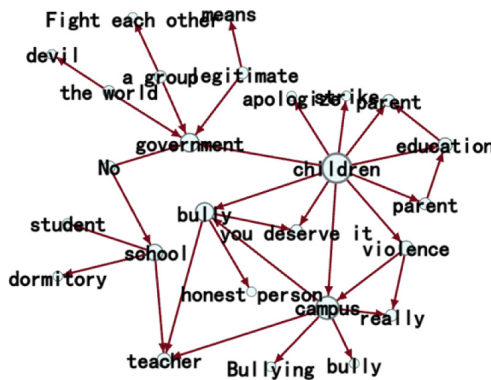
Fig. 3. Social Network Diagrams of Bullet Comment
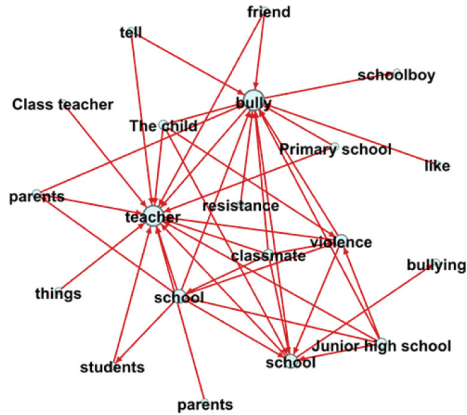
Fig. 4. Social Network Diagrams of Online Comment

Table 1. Results of LDA Cluster Analysis

	1	**2**	**3**	**4**	**5**
Percentage	21.40%	20.60%	20.20%	19.10%	18.70%
Topic	School bulling	Resolution	Response	Social attitude	Be in dispute
Representative words	Child, school, bulling	Lawyer, teacher, parents	Parents, excessive defense, law	Kindness, strike back, resistance	Legitimate defense, mutual assault, fight

4   Implication and Discussion

The above research shows that the public remains highly concerned about school bullying, with schools, parents, and children as the core three elements, and that more and more of the public believes that resistance is an important means of preventing school bullying. This paper puts forward suggestions for preventing school bullying.

4.1   Schools

School is the origin of bullying incidents, and a lot of bullying incidents on campus are caused by small things. School is the best place to prevent and control school bullying. In addition to regular safety education and moral education, schools should pay more attention to special subject education on prevention and control of school bullying, and make students aware of the relationship between school bullying and the law. Statistics show that bullying mainly occurs in middle and high school when students are in their adolescence. Adolescent students are still immature, both physically and psychologically, in terms of self-awareness, emotional traits, ideology, and behavior patterns. In addition, schools should pay attention to students' adolescent psychology and foster

their positive emotions through psychological guidance, physical exercise, and interests. In particular, studies have shown that physical exercise helps with emotional regulation, and schools must pay attention to scheduling physical exercise.

In addition, the main reason for students to engage in school bullying is daily disputes, which often happened during breaks or before and after school. Schools should establish sound anti-bullying regulations and prevention and control measures to build and improve safety management systems. First, schools can monitor all aspects of the campus to deter bullying. On the condition that students' privacy is not violated, the monitoring system and the real-time warning and response mechanism are set up to minimize school bullying. Secondly, pay attention to policing around schools. Schools should have staff patrolling around schools during school hours and after school hours to create a safe social environment near schools, which can effectively reduce bullying on the street or in public places.

The country is now increasingly concerned about the rule of law, especially the adjustment of the conditions for juvenile delinquency. Schools should carry out legal education for minors and pay special attention to the education of malignant cases. Many students are influenced by Internet violence and believe that their behavior is just imitation, or imitate others to deal with affairs. They do not know that their behavior is illegal. Therefore, schools should collect some cases and link the law to bullying through imparting and discussion to let students know to use the law to protect themselves.

4.2   Family

Families must have the sense that the growth of children is shared by the family and the school. Parents should constantly improve their own self-cultivation, especially emotional management. They need to help their children manage the relationship between academic performance and other abilities. Family members are strictly prohibited from domestic violence. Research shows that many victims of domestic violence end up being the perpetrators of school bullying. Because these kids are unprotected and think violence is the way to go. At the same time, family members should not spoil children too much. Families should establish a democratic atmosphere and teach children to be polite to others.

Parents should keep in touch with the school more, and fathers should be actively involved in the growth of their children. Research shows that the growth of children with "absentee fathers" tends to leave children vulnerable. Parents should always keep in touch with the school. Once the children are found to be tired of school, truancy, self-harm, and other situations, they must contact the school to provide emotional support for their children.

4.3   Society

Students do not live in an ivory tower, and their growth is bound to be connected with society. School surrounding security must be jointly maintained by the whole society. Public security, Industrial and commercial administration, city management, and other relevant agencies should participate in the formulation and maintenance of relevant laws and regulations and effective law enforcement to ensure the healthy growth of students

at the social level. It is necessary to clarify the responsibilities that each subject should bear in school bullying cases, guide them to establish a sense of awe for the law and take the initiative to resist school bullying.

The idea that psychological counseling helps to be positive should be established in the whole society. It should understand the harm of depression and anxiety to teenagers and encourage adolescent students to seek professional psychological counseling when they have emotional problems. Special attention should be paid to the establishment of psychological consultation rooms in schools in economically underdeveloped areas. And excellent professional psychological consultants should be invited to guide psychological teachers in these schools.

Cyber bullying has long been one of the main causes of school bullying. Especially because of the popularity of mobile devices, it is increasingly difficult for schools and parents to control students' use of mobile devices. The most effective way to deal with Internet violence is to supervise online content. In addition, we should pay attention to variety shows and fans of celebrities. In recent years, many middle school and high school students have been involved in irrational fan community conflicts. Supervision should be strengthened on head media companies and celebrities, so as to provide all-round protection for students from online to offline.

4.4 Students

Pay attention to the bullied. The bullied are often in a vulnerable position, and they are often unable to protect themselves and usually respond to the bully's behavior by evading and retreating. The bullied person is often physically injured and at the same time unable to handle interpersonal relationships, which in turn leads to negative emotions. Some students suffer from depression, which leads to extreme behaviors. For these students, it should actively safeguard their interests and restore their emotions to normal through psychotherapy and companionship. The Education Committee and the school should actively help students who need to transfer to find a school with a better atmosphere. Parents should not blame or neglect their children and pay attention not to putting academic performance first.

For bullies, it must analyze the reasons why they become the perpetrators. Some bullies have difficulties in learning. They need schools, teachers, and parents to actively communicate with them so that they can recognize their advantages and find their own interests. Some bullies are severely emotional and need psychological counseling intervention when necessary. Finally, legal education is needed for the bullies and their parents, and if necessary, education should be conducted through typical cases, and serious school bullying must be dealt with severely.

5 Conclusion

School bullying is a long-standing problem that seriously affects students' psychological health and social morale. The analysis of public attitudes shows that the majority of the public can view school bullying rationally. Their attitude has changed from the previous view that the responsibility for bullying on campus belongs to schools and teachers to

that of parents, who are also the main participants in the prevention and control of school bullying. At the same time, the victim should be protected by law. The definition of the law for legitimate defense and the investigation of minors' violation of the law are also important ways to prevent school bullying.

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