Cyberbullying on Social Media

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ABSTRACT: Social networking platforms have both positive and negative impacts that rely on how people use it or intended to use it. Cyberbullying is one of the major problems that plagues social networking websites in a number of ways that have evolved especially among teenagers. Therefore, this study will examine Momo Challenge's secret patterns of an event and type of cyberbullying that has been developed especially on Twitter. Social network analysis (SNA) will be used to evaluate the Momo Challenge Twitter network. Data is collected and analyzed using Node XL an open source platform maintained by a foundation for social media analysis. Three analytical strategies for detecting cyberbullying are built in the proposed framework, including network analysis, content analysis, and Graph-based network visualization analysis. Find out how information is circulating and user tweet sentiment analysis to identify public views on cyberbullying. Graph based visualizations are used to identify Momo Challenge network patterns.

KEYWORDS: Cyberbullying, Momo Challenge, Social Network Analysis, Node XL, Twitter.

INTRODUCTION

Although some researchers interpret cyber bullying as not fundamentally distinct from conventional bullying, the complex distinctions between the two indicate that it may be insufficient to generalize results from conventional bullying to cyber bullying. -- research shows that several facets of cyberbullying — including its concept, rate of incidence, risk and protective factors, results, and methods of prevention — are linked and yet quite distinct including conventional bullying. Cyberspace encourages, makes bullying more available and hurts more than conventional bullying [1].

Such factors cumulatively suggest cyberbullying could be more nuanced and subtle than conventional bullying. And yet the literature on cyberbullying is still nascent with advances in research and scientific evidence needed to drive improvements in programming for prevention and intervention. Given several factors a call-to-action is appropriate. Firstly, Pew Research Center findings indicate that 95 percent of teenagers own or have access to a smartphone and 45 percent of teenagers surveyed report being "online on an almost constant basis." Twenty-four percent of young people surveyed by Pew thought that social media had a negative effect on their lives; 27 percent of these youth claim that social media is the cause for more bullying and gossip spreading [2]. Second, there is growing evidence of the long-term negative consequences specifically associated with cyber bullying, which is especially alarming in view of the fact that approximately one in five teenagers experience it demonstrates that, in addition to conventional bullying, cyber bullying is specifically correlated with (a) somatic difficulties; (b) depression; (c) suicidal ideation and attempted suicide; (d) Post-traumatic stress disorder (PTSD) symptoms; and (e) learning problems, inter alia.

Given the current state of the field, this literature review offers a crucial summary of established information on (1) the concept of cyberbullying; (2) cyberbullying theories; (3) prevalence rates; (4) a brief development-focused overview of adolescents and their online use; (5) risk and protective factors; (6) results beyond conventional bullying; and (7) a brief overview of adolescents and their online use; A literature search of the most recent scholarship published in peer-reviewed publications from 2010 and beyond has been undertaken in order to conduct this study. Cyberbullying, cyber victimization, electronic bullying, online bullying, and technology and bullying included keyword searches [3].

Publications were used primarily in the English language. It also included findings from large-scale studies carried out by government agencies and advocacy organizations based on facts. In addition, this analysis focuses primarily on adolescents identified as "individuals in the 10-19 age group." In accordance with that definition, the term adolescent in this paper typically refers to middle- to high-school-age individuals who are distinct from college-aged samples. Developmental psychopathology offers a research-to-application continuum in terms of the context that drives this review of literature which is most helpful in addressing this issue. Briefly, developmental psychopathology, as a discipline, examines the intersection of human development (e.g. seeking progress that identifies the person as an active participant of his or her development) and clinical psychology (e.g., diagnosis and treatment of disordered behavior) with a strong emphasis on using research to inform preventive strategies [4]. Many researchers agree that social-ecological structures based on development that interpret bullying as a complex process involving multiple layers of control (e.g., family, school, neighborhood) are most useful in understanding bullying. In addition, new literature that parses vulnerability and protective factors that are specifically correlated with cyberbullying is also helpful in conceptualizing the problem within a context of developmental psychopathology. To date, there has been no research investigating cyberbullying through this prism, leaving a gap in the scholarship and evidence-based guidelines on best practices for handling cyberbullying [5].

LITERATURE REVIEW

Prevalence rates for cyber bullying were lower than for traditional bullying and there was a high association between cyber and conventional bullying. A variety of assessment shows modest variation in the prevalence of bullying; while conventional relational violence emphasis has strengthened associations between cyber and conventional violence. Traditional coercion was twice as widespread in our meta-analytic analysis as cyber bullying. Cyber and conventional bullying have also been closely associated, indicating that participation in polyaggression will be a primary focus for programs and policies. Results of tolerance analyzes highlight the need for greater unity of both cyber and conventional bullying assessment methods [1].

The research compared rates of depression among bullies, perpetrators, and conventional (physical, verbal, and relational) bullying that is a relatively new phenomenon. The research also explored the correlation between depression and participation level for increasing type of bullying [2]. Purpose: To explore the relationship between the experiences of children and adolescents with cyberbullying and conventional bullying, and social, physical, and academic success. Nine hundred and thirty-one grade 6 to 12 students were identified as belonging to one of four groups: cyber offenders, cyberbullies, cyber bully / offenders and non-cyberbullying participants. Traditional bullying was done with a similar categorisation. Many in the bully / victim groups (and particularly the cyber bully / victim group) had the most negative scores on most psychological, physical, safety, and academic performance measures [3].

Digital victimization of bullying is associated with an increased risk of suicidal ideation, whereas conventional victimization as well as cyber bullying is associated with an increased risk of mental health issues among children. These results highlight the importance of interventions aimed at mitigating bullying behaviour, in particular because early mental health issues can present a risk to the development of adult psychiatric disorder [4]. The present study analyzed the psychological profile of 430 Greek university students who recorded experiences of cyberbullying / victimization. Participants completed a self-report questionnaire, assessing cyberbullying, cyber-victimization, frequency and use of the internet, personality traits, and psychological symptoms. Results showed that 58.4 per cent of the sample had claimed some involvement in a cyber-bullying incident. The most common participant category, cyber bully/victims, endorsed more psychological symptoms, more psychopathic tendencies, and were high attention seekers relative to the rest of the classes, while cyber-victims scored higher on empathy [5].

The present research systematically investigated the connection between participation as a victim or abuser in cyber bullying, as well as depressive symptomatology and suicidal ideation. Self-report data were obtained in grades 8-10 (mean age = 14.2 years, SD = .91 years) from 399 (57 per cent female) Canadian adolescents. Results suggested that participation in cyber bullying, either as a target or as a bully, contributed uniquely to predicting both depressive symptomatology and suicidal ideation, in addition to contributing to conventional types of bullying (physical, verbal, relational) [6]. In a prospective 2-year school-based study, information was gathered on 1,344 children aged 10 including behavior/experience bullying, depression, anxiety, coping mechanisms, self-esteem, and psychopathology. Parents reported signs of demographic data, general health, and hyperactivity deficit attention disorder (ADHD). This were investigated in relation to the perpetration and victimization of conventional and cyberbullying at age 12. Male gender and depressive symptoms have been related to all forms of actions and involvement of bullying. Working with a single parent was associated with conventional abuse, while signs of higher ADHD were associated with victimization [7].

Cyber bullying is when individuals or organizations use online communication tools to engage themselves deliberately and frequently in violent online activities, designed to hurt and damage others. Cyber bullying on social networking sites (e.g. Myspace, Facebook, Google Plus, Twitter, Weibo, Instant Messaging, and Micro-blogging websites) goes beyond time and space limits. That argument alone makes a difference between cyber bullying and more conventional forms of bullying. A high proportion of cyber bullying is left unreported by cyber perpetrators or observers from third parties [8]. The aim of this study is to establish a consistent and accurate scale, which will assess high school students' cyber victimization and bullying behaviours. In the academic years 2009-2010, the study community consisted of 404 students (250 male, 154 male) in Sakarya. Mean age for the study sample is 16.68. The quality of the content and face value of the scale were given through the judgment of field specialists. Confirmatory and exploratory factor analyzes were performed for scale factor structure investigation [9]. The aim of this study is to investigate victim, abuser, abuser / victim conduct in schools and the association within the family with certain factors of socialization. They focused on the nature of family socialization factors by analyzing the relationship between victim, bully, and bully / victim actions and family environment, parental disposition, parenting-style aim of parenting and parental treatment practice. In total, 647 elementary and secondary school students (301 female and 346 male) participated in the study [10].

METHODOLOGY

The proposed research is based on the study of the different mining techniques for SNA and social media. It categorizes the MomoChallenge analysis into various parts such as Network Analysis, Content Analysis, and Network Visualization of the entire Network to interpret user actions, value, and relationship made with other users etc. Figure 1(A) demonstrates the architecture of the proposed work and its elements. The technique explains the various phases and rounds which were followed to complete the study. Figure 1(B) suggest the approach and the steps to be taken to execute the proposed study.
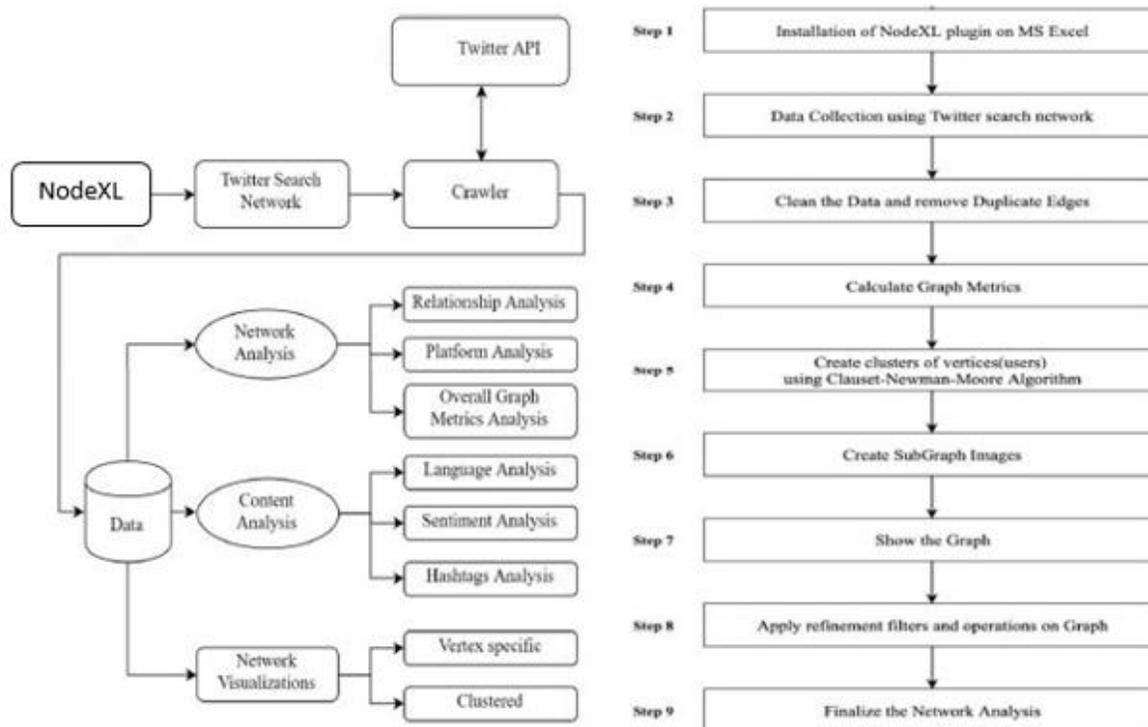
FIGURE 1: (a) Architecture; (b) Methodology

There are nine steps to the methodology to do the analysis and get the results. These steps are described below:

- Step 1: The first step is to set up the SNA tool environment named NodeXL which is an add-in to MS Excel. It is downloaded from the official social media research foundation website which provides a software setup that can be easily installed on windows-based pc with minimum version of MS Excel 2007.
- Step 2: Data was obtained using NodeXL's TSN import method to extract twitter MomoChallenge data by searching for keyword 'momochallenge' messages. A crawler gets the data from the Twitter API which provides a collection of the day's latest tweets relevant to the search query, whatever. Twitter has a data usage rate cap under which it doesn't send more than 18,000 latest tweets or 7-day data from last week. The collected data set includes the MomoChallenge related tweets which are a suspected form of cyberbullying.
- Stage 3: To eliminate redundancy from dataset, the collected data set is cleaned up. This procedure is performed by measuring and merging the duplicate edges (entries) to create a single, unique entry in the dataset.
- Step 4: Graph metrics are determined by using the NodeXL functions. These metrics include calculating centrality measures and parameters related to TSN primarily used for twitter network.
- Step 5: All users with similar attributes in network sharing are grouped into separate groups that are uniquely defined by assigning the group color, shape and name. Using NodeXL's group-by-cluster function, the 'Clauset-Newman-Moore' algorithm is used to construct the clusters.
- Step 6: The images of the entire network graph are very dense and wide, and can not be analyzed easily. To show information about individual vertices or clusters it may break the network graph image into separate sub-graph images.
- Step 7: This is the principal step in which the actual SNA will be performed. With the aid of network and graph theory the network is visualized graphically. This phase creates the entire network image into the NodeXL graph pane available. The program controller reads the dataset workbook and

generates the graph according to the relationships present in the edges spreadsheet between the various users and clusters.

- Step 8: This is the method of hiding vertices and edges, based on the SMN's attributes and properties. In, this auto-fill columns function step is also used which is very helpful when designing the graph according to the vertices and edges attributes.
- Step 9: The final step is to integrate the findings into a meaningful way of doing the network analysis that tells the MomoChallenge SNA's overall story.

ANALYSES AND VERIFICATION

Network analysis

The network research involves the customer relationship research, customer-used application, and overall graph metrics. Network analysis is the most important aspect of SNA, where SNA techniques and algorithms are used to measure and evaluate network related parameters.

Relationship analysis

Analysis of the relationship is the study of different types of relationships created on Twitter between users when interacting with each other. Four types of relationships exist on Twitter i.e. (follows, comments, responses, and tweets). Relationships made with retweets including 69 percent of retweets, the highest proportion compared to posts, comments and mentions. Retweets are the way Twitter social network spreads ideas and information. Tracking retweet frequency is an effective way to detect message spreading. A retweet is, in simple terms, the exchange of a tweet post on a Twitter network with a user's friends and followers. However, the tweets are the actual retweeted content. The network's 6 percent were tweets. Most of the network is built from the power of the retweets. There are two percent of responses of which the amount of user answers is much lower in the network. This means that users are more interested in sharing the 'MomoChallenge' information with their friends than in reacting to it. Throughout the relationship network, 23 percent of mentions are identified in which most users seek to address police, child and health communities, and their state or country's higher-level authorities to take action.

Platform analysis

Twitter services are available on various platforms including Mobile, Android, iPhone, Twitter Deck, and so on. The network analyzer is the tool used by users from all over the world to analyze the application. This will aid in identifying the site where much of the traffic comes from.

Sentiment analysis

The sentiment analysis is the method of classifying tweet text to detect the users' opinion on cyberbullying and how they respond to MomoChallenge-related events. Analyzing sentiment is done by calculating the words and word-pairs of all the tweets in the dataset. NodeXL has a predefined database of positive, negative, and user-defined terms that are mapped with tweet terms and classified into matching categories. Top 10 words and word-pairs are calculated in sentiment analysis which have a high frequency of occurrence in tweets and are used by most users. This can help identify group peoples' views, their feelings and their language. This will allow studying the effect of cyberbullying incidents on societies or individual users.

CONCLUSION

In this paper, SNA and graph-based visualization techniques were used to perform an overview of the 'momochallenge' and #MomoChallenge on Twitter. NodeXL platform has been used to collect, visualize, and analyze data from about 5615 users with 7384 tweets. Relationship analysis, explains that most of the relationships are made using retweets and are responsible for spreading cyberbullying-related content. Web

analytics estimates that most consumers use network applications for iPhone and Android apps compared to TwitterDeck, Twitter lite, and other platforms. In Graph metrics data density shows the network's connections are much less dense. Examination of the language shows that English is the language that people use the most. Sentiment analysis carried out using NodeXL's words and word-pairs feature which describes the important words used and categorizes them into positive and negative categories.

Popular hashtags are identified using hashtag analysis and most of the hashtags are connected to MomoChallenge (cyberbullying) and others generate noise in the network, while users use it their own way. The proposed research is contrasted, and the latest study is shown to provide new methods of detecting cyberbullying on SMN's. After conducting all the theoretical methods, the conclusion explains that the MomoChallenge is simply a hoax, and it spreads across social media as an case of cyberbullying. Some people use MomoChallenge keyword or hashtag to alert and educate their peers, and some abuse it, to shield children from such events.

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