Analysis of Tweets Related to Cyberbullying: Exploring Information Diffusion and Advice Available for Cyberbullying Victims

Sophia Alim, Independent Researcher, UK

ABSTRACT
The use of Twitter, especially by teenagers and young people, has raised the issue of cyberbullying. There is a lack of research into what types of advice and support are available in tweets for cyberbullying victims, and into the features influencing the spread of tweets related to cyberbullying. In this study, 7,315 tweets associated with cyberbullying were extracted and analysed. The results highlighted that tweets containing features such as a higher number of URLs, hashtags, or followers did not necessarily lead to a higher number of retweets. Sentiment analysis of the tweets presented both positive and negative sentiments from users towards cyberbullying. This study manually sampled 400 tweets for content analysis. Tweets covered a variety of areas associated with cyberbullying ranging from user opinions to news events. Results showed that 33% of tweets contained advice and support for cyberbullying victims. These tweets produced the highest number of retweets in comparison with tweets covering other areas associated with cyberbullying.

Keywords: Advice, Automated Extraction, Cyberbullying, Tweets, Twitter

1. INTRODUCTION
In December 2014, Twitter had 284 million active users (Ketch, 2015). The age range of users was reported to be between 18-65+ years old (Statista, 2015). This however, did not take into account the popularity of Twitter amongst teenagers, who are growing up in a world surrounded by social media and cyberbullying.

Jaffray (2015) conducted a survey of 7,200 US teenagers in 2014 regarding social media usage. The results indicated that 59% of teenagers surveyed used Twitter. Twitter is a microblogging service that allows users to send 140 character messages called tweets. Tweets can contain images, text, and videos. Users who are registered on Twitter can read and post tweets but unregistered users can only read tweets (Wikipedia, 2015).

DOI: 10.4018/IJCBPL.2015100103
The use of Twitter and social networking sites (SNS) such as Facebook to communicate with one another and the world, has led to increased instances of cyberbullying, especially among teenagers. The issues surrounding teenagers and cyberbullying have been widely reported by researchers.

Cyberbullying is the use of information and communication technology to harass and harm in a deliberate, repetitive, and hostile manner (Stopbullying.gov, 2014). Types of cyberbullying include bullying someone through social media, harassment, sexting, cyberstalking, deception, impersonation, and sending nasty messages via chat rooms and instant messenger. Ditch the Label (2014) surveyed more than 10,008 teenagers and discovered that of the 43% who used Twitter, 28% had experienced cyberbullying.

Various cases of cyberbullying involving teenagers have been highlighted in the media. A specific example relating to Twitter involves teenager Rachel Lemmons. After Rachel broke up with her boyfriend, the girlfriend of her ex-boyfriend started to cyberbully her. The campaign involved making a Twitter profile under Rachel’s name and tweeting from it, so it seemed as though Rachel herself was tweeting. The tweets contained malicious content which led to confrontations with peers and classmates. The consequence of being cyberbullied was that Rachel’s grades were slipping due to stress as some of the tweets were retweeted up to 50 times a day, thus adding to the impact of being bullied on-line in front of a wider audience (Zahriyeh, 2014).

In the field of cyberbullying research regarding teenagers, social scientists have explored areas such as cyberbullying risk factors (Anderson, Bresnahan & Musatics, 2014; Jung et al., 2014; Peskin, 2014; Sampasa-Kanyinga, Roumeliotis, & Xu, 2014), the personalities of actors (victims, bullies, and bystanders) involved in cyberbullying (Camacho, Hassanein, & Head, 2014; Lohman, 2015) and the view of teachers and parents towards cyberbullying (Eden, Heiman, & Olenik-Shemesh, 2013; Moreno & Kota, 2014). Computer scientists in comparison have focused upon developing automated approaches for cyberbullying detection using data and text mining. Research studies specific to Twitter have included characterising hashtags associated with bullying (Calvin, Bellmore, Xu, & Zhu, 2014), detecting cyberbullying messages through feature selection (Nalini & Sheela, 2015), and a language specificity analysis of Indonesian bullying words on Twitter to discover Indonesian bullying patterns (Margono, Yi, & Raikundalia, 2014).

In addition to detecting instances of cyberbullying on-line, Tarapdar and Kellett (2011) emphasised that teenage victims of cyberbullying go to a variety of people such as friends, parents, teachers, the police, peer mentors, and social network companies for support. Notar, Padgett, and Roden (2013) referred to the importance of working with parents to diffuse cyberbullying situations. Equipping parents with knowledge of cyberbullying can help them understand victimised teenagers. Teenagers and children need encouragement to report instances of cyberbullying. Holfeld and Grabe’s (2012) study into the cyberbullying experiences of 665 US middle school children, found that 64% of 333 students who were cyberbullied chose to report it. 64% of the students told their friends, followed by their parents (50%), siblings (20%), teachers (8%), cousins (5%) and grandparents (1%). Despite a low rating for teachers, 80% of students indicated that teachers tried to stop cyberbullying once they were made aware of it.

The motivation for this paper is that there is a need for more research into how types of information relating to cyberbullying, especially advice and support associated with counteracting it, are disseminated on Twitter via tweets. This advice can provide a support network for cyberbullying victims spanning various ages, including many teenagers.

This need for further research will be explored by:

1. Extracting tweets associated with cyberbullying using automated extraction, in order to explore the connection between features of the tweets and their spread through Twitter;
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