Social Cues and Cyberbullying in Facebook:
The Effects of Flaming Messages, Friend Count and Anonymity on Cyberbullying Behaviors

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Abstract

The current research seeks to investigate cyberbullying behaviors on Social Networking Sites (SNSs) by studying the effects of message, receiver and sender characteristics within one such popular platform, Facebook. Facebook, unlike older computer-mediated platforms, possesses distinct features and usage cultures, with one such example being the greater extent to which users disclose about their personal identity. The effect of such social cues and user behavioral patterns on Facebook towards cyberbullying behaviors is still not fully understood. In this study, we apply the communication model to understand how the frequency of cyberbullying activity, friend count and anonymity within Facebook can affect cyberbullying intentions and perception towards a potential cyberbully victim. A 2 x 2 x 2 factorial experimental design was created to examine the variables in this study. 200 undergraduates between 19 and 24 of age were recruited and randomly assigned to one of the eight experimental conditions. From the results, we found that anonymity and a greater frequency of cyberbullying activity increased the intention of users to want to cyberbully a victim. Also, a low-friend count and a greater frequency of cyberbullying activity can create a negative perception of the victim’s personality, which may lead to more online victimization. Implications of the results are discussed in the report.

Keywords: Facebook, cyberbullying, flaming, anonymity, friend count
Introduction

The use of communication technology has increased exponentially over the last decade, and this is accompanied with an increasingly widespread usage of the Internet. According to Internet World Stats, there are approximately 2.4 billion Internet users as of June 2012. This is a 566.4% growth as compared to the year 2000 (Miniwatts Marketing Group, 2012), and the popularity of the Internet is likely to continue to grow in the few decades to come.

In recent years, the proliferation of the Internet usage is coupled with the growing popularity of Social Networking Sites such as Facebook and Twitter. The Nielsen Company (2012) reported that in the United States, the average time spent on SNSs is 121.18 minutes a day in 2012 (88.48 minutes a day in 2011). In Asia, there are at least 811 million SNS users (Kemp, 2012), with Singapore ranking first in terms of SNSs usage, especially Facebook (Locke, 2011). Research on SNSs revealed multiple reasons for using SNSs such as maintaining offline connections (Ellison, Steinfield, & Lampe, 2007; Madge, Meeks, Wellens, & Hooley, 2009; Wiley & Sisson, 2006) and the desire to integrate online and offline relationships (Boyd & Ellison, 2010).

Though SNS usage proved to be beneficial for the users in terms of social communication, the increased usage have also brought about some negative consequences – an increment of cyberbullying activities being one of the most prevalent issues. Past research has shown that as users are more likely to disclose a greater amount of personal information on SNSs (Christofides, Muise & Desmarais, 2009), certain demographic and psychographic information on people’s profile pages can possibly encourage destructive actions on SNSs, contributing to cyberbullying occurrences. The access to excess information on SNSs, accompanied with the rapid exchanges of text, lack of social feedback and regulating norms may make online communication more impersonal and less restrictive (Kiesler, Siegel &
McGuire, 1984), which gives deviant users more opportunities to commit anti-social behaviors such as cyberbullying.

While there has been research done on cyberbullying behavior on traditional online platforms and cyberbullying in general, relatively few studies are done on cyberbullying in the context of SNSs and various elements that affect such behaviors in this new platform (Kwan & Skoric, 2012). Filling in this literature gap is imperative because of the worrying growth of cyberbullying cases through SNSs. According to McAfee Inc.’s 2012 Teen Internet Behavior Study, 92.6% of the teens surveyed stated that cyberbullying happened on Facebook, making it the top SNS that acts as a vehicle for cyberbullying. Moreover, with reference to Singapore, looking at the high SNSs penetration rate, one can only expect the number of reports of cyberbullying to be of a high one, and true enough, as of May 2012, Singapore has the second highest number of reported cyberbullying cases, with China topping this ranking (Microsoft Corporation, 2012).

Cyberbullying on SNSs has been shown in the past to be able to cause serious, and sometimes even fatal consequences. In 2011, two schoolgirls in the United Kingdom were arrested after cyberbullying a classmate through the creation of a fake Facebook page for her, and then posting obscene photos and comments on it (Bates, 2011). In October 2012, Amanda Todd committed suicide after being viciously cyberbullied on Facebook (Grenoble, 2012). The growing number of incidents and the potentially detrimental consequences caused by cyberbullying in SNSs call on the pressing need for us to better understand how these activities are enacted and the various characteristics within SNSs that may encourage such behaviors.

To further our understanding of cyberbullying in SNSs, we can look to the communication model to explain how factors within the platform may affect cyberbullying behaviors. A simplified communication model consists of four factors: the sender, the
message, the channel and the receiver (Adler, Rosenfeld & Proctor II, 2007). Westley & MacLean (1957) posits that three of these elements, namely the message, the receiver and the sender may additively affect the attitude of a person towards a particular behavior. In SNSs, social cues such as photos and personal information can have a significant impact on how people perceive whether another user embodies personalities that characterize a cyberbully victim (Craig, 1998). The impression formed as people interact with the cues available on SNSs may influence the intention of someone to cyberbully another based on their attitude towards the perceived user’s personality (Tanis & Postmes, 2006). In this study, we propose that a combination of the message content, information on a potential victim’s profile page and characteristics of a user’s account may affect how users perceive a victim and their intention to engage in cyberbullying activities in SNSs.

Therefore, the proposed study seeks to investigate how users’ intention to cyberbully in SNSs, specifically Facebook, is affected by the combination of the message, receiver and sender characteristics that are present within the platform. In particular, this study will focus on how the number of flaming comments (message characteristics), friend count of a victim’s profile (receiver characteristics) and anonymity of the user (sender characteristics) can additively lead to different impressions formed of potential victims and how this affects their intention to cyberbully in SNSs. In the following sections, we will first review the relevant literature on cyberbullying and how different personalities characterize a cyberbully/victim. Following which, we empirically examine the effects of flaming comments, friend count, and anonymity on intention to cyberbully in Facebook using the experimental method. We discuss implications of our study on how the communication elements embedded in a communication sequence within SNSs could influence impression formation and cyberbullying intention of SNS users.
Literature Review

Cyberbullying

Traditionally, bullying has been defined as the repeated exposure of one to purposeful intimidation and aggression over time that include aggressive physical contact, verbal abuse, abusive gestures, group segregation and ostracism (Olweus, 1994; Salmivalli, Lagerspetz, Bjorkqvist, Osterman & Kaukiainen, 1998). There is usually an imbalance in power and strength between the bully and the victim where the latter often has little power over his or her own protection (Olweus, 1994). There are five main features of bullying which includes: 1) The bully causing harm and/or fear to the victim, 2) the act is repeated, 3) the victim is passive throughout the bullying, with no intentional or ability to provoke, 4) the act occurs in a social group that is familiar and 5) the bully is perceived to have greater power over the victim (Greene, 2000).

Cyberbullying, which is bullying that is executed through electronic communication devices and platforms (Li, 2007; Patchin & Hindura, 2006), share many similarities with traditional bullying in its definition and consequences (Vandebosch & Cleemput, 2009). Studies that define cyberbullying have noted that a malicious intention, violence, repetition and perception of greater power are also present when a victim is subjected to cyberbullying activities (Corcoran, Connolly & O'Moore, 2012). Victims of cyberbullying acts are also known to suffer from psychological harms that are similar to a victim of real life bullying acts (Ybarra & Mitchell, 2004).

However, as cyberbullying occur within electronic platforms, there are certain unique differences of the behavior that are important to take note of. The characteristics of the Internet and how people communicate in these electronic platforms make it such that malice and aggression on the Internet has taken new form over the years (Ybarra & Mitchell, 2004; Slonje & Smith, 2008; Law, Shapka, Hymel, Olson & Waterhouse, 2012), creating
various new ways to bully a victim online. According to Willard (2004), there are seven categories of common cyberbullying behaviors such as flaming, online harassment, cyberstalking, denigration, masquerading, outing and exclusion, which include embarrassment and nasty comments via various electronic platforms. These platforms include: emails, text messages, cell phones, chat rooms, instant messaging, defamatory websites, forums and social networking sites (Li, 2007; Vandebosch & Cleemput, 2009).

To investigate cyberbullying activities in Facebook, this study has chosen to concentrate on the act of flaming due to its prevalence and potential consequences to victims within the particular platform (Nitin & Sharma, 2011; Moor, Heuvelman & Verleur, 2010). Flaming, which is defined as an electronic message that is intended to insult and provoke someone (Steele, 1983), is rampant on Facebook due to users being able to rapidly leave such messages on the profile pages of their intended victims (Kayany, 1998). On Facebook, flaming also has the ability to snowball the cyberbullying act when negative messages left on a victim’s profile page may potentially affect the impression formed of the victim. Many users can view these insulting messages left on a victim’s profile page if they are not quickly removed and form negative impressions about the characteristics and personality of the victim (Walther, 1993). These negative impressions that are incited by cyberbullying acts such as flaming may be a key factor to understand how certain conditions within Facebook may facilitate cyberbullying activities.

Perception of a cyberbully victim personality

To investigate the different types of negative impressions that may be formed of a cyberbully victim, it is necessary to first examine the key personalities that typically characterize such a victim. The cyberbullying phenomenon involves two main groups: the bully and the passive/submissive victims (Olweus, 1997). Cyberbullies are the main perpetrators of the aggressive behaviors while the submissive cyberbully victims receive
bullying but do not retaliate or attempt to retaliate and usually have weaknesses that are exploited. Studies on cyberbullying have sought to examine the typical characteristics of the passive/submissive victim because personality and characteristics have been shown to play an important part in identifying potential victims of cyberbullying acts (Gofin & Avitzour, 2012). According to Gofin & Avitzour (2012), victims who experience frequent incidents of cyberbullying activities typically possess three main characteristics. Firstly, cyberbully victims are observed to be less extroverted as compared to other people. They tend to be described as lonely and vulnerable, have more relationship problems with peers and internalize more negative social feedbacks (Marini, Dane, Bosacki & YLC-CURA, 2006; Gofin & Avitzour, 2012). They also tend to have more negative perceptions of their self-esteem and self-image as compared to cyberbullies and non-involved counterparts.

Secondly, cyberbully victims are also known to face more ostracism from their peer groups as compared to their bully counterparts or peers who are uninvolved in cyberbullying activities (Seals & Young, 2003). They typically perceive lesser power for themselves within a relationship and are disliked by their peers due to low levels of socializing skills (Olweus. 1997; Marini, et. al, 2006). Other people usually perceive these cyberbully victims as being less confident, more withdrawn and also insecure in their interactions within social settings (Boulton & Smith, 2011; Carney & Merrell, 2001).

Thirdly, cyberbully victims are known to be less dominating within their social relationships with other people. Dominance in this case refers to the likelihood of a person to have a more exertive and extroverted personality when interacting with other people (Festl & Quandt, 2013). Cyberbully victims typically display a low level of dominance when interacting with their peers. They are usually passive and withdrawn, choosing instead to engage in indirect communication strategies to negotiate their social relationships (Craig, 1998; Boulton & Smith, 2011; Carney & Merrell, 2001).
When users of Facebook view a victim’s profile page, information that is being provided on the page may facilitate the formation of impressions pertaining to the personalities of a cyberbully victim. Such impressions may include the victim being perceived as being less extroverted, more ostracised and less dominant. It is important to identify the varying cues on Facebook that may result in creating these negative impressions as past studies have shown that such perceptions of a victim may increase their vulnerability to cyberbullying acts (Neary & Joseph, 1994). Thus, to further our understanding of how negative perceptions are formed through the exposure of various cues within Facebook and its effects on cyberbullying intentions, the study has adopted a message, receiver and sender communication model. The following sections will provide the rationale on how the variables within each characteristics of the model were selected in this study.

**Message characteristics – Number of flaming comments**

Message cues that are available on Facebook can play a part in influencing how the personality of a victim is being perceived and a user’s inclination to cyberbully. Specifically, this study focuses on the frequency of the cyberbullying activity, which is being translated as the number of flaming messages that are directed towards a victim’s Facebook profile page. The number of flaming messages may be a key factor of the message cues in Facebook and its importance in influencing users can be explained using the Warranting principle (Walther & Parks, 2002) and Noelle-Neumann’s Spiral of Silence theory (SOS) (Moy, Domke & Stamm, 2001).

Past research has shown that in online platforms, users are able to manage impressions easily and tend to manipulate their profiles to provide a more desirable image of themselves (Herring & Martinson, 2004; Ellison, Heino & Gibbs, 2006). The Warranting principle posits that as a result of this self-serving mechanism, other users are generally aware of the many inaccuracies that may be present within self-generated claims and are
more skeptical of such information when forming impressions. This results in users relying more on others-generated cues, including messages left on a user’s profile page by other people, to form a more reliable impression of someone (Walther, Van Der Heide, Hamel, & Shulman, 2008; Walter & Parks, 2002; Donath, 1999).

The Warranting principle is found to have particular importance with regards to impression formation in online platforms. In a study by Antheunis & Schouten (2011), the researchers found that despite user-generated information that had a positive valence on a Facebook profile page, observers had a negative impression of the user when there were others-generated negative messages on the profile page. Antheunis & Schouten (2011) attributed their findings to the sensitivity of the users towards the content of these others-generated comments. This result implies that typically, users were more likely to form an impression on a profile owner’s characteristics by using information provided by others-generated comments.

The Warranting principle is also of relevance to cyberbullying behaviors on Facebook, which allows third parties to leave flaming messages on a target’s profile publicly. We expect that when users are exposed to third party flaming messages on Facebook, they will readily use such information, which are perceived to be more credible, to form judgment about the personalities of the victim. (Walther, et. al, 2008; Tong, Van Der Heide, Langwell, & Walther, 2008). In addition, a greater number of flaming comments directed to a victim’s profile by other users can be considered as a form of “validation” of one’s perception of the profile owner’s victimization status (Tong, et. al, 2008). A high frequency of cyberbullying activities by others may reinforce the impression that the target is a typical cyberbully victim, encompassing the negative personalities that characterize such a person. Taken together, we note that in SNSs, the number of flaming messages on a victim’s profile page may influence the formation of negative impressions that encapsulate the typical characteristics of a
cyberbully victim.

In addition, besides affecting a user’s impression formation, the frequency of cyberbullying activity on Facebook may also influence a user’s intention to directly commit cyberbully acts against the victim, which can be explained by looking to the Spiral of Silence theory. In SOS, Noelle-Neumann posits that observation of the environment can influence one’s public opinion formation – a person would most likely conform to the dominant opinion due to a fear of being isolated if he or she expressed a minority view (Noelle-Neumann, 1974; Glynn & McLoed, 1985). There are 5 underlying assumptions in the SOS theory, which explains when people will jump on the bandwagon and express an opinion that is similar to the majority but may not be reflective of their true intentions. These assumptions include a threat of isolation when one does not conform to the dominant view, with the fear of being ostracised from one’s peer group being the main driver of the SOS effect (Scheufele & Moy, 2001).

One way to gauge a user’s perception of the public opinion climate – whether they are in the minority or the majority view and their inclination to conform to the dominant view- is via their message posting behaviors or their willingness to speak up (Yun & Park, 2011; Scheufele & Moy, 2001; Noelle-Neumann, 1977). In a study by Yun and Park (2011), users of an online platform were shown to be more likely to post a message when they were surrounded by congruent messages than by incongruent messages. Applying this observation to this study’s context, it can be predicted that as a result of SOS, a high frequency of cyberbullying activities (as seen by a high number of flaming messages) can form a dominant climate that creates a social pressure for others to conform. This pressurizing factor may cause others to follow the dominant cyberbullying behavior, increasing the possibility of more follow-up cyberbullying activities (Liu & Fahmy, 2011).
Based on the above studies, we predict that with a higher frequency of cyberbullying activities, seen as the higher number of flaming messages directed towards a Facebook profile page of a cyberbully victim, users will most likely view the victim more negatively in various aspects of their personalities and also have more inclination to cyberbully the victim. Therefore, we propose the following hypotheses:

\textbf{H1:} Participants who see a higher number of flaming messages will show greater intention to cyberbully the target, compared to participants who see a lower number of flaming messages.

\textbf{H2:} Participants who see a higher number of flaming messages will perceive the personalities of the target to be (a) more ostracised, (b) less extroverted, and (c) less dominant, compared to participants who see a lower number of flaming messages.

\textbf{Perceived vulnerability of victim – Third-Person Effect}

Although the presence of a higher number of cyberbullying activities may directly influence the inclination for a user to cyberbully the victim, previous studies have shown that when a person perceive a message cue to have a possible negative influence on oneself, they will tend to perceive the message to have a greater influence on others than on themselves (Craig, 1998; Bosworth, Espelage & Simon, 1999). Such a discrepancy is known as the third-person effect (Paradise & Sullivan, 2012). The third-person effect posits that “people will tend to overestimate the influence mass communications have on the attitudes on behavior of others” (Davidson, 1983, p. 3), and such an effect is more pronounced for messages that are deemed to be less socially desirable.

In this study, as users may perceive an increased in the activity of cyberbullying to have a potential negative influence, they may think that the effects of such message cues have a greater impact on others than on themselves. The presence of such an effect may cause one to think that other users have a greater inclination than themselves to cyberbully the victim,
and direct reports on the user’s cyberbullying intention may not accurately reflect the influence of the message cue.

In order to circumvent the potential discrepancies that may arise due to such an effect, this study will measure the perceived vulnerability of the cyberbully victim, which is translated as how the users perceive the cyberbullying intentions of other users. This measurement can give a more holistic view of how various cues in Facebook may affect user’s inclination to cyberbully. In a study by Paradise & Sullivan (2012), the researchers found that a third-person effect was present on Facebook as the users perceived themselves to have a lower probability of being persuaded as compared to their peers (e.g., closest friends, friends in their Facebook network, younger people, and general Facebook users) when exposed to different information on the platform. However, when behavior was investigated directly, it was found that users’ behaviors were correlated more closely with their perception of the media’s influence on their peers rather than on themselves.

Hence, besides directly measuring how various characteristics on Facebook may affect inclinations to cyberbully, this study will also investigate the perceived vulnerability of the cyberbully victim. This measurement can help us understand whether the third-person effect exists among the users in SNSs in the context of cyberbully, which will allow us to go deeper into the investigation of cyberbullying intentions.

**H3:** Participants who see a higher number of flaming messages will perceive the target to be more vulnerable to third-party cyberbullying activities, compared to participants who see a lower number of flaming messages.

**Receiver characteristics - Friends count on SNS profiles**

Besides message characteristics such as the frequency of cyberbullying activities, studies have also shown that receiver characteristics on SNSs, specifically the number of friend count displayed on a user’s profile, is an important cue in how people assess the
personality of a cyberbully victim (Utz, 2010). The friend count of a user’s profile plays a part in determining the different types of impressions that are first formed by users when they view a victim’s profile (Tong, et. al, 2008), which may determine their intentions to engage in cyberbullying behaviors towards the victim.

Previous studies have shown that for an online profile that corresponded to a low number of friend count, the owners of these profiles were usually rated less positively in various social scales such as liking, extraversion and the potential for the person to establish a friendship with other people (Tong, et al., 2008). These individuals were also judged to be less trustworthy and generous as compared to owners of profile that displayed a high-friend count (Parkhurst & Hopmeyer, 1998; Reese, Ziegerer-Behnkken, Sundar & Kleck, 2007). Utz (2010) also showed that both friend count and the profile pictures of friends on Facebook had an effect on the perception of the profile holder’s popularity, implying that both cues play an important role in online impression formation. A high-friend count on a user’s Facebook profile page generated a positive feedback on the owner’s physical characteristics and personality, causing others to see the profile owner as being more popular, pleasant, attractive and self-confident (Antheunis & Schouten, 2011). On the other hand, when a profile displayed a low-friend count, the owner of the profile was seen as being introverted, unfriendly, serious and generally rated lower in terms of social attractiveness (Tong, et al., 2008). In addition, friend count serves as a functional cue in determining the communal orientation of the profile owner (Utz, 2010), with those who have a lower friend count rated less sociable and caring towards other people, and thus less liked, as compared to those with a high-friend count who were seen as being more sociable.

With the ability to affect perception towards users in an online platform, another aim of this research is to utilize the number of friend count that is displayed on a Facebook profile to investigate how cyberbullying behaviors may be influenced by receiver characteristics.
within SNSs. As users view a profile displaying a low-friend count, perceptions towards the profile owner may be affected negatively, causing them to be seen as embodying the traits of a typical cyberbully victim. As such, this phenomenon may have an impact on the intentions towards cyberbullying activities. Following these observations, we propose the following hypotheses pertinent to friend count:

**H4:** Participants who see a lower number of friend count will show greater intention to cyberbully the target, compared to participants who see a higher number of friend count.

**H5:** Participants who see a lower number of friend count will perceive the target to be (a) more ostracised, (b) less extroverted, and (c) less dominant, compared to participants who see a higher number of friend count.

**H6:** Participants who see a lower number of friend count will perceive the target to be more vulnerable to third-party cyberbullying activities, compared to participants who see a higher number of friend count.

**Sender characteristics - Anonymity of the cyberbully**

One of the elements that distinguish the offline world from the online world is the element of anonymity. This can be observed on platforms such as online forums, games, social networks etc., where users can take on various identities and also conceal their own. The ability to segment one’s real life identity with their online ones help to reduce the feeling of vulnerability and subsequently a reduction in the fear of disclosure (Boyd, 2012). In addition, the anonymity conferred to the online users can also result in an increase in acceptance of prevailing group norms as a result of an effect known as the disinhibition effect (Suler, 2004; Lea & Spears, 1991).

Hardaker (2010) showed that anonymity may lead to less civil actions online and attributed this to the disinhibition effect. According to Hardaker, "anonymity fosters a sense
of impunity, loss of self-awareness, and a likelihood of acting upon normally inhibited impulses.” (p.224). This lack of social cues would result in the reduction of one’s self-awareness, leading to a decrease in self-restraint, self-evaluations and causing the user to have a lesser consideration on the consequences of their potential deviant behaviors (Lea, O'Shea, Fung & Spears, 1992; Festinger, Pepitone & Newcomb, 1952; Prentice-Dunn & Rogers, 1982; Wright, 2002). Hence, one can predict that anonymity conferred to web users could be important in explaining deviant behaviors in online platforms, as the resulting disinhibition effect may cause a user to be more willing to engage in anti-social behaviors such as cyberbullying (Hardaker, 2010; Williams, 2005).

Another implication of the disinhibition effect as a result of anonymity is aggression - users tend to be more aggressive in anonymous conditions (Moore, Nakano, Enomoto & Suda, 2012; Silke, 2003). Twyman, Saylor, Taylor & Comeaux (2010) proposed that a possible explanation to why some users choose to bully online but not offline is that the veil of protection provided by anonymity in online communication platforms allow users to become less connected to the consequences of their own deviant behaviors.

Furthermore, previous studies have supported the view that the components of an internal disinhibition state due to anonymity could result in an increased likelihood for users to become swayed by external anti-social cues, increasing one's likelihood to engage in anti-social behaviors (Lea & Spears, 1991; Johnson & Downing, 1979; Diener, 1980). This observation is exemplified by Rosenberry (2011) who found that negative discussions on online news forums could be largely attributed to the anonymity conferred to the forum users. Anonymity promoted an increased inclination to post messages impulsively and negatively. Such a phenomenon may also potentially influence one’s inclination to engage in cyberbullying behavior on online platforms such as SNSs.

Based on these results from past research, this study will investigate how anonymity,
as a sender characteristic within Facebook, may encourage cyberbullying behaviors in Facebook. As users of Facebook assume an anonymous profile, we expect that they will become less inhibited about committing deviant behaviors such as cyberbullying towards another. As such we propose the following hypotheses:

**H7:** Participants in the anonymity condition will show greater intention to cyberbully the target, compared to participants in the non-anonymity condition.

**H8:** Participants in the anonymity condition will perceive the target to be more vulnerable to third party cyberbullying activities, compared to participants in the non-anonymity condition.

**Mediating effects – Social Information Processing Theory**

As reviewed in the previous sections, the impression that is formed of a potential cyberbully victim’s personality may be important in determining an individual’s intention to cyberbully the target. Characteristics such as the perceived extraversion, dominance and level of ostracism of the target may mediate how the cues available on SNSs affect cyberbullying activities. In this study, one of our goals is to understand how impressions of a target mediate the effects of various characteristics on cyberbullying intentions in SNSs (Bryman, Liao & Lewis-Beck, 2003). Based on the Social Information Processing (SIP) Theory, we discuss the possibility of such mediating effects.

The SIP theory is understood by how online users try to use different cues online to compensate for the missing traditional cues in an online environment (Walther, 1992; Walther, Anderson & Park, 1994; Tidwell & Walther, 2002). This enables users of online platforms to foster deeper relationships with one another by enabling the “individuating” of each other (Tanis & Postmes, 2003). This individuation process can be further explained through how users use the available online cues to form impressions of the targeted individual (Pena & Hancock, 2006; Walther, 1992). Walther (1996) suggested that online
users are capable of showing affinity (i.e., liking) for online individuals even though there is a lack of non-verbal cues (e.g. gestures or clothing style). The SIP theory has been used in various studies, including how people learned to verbalize more in an Multi-User Dungeons (MUDs) over time, how people created virtual friendships (Utz, 2000), and how online users used cues available on dating sites to help with their decision of finding their partner (Ellison, Heino & Gibbs, 2006).

Applying the SIP theory to the context of the current study, we predict that through available online cues such as the number of flaming comments and the friend count on a Facebook profile page, users may reduce the uncertainty that they have on a certain individual, including the perceived extraversion, ostracism and dominance of a potential cyberbully victim. These impressions, in turn, may influence the user’s intention towards committing cyberbullying act against the victim. Hence, it is possible that the intention to cyberbully on Facebook is indirectly related to cues like Facebook friends and number of flaming comments. In other words, such cues may help the users to form impressions of the targeted individual (as explained by the SIP theory), and through these impressions, the users may decide whether or not they would want to engage in cyberbullying activities.

Taking the message, receiver and sender characteristics together, this research also seeks to examine whether perceived personality factors of a cyberbully victim mediate the effects of the message and receiver characteristics on cyberbullying intentions (see Figure 1). From these, we propose the following research questions:

**RQ1:** Does perception of the target’s personality mediate the effect between the number of flaming comments and the intention to cyberbully?
Flaming Messages  \rightarrow \text{Intention} \\
Friend Count  \rightarrow \text{Intention} \\
\text{Anonymity}  \rightarrow \text{Intention} \\
\text{Narcissism}  \rightarrow \text{Intention} \\
\text{Extraversion}  \rightarrow \text{Intention} \\
\text{Ostracism}  \rightarrow \text{Intention} \\
\text{Vulnerability}  \rightarrow \text{Intention} \\

\textbf{Figure 1.} Proposed pathways of how Anonymity, Flaming Messages and Friend Count can affect Intention to cyberbully and perception of a target’s Vulnerability
RQ2: Does perception of the target’s personality mediate the effect between the friend count displayed and the intention to cyberbully?

RQ3: Does perception of the target’s personality mediate the effect between number of flaming comments and the perception of a target’s vulnerability to third party cyberbullying activities?

RQ4: Does perception of the target’s personality mediate the effect between the friend count displayed and the perception of a target’s vulnerability to third party cyberbullying activities?

Method

Participants

All participants (N = 200; 64 males and 136 females) were undergraduates from a local university in Singapore and were recruited between October 2012 and February 2013. Students were paid SGD$5 voucher as a token of appreciation. The age of the respondents ranged from 18 – 26 years old, with an average age of 21.6 years old. The participants spent an average time of 3.2 hours on the Internet and 2.1 hours on Facebook everyday. They also have been on the Internet and Facebook for an average of 10.4 years and 4.6 years respectively. A recruitment email was sent out to a local university informing potential participants of the experiment, with a mention of a cover story (i.e., to understand user experience on Facebook) and the amount of remuneration for participating. Interested participants were told to click on a link provided in the email, which brought them to a recruitment event page on Facebook. This is to make sure that people who are interested in joining the study has a valid Facebook account. Participants of the experiment were recruited in two phases. The first group was recruited during the first university semester (Oct 2012) and the second group was recruited in the second university semester (Jan 2013). During both times, the procedures of the recruitment were kept the same.
Stimulus

Pre-test. In order to select the levels of manipulations for the variables in the study, we initially conducted a pre-test with 24 participants. Quantitative and qualitative feedback on the photos used in the mock-up Facebook profile page, the number of friend counts, the specific flaming messages and the number of flaming messages used in the experiment were collected during the pre-test.

Mock-up Facebook profile page. In order to control the different variables that are needed to test the hypotheses and research questions in an SNS setting, the stimulus used in this study comprised of a mock-up Facebook profile page (see Figure 2) with several variations. A programmer who was hired by the researchers created this mock-up page. The mock-up Facebook page was hosted on campus servers to replicate a real Facebook profile page. Realism was emphasized to immerse and convince participants of its legitimacy. All the elements of the Facebook profile pages were created to be consistent among all conditions (e.g., the name Jamie Lui, the timeline events on the profile’s wall, the Like pages), except for the information that is related to the three variables (i.e., friend count, Facebook status, and flaming comment) in the experiment.

Anonymity and Non-anonymity. A faux login page was created alongside the mock-up Facebook profile page. This login page served two functions: to enhance the realism of the mock-up Facebook page and to serve as one of the key elements to control the anonymity condition. Before the participants can enter and view the mock-up Facebook profile page, they would have to log in with a username and password. Participants in the anonymous condition logged in with the username and password that they were provided by the researchers (Username: NTU0001, Password: QWERTY1234). After they have logged in,
Figure 2. Mock-up Facebook profile page
they were identified as “NTU0001@e.ntu.edu.sg”, which was accompanied by the default Facebook profile picture (Figure 3).

Emails of the participants assigned to the non-anonymous condition were obtained prior to the experiment and were used by the researchers as the username of the participants when they logged in the mock-up Facebook page. When these participants arrived at the laboratory for the experiment, a researcher took a photograph of them individually. Participants were prompted to log in using the email addresses that they had previously provided. After they have logged in, they were identified by their own name in the account, which was accompanied with the photograph of them taken previously (Figure 3).

High-friend count and Low-friend count. To create the two different conditions in the experiment that will depict a “High-friend count” and a “Low-friend count”, 24 undergraduates were surveyed in a pre-test. The pre-test participants were asked two sets of questions in this premise. Firstly, to select the profile and cover photos for both conditions, the participants were asked to rate, on a scale of one to five (with one being “most lonely” and five being “most outgoing”), 10 photos of a volunteer. Two photos that were ranked as the “most outgoing” and “most lonely” were being chosen as the stimulus material for the “High-friend count” and “Low-friend count” conditions respectively. Secondly, the pre-test participants were also asked on what they viewed as a high number and low number of Facebook friend count on a typical user’s profile. An average number of 990 friends was derived as “High-friend count” and an average number of 302 friends was derived as “Low-friend count”. The two sets of photos, coupled with the different friend counts, were incorporated into the mock-up Facebook profile page to create two different conditions that reflect a profile with a high number of friends and low number of friends on Facebook.
Participants assigned to the low-friend-count condition saw a profile page that had 302 friends, with both profile and cover photos displaying the profile holder by herself. Participants assigned to the high-friend-count condition saw a profile page that had 990 friends, with both profile and cover photos displaying the profile holder together with a group of friends (See Figures 4 and 5).

*Facebook Status.* A topic of roommate disagreement was chosen since undergraduates relate more towards it and may feel more compelled to reply to the status. Four possible scenarios were created: *Drunk every night, Noisy and Dirty, Failure to return borrowed money* and *Failure to return borrowed items to their original location.* These four derivatives were rated on a scale of one to four based on which made the pre-test participants feel most compelled to reply to. *Failure to return borrowed money* was chosen as the most relatable topic and the status used in the experiment is constructed as below:

"I hate my roommate! She should have returned me that $300 a long time ago!!! If not I wouldn't have poured the can of coke on her bed this morning."

The Facebook profile page only contains this comment and it is easily identifiable by the participants in the profile page.

*Low number of flaming messages and high number of flaming messages.* Under the status update, 20 comments from the profile holder’s "friends" were included. For the construction of these messages, the pre-test participants rated, on a scale of one to five, 70
Figure 4. Profile and cover photos of profile owner with low-friend count

Figure 5. Profile and cover photos of profile owner with high-friend count
different replies that are frequently posted on Facebook and how hateful these messages are. The 17 most hateful messages were included in the “High flame” condition, with the remaining 3 messages being neutral comments, while 17 neutral comments were included in the “Low flame” condition, with the remaining 3 messages being hateful messages to increase the realism of the experimental manipulation. Examples of flaming comments are: “The world will be a better place without people like you,” “What an idiot,” and “Loser, no wonder your roommate didn’t return your money.” Examples of neutral comments include: “Approach her and discuss this with her, it will help more,” “I do not think revenge will be able to convince your roommate to return you your money,” and “calm down and think through what can better solve your problems with your roommate.” Any grammatical or syntax error present in the messages are purposefully inserted into the sentences to reflect the common writing characteristics on Facebook.

Procedure

Interested participants were allocated their preferred experimental timeslots and invited to come to a computer laboratory. A researcher greeted the participants and ushered them to their individual computer stations. In these stations, each participant only saw the mock-up Facebook log-in page on the computer screen. Participants were then instructed to sign the informed consent form. For participants in the Non-Anonymous condition, photographs of their faces were taken using a camera. Participants were told to wait for further instructions while the photographs were being transferred into the main server, and then synced with the participants’ computers. The researcher then directed the participants to read the instruction sheet. The participants continued on with the experiment by logging into the mock-up Facebook website using the login information provided by the researchers or their personal email address.
In the instruction sheet, participants were informed that the experiment was to investigate roommate relationship and conflicts within Facebook. After logging in, participants in all experiment conditions were instructed to scrutinize the mock-up profile page and the status update about the conflict, and then leave a comment on the status update.

After leaving a comment, participants completed a questionnaire. Upon completion, they were presented with the remuneration voucher. A debrief email was sent to all participants after the entire experiment has concluded.

**Measures**

A 78-item questionnaire was constructed with six different parts. The questionnaire was designed to measure the concept of ostracism, extraversion, dominance, intention to cyberbully and perceived vulnerability. All participants in all eight experimental conditions were given the same questionnaire.

**Ostracism.** A five-point Likert scale was used to measure the perceived ostracism of the profile holder. The 10-items were adapted from the Workplace Ostracism Scale (Ferris, Brown, Berry & Lian, 2008) and modified to better represent the social media context. Example items include “When this person enters a conversation online, others will probably ignore what she says” and “Other people will probably not invite this person into their Facebook group or Facebook page.” Higher scores indicate that the target individual is more likely to get ostracised in social media by other users (α = 0.89).

**Extraversion.** A 6-point Semantic Differential Scale was used to measure perceived extraversion of the Facebook profile holder. The items were adopted from the Extraversion subscale of the NEO Five-Factor Inventory (NEO-FFI, Costa Jr. &McCrae, 1992). Extraversion traits like warmth, gregariousness, assertiveness, activity, excitement seeking and positive emotions were measured using the 6-point Semantic Differential Scale (For
example, “Attached” versus “Cold” and “Vigorous” versus “Passive”). Higher scores indicate higher perceived extraversion ($\alpha = 0.86$).

**Dominance.** Ten items with a five-point Likert Scale were used to measure the perceived level of dominance of the profile holder. We chose and modified the items in this category from the Narcissistic Personality Inventory (NPI, Raskin & Terry, 1988) that best fit the context of our research. The example items include “This person knows she is good because everybody keeps telling her so” and “Modesty does not describe this person.” Higher scores indicate that the target individual is more likely to be perceived as being dominant in relationships ($\alpha = 0.78$).

**Intention to Cyberbully.** To measure the intention of participants posting “flaming” comments on the profile holder’s status update, two five-point Likert Scale items were used. The two questions are “I plan to post nasty comments on the person’s facebook status,” and “I would like to post nasty comments on the person’s facebook status.” Higher scores indicate greater intention to post a flaming comment on the status update ($r = 0.72$).

**Perceived Vulnerability.** Ten items with a five-point Likert scale were adapted from the online victimization scale from Akbulut, Sahin and Eristi (2010) to measure the perceived vulnerability of a particular user. The example items include “I think the person will receive threatening emails or instant messages” and “I think the person will be the victim of nasty things written about her in the future.” Higher scores indicate a greater perceived risk of the target individual to be bullied by other users in SNSs ($\alpha = 0.87$).

Lastly, demographic information such as age, gender, number of hours spent on the Internet and facebook, and number of facebook friends was measured.
Results

Intention to cyberbully by participants

To investigate how the participant's intention to cyberbully may be affected by the message, receiver or sender characteristics in the mock-up Facebook page, a 2 X 2 X 2 (Flaming Comments x Anonymity x Friend count) factorial analysis of variance with the intention of the participant to cyberbully as the dependent variable was conducted to examine Hypotheses 1, 4 and 7. The results showed a significant main effect for anonymity, $F(1, 192) = 4.77, p< .05$. As compared to the participants in the non-anonymous condition (e.g., showing one's own name and photo; $M = 1.47, SD = 0.73$), the participants in the anonymous condition reported a significantly higher level of intention to cyberbully the target ($M = 1.70, SD = 0.73$). Thus, H7 was supported. However, the other two independent variables (flaming comment and friend count) did not show any significant effects on the intention to cyberbully the target. Therefore, both H1 and H4 were not supported.

Perception of cyberbully victim personalities

For perception towards personalities related to a cyberbully victim, it was predicted that a high number of flaming messages on the Facebook status and a low-friend count would cause the target to be perceived as being more ostracised (H2a, H5a), less extroverted (H2b, H5b), and less dominant (H2c, H5c). A 2 X 2 (Flaming Comments X Friend count) factorial analysis of variance with the three personality components as the dependent variables was conducted to examine Hypotheses 2 and 5. The means, standard deviations and F values of all the variables tested on the two groups are shown in Table 1. The results showed significant main effects of flaming comments on the perception of ostracism, $F(1, 192) = 3.65, p< .05$, and dominance, $F(1, 192) = 6.92, p< .05$. As hypothesized, the participants in the high flaming condition perceived the target to be more ostracised ($M = 3.20, SD = 0.65$) and less dominant ($M = 3.27, SD = 0.55$), as compared to the participants in the low flaming condition.
Table 1. Factorial Analysis of Variance with Cyberbully Victim Personality components as dependent variables

<table>
<thead>
<tr>
<th>Dependent variables</th>
<th>Means and standard deviations</th>
<th>F values and effect sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High Flame</td>
<td>Low Flame</td>
</tr>
<tr>
<td></td>
<td>High- friend</td>
<td>Low- friend</td>
</tr>
<tr>
<td></td>
<td>Friend</td>
<td>Flaming</td>
</tr>
<tr>
<td></td>
<td>Count (C)</td>
<td>(F)</td>
</tr>
<tr>
<td>Ostracism</td>
<td>3.18 (0.65)</td>
<td>3.22 (0.67)</td>
</tr>
<tr>
<td></td>
<td>8.13**</td>
<td>0.36</td>
</tr>
<tr>
<td>Extraversion</td>
<td>4.28 (0.51)</td>
<td>4.01 (0.61)</td>
</tr>
<tr>
<td></td>
<td>2.63 (0.61)</td>
<td>0.61</td>
</tr>
<tr>
<td>Dominance</td>
<td>3.29 (0.49)</td>
<td>3.44 (0.46)</td>
</tr>
<tr>
<td></td>
<td>6.92**</td>
<td>0.70</td>
</tr>
</tbody>
</table>

Note. *p<.05, two-tailed. **p<.01, two-tailed

condition (M = 2.93, SD = 0.67; M = 3.47, SD = 0.51 respectively). The results also showed a significant main effect of friend count on extraversion, F(1, 192) = 23.46, p< .05.

Specifically, the participants in the low-friend count condition perceived the target to be less extroverted (M = 4.32, SD = 0.56), compared to the participants in the high-friend count condition (M = 3.91, SD = 0.62). Taken together, H2a, H2c and H5b were supported.

Perceived vulnerability of victim

Hypotheses 3, 6 and 8 predicted effects of flaming comments, friend count and anonymity on the perception of whether other users are willing to cyberbully the profile owner in the study. A 2 X 2 X 2 (Flaming Comments X Anonymity X Friend count) factorial analysis of variance with the perceived vulnerability of the target as the dependent variable was conducted to examine H3, 6 and 8. The results showed a significant main effect of
flaming comments, $F(1, 192) = 3.63, p< .05$. As compared to participants who viewed a profile with a low number of flaming messages ($M = 3.12, SD = 0.69$), participants who viewed a profile with a high number of flaming messages reported that other users of Facebook would be willing to cyberbully the profile owner in the experiment ($M = 3.30, SD = 0.64$). Thus, H3 was supported. There were no significant main effects of the other two independent variables, which indicated that both H6 and H8 were not supported.

However, the results also showed a significant interaction effect between flaming comments and friend count, $F(1, 192) = 3.91, p< .05$, indicating that the effects of the number of flaming comments were not the same for participants who viewed the profile page that displayed different friend counts. The results of a post-hoc simple main-effect analysis showed that the main effect of flaming comments was mainly driven by the participants in the low-friend count condition. In other words, when the participants who viewed a low number of friends on a Facebook profile page also viewed a high number of flaming messages, they perceived other users to be more willing to cyberbully the profile owner ($M = 3.35, SD = 0.62$), as compared to viewing a low number of flaming messages ($M = 3.00, SD = 0.62$) in the same low-friend count condition. Flaming comments, however, did not have any effect when the target had a high number of friends on the Facebook profile page (both $Ms = 3.24$).

**Mediation effects**

RQ1 through RQ4 questioned whether the three main cyberbully victim personalities (i.e., ostracism, dominance and extraversion) mediate the effects of the number of flaming messages and friend count on the intention to cyberbully and the perceived vulnerability of the target towards third party cyberbully activities. The single-step multiple mediator model by Preacher and Hayes (2008) was used to examine the indirect relationships among the
Table 2. Results of the Single-Step Multiple Mediator Model: The Confidence Interval for the Estimated Bootstrapped Specific Indirect Effect

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Through Ostracism</th>
<th>Through Dominance</th>
<th>Through Extraversion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intention</td>
<td>Vulnerability</td>
<td>Intention</td>
</tr>
<tr>
<td>Anonymity</td>
<td>-0.0278 ~ -0.1051 ~</td>
<td>-0.0168 ~ -0.0279 ~</td>
<td>-0.0255 ~ -0.0104 ~</td>
</tr>
<tr>
<td></td>
<td>0.0127</td>
<td>0.0366</td>
<td>0.0296</td>
</tr>
<tr>
<td>Flaming</td>
<td>-0.0637 ~ -0.1880 ~ -0.0143 ~</td>
<td>0.0105 ~ -0.0409 ~ -0.0023 ~</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.0309</td>
<td>0.303*</td>
<td>0.0746</td>
</tr>
<tr>
<td>Friend</td>
<td>-0.0087 ~ -0.0397 ~ -0.0430 ~</td>
<td>-0.0528 ~ -0.0498 ~ -0.1152 ~</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.0397</td>
<td>0.1120</td>
<td>0.0078</td>
</tr>
</tbody>
</table>

Note: *p < .05

variables. The single-step multiple mediator model allows the investigation of total indirect effect by a set of mediators, and compared to a simple mediation model, presents a more realistic perspective as multiple mediators often interact with each other in creating an effect (Preacher & Hayes, 2008).

Using the SPSS macro for conducting the single-step multiple mediation analysis (Preacher & Hayes, 2008), the results showed that the bootstrapped specific indirect effect for the number of flaming comments through dominance and ostracism were significant for the perceived vulnerability of the victim with 95% confidence interval (see Table 2). In summary, the perception of the target’s personality mediated the effect of flaming comments on the perceived vulnerability of the target (RQ3). There was no significant mediation effect for RQ1, 2 and 4.
Figure 6. Direct and Indirect Effects of Anonymity, Flaming Messages and Friend Count on the Intention to cyberbully and perception of a target’s Vulnerability.

Note: Numbers are standardized regression coefficients. Solid lines indicate significant direct or indirect effects based on the results of the single-step multiple mediator model (Preacher & Hayes, 2008). Doted lines indicate non-significant effects.

+ $p < .7$, * $p < .05$, ** $p < .01$, *** $p < .001$
Discussion

Based on the communication model, we investigated the effects sender (i.e., anonymity of the user), message (i.e., flaming comments) and receiver (i.e., number of friend count) characteristics have on perceived personalities of the profile owner, intention towards cyberbullying and perceived vulnerability of the victim on Facebook in the current study. Traditionally, previous research on cyberbullying has concentrated on investigating potential bullies in school, workplaces or the Internet (Aquino & Bradfield, 2000) by identifying specific salient qualities in this group of people. Such research focuses on how sender characteristics such as gender (Kaplan & Miller, 1978) can explain how online users may be incited to commit deviant behaviors. In this study, we took one step further to expand on the current literature in cyberbullying by taking into account the effects of the whole communication model to explain its effects on cyberbullying behaviors. We apply this model to an online platform that has been rapidly expanding, Facebook, to examine how cyberbullying behaviors may be influenced by a combination of the message, receiver and sender characteristics within SNSs. In the following sections, we will discuss the results and some practical implications on how cyberbullying may be curbed in SNSs.

Intention to cyberbully

Consistent with previous findings that anonymity tends to lower one’s fear of isolation, promote disinhibition and enable one to perform anti-social behaviors (Suler, 2004; Patchin & Hinduja, 2006; Hlavach & Freivogel, 2011), the results in this study showed that anonymity of a person could also lead to greater intention to cyberbully in an SNS platform such as Facebook (H7). This result is similar to the effect of anonymity found on other online platforms such as forums (Moore, et. al, 2012; Rosenberry, 2011), chatrooms (Hinduja & Patchin, 2008; Kowalski & Limber, 2007) and email (Brandtzæg, Staksrud, Hagen & Wold, 2009).
However, such a finding is contrary to current speculations by scholars on how the usage culture within SNSs can discourage anonymous cyberbullying activities (Topcu, Yıldırım & Erdur-Baker, 2012). As SNSs are online platforms that tap on social capitals and social networks to enhance users’ experiences, they have generally cultivated a culture of using one’s real name and information on the platform (Tufekci, 2008; Freis & Gurung, 2013). Users who use an account that contains a fake name or information are typically ostracised from the community and sometimes even banned from using the SNS. Such a usage culture has been thought to be a factor in how SNSs may deter cyberbullies who use anonymous fake accounts (Kwan & Skoric, 2012; Orita & Hada, 2009), but the results from this study show that anonymity can still provide certain psychological effects causing them to have a greater inclination to commit cyberbullying acts. A plausible explanation of such an effect is that the undertaking of a fake identity in SNS may allow one to feel more disconnected from their actions, which may result in a loss of self-awareness and a diminished sense of accountability for their actions (Yun & Park, 2011; Kling, Lee, Teich & Frankel, 1999; Joinson, 2001). Anti-social behaviors like cyberbullying might be a result of this disinhibition effect (Hardarker, 2010; Scott, 2004). From this, we note that despite different features or usage cultures in various online platforms, anonymity generally leads to greater disinhibition of online users, making them more prone to commit deviant behaviors such as cyberbullying.

To curb cyberbullying acts in SNSs that arises from the usage of anonymous fake accounts, intervention methods that focus on self-awareness of one’s behaviors (Correia, Alves, de Almeida, & Garcia, 2010) should be given equal or more emphasis as compared to correcting the behavior of the bully directly. Users can be educated on how certain conditions within the Internet, such as anonymity, may provide them with a sense of false security that cause them to be deindividualized and increase their likelihood of engaging in deviant
behaviors. Improving the Internet literacy and educating users on the impact of cyberbullying can help them to be more sensitive to such situations that can provoke deviant behaviors (Slonje & Smith, 2008).

**Perception of cyberbully victim personalities**

Although past studies have shown that the negative perceptions of a victim’s characteristics play an important role in determining the likelihood of one being cyberbullied (Staude-Müller, Hansen, & Voss, 2012), the notion of how such perceptions are formed is still debatable (Bowling, Beehr, Bennett, & Watson, 2010). Victims who experience a high frequency of cyberbullying activities are typically thought to be less socially dominant (Olthof, Goossens, Vermande, Aleva, & van der Meulen, 2011), less extroverted in personality and more ostracised as compared to people who are not involved in cyberbullying (Marini, et al, 2006; Gofin & Avitzour, 2012). Previous studies have also demonstrated that victims may in some degree participate in their own victimization by presenting themselves as being anxious, anti-social and angry (Aquino & Bradfield, 2000), which leads to the appearance of them being vulnerable to cyberbullying acts.

However, the results of the current study implies that negative perceptions of a potential cyberbully victim in SNSs might also be a result of external factors such as the message and receiver characteristics within a SNS platform. Specifically, a high number of flaming messages and low-friend count on a Facebook profile page can cause users to form a negative impression of a victim, leading to an increased perception of the victim’s vulnerability towards cyberbullying. Therefore, whether cyberbully victims are subjected to such deviant behaviors on SNSs might not only be a result of internal personality factors. Non-personal factors, in this case the message and receiver characteristics on Facebook, can also increase the vulnerability of the victim towards cyberbullying activities. It may hence be important to raise the awareness among online users that impressions on SNSs can influence
the perceived vulnerability of a user on SNS. This awareness could prompt users to think
twice before posting any comments on their own and others’ profile page and also consider if
there is a need to adjust their own privacy settings on SNSs – restricting the public exposure
of certain information like photos or comments that might lead them to be more likely to be
perceived as a cyberbully victim.

Also, our study showed how different characteristics within the communication model
could influence each other to additively have an effect on the perception of a victim’s
personality and vulnerability. Specifically, when participants saw a Facebook profile that
displayed a low-friend count, they perceived the victim to be more vulnerable to
cyberbullying acts when the profile page displayed a high number of flaming messages as
compared to when the profile page displayed a low number of flaming messages. However,
such a relationship was not seen when the participants viewed a profile page displaying a
high-friend count. Such an effect in this study demonstrates that it may be possible that
different elements within an SNS platform can affect each other to either mitigate or enhance
cyberbullying behaviors within the platform.

A plausible reason as to why such a discrepancy was observed for the Facebook
profiles with different friend counts is that friend count may have acted as a counteractive
medium for the negative perceptions that may have been formed from viewing a greater
number of flaming messages. As investigated by Antheunis & Schouten (2011), a high-friend
count on a user’s Facebook profile page can generate a positive feedback on the user, causing
others to see the profile holder as being more popular, pleasant, attractive and self-confident.
These positive characteristics may act to neutralize the negative perceptions that are being
formed from viewing a high number of flaming messages on the victim’s profile, thus
making victims, that have a Facebook profile page displaying a high number of friend count,
immune to the effects of negative impressions that arises from an increased frequency of cyberbullying activities.

**Third-Person Effect**

The results also confirmed that a third-person effect existed when we investigated the message cue on Facebook and its effect on measuring cyberbullying intentions. By comparing H1 and H3, we noted that when participants were exposed to a high number of flaming messages, they perceived others as being more likely to be influenced by these messages and have a higher inclination to cyberbully the target (H3) as compared to themselves (H1). This result is in line with the findings from a study by Gunther and Storey (2003). According to Gunther & Storey, (2003), a negative-influence corollary is a condition whereby the third-person effect is evident for “messages with apparently undesirable consequences” (p. 200 -201). When there is a high frequency of cyberbullying activities, the online user will be likely to perceive the opinion climate to be negative, causing them to differentiate themselves from others by creating a greater distance between themselves, the first-person, and the third-person (i.e., other users; Eveland, Nathanson, Detenber & McLeod, 1999). Such a perception could result in a third-person effect where the users dissociate themselves from the message’s negative influence but still perceive the message cue to have a strong influence on other users’ behaviors (David & Johnson, 1998; Gunther & Mundy, 1993).

The result on the third-person effect in this study implies the importance of why we should measure and understand the effects of cues in SNSs that may promote cyberbullying behaviors in differentiated methods. As users would tend to perceive themselves as being more immune to negative message influences than they really are (Paradise & Sullivan, 2012), measuring the effects of the various characteristics in SNSs that may generate a greater tendency towards cyberbullying may yield a result that is not reflective of the true
effects of these cues. In the investigations of cyberbullying behaviors and how mass communication may affect these behaviors, scholars should be aware that users normally view themselves being less prone to negative media influences. This effect may cause the direct reporting of cyberbullying behaviors and how cues on online platforms affect users to be less pronounced than it is in the actual online situation. Thus, in order to paint a more accurate picture of the effects of different variables in online platforms towards cyberbullying intentions, it may be necessary to not only directly measure whether online users are affected by such negative message cues, but also to measure their perception of the message’s influence through a proxy that can negate the negative-influence corollary.

**Mediation effects**

From the study’s results, we noted that the message characteristics on Facebook had two types of effects – direct and indirect – on the perceived vulnerability of the cyberbully victim. As discussed in the previous section, a high number of flaming comments have a direct effect on the perceived vulnerability of victim towards third party cyberbullying activities. In this study, it was also found that the perceived negative personalities of the profile owner act as a mediating factor for the effects of the number of flaming messages has on perceived vulnerability. Specifically, the indirect relationship between the number of flaming messages and perceived vulnerability showed that a higher number of flaming messages portrayed the profile owner as having low dominance and being more ostracised, which in turn created the perception that the profile owner would be more susceptible to cyberbullying activities by other users (RQ3).

From these results, we found that message characteristics, such as the number of flaming comments, may not only have an immediate and direct effect on a user’s intention to cyberbully a victim, but it may also be used as a cue to form impressions of the cyberbully victim. As the number of flaming messages that appears on a victim’s profile page increases,
users who view these profiles may generate a negative impression of the victim’s personalities. They may view the victims as being weak or deserving of the flames that are hurled at them, and such perceptions may lead to the increased perception of the victim’s vulnerability towards cyberbullying behaviors.

**Limitations and Future Research**

There are a few limitations that we will like to note within this study. Firstly, to investigate cyberbullying behaviors in Facebook, this study asked participants about their intentions to commit cyberbullying acts. Such a method to measure cyberbullying behaviors has been a common procedure in past studies (Menesini & Nocentini, 2009), but in future research, a different methodology or procedure can be developed to measure cyberbullying behaviors directly. For example, cyberbullying behaviors can be measured in an experimental set-up by allowing users to leave comments in an SNS and investigating the valence of these messages to determine the frequency of the cyberbullying act. Such methods may allow for more conclusive results on how characteristics within the platform may affect cyberbullying activities.

In this study, it was shown that message and receiver characteristics on Facebook play an important role in determining the perceived vulnerability of the cyberbully victim. This study investigated one aspect of the message, receiver and sender characteristics to determine its effects on the participants. However, SNSs provides online users with many functions to manipulate their profile, and different cues such as others-generated appraisals, group affiliations, like pages and photo albums of the user can also play a part in affecting people’s perceptions. Future research can investigate how other combinations of message, receiver and sender characteristics on SNSs may contribute to making a potential target more vulnerable to cyberbullying activities and expand on our understanding of the general effect of the communication sequence within SNSs.
Also, the independent variables for friend count and flaming comments in this study were dichotomous, which may limit the type of responses and effects it has on the participants. Past literature have shown that an excessive number of friends on SNSs may lead to a negative perception of the profile holder (Tong, et. al, 2008) as the person was judged to be pretentious and frivolous. An excessive number of flaming comments on a profile may also have such a boomerang effect (Hovland, Janis, & Kelley, 1953) and a saturation of flaming messages can appear to work in favor of discouraging additional cyberbullying activities. Future research can employ more levels of the variables when seeking to explore the effects of friend count and flaming messages on cyberbullying behaviors.

Finally, to create a more holistic view of how communication characteristics within SNSs can affect cyberbullying intentions, future research can investigate the variables proposed in this study on different SNS platforms. This study concentrated on investigating cyberbullying behaviors in Facebook due to its present popularity. But comparing Facebook to other SNSs such as Twitter or Google+, different features within these SNS platforms may result in different effects of the variables investigated inside this study. Future research that investigate the effects of these communication characteristics across different SNS platforms can give us a clearer idea of how such cues affect the cyberbullying behaviors of online users.

Conclusion

SNSs, such as Facebook, have brought about new ways for youths to socialize and communicate with one another. However, these new tools of communication have also created additional channels to which cyberbullying activities can occur. Hence, it is necessary to look at the different elements of an SNS, in this case Facebook, to decipher how these cues can lead to online users forming differing impressions of the profile owner and give way to intentions towards cyberbullying. The current study focuses on how a combination of
message, receiver and sender characteristics present within Facebook can help to determine online users’ intention to cyberbully and the perceptions formed of potential victims within these platforms.

In this study, it was found that anonymity directly affected users’ intentions to cyberbully. Also, a significant relationship was discovered between the frequency of cyberbullying activities and the perceived vulnerability of the victim. A revelation in this study is how the perceived personality of a cyberbully victim can act as a mediating factor for the effects of the frequency of cyberbullying activities has on the perceived vulnerability of the victim. Online users will typically view a victim that has a high number of flaming messages on their Facebook profile as being a person that is less dominant and more ostracised. Such a perception may then lead users to believe that the victim will be more vulnerable to third-party cyberbullying activities. Overall, this study has explored and given some answer to how aspects of the communication sequence in an SNS platform such as Facebook can affect cyberbullying intentions and perceptions of online users. The study illuminates a new perspective towards research in the variables that may affect cyberbullying, allowing for a better understanding of this growing phenomenon.

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