The Role of Personal and Environmental Attributes in Cyberbullying Victimization in Adults

Zimo Tang
Nanyang Technological University
TANG0379@e.ntu.edu.sg

Mariana Giovanna Andrade-Rojas
Nanyang Technological University
mariana@ntu.edu.sg

Lai Lai Tung
Nanyang Technological University
ALLTUNG@ntu.edu.sg

Abstract
This study empirically assessed the effects of intense internet usage and social media usage on cyberbullying victimization and used demographic attributes (age, gender, education, work status, online activity and economic status) as moderating factors. It revealed that intense social media usage highly contributed to cyberbullying victimization while intense internet usage surprisingly had a negative relationship with cyberbullying victimization. Meanwhile, age, gender and education were found to possess strong moderating effects on internet and social media usage. The results of this study could be used to devise prevention and intervention methods for cyberbullying, particularly in workplaces where a rising cyberbullying risk has been observed in recent years. As one of the few cyberbullying studies that focuses on working-age adults, this study serves as a foundation for future cyberbullying studies on the adult age group.

Keywords
Internet usage, social networking site, cyberbullying victimization.

Introduction
In the last decade, the number of online social network users has tripled and by 2018, 55.1% of the world population actively used the internet. Intensive usage of the internet and online social networks has increased concerns regarding their influence on individuals’ lives. There is an enduring interest on negative effects of the internet, among which, cyberbullying is a growing concern. Cyberbullying, defined as an “aggressive, intentional act or behavior that is carried out by a group or an individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend him or herself” (Moreno 2014), can have negative effects on victims. Research on cyberbullying has posited psychological theories and models to analyze the determinants of cyberbullying perpetration. For instance, Bo, Zhengchuan and Dahui (2016) studied cyberbullying perpetration and extended the contemporary deterrence theory (CDT) which acknowledged the effect of informal sanctions (including social disapproval from others, self-disapproval and moral inhibition of individuals) on committing criminal behaviors. In contrast to the plethora of research in cyberbullying perpetration, most of which have focused on teenagers and children, research on cyberbullying victimization in adults has been scant, which opens an interesting avenue of research to further understand factors that influence cyberbullying victimization in adults. In this paper we rely on the lifestyle-exposure theory of victimization to explain the effects of online activities, personal attributes, and economic status on cyberbullying victimization. Lifestyle-exposure theory of victimization suggests that victims’ characteristics influence likelihood of victimization, because characteristics may influence the exposure of victims to dangerous situations (Hindelang, Gottfredson and Garofalo 1978).

While intensity of internet usage has long been considered as one of the potential determinants of online criminal activities, intensity of internet usage has been extended as a factor leading to cyberbullying victimization over the last decade (Yun-Kyoung 2017). For instance, Yun-Kyoung and Jae-woong (2017) argued that adolescents’ entertainment use of internet was negatively associated with cyberbullying victimization and perpetration, while information use of internet displayed positive correlation with
cyberbullying victimization. Overall, they stated that greater amount of internet usage, itself, did not significantly contribute to the explanation of cyberbullying. The debate regarding the effect of internet usage intensity on cyberbullying victimization still continues as previous studies had mainly focused on a single age group – either adolescents or university students and have found conflicting results.

Online social networking sites (SNS) or social media are common venue for cyberbullying (Whittaker 2015). Scholars suggested that anonymous SNS have free online exchange of innermost, private thoughts and needs (Lowry, Zhang, Wang and Siponen 2016). Users with untraceable IDs could freely engage in unethical behaviors without taking any responsibility. Different classifications of cyberbullying (Willard 2006) have all recognized electronic messages as the main medium in cyberbullying. However, SNS, as a new form of online communication, have levelled up cyberbullying to a more central stage. Despite some work, there is little consensus on the relationship between social media usage and cyberbullying victimization. Most prior literature focused on the effects of social media and cyberbullying on adolescents and school age children. Thus, we further analyze how online social media usage is an important factor in cyberbullying victimization in adults. The lifestyle-exposure theory of victimization and our review of cyberbullying literature highlighted several personal attributes and socio-economic factors that may influence cyberbullying and they are age, gender, education background, work status, online activity and socio-economic status. To address these literature gaps and provide further understanding of cyberbullying victimization in adults, we focus on the relationship between intense internet and social media usage and cyberbullying victimization. We also explore how personal attributes and socio-economic factors influence the relationship between intense internet and social media usage and cyberbullying victimization.

**Theoretical Framework**

**Internet usage intensity:** It is defined as the extent that one has used the internet over a period of time. The internet generally offers anonymity, which eases identity hiding or fake identities to post whatever individuals would like without taking any responsibility. Even people with few social skills offline are empowered with capability to socialize online. The online disinhibition effect, defined as an increase in unrestrained online behavior (Suler, 2004), explains that self-disclosure and aggressive acts are more likely to be carried out when people are online (John 2004). The role that internet plays in cyberbullying victimization can be significant. Yun-Kyoung (2017) argued that the relationship between intense internet usage and cyberbullying victimization remained unclear as more time spent online did not necessarily imply more involvement in risky online activities and thus, a higher risk of being cyberbullied. In this study, given the anonymity of the internet which promotes the online disinhibition effect, we hypothesize:

*Hypothesis 1: Internet usage intensity is positively associated with cyberbullying victimization.*

**Social Networking Sites (SNS) usage intensity:** Online social media has a profound effect on how people interact in the modern social context. Lowry et al (2016) posits that social media use promotes anonymity, which in turn leads to disinhibition and deindividuation of users and their increased willingness to engage in cyberbullying. Deindividuation (Lowry et al 2016), defined as losing one’s sense of individuality and responsibility (Silke 2003), can contribute to an individual’s loss of self-awareness in a group setting, triggering

---

1 In this paper we refer to social media and social networking sites (SNS) as synonyms.
the individual to participate in anti-normative behavior (Newcomb et al. 1952; Diener, 1980; Zimbardo, 1969). These theories propose that social media use may lead to unrestrained behavior and promotes online risk behavior. As a result, we propose that these behaviors and increased online risk of cyberbullying would lead to an increase in cyber-victimization through heightened social media usage.

Hypothesis 2: SNS usage intensity is positively associated with cyberbullying victimization.

**Personal attributes:** Demographic variables are important in the analysis of cyberbullying victimization. Different age groups present different cyberbullying victimization patterns (Yun-Kyoung, 2017). Research on effect of age on cyberbullying victimization facilitates cyberbullying mitigation process by providing a framework for effective prevention and intervention. Age has a strong influence on perceived easiness of participating in technology-mediated activities and on the perceived functionality of given internet-mediated products. The elderly often feel less literate in adapting to modern technology, particularly computers (Selwyn 2003), mobile phones and tablets (Arning 2007). Older people tend to be less engaged in internet-mediated activities and less devoted to social networking sites, and thus, age could reasonably impose a weakening effect on the relationships 1) between internet usage intensity and cyberbullying victimization and 2) between SNS usage intensity and cyberbullying victimization.

Hypothesis 3a: The positive relationship between internet usage intensity and cyberbullying victimization is weaker when the age of the victim is high.

Hypothesis 3b: The positive relationship between SNS usage intensity and cyberbullying victimization is weaker when the age of the victim is high.

Gender effect on cyberbullying victimization is attributed to the fact that female and male have different areas of interest online. While male focus more on entertainment, females seem more interested in the relational aspects of social media, which could arguably expose more information (Jones, Millermaier, Goya and Schuler 2008). Females are more likely to share secret things and deep feelings with friends on the internet through various social media platform (Rainie 2003). This information would potentially make females more vulnerable in the cyberspace. Given female's dominant usage in instant messages and online social networks (Statista 2017), it is reasonable to hypothesize that females would be an easier target in cyberbullying victimization.

Hypothesis 4a: The positive relationship between internet usage intensity and cyberbullying victimization is stronger when the victim is female.

Hypothesis 4b: The positive relationship between SNS usage intensity and cyberbullying victimization is stronger when the victim is female.

High education levels are likely to suppress the effect of some background factors on cyberbullying victimization (Akbulut 2011). Education equips individuals with flexibility and more available approaches to deal with problems, particularly cyberbullying. Education has direct effects in developing cognitive skills and problem-solving skills (Reynolds 2010). People from high education background are likely to be more internet-literate so that they tend to possess better risk perception in terms of cyberbullying victimization. Thus,

Hypothesis 5a: The positive relationship between internet usage intensity and cyberbullying victimization is weaker when education of the victim is high.

Hypothesis 5b: The positive relationship between SNS usage intensity and cyberbullying victimization is weaker when education of the victim is high.

Employment tends to have a profound effect on an individual's well-being, both economically and socioemotionally (McKe-Ryan 2005). Aside from making a living, employment somehow shapes an individual’s lifestyle and facilitates the development of friendship and social support. Unemployed individuals are likely to utilize online social media in hope of developing social relationships. The online platforms indeed provide places to foster conversations and build emotional support among unemployed people with similar interest (Douglas 2008). The unemployed tend to devote excessive amount of time online to seek online media's sociability, getting exposed to higher risk of being cyberbullying targets.

Hypothesis 6a: The positive relationship between internet usage intensity and cyberbullying victimization is weaker when the victim is employed.

Hypothesis 6b: The positive relationship between SNS usage intensity and cyberbullying victimization is weaker when the victim is employed.
Online activity: Online activity refers to the number of online activities that an individual has been involved in. Previous research (Grace Chi En 2013) argued that engagement in risky online activities was the first and foremost influencing factor in cyberbullying victimization. In this study, we examine number of online activities an individual has with the assumption that the more online activities one individual has, the more likelihood of being involved in risky online behaviors is. That is because People with diverse online activities are more likely to be engaged in risky online behaviors that would expose them as vulnerable cyberbullying targets (Grace Chi En 2013). Thus, online activity can be hypothesized to have a strengthening effect on the relationships 1) between internet usage intensity and cyberbullying victimization and 2) between SNS usage intensity and cyberbullying victimization.

Hypothesis 7a: The positive relationship between internet usage intensity and cyberbullying victimization is stronger when online activity of the victim is large.

Hypothesis 7b: The positive relationship between SNS usage intensity and cyberbullying victimization is stronger when online activity of the victim is large.

Economic status: Economic status refers to the socio-economic background based on family income. The socio-economic background would mirror individuals' living standards as well as opportunities and resources possessed in potential problems solving. People with good economic status are more aware of and more intended for having a balanced and healthy lifestyle in general. Past research (Hindelang 1978) suggested that an individual's lifestyle choices could affect his or her odd of being victimized through affecting potential exposure to criminals, which could be also applied to virtual world. Thus,

Hypothesis 8a: The positive relationship between internet usage intensity and cyberbullying victimization is weaker when economic status of the victim is good.

Hypothesis 8b: The positive relationship between SNS usage intensity and cyberbullying victimization is weaker when economic status of the victim is good.

Methodology

We collected information related to cyberbullying victimization, personal, and environmental factors through a country wide random survey conducted in an emerging economy. The survey items were developed based on existing and reliable scales. First, in-depth interviews were conducted to verify the relevance and completeness of the instrument. After the interviews, survey items were revised to enhance readability and clarity. For the final survey, 90,024 individuals were randomly selected nationwide from the government household registration database. A randomization technique was deployed, and the selection consisted of 25,000 individuals randomized on the national level and 65,024 individuals for regional randomization. Interviewers were recruited and trained to conduct effective onsite surveys by attending an orientation course and receiving a manual with details. The interviewers visited the households and presented the questionnaires related to cyberbullying victimization, housing, usage of internet, social media and information technology. On-site surveys have been identified as an efficient method to collect information in emerging economies (Zhou and Wu 2010). At the end, 59,800 independent individuals responded the survey. After selecting adult individuals (age 18 and above), we obtained 33,901 complete and effective responses. The respondents were aged 19-69 years old and consisted of 17,193 males (50.72%) and 16,708 females (49.28%). This survey was part of a government initiative to further understand the online behavior of the population and participants had the legal obligation to answer the survey.

Table 1 displays the survey items. To measure cyberbullying victimization, we followed Willard's broad categories of cyberbullying behavior. A count variable was then used to count the number of cyberbullying incidents that an individual encountered, where 0 indicated “no experience” and 10 indicated “experience all types”. Following Hinduja and Patchin’s findings (2008), we measured the proportion of days spent online with a 365-day year basis. We, then, performed logarithm transformation and used the logarithm value to indicate internet usage intensity. The SNS usage intensity variable included four major types of online social media: Facebook, Twitter, Instagram and LinkedIn. It is zero if the person did not use any type of online social media and one, two, three or four to indicate number of SNS sites used. Following Anderson and Gerbing's approach (1988) in refining the multiple-category measures and testing construct validity, we ran exploratory factor analysis on 23 categories of online activities (Table 1). Due to the dichotomous nature of the data, polychoric correlation matrix was used. Based on factor loadings (Fornell 1981), 18 out of 23 categories were significant in constructing a single factor while the rest were omitted due to low factor loadings. A summative index was created to count the number of different online activities one respondent had among the remaining
18 categories, then logarithm transformation was performed. The factor analysis results are omitted for brevity. Age was measured as the logarithm of the number of years since the person was born at the time of the survey. A dummy variable was used to measure gender female (1) and male (0). Education is measured by the logarithm of number of years of education. A dummy variable was used to measure work status (0 = unemployed, 1 = employed). Possession of fundamental household appliances (refrigerator and washing machine) was used as an indicator of economic status (Topçu 2008). The variable took the value one if the household was in good economic condition and zero otherwise.

| **Cyberbullying victimization:** | Please indicate if you have experienced the cyberbullying incident in the last year (0 = none, 1 = experienced at least once): 1. Being registered in a service or website without your consent, 2. Receiving junk mails with virus that caused harm, 3. Getting messages with insults, threats, intimidation or other uncomfortable content, 4. Receiving calls with insulting, threatening, intimidating or other uncomfortable dialogue, 5. Being contacted through false identities, 6. Being published online with shameful, false or intimate information, 7. Identity theft and someone send false or harmful message on your behalf, 8. Personal accounts or websites being stalked ant tracked, 9. Receiving video or image of sexual or aggressive content, 10. Being forced to give your password to someone else to keep an eye on you |
| **Internet usage intensity:** | Please indicate the extent to which you have used the internet over the past year (0 = Do not use the internet at all, 1 = Every day, 2 = At least once a week, 3 = At least once a month, 4 = At least once every 6 months, 5 = At least once each year) |
| **SNS usage intensity:** | Please indicate the types of online social media that you used in the past year (0 = none, 1 = used at least once): 1. Facebook, 2. Twitter, 3. Instagram, 4. LinkedIn |

Table 1. Survey Items

We controlled for variables that could influence cyberbullying victimization. First, we controlled for the effects of city type. Urban and rural areas have experienced a digital gap in terms of internet penetration. This variable took the value one if the household lived in an urban area and zero otherwise. We also considered town size (Smokowski 2013), which was measured with a four-point scale based on the number residents. We used the number of regular residents living in one household to control for family size (Yun-Kyoung 2017). A dummy variable measures internet accessibility at home (Cohen-Almagor 2015).

Analysis and Results

Due to the discrete and positively skewed distribution pattern, Poisson regression models were employed in this study to analyze the effects of intense internet and social media usage on cyberbullying victimization. Although prior research has used structural equation modeling (SEM) and Partial least squares to test survey data, there is a plethora of research that has used regression analysis to unfold the relationships between variables (Andrade Rojas, Solis and Zhu 2018; Zhou and Wu 2010). Hence, given the nature and distribution of the variables in this study, regression models were adequate.

Regression Model I included all main effects on cyberbullying victimization. We run it first to test Hypotheses 1 and 2 Regression Model II added the interaction effect between internet/SNS usage intensity and personal attributes. To test Hypotheses 3a, 3b, 4a, 4b, 5a, 5b, 6a and 6b, interaction effects of four personal attributes (age, gender, education, work status) were discussed. Regression Model III, distinct from Regression Model II, included the interaction terms between internet/SNS usage intensity and online activity. The model was built to test Hypotheses 7a and 7b. Regression Model IV (contingencies related to living standard), parallel to model II and III, Regression Model IV incorporated the last interaction terms between Internet/SNS usage intensity and economic status. The model was built to test hypothesis 8a and 8b.
Results

The correlation coefficients between cyberbullying victimization (DV) and the intendent variables show the theoretically expected relationship, except for education and work status for which the coefficients are positive yet small. Table 2 displays the results of Regression Models I and II. The results are aligned with theoretical assumptions and previous literature, except for internet usage intensity where we observe an insignificant negative relationship, therefore H1 is not supported. The significant positive coefficient for SNS usage intensity supports H2. Model 3 – 5 further include interaction terms between internet/SNS usage intensity and personal attributes. While H3a and H3b are supported by the negative interactions between age and internet usage intensity and SNS usage intensity, Hypothesis H4a and H4b are also verified by the negative coefficients observed for education with internet usage intensity and SNS usage intensity. We find support for H4a. The interaction effect between gender and SNS usage intensity is statistically insignificant and thus, H4b is not supported. Work status has a negative interaction with SNS usage intensity, which supports H6a. Internet usage intensity has a positive yet statistically insignificant interaction effect, H6b is not supported. Figure 2 (a) plots interaction effects of personal attributes and cyberbullying victimization. Under high age, the downward slope of SNS usage intensity on cyberbullying victimization is steeper, implying that individuals at a higher age are less likely to be victims of cyberbullying. A similar induction can be made for the moderating effects of education on the relationships between (1) SNS usage intensity and cyberbullying victimization (2) internet usage intensity and cyberbullying victimization. High education weakens the positive effects of both SNS usage intensity and Internet usage intensity on cyberbullying victimization.

<table>
<thead>
<tr>
<th>Variables</th>
<th>H</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
<th>Model 7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNS usage intensity</td>
<td>0.0884***</td>
<td>0.1001***</td>
<td>0.0890***</td>
<td>0.1029***</td>
<td>0.1174***</td>
<td>0.1355***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0080)</td>
<td>(0.0093)</td>
<td>(0.0098)</td>
<td>(0.0086)</td>
<td>(0.0149)</td>
<td>(0.0177)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet usage intensity</td>
<td>0.0323***</td>
<td>0.0324***</td>
<td>0.0577***</td>
<td>0.0298***</td>
<td>0.0056</td>
<td>0.0404***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0044)</td>
<td>(0.0044)</td>
<td>(0.0058)</td>
<td>(0.0045)</td>
<td>(0.0075)</td>
<td>(0.0102)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.2471***</td>
<td>-0.2375***</td>
<td>-0.2564***</td>
<td>-0.2449***</td>
<td>-0.2544***</td>
<td>-0.2459**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0236)</td>
<td>(0.0247)</td>
<td>(0.0236)</td>
<td>(0.0236)</td>
<td>(0.0238)</td>
<td>(0.0249)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-0.1562***</td>
<td>-0.1567***</td>
<td>-0.1187***</td>
<td>-0.1561***</td>
<td>-0.1615***</td>
<td>-0.1204**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0141)</td>
<td>(0.0141)</td>
<td>(0.0157)</td>
<td>(0.0141)</td>
<td>(0.0143)</td>
<td>(0.0163)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>-0.1092***</td>
<td>-0.1081***</td>
<td>-0.1148***</td>
<td>-0.0791**</td>
<td>-0.1125***</td>
<td>-0.0868**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0351)</td>
<td>(0.0351)</td>
<td>(0.0350)</td>
<td>(0.0368)</td>
<td>(0.0350)</td>
<td>(0.0368)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work status</td>
<td>-0.0155</td>
<td>-0.0140</td>
<td>0.0034</td>
<td>-0.0147</td>
<td>-0.0161</td>
<td>0.0125</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0168)</td>
<td>(0.0168)</td>
<td>(0.0170)</td>
<td>(0.0168)</td>
<td>(0.0182)</td>
<td>(0.0187)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economy</td>
<td>-0.1538***</td>
<td>-0.1543***</td>
<td>-0.1540***</td>
<td>-0.1549***</td>
<td>-0.1546***</td>
<td>-0.1552**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0177)</td>
<td>(0.0177)</td>
<td>(0.0177)</td>
<td>(0.0177)</td>
<td>(0.0177)</td>
<td>(0.0177)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Online activity</td>
<td>1.2137***</td>
<td>1.2083***</td>
<td>1.2140***</td>
<td>1.2083***</td>
<td>1.2123***</td>
<td>1.2083***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0228)</td>
<td>(0.0228)</td>
<td>(0.0228)</td>
<td>(0.0228)</td>
<td>(0.0228)</td>
<td>(0.0231)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Control variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Town size</td>
<td>0.0086</td>
<td>-0.0231**</td>
<td>-0.0238**</td>
<td>-0.0246**</td>
<td>-0.0238**</td>
<td>-0.0233**</td>
<td>-0.0256**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0095)</td>
<td>(0.0095)</td>
<td>(0.0095)</td>
<td>(0.0095)</td>
<td>(0.0095)</td>
<td>(0.0095)</td>
<td>(0.0095)</td>
<td></td>
</tr>
<tr>
<td>City size</td>
<td>0.0175</td>
<td>-0.0245</td>
<td>-0.0236</td>
<td>-0.0241</td>
<td>-0.0229</td>
<td>-0.0242</td>
<td>-0.0227</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0184)</td>
<td>(0.0184)</td>
<td>(0.0184)</td>
<td>(0.0184)</td>
<td>(0.0184)</td>
<td>(0.0184)</td>
<td>(0.0184)</td>
<td></td>
</tr>
<tr>
<td>Internet access</td>
<td>0.1668***</td>
<td>-0.0906***</td>
<td>-0.0902***</td>
<td>-0.0918***</td>
<td>-0.0869***</td>
<td>-0.0878***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0151)</td>
<td>(0.0164)</td>
<td>(0.0164)</td>
<td>(0.0164)</td>
<td>(0.0164)</td>
<td>(0.0164)</td>
<td>(0.0164)</td>
<td></td>
</tr>
<tr>
<td>Family size</td>
<td>-0.0210***</td>
<td>0.0027</td>
<td>0.0026</td>
<td>0.0027</td>
<td>0.0018</td>
<td>0.0025</td>
<td>0.0019</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0038)</td>
<td>(0.0040)</td>
<td>(0.0040)</td>
<td>(0.0040)</td>
<td>(0.0040)</td>
<td>(0.0040)</td>
<td>(0.0040)</td>
<td></td>
</tr>
<tr>
<td><strong>Interaction variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet usage &amp; Age</td>
<td>H3a</td>
<td>-0.0141</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0117)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNS usage &amp; Age</td>
<td>H3b</td>
<td>-0.0109**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0044)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet usage &amp; Gender</td>
<td>H4a</td>
<td>-0.0523***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0075)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNS usage &amp; Gender</td>
<td>H4b</td>
<td>-0.0025</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0018)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Twenty-fifth Americas Conference on Information Systems, Cancun, 2019
Internet usage & Education & H5a & -0.0239 & -0.0228
& (0.0149) & (0.0149)
SNS usage & Education & H5b & -0.1416*** & -0.1344***
& (0.0325) & (0.0353)
Internet usage & Work status & H6a & 0.0364*** & 0.0158*
& (0.0085) & (0.0093)
SNS usage & Work status & H6b & -0.0372** & -0.0357**
& (0.0164) & (0.0168)
Constant & & & -0.5159*** & -1.8773***
& (0.0327) & (0.1287)
& & -1.9106*** & -1.9625*** & -1.9538*** & -1.7651*** & -2.0431***
& (0.1314) & (0.1295) & (0.1321) & (0.1347) & (0.1430)
Pseudo R^2 & & & 0.0022 & 0.0984
& & & 0.0985 & 0.0990 & 0.0987 & 0.0986 & 0.0994
N = 33,901; *** p<0.01, ** p<0.05, * p<0.1

Table 2. Results of Regression Analysis – Model I and II

To analyze how online activity influences the effects of internet usage intensity and SNS usage intensity on cyberbullying victimization, we present the results for Regression Model III in Table 3. Model 8 and Model 9 incorporate interaction effects of online activity on internet usage intensity and SNS usage intensity. Significant positive interaction terms are in support of H7a and H7b. Figure 3 illustrates the relationship between internet/SNS usage intensity and cyberbullying victimization under high and low online activity. With more perceived online activities, the onward-slopes of both (a) SNS usage intensity and (b) internet usage intensity have a stronger impact on cyberbullying victimization, aligned with H7a and H7b. Table 4 presents the moderating effect of economic status on the relationship between internet/SNS usage intensity and cyberbullying victimization. The result shows that the moderating effect of economic status is insignificant in the analysis of cyberbullying victimization.
Table 3. Results of Regression Analysis – Model III

Discussion

Intense social media usage is linked to high cyberbullying victimization. Internet usage intensity is observed to have a negative association with cyberbullying victimization, in contrast with results of prior work (Livingstone 2010). This may due to the fact that intense internet usage may equip users with relatively good judgement and identification methods when encountering risky behaviors. Users with better internet skills tend to be more aware on how to prevent cyberbullying. As previous researchers (Livingstone 2010) mainly focused on cyberbullying victimization among adolescents, the discussion of cyberbullying victimization in adults needs more attention. This study analyzed adults and the results show a strong moderating effect of age on the relationship of social media usage and cyberbullying victimization. The moderating effect of gender is also observed. Unlike Suzan and Mustafa (2012) who observed no gender difference on cyberbullying victimization, this study shows that cyberbullying victimization is more prevalent for females than males, which can be attributed to female’s intense engagement in online social media, which could result in getting exposed to more cyberbullying risk. Another important moderating effect is education background. People that achieved higher education levels are less likely to be cyber-victims. Consistent with past literature (Akbulut 2011), education moderates the positive effect of intense internet and social media usage on cyberbullying victimization.
### Table 4. Results of Regression Analysis – Model IV

<table>
<thead>
<tr>
<th>Interaction variables</th>
<th>H8a</th>
<th>-0.0234*** (0.0083)</th>
<th>-0.0226*** (0.0086)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet usage &amp; Economy</td>
<td>H8b</td>
<td>-0.0185 (0.0169)</td>
<td>-0.0068 (0.0175)</td>
</tr>
<tr>
<td>SNS usage &amp; Economy</td>
<td>Constant</td>
<td>-0.5159*** (0.0327)</td>
<td>-1.8773*** (0.1287)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-1.9443*** (0.1311)</td>
<td>-1.8949*** (0.1298)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-1.9484*** (0.1315)</td>
<td></td>
</tr>
<tr>
<td>Pseudo R^2</td>
<td>0.0022</td>
<td>0.0984</td>
<td>0.0985</td>
</tr>
</tbody>
</table>

* N = 33,901; *** p<0.01, ** p<0.05, * p<0.1

### Figure 2. Moderating Effects of Personal Attributes on the Relationship Between Internet/SNS Usage Intensity and Cyberbullying Victimization

### Figure 3. Moderating Effects of Online Activity on the Relationship Between Internet/SNS Usage Intensity and Cyberbullying Victimization

In practice, this study highlights the importance of social media usage control, education, prevention and intervention in cyberbullying situations. This finding might not be surprising as most companies install firewall to restrict social media usage in workplaces and conduct series of internet usage trainings in hope of minimizing internet-related risk that may do harm to employees, companies, clients and shareholders. Supervisors on the management roles and human resource managers are perceived as having scarce coping methods when facing workplace cyberbullying (Naomi 2014). Precautions specifically for cyberbullying should be developed within companies, where a benign and inclusive working culture may be necessary. Moreover, managers of different levels should be highly aware of the potential cyberbullying among employees and monitoring the office mental health with feasible regular group meetings and individual conversations. Our paper has some limitations that offer potential new avenues for research. With a general trend view of the relationship of intense internet and social media usage on cyberbullying victimization, further research could design survey analysis with different measure mechanisms. Moreover, being aware of growing cyberbullying cases in workplaces, further research could specialize in the study of workplaces and how customized workplace social media software (for example, yammer) influences the occurrence of cyberbullying in workplaces.

### Acknowledgements
We wish to acknowledge the funding support for this project from Nanyang Technological University under the Undergraduate Research Experience on CAmpus (URECA) programme.

### References


