

Factors in cyber bullying: the attitude-social influence-efficacy model

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Título: Factores en el acoso cibernético: el modelo de actitud-influencia social-eficacia.

Resumen: Este estudio examina la correlación entre la percepción de riesgo, el conocimiento, la influencia social, la autoeficacia y el comportamiento del acoso cibernético desde la perspectiva del modelo de influencia social. Las muestras en esta encuesta son adolescentes que han tenido un comportamiento de acoso cibernético o han presenciado el comportamiento de acoso cibernético de sus compañeros. Los resultados mostraron que la actitud hacia el acoso cibernético afectó la intención de acoso cibernético, y esa intención también influyó en el comportamiento del acoso cibernético. La influencia social también tuvo un impacto en la intención de acoso cibernético y el comportamiento de acoso cibernético. De hecho, la intención era un mediador entre la actitud y el comportamiento, así como entre la influencia social y el comportamiento.

Palabras clave: ciberacoso; modelo de actitud-influencia social-eficacia; percepción de riesgo.

Abstract: This study examines the correlation between risk perception, knowledge, social influence, self-efficacy, and cyber bullying behavior from the perspective of the attitude-social influence-efficacy model. The samples in this survey are adolescents who have had cyber bullying behavior or have witnessed their peers' cyber bullying behavior. The results showed that attitude towards cyber bullying affected cyber bullying intention, and that intention also influenced cyber bullying behavior. Social influence also had an impact on cyber bullying intention and cyber bullying behavior. In fact, intention was a mediator between attitude and behavior, as well as between social influence and behavior.

Keywords: cyber bullying; attitude-social influence-efficacy model; risk perception.

Introduction

Bullying is a major public health problem that demands the concerted and coordinated time and attention of health-care providers, policy-makers, and families (Srabstein & Leventhal, 2010). Bullying behavior refers to students, either at the same school or different schools, on-campus or off-campus, individually or collectively, using verbal languages, writings, images, symbols, physical gestures, or other forms to directly or indirectly disparage, ostracize, or make fun of other people, place other people in a hostile or unfriendly learning environment at school, make it difficult for other people to resist, inflict harm on other people's psychology, body, or possessions, and interfere with normal learning activities (Ministry of Education, Taiwan, 2011). With the popularization of the Internet, cyber bullying has become a type of bullying on campus (Huang & Chou, 2010). Compared to ordinary students, victims of bullying are more likely to suffer from mental and physical conditions, such as sleep problems, headaches, abdominal pain, depression, anxiety, low self-esteem, social withdrawal, worsening school performance, deteriorating social skills, and even suicidal inclinations in serious cases (Chang, 2013; Kim, Koh, & Leventhal, 2005). Some scholars pointed out that adolescents' attitude towards bullying has an impact on bullying behavior (van Goethem et al., 2010). Eslea and Smith (2012) pointed out that the main approach to discourage bullying behavior is to change students' attitude towards bullying.

Environment is an important influential factor in social interactions. It is likely that an individual can gain more power, and be in a more revered position, when others in a

group are more reliant on the individual (Lin et al., 2014). In the cyber world, adolescents use mobile instant messaging applications to send texts and images, create Facebook accounts to stay in touch with and share emotions with friends, make friends on social networking websites, and interact with other people. Scholars previously pointed out that, along with a growing number of accessible new technologies, social networking websites, text messaging software, and instant messaging applications, some people have started to use these information technologies to harm and bully others (Macdonald & Bridget, 2010). The research of Liao et al. pointed out that in the world of online games, whoever is more dominant also possesses more power. Game players have become even more reckless and unrestrained in bullying other game players. The anonymous environment on the Internet could be conducive to bullying behavior.

The theory of self-efficacy, as proposed by Bandura (1977), suggests that individuals' psychology is subject to the influence of personal cognition, and such a mechanism of cognition is called self-efficacy. When individuals encounter a hazard model, the individuals could predict future performance based on previous behavior, and self-efficacy is an accurate predictive factor of how the individuals might act. The research of Hsu et al. (2000), regarding whether people become involved in pirated software, pointed out that people's self-efficacy of a behavior is an important factor in changing or implementing that behavior. Self-efficacy is an individual's belief regarding their capabilities to complete a designated task or action. Individual moral self-efficacy regarding pirated software enables a person to show confidence in refusing software piracy behavior in any situation that might encourage software piracy behavior. Therefore, the social cognitive theory believes that self-efficacy is the most predominant self-regulatory mechanism that has influence on behavior. Chen et al. (2010) pointed out that the

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consequences of chewing betel nuts are anticipated to affect adolescents' habit of chewing betel nuts. Therefore, it has been proved that self-efficacy is an important factor that has an impact on behavior (Yang & Ke, 2015).

Attitude-Social Influence-Efficacy model (ASE) which integrates the theories of reasoned action and social learning, and believes that attitude, cognition, and social influence could predict behavioral intention and determine behavioral performance. In addition, an individual's attitude is a result of social influence and accumulated personal experiences. The ASE model emphasizes using anticipated results, self-efficacy, and social influence to predict behavior and intention (Chen et al., 2010). Therefore, using the ASE model to explain personal cognition and the importance of social elements to usage behavior has been proven effective (Chang et al., 2007).

There have been a growing number of studies regarding cyber bullying. By examining cyber bullying behavior from the perspective of gender differences, scholars have pointed out that males are more likely to show cyber bullying behavior than females (Barlett & Coyne, 2014). Exploring the role of onlookers in bullying behavior, the results of Holfeld's research (2014) indicate that onlookers are unlikely to offer help to victims of cyber bullying. Kokkinos et al. (2014) investigated cyber bullying behavior from the perspectives of personality traits, emotional factors, and the frequency of Internet usage. There is also research on the impact of cyber bullying at work (Hong et al., 2014). There are limit studies that investigated the correlation between cognition, social influence, self-efficacy, and cyber bullying behavior from the perspective of the ASE model. In order to effectively deal with cyber bullying behavior, in addition to strengthening school education personnel's professional competencies and accountability, an understanding of the involved parties and bullies' cognition and behavior are indispensable for reducing the likelihood of cyber bullying behavior. This study's research goals include: 1) to investigate the impact of an individual's attitude towards cyber bullying, self-efficacy, and social influence on the individual's cyber bullying intention and behavior; 2) to investigate whether socio-economic variables have an impact on cyber bullying intention and behavior.

Literature Review

Cyber Bullying

Cyber bullying refers to a situation when an individual or a group maliciously and repeatedly uses information and communication technologies to threaten others (Belsey, 2007). Tokunaga (2010) pointed out that cyber bullying behavior is usually enabled through the use of electronic or digital media. Individuals can also use the Internet, chat rooms, emails, mobile phones, mobile phone cameras, text messaging, instant messaging, blogs, and social networking

websites to bully other people (Campbell, 2005; Liao et al., 2012).

This form of bullying uses the Internet as a platform to send or post taunting, humiliating, scornful comments or unsightly images. Additionally, the Internet's anonymous nature is abused to disseminate such information to peers or strangers of the general public in an attempt to use a public trial on the internet to incite victims' fear and embarrassment and serve the purpose of hurting the victims (Liao et al., 2012). Such behavior would cause problems in the victims' mentality and in society (Shariff & Gouin, 2005). The varieties of cyber bullying may include creating online messages to harass, ostracize, vilify, imitate, swindle other people, divulging information about other people, take part in mutually accusative quarrels online, and stalking other people online.

A person involved in cyber bullying can be classified as a cyber bully victimizer, a cyber bully victim and bystanders (Holfeld, 2014; Wu & Jian, 2009). Victims of cyber bullying usually adopt the following three strategies in response to their experience of being bullied. Firstly, victims may adopt a passive approach, such as abstaining from taking action or choosing to ignore it; secondly, victims may adopt an active approach, such as reporting such behavior to other people; thirdly, victims may adopt a reactive approach, such as responding to the bullying behavior (Holfeld, 2014; Tokunaga, 2010). The true identity of a cyber-bully is usually difficult to determine, and a cyber-bully is possibly a victim of cyber bullying (Wu & Jian, 2009). Meanwhile, the bystanders of cyber bullying play a critical role in continuing or discouraging such behavior; while an active and positive participant would intervene and attempt to deter the bullying behavior. However, it is also possible for the situation to take a negative turn when bystanders become engaged in cyber bullying (Holfeld, 2014). Hinduja and Patchin (2009) described that bystanders are doing something.

It was previously pointed out that gender and age have a one-way or two-way interaction with bullying behavior (Barlett & Coyne, 2014). Cyber bullying usually happens to adolescents; particularly at school (Holfeld, 2014). More boys than girls participate in cyber bullying. In addition, more cyber bullying cases happen to girls in early adolescence and boys in late adolescence. Regarding more senior males and females, the chances of males partaking in cyber bullying are higher than females. Furthermore, cultural differences can make people of the same gender show different cyber bullying behavior. Such differences are perceived in North America, Europe, and Asia, but not in Australia (Barlett & Coyne, 2014).

In terms of cyber bullying's impact on victims, it was previously pointed out (Mishna et al., 2012) that victims of cyber bullying would feel frightened, worried, distressed, and can suffer from social anxiety disorder, eating disorder, drug or alcohol abuse, criminal behavior, and chaotic or nervous interpersonal relationships (Dehue, Bolman, & Vollink, 2008; Fosse & Holen, 2006; Ybarra & Mitchell, 2007; Gra-

ham, Bellmore, & Mize, 2006). In addition to suffering from social and psychological discomfort, some victims might even have aggressive behavior, antisocial behavior, emotional distress, or even have self-harming or suicidal thoughts (Chang, 2013).

The Attitude-Social Influence-Self-Efficacy Model

By integrating the theory of reasoned action (Fishbein & Ajzen, 1975), the social cognitive theory (Bandura, 1986), and the trans-theoretical model (Prochaska & DiClemente, 1983), and precaution adoption model (Weinstein, 1988), an ASE model, which integrates the various theoretical perspectives, is developed (de Vries et al., 2003). The ASE model can be used to explain changes in behavior and motivation, and suggests that attitude, cognition, and social influence could be employed to predict behavioral intention and further determine the possible occurrence of such behavior. In addition to the formation of individuals' attitude as a result of social influence and accumulated personal experience, self-efficacy regarding life matters is developed (Chen et al., 2010). In terms of the range of intention, it can range from the intention to change behavior to the intention to not change it (de Vries et al., 2003). Behavior is affected by individuals' capabilities. Possessing important capabilities enable individuals to take practical actions to turn intentions into real actions and reach goals (Gollwitzer & Schaal, 1998). Motivational factors include attitude, social influence, and self-efficacy, and are subject to the influence of different predisposing factors (de Vries et al., 2003). Attitude is an individual's positive or negative judgments regarding certain behaviors (Tan & Hung, 2006). Social influence is a result of social norms on behavior. Obtaining support from other people would aid or avoid the occurrence of certain behavior. Social influence can also be considered as opinions or expectations from important others in a person's mind or life, as well as the surrounding environment (Tan & Hung, 2006). Self-efficacy can also be considered as an individual's belief, as it assists an individual's performance or enables the individual to overcome obstacles (Brug et al., 1995). As pointed out by the ASE model, individuals' behavior is changeable, and goals can be reached by changing individuals' attitude, social influence, support, and self-efficacy.

It was previously pointed out that there is positive correlation between attitude and behavior (Hazzard & Angert, 1986). While studying the issue of asthma in adolescents, Tan and Hung (2006) pointed out a positive correlation between one's attitude towards asthma and self-management intentions, indicating that a person's intentions to self-manage the ailment of asthma are proportional to the positivity of the person's attitude towards asthma. On the social influence level, the consumption behavior of society or peer groups is subject to the influence of the herd mentality, which drives people to behave in a way that is consistent with others' behavior. As individuals grow up surrounded by different groups, individuals' behavior tends to be constantly

affected by parents, friends, and colleagues, and even limitations imposed by customs, laws and regulations. When making decisions, group members tend to make decisions by following group norms, which further affect other members' cognition and behavior (Lascu & Zinkhan, 1999). When individuals disagree with cyberbullying, their attitude towards cyberbullying is more negative, which affects their intention and behavior to engage in cyberbullying. As such, this study puts forward the following hypotheses: H1: "Cyber bullying attitude" has the inverse impact on "bullying intentions". H2: "Bullying intentions" have the direct impact on "bullying behavior".

Hsu et al. (2011) pointed out that bloggers' behavior is governed by a value system shared by society members, where they establish their own behavioral standards while complying with the group's unspoken rules. As indicated by Chen's research (2008), the variables of social learning, which include "the number of peers who use drugs" and "family members' drug-usage behavior", have the most powerful and crucial impact on adolescents' drug-usage behavior. This result indicates that adolescents are the most vulnerable to the influence of their peers and family members in terms of drug use. When peers do not support cyberbullying, this also influences adolescents' intention and behavior to engage in bullying. For that reason, this study puts forward the following hypotheses: H3: "Social influence" has the negative impact on "bullying intentions". H4: "Social influence" has the negative impact on "bullying behavior".

Bandura (1986) pointed out that, self-efficacy refers to an individual's belief in his or her capacity to execute and complete specific tasks in specific circumstances, i.e. an individual's expectations of his or her capacity to execute behavior necessary for specific tasks. Bandura (1991) also pointed out that, the higher an individual's self-efficacy in self-discipline is, the more likely that the individual could insist on exercising self-control and refuse to partake in immoral behavior. On the contrary, it is more difficult for an individual with lower self-efficacy in self-discipline to resist external temptations, and thus, it is easier for the individual to have immoral behavior. Bandura (1993) also found that, those with low self-efficacy in academic performance and self-management are prone to having negative emotions, as well as some forms of deviant behavior, such as attacking other people physically and verbally, which indicates a correlation between self-efficacy and adolescents' deviant behavior. Adolescents' self-efficacy to refuse to engage in cyberbullying also impacts their intention and behavior to engage in cyberbullying. For this reason, this study puts forward the following hypotheses: H5: "Self-efficacy" has the negative impact on "bullying intentions". H6: "Self-efficacy" has the negative impact on "bullying behavior".

deVries et al. (2003) suggested that motivational factors, which consist of attitude, self-efficacy, and social interaction, are subject to the influence of external factors, such as risk perception and knowledge. Viscusi (1991) suggested that an

individual's risk perception is a dynamic process of learning, meaning that old risk perceptions would be modified to form new posterior risk perceptions in retrospect after the individual accepts or learns new knowledge. As revealed by the research of Liou and Wu (2013), rational cognition regarding health risk has significant impact on daily cigarette consumption. In their research, Liou and Wu (2009) suggested that among subjective beliefs and concepts that affect the attitude towards alcohol consumption behavior attitude, the most important concept is what consequences such consumption behavior would bring to personal health. It is a belief that different levels of alcohol consumption would result in different impacts on health, thus, the level of impacts on personal health would be an evaluation made on the belief. In terms of formality, this is a type of subjective perception of health risk. As pointed out by scholars, the main factors that affect cigarette consumption behavior include the level of consumers' own subjective risk perception, age, educational attainment, and other socio-economic variables (Fu et al., 2001). As such, this study puts forward the following hypotheses: H7: "Risk perception" has the positive impact on "attitude". H8: "Risk perception" has the negative impact on "bullying behavior".

Knowledge has the nature of being undeletable and unpredictable and can change dynamically along with changes in the external environment (Lin, 2004). As pointed by Huang's research (2011), students have no correct knowledge of the process of individuals' aging, and may also harbor negative prejudices or even treat the elderly and aging with a negative attitude. Therefore, educational authorities should be warned that, while it is easy to impart the knowledge of aging to students, it is undoubtedly challenging to develop students' positive attitude towards aging and make students have a more positive behavioral intention. As pointed out by Yang et al. (2015), the more positive attitude that students have towards painkillers and the more knowledge students have about painkillers, the better students' performance is in the use of painkillers. Attitude is formed as a result of an individual's cognitive and emotional response to the stimulation of external objects and events. Therefore, the amount of customers' product knowledge would have an impact on the cognitive process of attitude development, and subsequently affect reactions (Petty & Cacioppo, 1986). Chiou et al. (2002) suggested that product knowledge is an important factor that affects post-purchase behavior. As such, this study puts forward the following hypotheses: H9: "Cyber bullying knowledge" has the positive impact on "attitude". H10: "Cyber bullying knowledge" has the negative impact on "bullying behavior"

Methods

Participants and Procedures

Prior to subject enrollment, the participants were adolescents who have had cyber bullying behavior or have witnessed their peers' cyber bullying behavior. All participants volunteered to join the study. Purposive sampling was employed, while face-to-face interviews were conducted for data collection. As proposed by Calder et al. (1981), homogeneous sampling is appropriate when the purpose of a study is to test a theory, as it reduces the probability of fallacies. Given that adolescents are the main group of cyber bullies and cyber bullying victims (Holfeld, 2014), both the chosen research sample and the sampling technique are appropriate. This study did not collect the participants' privacy, and the informed consent was obtained from all of the participants. Ethical considerations in this study had reported to an appropriate authority.

Design and Measures

This study defines the knowledge construct of cyberbullying as adolescents' perception of cyberbullying online and their understanding of the consequences. The scale was modified from the cyberbullying ebook (2014) developed by Taipei City Government's Department of Education on the website of information literacy and ethics, with a total of 10 items. Each correct answer of the subjects was scored 1, and each incorrect answer was scored 0. The total score of all correct answers was 10. The higher the score was, the higher the understanding of cyberbullying knowledge was. For the risk perception construct, this study referred to the opinion on perceived risk of Lin and Liao (2011), defining perceived risk as "individuals' perception of potential risk of being bullied due to the use of the Internet." The scale was modified from Lin and Liao (2011) and Hsu et al. (2013), with a total of 4 items. For the constructs of attitude, social influence, self-efficacy, and behavior and intention, the scales were developed based on the ASE model. This study defines the attitude construct as "individuals' positive or negative evaluation of cyberbullying behavior." The scale was modified from Lin and Liao (2011) and de Vries et al. (2003), with a total of 4 items. This study defines the intention construct as "individuals' willingness to engage in cyberbullying." The scale was modified from Tu et al. (2011), with a total of 1 item. This study defines the behavior construct as "individuals' subjective probability judgement of cyberbullying behavior." The scale was modified from Lin and Liao (2011), with a total of 3 items. This study defines the social influence construct as "perception of opinion or expectation from significant others." The scale was modified from Hsu et al. (2011), with a total of 5 items. This study defines the self-efficacy construct as "belief in the ability to refuse to engage in cyberbullying." The scale was modified from Hsu et al. (2000), with a total of 6 items. This study applied a 7-point

Likert scale to all of the items (1= strongly disagree; 7= strongly agree) for testing. The framework of this study was showed in Figure 1.

Statistical analysis

Partial Least Squares Structural Equation Modeling statistical software is employed to compute each construct's Cronbach's alpha value, composite reliability, factor load-

ings, and average variance extracted (AVE). This study used Cronbach's alpha to test the reliability. Except for the knowledge and intention constructs, the reliability coefficients of various constructs are: Cronbach's alpha of risk perception was 0.80, that of attitude was 0.79, that of social influence was 0.84, that of self-efficacy was 0.80, and that of behavior was 0.82. Therefore, the reliability of the various constructs met the requirement.

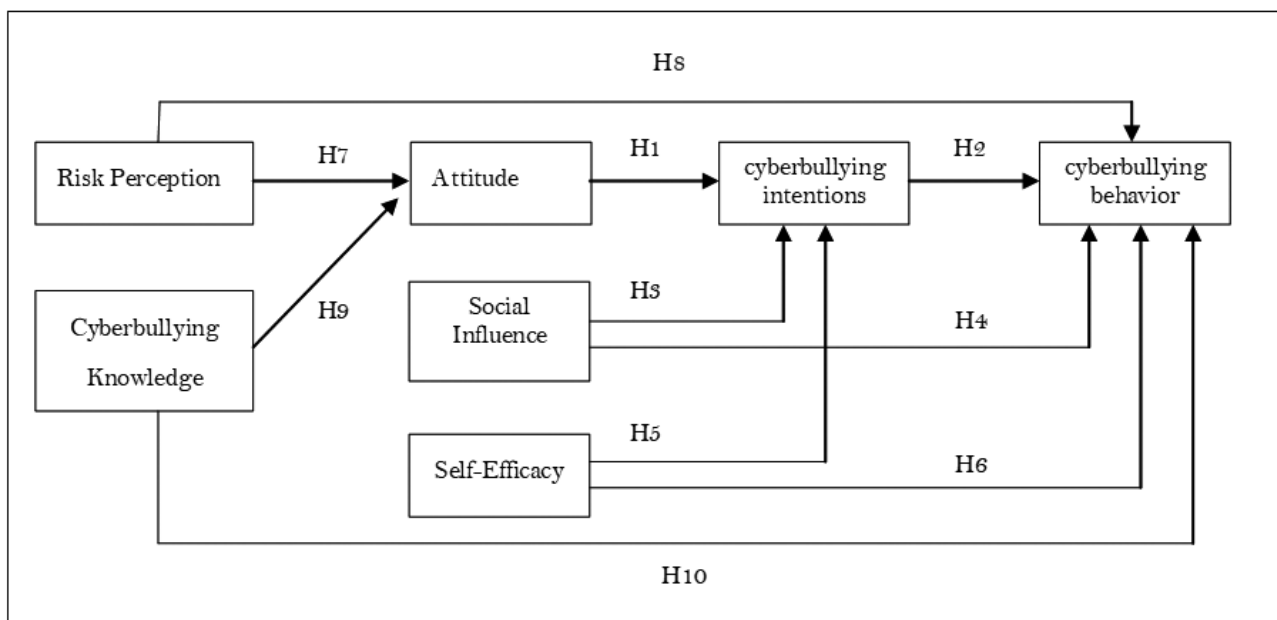


Figure 1. The Framework of this study.

For the test of validity, this study tested the convergent validity and discriminant validity of the various constructs. (Fornell & Larcker, 1981). The composite reliabilities of the

research were all greater than 0.7, and for the discriminant validity, AVE was also greater than 0.5. Therefore, the validity of this study was good. (Table 1).

Table 1. The model of this research.

	AVE	Composite Reliability	Cronbach's Alpha	Attitude	Behavior	Social Influence	Self-Efficacy	Intention	Knowledge	Risk perception
Attitude	0.623	0.865	0.786	0.789						
Behavior	0.845	0.916	0.817	-0.341**	0.919					
Social Influence	0.681	0.894	0.844	0.213*	-0.659**	0.825				
Self-Efficacy	0.655	0.878	0.801	0.390**	-0.278**	0.203**	0.809			
Intention	1	1	1	-0.251**	0.654**	-0.406**	-0.213*	1		
Knowledge	1	1	1	0.216*	-0.274**	0.223**	0.269**	-0.196*	1	
Risk perception	0.831	0.907	0.797	0.454**	0.234*	-0.108	0.316**	-0.197*	0.277**	0.911

*p < .05; **p < .01

Results

This study enrolled adolescents who had engaged in cyberbullying behavior or had seen peers engaging in cyberbullying behavior as the main subjects and collected a total of 120 valid samples, including 67 male subjects (55.83%) and 53 female subjects (44.17%). The average age of the subjects

was 20.77 years old (SD = 1.13). The educational background of all the subjects was at the university level. The average number of years of Internet use was 9.40 years (SD = 2.58). The daily average hours of Internet use was 5.80 hours (SD = 3.35). The subjects most frequently used cellular phones to access the Internet (77.5%). Sixty-six subjects (55%) had engaged in cyberbullying behavior, including 45

male subjects (68.18%) and 21 female subjects (31.82%), reaching statistical significance ($p = 0.003$). Forty-eight subjects had “uploaded embarrassing photos of friends online,” which was the behavior in which the largest number of subjects had engaged (72.72%). Moreover, the subjects who had engaged in bullying behavior spent a daily average number of 6.44 hours on using the Internet ($SD = 3.38$), which was higher than that (5.00 hours; $SD = 3.16$) of those who had never engaged in bullying behavior. The difference achieved significance ($p = 0.023$). However, in terms of the experience of Internet use, there was not a statistically significant difference between them (9.52 vs. 9.26, $p = 0.604$).

This study proposed a total of 10 hypotheses and used PLS to perform a linear structural equation analysis during the testing of them. The standardized coefficients and significance values showed that adolescents’ attitude towards cyberbullying had a negative influence on their intention to engage in bullying (Estimate value = -0.19, $p = .024$). Therefore, H1 was supported. Intention also had a statistically significant influence on behavior (Estimate value = 0.48, $p < .001$), therefore, H2 was also supported. For the social influence construct, social influence had a significant influence on adolescents’ intention and behavior to engage in bullying. When peers disagreed with cyberbullying behavior, adolescents’ intention to engage in cyberbullying was also reduced (Estimate value = -0.37, $p < .001$). In addition, their cyberbullying behavior also dropped (Estimate value = -0.41, $p < .001$). Therefore, H3 and H4 were both supported. For the self-efficacy construct, adolescents’ self-restraint ability to engage in cyberbullying did not have a statistically significant influence on intention (Estimate value = 0.06, $p = .117$) and behavior to engage in bullying (Estimate value = 0.04, $p = .395$). Therefore, H5 and H6 were not supported. For the risk perception construct, the results showed that when adolescents perceived a higher risk of being bullied online, they would also agree that bullying is bad (Estimate value = 0.44, $p < .001$). Thus, H7 was supported. However, risk perception did not have a statistically significant influence on bullying behavior (Estimate value = -0.01, $p = .828$). Therefore, H8 was not supported. In the end, the knowledge construct showed that the level of cyberbullying knowledge did not influence adolescents’ attitude (Estimate value = 0.12, $p = .131$) and behavior (Estimate value = -0.10, $p = .073$). Therefore, H9 and H10 were not supported. Average $R^2 = 0.35$, and $GOF = 0.53$. Therefore, the model’s goodness of fit was acceptable.

This study used the Sobel test to confirm the mediating effects (Sobel 1982). Preacher and Hayes (2004) suggested that, for computations based on the path coefficient and standard error, a Z value greater than 1.96 indicates a significant mediating effect. This shows that cyber bully intent plays mediating effects between cyber bully attitude and cyber bully behavior (Sobel z test = 2.062; $p = .039$) as well as between social effect and cyber bully behavior (Sobel z test = 2.900; $p = .003$).

Discussion

This study used the ASE model to analyze the influence of attitude, social influence, and self-efficacy on cyberbullying intention and cyberbullying behavior. Moreover, this study included antecedent variables, risk perception, and cyberbullying knowledge to perform analyses. The results showed that attitude towards cyberbullying affected cyberbullying intention, and that cyberbullying intention also influenced cyberbullying behavior. Social influence also had an impact on cyberbullying intention and cyberbullying behavior. In fact, cyberbullying intention was a mediator between attitude and behavior, as well as between social influence and behavior. However, self-efficacy did not affect intention and behavior. For the antecedent variables, only risk perception affected attitude towards cyberbullying, while cyberbullying knowledge did not have a statistically significant influence on other variables.

Past studies (Tanrikulua & Campbell, 2015) indicated that gender is an important factor affecting bullying. This study also found that, compared with girls, boys are more likely to engage in cyberbullying behavior. This result is consistent with that of past studies. Therefore, in terms of advocacy education for the prevention of bullying, educational authorities should focus more on male students. Moreover, this study also found that the average daily number of hours of Internet use of adolescents who had engaged in bullying behavior was significantly higher than that of those who had never engaged in bullying behavior. Past studies indicated that the number of bullies and those who are bullied are associated with frequent use of science and technology and technological involvement (Topcu et al., 2008). Therefore, adolescents who are more addicted to Internet use are more likely to become online culprits or victims. Therefore, it is necessary and important to develop a plan to reduce adolescents’ Internet use.

According to Theory of Planned Behavior (Ajzen, 1991), attitude affects intention and further influences behavior. This study found that when adolescents’ attitude towards cyberbullying is negative, their intention to engage in cyberbullying will be reduced and their cyberbullying behavior will further decrease. This result is consistent with the studies of Shima and Shin (2016) and Hong and Fu (2012). Attitude towards cyberbullying is an internal psychological tendency about the cyberbullying issue of adolescents. When adolescents view cyberbullying as a behavior failing to conform to information ethics, their intention to use the same negative approaches when treating others will be reduced. Therefore, the probability to develop cyberbullying behavior will decrease.

According to social influence theory (Kelman, 1958), individuals follow the opinions from significant others, who have an obedient social influence. Individuals will also internalize peers’ visions or values and convert them into their own beliefs (Liao, 2015). This study found that when peers disagreed with cyberbullying behavior, a high social influ-

ence will lessen adolescents' cyberbullying intention and further reduce their cyberbullying behavior. This research result is consistent with that of Chen et al. (2010). To adolescents, the social influence of friends is the highest, followed by parents (Chen et al., 2010). When significant others stand against cyberbullying, it influences adolescents' intention and behavior to engage in cyberbullying. Therefore, in practice it is necessary to inhibit dominant cyberbullying behavior as well as to aggressively use powerful peer restraint forces to lessen adolescents' Internet use behavior. The actual effectiveness of a positive Internet use attitude from significant others to influence adolescents' Internet use behavior is more significant.

This study also found that the external variable of "risk perception" affects individual attitude, but it does not have a significant influence on behavior. This result is consistent with that of Lin and Liao (2011). When individuals perceive an extremely high risk of being bullied in the Internet world, they will uphold a careful attitude towards cyberbullying. Therefore, the higher the perceived risk is, the more the individuals are inclined to uphold a disagreeing attitude (Lin and Liao, 2011). Risk perception does not affect the behavior dimension, probably because adolescents online may easily be attacked by different Internet users for many reasons. However, because adolescents' daily activities are mostly inseparable from the Internet, although adolescents are aware of the risk of cyberbullying, the nature of Internet anonymity makes them take the chance to engage in cyberbullying without being discovered.

Cyberbullying knowledge and self-efficacy do not affect attitude and behavior. This result is consistent with that of Hong and Fu (2012). However, it is opposite to that of Chen et al. (2010). Even if adolescents possess sufficient cyberbullying knowledge and the self-efficacy to not engage in cyberbullying, cyberbullying knowledge and self-efficacy may not necessarily influence the attitude and the development of actual behavior. One reason may be that, although adolescents are aware of the punishments concerning cyberbullying and the information ethics of accurate Internet use and are confident in engaging in daily Internet use behavior

without engaging in cyberbullying behavior, the high probability of being attacked by others in the Internet world and reasons such as emotions and consumer disputes, intention to vent emotions, making clarifications or protecting themselves, and Internet anonymity can make them engage in unacceptable behaviors. Such a situation is worthy of further investigation.

Limitations and Future Directions

The research limitations of this study are diversified cyberbullying patterns, including texts and images. Bullies are also divided into bullies, bystanders, and those who are bullied. The devices in use include cellular phones and computers. The tools in use include social networks, such as Facebook and instant message networks. Therefore, future studies are advised to include them in the analysis. Moreover, this study did not include emotions in the analysis. Future studies are advised to further investigate the emotions generated from cyberbullying or how emotions affect cyberbullying behavior.

Conclusion

The online environment provides a new stimulus that influences adolescents' behavior. Therefore, it reasonably explains that with the change of time, adolescents have been dynamically positively and negatively affected by Internet users and other peers in the online environment (Cross et al., 2015). Therefore, a clear information education is necessary and important to the high-risk group of cyberbullying: students. In addition to teaching correct and ethical Internet use behavior, schools and mass media should also clearly inform people as to the punishments for violators, teach them not to be a bystander of cyberbullying, encourage them to aggressively assist victims, and contain peers' adverse Internet use behavior in order to jointly maintain order and etiquette within the fast developing Internet world.

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