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Deviant Peers, Opportunity, and Cyberbullying: A Theoretical Examination of a New Deviance

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DEVIANT PEERS, OPPORTUNITY, AND CYBERBULLYING: A THEORETICAL EXAMINATION OF A NEW DEVIANCE

by

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Scholars of cybercrime have used social learning theory (SLT) and routine activities theory (RAT) to explain the variation in offending and victimization; however, to date, only RAT has been used to explain the specific behavior of cyberbullying. Therefore, this study combines SLT and RAT concepts to explain the cyberbullying phenomenon. Today's adolescents are exposed early to cyberspace and this has given them more opportunities to bully their peers, especially in an environment that is difficult to monitor by adults. The results from this study of a sample of Southeastern middle and high school students suggest that the opportunity component of RAT explains both cyberbullying victimization and offending, and the differential association component of SLT increases youths' likelihood of offending. Additionally, the findings suggest a correlation between victimization and offending. The results also show that the differential association-opportunity interaction increases the likelihood of offending, but the relationship was not statistically significant.

DEDICATION

I would like to dedicate this to my immediate and extended families. I cannot give enough thanks to my parents, Bill Clinton Lee and Mai See Vang Lee, for supporting me at times of social and financial distress during college. My siblings, cousins, aunts, uncles, and grandparents also deserve special thanks for their endless social support and encouragement. I would also like to express my gratitude to my writing tutor, Katrina Bell, who has helped proof read my thesis over the last six months and encouraged me to excel in my scholarly pursuits. My close friends also deserve special thanks for their encouragement.

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CHAPTER 1

INTRODUCTION

Akers' (1998) social learning theory (hereafter SLT) and Cohen and Felson's (1979) routine activities theory (hereafter RAT) are two widely known theories in criminology. Akers (1998; Burgess & Akers, 1966) argues that crime is a learning process that involves four components: differential association, definitions, differential reinforcement, and imitation. In short, Akers (1998) suggests that individuals who associate with deviant peers will be more likely to develop definitions favorable to committing crime and these definitions are reinforced by the anticipated rewards and punishments. In addition, whether the individuals can learn the illegal behaviors depends on their own characteristics, on the offenders' characteristics (those being observed), and on the consequences that follow the offenders' behaviors.

Cohen and Felson (1979) take a different perspective on criminal offending. According to these routine activities theorists, crime occurs when there is a convergence in place and time between a motivated offender, suitable target, and lack of a capable guardian (Cohen & Felson, 1979; Felson, 1994). Further, Cohen and Felson note that motivated offenders are everywhere; thus, these theorists are more interested in the opportunity to commit crime, particularly the presence of suitable targets and absence of capable guardians.

In past research, scholars have combined aspects of SLT and RAT to explain unlawful or delinquent behaviors (see Bernburg & Thorlindsson, 2001). Likewise, the present study will combine differential association from SLT and opportunity from RAT to explain cyberbullying. This permutation of bullying deserves attention because cyberbullying incidents can occur almost anywhere that access to information and communication technology is available, which is everywhere in America. For example, sophisticated advances in technology have allowed many

adolescents to engage in harmful communication and interaction with their peers at school and carry on the same communication at home, 24 hours a day (Patchin & Hinduja, 2006).

Akers also notes that SLT is a general theory that can explain all types of criminal or deviant acts. This means that SLT is appropriate to use to explain the new forms of deviance, such as cyberbullying; however, researchers have not yet used SLT to explain cyberbullying. Despite the lack of research on SLT and cyberbullying, studies have focused on using RAT to explain this type of deviance. Past research has tested RAT on cyberbullying and found support for the theory (Bossler, Holt, & May, 2012; Marcum, 2008; Mesch, 2009; Navarro & Jasinski, 2012). For example, individuals who regularly use electronic devices and the Internet to communicate with their peers increased their likelihood of being victimized. In other words, individuals increase their exposure to motivated offenders when they frequently communicate with others in cyberspace, and thus, they are more likely to be victimized.

Still, researchers have suggested that future studies should explore both SLT and RAT because cyberbullying is a learned behavior and victims of cyberbullying are attractive targets (Hinduja & Patchin, 2008). As of yet, no study has combined SLT and RAT to explain cyberbullying. Aside from this, research has used RAT as a base and integrated the differential association concept of SLT to explain the actions of motivated offenders in criminal offending. For example, researchers have used differential association and opportunity as separate direct effects on deviant behavior (Bernburg & Thorlindsson, 2001). In addition, scholars have reported a positive interaction between deviant peers and opportunity when used to explain deviance (Bernburg & Thorlindsson, 2001). Although the differential association-opportunity interaction has been supported in previous research on deviance, no study has yet examined this interaction on cyberbullying.

Thus, the current study is an attempt to use SLT and RAT to explain cyberbullying. Specifically, I will examine differential association and opportunity in terms of direct effects on cyberbullying as well as differential association as a moderating effect between opportunity and cyberbullying. Using a sample of middle and high school students as often studied by researchers (see Beran & Li, 2005; Bossler et al., 2012; Calvete, Orue, Estévez, Villardón, & Padilla, 2010; Hinduja and Patchin, 2009; Katzer, Fetchenhauer, & Belschak, 2009; Mesch, 2009; Mishna, Khoury-Kassabri, Gadalla, & Daciuk, 2012) and differential association as a moderator variable between opportunity and cyberbullying, I hypothesize that there will be a positive interaction between the SLT and RAT variables when tested on cyberbullying. These findings will provide additional support for SLT and RAT and provide suggestions for integrating SLT with RAT to explain criminal or deviant acts. In addition, the findings will benefit the literature on cyberbullying offending and victimization. Specifically, the findings will present an understanding of whether or not deviant peers, opportunity, or both concepts increase the likelihood of online bullying as well as present an understanding of whether or not opportunity increases the likelihood of cyberbullying victimization. Overall, the findings will provide insights on the nature of cyberbullying and provide suggestions on how to address it.

CHAPTER 2

LITERATURE REVIEW

Today's American youths are growing up using communication devices, and in turn, they understand how to navigate through cyberspace. On cyberspace, they can come in contact with potential bullies or victims. This online bullying behavior has been termed cyberbullying and is often defined as "willful and repeated harm inflicted through the use of computers, cell phones, and other electronic devices" (Hinduja & Patchin, 2009, p. 5). According to Patchin and Hinduja (2006; Hinduja & Patchin, 2009), the *bullying* part of cyberbullying refers to school-aged youth, so scholars in this area of research are more interested in studying youths who are under 18 because this behavior occurs more often in the adolescent population. In addition, the scholars who constructed this definition argue that this is the clearest and most comprehensive definition that exists in cyberbullying literature because it includes elements such as a *willful* (e.g., aggressive or intentional act) act carried out by one or more adolescents using *technology* (e.g., computer, cellular phone, tablet and so forth) to bully another adolescent (Patchin & Hinduja, 2006; Hinduja & Patchin, 2009; Hinduja & Patchin, 2012). In addition, this behavior is *repeated* (e.g., duplicating and distributing digital content such as emails, pictures, videos) to cause psychological, emotional, and social *harm* to the targeted adolescent, and the targeted adolescent needs to perceive that he or she is being harmed (Patchin & Hinduja, 2006; Hinduja & Patchin, 2010b). This aggressive behavior falls under two categories: direct harassment such as sending verbal insults or physically aggressive messages, and indirect attacks such as spreading rumors, gossip, or jokes (Beran & Li, 2005; Hinduja & Patchin, 2009).

Furthermore, the victims who are psychologically, emotionally, and socially harmed by this type of communication may live with excruciating psychological, emotional, or social

wounds (Hinduja & Patchin, 2008; Hinduja & Patchin, 2009), which can lead to suicidal ideation. For example, Hinduja and Patchin (2010b) examined the relationship between cyberbullying and suicidal ideation and they found that victims of cyberbullying were more likely to develop suicidal ideation; such youths were 1.9 times more likely to attempt suicide than others. Furthermore, Schneider, O'Donnell, Stueve, and Coulter (2012) studied the prevalence of cyberbullying and they found that victims of cyberbullying were at risk for psychological distress. They reported that 33.9% of the cyberbully victims reported having depressive symptoms compared to 13.6% of the non-victims and 9.4% of the victims attempted suicide compared to 2% of those who were not victimized (Schneider et al., 2012).

Additionally, the victims may feel frustrated, angry, and sad (Beran & Li, 2005; Patchin & Hinduja, 2006). Patchin and Hinduja (2006) did a preliminary study on cyberbullying and found that over four out of ten (42.5%) of the cyberbullying victims felt frustrated, four out of ten (40%) were angry, and over a quarter (27%) felt sad. The youths who have mixed emotions as victims of cyberbullying may take their anger and frustration out by bullying their offenders or others. Mishna et al. (2012) and Li (2007) found that the cyberbully victims also reported bullying others (25.7% and 16.7%, respectively).

Scholars have reported the prevalence rates for cyberbully offenses that vary from 8% to 23% and for cyberbully victimizations that vary from 6% to 29% (Beran & Li, 2005; Hinduja and Patchin, 2010b; Schneider et al., 2012; Li, 2006; Mishna et al., 2012; Patchin & Hinduja, 2006). For example, Beran and Li (2005) examined cyberbullying among Canadian students and they found that a quarter of the respondents were cyberbullies and nearly the same percent of them were cyberbully victims. Another study that examined Canadian youth reported that 8% of the participants were cyberbullies and almost one in four (23.8%) were cyberbully victims

(Mishna et al., 2012). In similar populations in the United States, Patchin and Hinduja (2006) found that 11% of the participants reported cyberbullying others while 29% of youth reported being victimized.

Although the aforementioned studies report similar results for cyberbullying experiences among offenders and victims, they may not be able to account for the anonymity problem presented by electronic communication technology. For example, the characteristics of cyberbully offenders are difficult to observe because cyberbullies can remain anonymous while they use technology. Anonymity provides a cyberbully a sense of safety and security because the offender can be hidden behind his or her pseudonym identity (e.g., fake age, race, gender or user accounts on social networking sites) (Hinduja & Patchin, 2008; Hinduja & Patchin, 2009; Hinduja & Patchin, 2012; Katzer et al., 2009; Li, 2007; Mishna et al., 2012). In other words, the pseudonym identity gives the offender freedom online. Moreover, this pseudonym identity makes it difficult for victims to uncover the true identity of their offenders (Hinduja & Patchin, 2008; Katzer et al., 2009). For example, Li (2007) found that 40.9% of the cyberbully victims cannot determine the identity of their offenders.

Adolescents who are involved in cyberbullying also experience disinhibition. Disinhibition is a psychological trait where adolescents who have weak social restraints or who act on impulse would say things to others online, or through electronic devices, that they would not normally say when face to face with others. In cyberbullying, technology creates a physical distance between offenders and victims (Hinduja & Patchin, 2012). The physical distance allows for the cyberbullies to send unwanted direct harassment or indirect attacks via email or text message to the victims (also see Mishna, Saini, and Solomon's (2009) study on youth perceptions and opinions of cyberbullying).

Previous studies on cyberbullying have attempted to identify a cyberbullying profile by examining gender, age, and race of the adolescents through self-report surveys. Based on past research, older adolescents were more likely to experience cyberbullying offending and victimization (Hinduja & Patchin, 2008; Mishna et al., 2012) because they have more opportunities (e.g., more access to electronic devices, more technologically savvy) to become involved in this behavior (Hinduja & Patchin, 2008; Li, 2007). Because most studies support the age element of the cyberbullying profile, I will only focus on gender and race of the cyberbullying profile because past studies have found mixed results for these elements.

One of the elements of the self-reported cyberbullying profile is gender, which is operationalized as male or female as reported by the students. In gender research, the results are mixed. Some studies have suggested that males engage more in cyberbullying offending than females (Calvete et al., 2010; Li, 2006; Li, 2007; Mishna et al., 2012). For example, Li's (2006) study on adolescents' experiences with cyberbullying found that 22% of boys reported being the cyberbullies, while only 12% of the girls identified themselves as such. In a similar vein, Calvete et al. (2010) reported that males were more likely than females to be cyberbullies and were more likely to behave in ways such as recording physical aggression and humiliating images of classmates on personal electronic devices and sending the files of these incidents to other classmates to view.

More recent studies that have examined gender and cyberbullying, however, have found that females were more likely than males to be the cyberbully offenders (Schneider et al., 2012; Marcum, Higgins, Freiburger, & Ricketts, 2012). For example, Schneider et al. (2012) found that 18.3% of girls were cyberbullies compared to only 13.2% of boys. Additionally, Marcum et al. (2012) found that females were 2.53 times more likely than males to use indirect forms of

cyberbullying. That is, females were more likely to spread rumors, gossip, or demeaning comments to harass others. These forms of cyberbullying behaviors can be explained by the hidden culture of aggression in girls. Simmons (2002) argues that girls are more secretive than boys and are more likely to use psychological, emotional, and social harassment to manipulate or overpower others.

Further, some studies on gender and cyberbullying have found no difference in males and females' experiences with cyberbullying offending and victimization (Hinduja & Patchin, 2008; Mishna et al., 2012). For example, Hinduja and Patchin's (2008) exploratory study on cyberbullying found that boys and girls had an equal experience of being a cyberbully offender and victim. Similarly, Mishna et al. (2012) reported both boys and girls had similar experiences with being cyberbullying victims (25% and 25.6%, respectively). Because there is no clear evidence of a gender effect that has emerged, more research is needed to uncover whether both sexes engage in cyberbullying at a similar frequency or whether one sex commits this behavior more so than the other sex.

Race is another element of the self-reported cyberbullying profile. Studies that have examined race and cyberbullying have found mixed results. Some researchers reported that whites were more likely than blacks to cyberbully (Marcum et al., 2012) while others found no effect on race (Hinduja & Patchin, 2008; Schneider et al., 2012). For example, Marcum et al. (2012) reported that whites were 2.18 times more likely than blacks to use indirect attacks (e.g., gossip, rumor, demeaning comments) on the Internet. However, Hinduja and Patchin (2008) found no difference in the effect of race and cyberbullying because whites and nonwhites had an equal chance of experiencing cyberbullying as an offender and victim (also see Schneider et al., 2012). Further, the results may reflect how these studies operationalized race. For example, race

was operationalized as whites and nonwhites by Hinduja and Patchin (2008) and as Asian, African American or black, Hispanic or Latino, Caucasian or white, or mixed or other by Schneider et al. (2012). Therefore, more research is needed to explore the effect of race and cyberbullying because limited research has reported mixed results on the race effect.

Moreover, previous research on cyberbullying has not examined socioeconomic status (SES), ownership of computers, and access to the Internet and how these variables correlate with cyberbullying. Using data collected by the 2010 U.S. Census Bureau, the U.S. Department of Commerce (2011) reported that more Asian American and white households own computers (86% and 80%, respectively) compared to Hispanic, black, and Native American households (65%, 67%, and 66%, respectively). The U.S. Department of Commerce also reported that more Asian American and white households have Internet access (81% and 72%, respectively) compared to Hispanic, black, and Native American households (55%, 57%, and 52%, respectively). By the same token, Fairlie (2007) found that blacks and Latinos with lower household income compared to white households had less ownership of computers and access to the Internet.

Theoretical Framework

Social Learning Theory

Akers' (1998) SLT is a general theory that was formulated to explain all crime and deviant acts. SLT is an individual trait theory that accounts for individuals who are prone to deviant or criminal behavior; this behavior can remain stable or change over time (Akers, 1998; Akers & Jensen, 2006). Akers (1998; Akers & Jensen, 2006; Burgess & Akers, 1966; Hwang & Akers, 2007) presents four central concepts of the social learning process: differential association, definitions, differential reinforcement, and imitation. The first proposition of Akers'

social learning process is differential association that varies in frequency, duration, priority, and intensity. Differential association is the concept that individuals make rational choices to associate and interact with deviant peers. People who are exposed to deviant individuals can develop the propensity to engage in unlawful behaviors by learning definitions favorable to committing law violations. The definitions that favor criminal or deviant behavior include both positive and neutralizing definitions. Positive definitions are beliefs or attitudes that view the law breaking or deviant activities as morally acceptable and neutralizing definitions are beliefs or attitudes that justify individuals to commit illegal or delinquent behaviors.

Deviant peers also expose individuals to reinforcements such as social, emotional, or monetary rewards that can encourage future law violation or deviant acts (Akers, 1998; Akers & Jensen, 2006; Burgess & Akers, 1966; Hwang & Akers, 2007). Imitation is the last proposition that determines individuals' involvement in illegal or deviant behaviors. For example, an individual who observes a crime in progress that is committed by a peer is more likely to model and imitate what he or she saw. However, whether somebody can fully imitate the behavior depends on the characteristics of the person who was committing the behavior, on the intensity of the observation, and on the consequences (rewards or punishments) that follow the behavior. In other words, individuals associating with deviant peers choose to engage in criminal or deviant activities after they have weighed the anticipated or actual rewards and consequences that follow the behaviors.

To date, although no research has explicitly used SLT to explain cyberbullying, Morris and Blackburn (2009) have argued that it is appropriate to use SLT to explain computer-based crime and deviance because it provides a theoretical framework that can explain the social learning process of cybercrime. First, people who engage in cybercrime need to have acquired

some degree of knowledge or skills on how to operate a computer. For example, the computer skills can be learned by observing one's peers. Second, people who spend a substantial amount of time with peers who commit cybercrime will develop favorable definitions to engage in cybercrime or develop unfavorable definitions that prevent them from cybercrime. Third, an individual's favorable definitions to commit cybercrime are reinforced by the observed rewards or punishments that follow their friend's cybercrime act. Fourth, the intensity of the observation and consequences need to be at a level where individuals can imitate the behavior. That is, how well did individuals observe the cybercrime behavior and consequences so that they could engage in the act.

In addition, previous research using SLT to explain cybercrime in general can provide useful information on how SLT can be applied to cyberbullying. For example, research on computer hacking, software piracy, and malware has found that individuals associating with deviant peers who engage in cybercrime are more likely to engage in cybercrime themselves (Burruss, Bossler, & Holt, 2012; Higgins & Makin, 2004; Hinduja & Ingram, 2008; Holt, Burruss, & Bossler, 2010; Morris & Blackburn, 2009). Moreover, researchers also found support for definitions favorable to law violation, which are reinforced by anticipated rewards and consequences that follow the behavior (Burruss et al., 2012; Higgins & Makin, 2004; Holt et al., 2010; Ingram & Hinduja, 2008; Morris & Blackburn, 2009).

Although the examples discussed above are based on cybercrime and not specifically on cyberbullying, Akers (1998) clearly states that SLT is appropriate for the study of deviance. Akers and Jensen (2006) note that the concept of differential association also includes online groups such as mass media, social networking, and computer game groups. Because people are directly or indirectly associating and communicating with online groups, this exposes them to

cybercrime or cyberdeviance, specifically to cyberbullying (Beran & Li, 2005; Hinduja & Patchin, 2008; Morris & Blackburn, 2009). Additionally, while the media can influence definitions favorable or unfavorable to engage in crime or deviance, it is not as strong as the influence of deviant peers. Therefore, the tenets of SLT provide an important framework to describe cyberbullying.

Routine Activities Theory

Another theory that can provide a useful theoretical framework to explain cyberbullying is Cohen and Felson's RAT (1979). Cohen and Felson's (1979) RAT was developed in the late 1970s to explain the increase in the rate of property and predatory crimes. These theorists (Cohen & Felson, 1979; Felson, 1994) argue that crime occurs when there is a convergence in space and time between a motivated offender, a suitable target, and an absence of a capable guardian. The convergence in space and time between the three aforementioned elements occurs because of individuals' routine activities at home, at jobs outside the home, and at other activities that require individuals to move away from their home (e.g., leisure activities such as vacations and sporting events). For example, since World War II, there has been an increase in property and personal crimes in the United States because there were fewer routine activities of everyday life at home and more routine activities at jobs and other activities away from home. That is, there were fewer people spending their daily routine activity at home and spending more time at their jobs and at leisure activities, which increased the likelihood of their houses being burglarized and increased their chances of being assaulted on the street. Moreover, in the 1960s and 1970s, there were more women and African Americans working and going to college; the economy was growing so more people were employed, which hindered their ability to protect their values and family. Additionally, advancements in technology has made consumer goods (e.g., televisions,

electronic appliances, telephone, and motor vehicles) lighter and easier to steal. Cohen and Felson (1979) also note that a crime can be deterred when there is a lack of any one of these elements, especially absence of a capable guardian. Capable guardians can be police officers, neighbors, parents, or other family members who can watch over each other's property and personal targets.

In addition, Cohen and Felson (1979; Felson, 1994) are concerned with the opportunity to commit crime, which includes a suitable target and lack of a capable guardian. Target suitability has four sub dimensions. The first, value, includes such things as "the material or symbolic desirability of a personal or property target for offenders" (Cohen & Felson, 1979:591) because offenders are interested in stealing property that they can later fence for money or rape someone for whom they have developed an attraction. Next, physical visibility refers to the value of a criminal behavior that can be seen or be evaluated by the offender before he or she decides carry out the act. For example, if an auto thief sees that a car has been left out in a parking lot for multiple days, then he may be more likely to steal it. Access is also a major component of target suitability because it provides an opportunity to commit a crime or deviant behavior. For example, an open garage door with no one inside the residence will create an opportunity for a thief to walk inside the garage and steal the owner's tools. Lastly, inertia refers to how easily the property or personal target can be moved or protect itself, respectively. This is important to understand because an offender will evaluate the weight and size of an object, or the physical capacity of a person, before he or she decides to commit an illegal act. For example, an iPod is easier to steal than a kitchen refrigerator and a child is an easier target for sexual assault than an ex-military adult.

As discussed above, advancements in technology (e.g., motor vehicles, telephone) in the last forty years has made it easier for youths to engage in deviant or criminal acts. Since then, mobile telephone and communication technologies have advanced so that people have the ability to remain in constant contact with others 24 hours a day. For example, youths can use the phone to make obscene phone calls or commit other "crimes of harassment" (Felson, 1994:86). Today, youths are using cellular phones, other electronic devices, and Internet services to bully other youths in cyberspace. As noted earlier, this behavior is known as cyberbullying. Youths can be involved in cyberbullying everywhere they go when they have a personal electronic communication device (e.g., cellular phone, iPod, tablet) and Internet access. With these technology advances, individuals' routine activities have changed from communicating with potential offenders or victims at home, at work, and at leisure actitivies during certain times of the day to constant contact with potential offenders or victims everywhere they go and 24 hours a day. For example, an offender can harass his or her victim on cyberspace even at night when the victim is offline or asleep at home because of the ability to communicate asynchronously. This makes it difficult for a capable guardian to prevent a criminal or deviant offense from occurring or detect it on a timely manner.

In recent years, research has found support for the three components of RAT when applied to cyberbullying. Researchers reported that adolescents increased their risk of victimization when they frequently use text messages, instant messages, and e-mails to communicate with their friends (Mesch, 2009; Navarro & Jasinski, 2012). Their increased likelihood of being victimized also becomes apparent when they enlist as members of a social networking site or YouTube, communicate with others in chat rooms (Katzer et al., 2009; Mesch, 2009; Navarro & Jasinski, 2012), and disclose more personal information on the Internet than

their peers (Bossler et al., 2012; Marcum, 2008; Mesch, 2009). Further, some of these activities occurred simultaneously, which provided more opportunity for motivated offenders. In other words, youths exposed themselves to motivated offenders when they spent more time online, when compared with their peers.

The aforementioned behaviors happened because parents did not supervise adolescents' use of electronic devices and the Internet. However, previous research has found that parents who use protective mechanisms such as providing guidance on Internet use, setting restrictions to Web sites, and placing the computer in a shared space are effective ways to prevent cyberbullying (Mesch, 2009). Mesch (2009) suggested that parents who provide guidance, set restrictions to Internet use, and locate the computer in a shared space discuss with their child(ren) about the nature of the Internet and create awareness for potential online risks. In addition, parents' use of a filter has been found to decrease risk of cyberbullying because a filter prevents children from receiving threatening emails, instant messages, or inappropriate material (Navarro & Jasinski, 2012). By contrast, other researchers found that using a filter increases the likelihood online bullying (Bossler et al., 2012). Because there are mixed findings on guardianship, more research is needed to disentangle what protective mechanisms are effective at decreasing the likelihood of cyberbullying among adolescents. To this end, RAT provides a fruitful framework to explain cyberbullying.

The Moderating Effect of Differential Association and Opportunity

Studies on cyberbullying and cybercrime have not examined the moderating effect of differential association and opportunity to commit criminal or delinquent acts. However, researchers have argued that there is an interaction between associating with deviant peers and finding opportunities to engage in illegal or deviant acts with these peers. According to Bernburg

and Thorlindsson (2001), youths choose to engage in certain everyday routine activities with their peers such as going to the mall or driving home from school. The youths who associate with deviant individuals will find opportunities to commit illegal or deviant acts during their everyday routine activities. Stated differently, adolescents who spend a substantial amount of time socializing with their deviant peers are more likely to become delinquents because they will develop definitions favorable to criminal offending and find opportunities to commit unlawful or delinquent acts (Akers & Jensen, 2006).

Research on deviance has found support for these claims (Bernburg &Thorlindsson, 2001). In Bernburg and Thorlindsson's (2001) study on deviant peers and opportunity, they found a positive interaction when the deviant peers variable was used as a moderator effect between opportunity and delinquency. That is, persons who associate with delinquent individuals in their everyday routine activities were more likely to be exposed to opportunities conducive to deviance.

Present Study

The current study aims to address the theoretical issue of using SLT to explain cyberbullying as well as combining the concepts of SLT and RAT to explain this form of bullying. In past research, the integration of differential association as a moderating effect between opportunity and delinquency has shown to have a positive interaction. Based on this information, I believe that using differential association as a moderator effect, linking opportunity and cyberbullying, will also present a positive interaction. In addition, the demographic effects in the cyberbully profile will be examined. It is noteworthy to suggest that this study is only a partial test of SLT and RAT, in general, and differential association, opportunity, and guardianship, in particular. Other concepts of SLT such as imitation, differential

reinforcement, and definitions, as well as concepts of RAT such as value, physical visibility, and inertia were not used to examine cyberbullying because the survey instrument lacks measures for these concepts.

CHAPTER 3

METHODOLOGY

Sample

The data used in the present study is secondary data collected by Hinduja and Patchin (2010a) in the spring of 2010. A computer survey was administered in a large southeastern public school district in the United States. All the middle and high schools in the district were asked to participate in this research project; however, some schools did not participate or showed really low interest (e.g., one class from a school was interested in participating). In total, 33 middle and high schools participated in this study. In addition, administrators at each school were asked to randomly select two to three classrooms from each grade level for participation. As noted above, cyberbullying usually refers to school-aged youth and the scholars studying this deviance usually include middle and high school students (e.g., Beran & Li, 2005; Bossler et al., 2012; Calvete et al., 2010; Hinduja and Patchin, 2009; Katzer et al., 2009; Mesch, 2009; Mishna et al., 2012).

Prior to data collection, Hinduja and Patchin informed administrators and teachers of the purpose of this study. In addition, teachers were given an informational packet that explains the procedure for administering the survey: general purpose of the study, voluntary participation, and anonymity of respondents. The schools' IT administrators were in charge of creating a shortcut on the school computers where the survey was taken. Consent was obtained passively from parents whose child(ren) attended the schools involved. In the initial data set, a sample of 4,441 students was collected after deletion of missing cases, difficult questions, and inconsistent answers. Before I computed my analyses, I conducted listwise deletion to exclude the missing

cases in the variables of interest[1] (male, race, opportunity, guardianship, differential association, cyberbullying victimization, and cyberbullying offending) as well as a binary logistic regression to confirm that the probability of missing data on the variables depended on the dependent variables and not the independent variables (Allison, 2001). Also, a series of diagnostics were conducted via binomial, chi-square, and independent t-tests to examine whether the missing data were missing at random or not missing at random[2]. After these tests, 4,159 respondents remained in this study.

Moreover, a 99% completion rate was recorded on students who attended class on the day of the survey. The demographic in this sample (e.g., 49.7% female and 50.3% male; 38.1% white, 23.4% African American, 24.8% Hispanic, 4.5% Asian, and 2.7% multiracial) is largely related to the overall population in the district (e.g., 49.1% female and 50.9% male; 39.5% white, 28.4% African American, 25.7% Hispanic, 3.1% Asian, and 2.5% multiracial).

Dependent Variables

It should be noted that this study is only interested in looking at cyberbullying behavior that happened in the last 30 days, thus, prior incidents before this time frame were not include

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[1] Age and parents' educational attainment were not included in the listwise deletion process because the mean for each variable was imputed for the missing cases (see below). This does produce biased estimates of variances and covariances (Allison, 2001) but age and parents' educational attainment are control variables and would not largely bias the sample.

[2] Results from the missing data diagnostics suggest that this study is underestimating males in the analytical sample, however, the analytical sample still shows an even split between males and females. There is also an underestimation of victimization and offending, but the difference is relatively small. Further, African Americans are significantly more likely to have missing data and be excluded from the sample, but a sizable proportion remains-about 23% of the analytical sample is African American. The difference between these groups is statistically significant but it is not a meaningful difference because there are 8% fewer African Americans in the analytical sample compared to the missing sample. Stated differently, 87 out of 1,061 African Americans were excluded in this study after listwise deletion, but a sizable proportion remains-974.

in this study.

Cyberbullying Offending

Cyberbullying offending was measured by asking participants eight items. Students were asked "In the last 30 days, I have cyberbullied others in these ways: (1) I posted mean or hurtful comments about someone online; (2) I posted a mean or hurtful picture online of someone; (3) I posted a mean or hurtful video online of someone; (4) I spread rumors about someone online, through text messages, or emails; (5) I threatened to hurt someone while online; (6) I threatened to hurt someone through a cell phone text message; (7) I created a mean or hurtful web page about someone; and (8) I pretended to be someone else online and acted in a way that was mean or hurtful to them." The original survey measures had a five item Likert-scale for each bullying behavior: never (0), once (1), a few times (2), many times (3), and every day (4). Because the distribution of these variables were non-normal and did not respond to transformations (see footnote 5 below), they were recoded into a summary scale that ranges from 0 to 32 ($\alpha = .973$), and then dummy coded into 0 and 1, where 0 and 1 in the summary scale were recoded as 0 and 2 to 32 in the scale were recoded as 1[3]. A dummy code 0 indicated no cyberbullying behavior was performed in the last 30 days while 1 suggested that there was cyberbullying behavior that occurred in the last 30 days.

Cyberbullying Victimization

There were eight measures that were used to assess *cyberbullying victimization*. Respondents were asked to answer "In the last 30 days, I have been cyberbullied in these ways: (1) Someone posted mean or hurtful comments about me online; (2) Someone posted a mean or

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[3] This coding strategy was based on the "repeat" component of the cyberbullying definition discussed earlier.

hurtful picture online of me; (3) Someone posted a mean or hurtful video online of me; (4) Someone created a mean or hurtful web page about me; (5) Someone spread rumors about me online, through text messages, or emails; (6) Someone threatened to hurt me through a cell phone text message; (7) Someone threatened to hurt me while online; and (8) Someone pretended to be me online and acted in a way that was mean or hurtful to me (responses were coded: never [0], once [1], a few times [2], many times [3], and every day [4])." Because these variables were non-normal and did not respond to transformations (see footnote 5 below), a summary scale that ranges from 0 to 32 ($\alpha = .943$) and dummy variable recoding were performed, where 0 and 1 were recoded as 0 and 2 to 32 were recoded as 1[4]. No (0) indicated that respondents have not been cyberbullied and yes (1) suggested that respondents have been cyberbullied in the last 30 days.

Independent Variables

Differential Association

This study is a partial test of STL, specifically differential association. Two measures were used to assess *differential association*. Participants in the study were asked "In the last 6 months, how many of your friends did the following? (1) Bullied someone while using a computer? (2) Bullied someone with their cell phone?" The response category included: none of them (0), a few of them (1), some of them (2), most of them (3), and all of them (4). These two items are indications of the presence of delinquent peers and were also used by other researchers (see Alarid, Burton, & Cullen, 2000; Jensen, 1972). The items were combined into a summary scale of differential association with values that range from 0 to 8, where 0 indicated no peers had committed cyberbullying and 8 represented high prevalence of peers committing

[4] See last footnote.

cyberbullying in the last 6 months. The internal consistency for these items was strong (α = .887).

Opportunity

As mentioned above, this study is only testing access or opportunity of RAT. *Opportunity* was measured by asking students "How often in the last 30 days did you go online?" The options were "never" (0), "once or twice" (1), "once a week" (2), "2-3 times a week" (3), and "every day" (4).

Guardianship

Prior research suggested that parents who provided guidance on safe Internet use decreased the likelihood of their children being victimized (Mesch, 2009); therefore, four items based on guidance were used to assess *guardianship*. These items were taken from the online harassment section of the survey instrument because the cyberbullying victimization and offending sections did not ask such questions. Student were asked to report "How often in the last 30 days have you experienced the following while using a computer?: (1) A parent talked to you about being safe on the computer and (2) A teacher talked to you about being safe on the computer (options being: never [0], once [1], a few times [2], many times [3], and every day [4]). The participants also reported "How often in the last 30 days have you experienced the following while using your cell phone?: (1) A parent talked to you about using your cell phone responsibly and (2) A teacher talked to you about using your cell phone responsibly (responses included: never [0], once [1], a few times [2], many times [3], and every day [4]). These items were summed into a single guardianship scale with values that range from 0 to 16. A zero represented no guardianship while a 16 indicated high levels of guardianship. Further, the Cronbach's alpha suggested a strong internal consistency among these items (α = .828).

Control Variables

Four demographic control variables are also included in the models. The first being sex, which was dichotomized into 0 for female and 1 for male. As noted earlier, Calvete et al. (2010) and Li (2006) have suggested that more males than females identified themselves as cyberbullies; thus, males are expected to be the cyberbullies more so than females. Age of the participants is another control variable. This variable was coded 10 years old or younger (10) to 18 years old or older (18). The mean for age was imputed into the missing data for age to prevent deletion of these cases (Allison, 2001). The third control variable is race of respondents. The students were asked to type in their race, which was later coded as 1 for white, 2 for African American, 3 for Hispanic, 4 for Asian, 5 for Native American, 6 for multiracial, and 7 for other race. Race was recoded into a series of dummy variables indicating whether respondents identified as white, African American, Hispanic, Asian, Native American, multiracial, or other race. According to past research, whites cyberbullied others more so than African Americans (Marcum et al., 2012), so this is expected in the findings. However, other groups such as Hispanics, Asians, Native Americans, multicultural, and other race, have not been explored; hence, these groups will also be examined. Lastly, the fourth control variable is parents' educational level, which will be used as a proxy for socio-economic status (SES). The respondents were asked to report their father and mother's educational attainment. These items were coded as 1 for less than high school, 2 for high school graduate, 3 for partial college, 4 for college graduate, 5 for graduate degree, and 6 for don't know. The "don't know" response category was imputed into the high school graduate response category to prevent any misleading information. Further, the mean of father's education replaced the missing cases in the father's education variable and the mean of mother's education replaced the missing cases in the

mother's education variable (Allison, 2001). The mean imputations were conducted to prevent deletion of missing data in these variables. Then a new variable for father's and mother's education was created by combining the two variables and dividing by 2 to get the average of both parents' educational attainment. These two variables were divided by 2 to match the coded values for father's and mother's educational attainment.

Hypotheses

There are three models and six hypotheses for this study.

Model 1: Victimization

The first model is victimization, which offered two hypotheses. RAT has argued that a suitable target and lack of a capable guardian provides opportunity for a motivated offender (Cohen & Felson, 1979; Felson, 1994). Additionally, past studies have suggested that adolescents who used the Internet and cell phone to channel their communication with others were exposed to higher risk of victimization (Mesch, 2009; Navarro & Jasinski, 2012). Thus, the opportunity to offend causes victimization and this provides the first hypothesis.

Hypothesis 1: An increase in opportunity will increase the likelihood of victimization.

Past research has suggested that adolescents were at a lower risk of being victimized when parents provided guidance on safe electronic use (Mesch, 2009; Navarro & Jasinski, 2012); thus, it is expected that there will be an inverse effect when parents and teachers talk to youths about safe computer and cell phone use. This framework provides the second hypothesis.

Hypothesis 2: An increase in guardianship will decrease the likelihood of victimization.

Model 2: Offending

The second model is offending, which has three hypotheses. According on past research, youths who spend more time online and on electronic devices were more likely to be victimized

because the activities they were involved in provided more opportunity for motivated offenders (Marcum, 2008; Mesch, 2009; Navarro & Jasinski, 2012). Hence, the third hypothesis states that opportunity causes offending.

Hypothesis 3: An increase in opportunity will increase the likelihood of offending.

In past research, youths who associate with deviant individuals were more likely to be conducive to delinquency (Bernburg &Thorlindsson, 2001; Burruss et al., 2012; Haynie & Osgood, 2005; Higgins & Makin, 2004; Hinduja & Ingram, 2008; Holt et al., 2010; Morris & Blackburn, 2009). Thus, it is expected that association with deviant peers causes offending and this provides the fourth hypothesis.

Hypothesis 4: Higher levels of differential association will increase the likelihood of offending.

As mentioned above, adolescents who feel unhappy about being victimized online will become bullies themselves in retaliation (Li, 2007; Mishna et al., 2012). Thus, this provides the fifth hypothesis.

Hypothesis 5: An increase in victimization will increase the likelihood of offending.

Model 3: Offending with Interactions

Researchers have explored the moderating effect of SLT and RAT and they have reported a positive interaction between deviant peers and opportunity on delinquency (Bernburg & Thorlindsson, 2001). That is, deviant peers increased the opportunity to commit deviance. The sixth hypothesis was based on this finding.

Hypothesis 6: A positive interaction between differential association and opportunity will increase the likelihood of offending.

Analytical Strategy

SSPS (version 20) was used to conduct statistical analyses. Moreover, a series of multivariate logistic regression analyses were computed to examine the direction and strength of the relationships among the variables (controlling for gender, age, race, and SES)[5]. In addition, logistic regression was used to test the interactions in the three models: victimization, offending, and offending with interactions. For example, the differential association independent variable was multiplied with the opportunity independent variable to predict cyberbully offending. By multiplying differential association by opportunity, I combined these two independent variables and created an interaction or a moderate effect (Field, 2009). In other words, an interaction effect is the overall effect that two or more combined independent variables have on the outcome variable.

Logistic regression is appropriate in this study because the dependent variables were dummy coded as 0 for no and 1 for yes and the independent variables include both categorical and continuous variables (Field, 2009). Moreover, logistic regression has less restrictive assumptions than ordinary least squares regression. For example, the outcome variable is categorical so the assumption of the outcome variable having linear relationships with the predictor variables is violated. To prevent this violation, the data is transformed by using the logarithmic transformation. Therefore, the linear relationship in logistic regression is between the

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[5] Logistic regression was considered after ordinary least squares regression could not be computed because the sample is not normally distributed; most respondents were not cyberbullying victims (89%) or offenders (94%). I conducted a log transformation on the victimization and offending dependent variables but the data still is non-normal. Then I performed a square-root transformation on the same variables, however, the data still is not normally distributed. I have also considered negative binomial and poisson regressions but these regressions could not be computed because of the data being considered-the dependent variables are not counts.

continuous independent variables and the log of the dependent variable. Further, the cases in the data are not related (independence of errors) and the variables are not highly correlated (see Appendix A).

CHAPTER 4

FINDINGS

Initial Results

Table 1 represents the univariate statistics of the sample. Males (50.3%) and females (49.7%) had an evenly distributed participation in the study (M = 0.50, SD = 0.50). Moreover, the average age of respondents was 14.08 years (SD = 1.94), and the demographic distribution of race was 38.1% white, 23.4% African American, 24.8% Hispanic, 4.5% Asian, 1.0% Native American, 2.7% multiracial, and 5.5% other race. The average parents' educational attainment was a partial college education (M = 2.99, SD = 1.11). In terms of spending time online, the majority of youths reported an average between 2-3 times a week and every day (M = 3.26, SD = 1.08). The respondents reported having some guardianship (M = 4.33, SD = 3.94) and some of them reported that their friends cyberbullied others (M = 0.54, SD = 1.45). Overall, 11% of the adolescents reported being cyberbullied, more than 6% reported themselves as cyberbullying offenders, and 3.5% of them reported being both a cyberbullying victim and offender in the last 30 days. Because most adolescents are not victims or offenders of crime or deviance, 89% of the respondents in this sample were not victimized and 94% of them did not bully others. In addition, this affects the percent correctly classified as shown in the models below. For example, the percent correctly classified are in the 80% and 90% levels because most of the respondents were not involved in cyberbullying as victims or offenders in the last 30 days.

Table 1

Descriptive Characteristics of Sample (n = 4,159)

Variables	**M/%**	**SD**	**Min**	**Max**
Male	50.3%			
Female	49.7%			
Age	14.08	1.94	10	18
White	38.1%			
African American	23.4%			
Hispanic	24.8%			
Asian	4.5%			
Native American	1.0%			
Multiracial	2.7%			
Other race	5.5%			
Parents' education	2.99	1.11	1	5
Opportunity	3.26	1.08	0	4
Guardianship	4.33	3.94	0	16
Differential association	0.54	1.45	0	8
Victimization = Yes	11.1%	0.32	0	1
Offending = Yes	6.6%	0.25	0	1
Both Victimization and Offending = Yes	3.5%			

Multivariate Results

The logistic regression results on cyberbully victimization are shown in Table 2. The opportunity and victimization model shows that males were significantly less likely than females to be victimized (B = -0.484, $p < .001$). Age was another significant control variable (B = 0.071, $p < .01$). The model correctly classifies about 90%[6] of the cases, but it does a weak job of predicting victimization[7] ($R^2\Delta = 0.033$). Overall, model 1 supports the first hypothesis because it

[6] As discussed earlier, not many adolescents are involved in cyberbullying as victims or offenders, so this affects the percent correctly classified.

[7] The Nagelkerke R^2, or goodness-of-fit, is a pseudo R^2 and it should be considered as a proportional reduction in error (Walker & Maddan, 2009). Therefore, the Nagelkerke R^2 should not be interpreted as the percent explained in the dependent variable; instead, it should be interpreted as the percent change from model to model, predicting the same outcome variable, with the higher Nagelkerke R^2 indicating a better prediction of the outcome variable.

suggests that having opportunity to access the Internet positively and significantly increased the likelihood of a youth becoming a cyberbully victim (B = 0.241, p < .001).

For model 2, where guardianship is added to the model, males were also significantly less likely than females to be the cyberbully victims (B = -0.396, p < .001). Similar to model 1, age and opportunity were positively significant (B = 0.093, p < .001 and B = 0.250, p < .001, respectively). In addition, the second hypothesis was not supported because the guardianship model suggests that there is an association between cyberbullying offending and victimization when parents or teachers talked to adolescents about being safe on the computer and cell phone.

Table 2

Logistic Regression on Cyberbullying Victimization (n = 4,159)

	Model 1			Model 2		
	Opportunity			Guardianship		
Variables	**B**	**S.E.**	**EXP(B)**	**B**	**S.E.**	**EXP(B)**
Male	-0.484***	0.102	0.613	-0.396***	0.103	0.673
Age	0.071**	0.026	1.070	0.093***	0.026	1.097
White is reference group						
African American	0.390	0.254	1.477	0.577*	0.258	1.781
Hispanic	0.202	0.263	1.224	0.164	0.267	1.178
Asian	-0.120	0.265	0.988	0.045	0.268	1.046
Native American	0.605†	0.318	1.831	0.701*	0.322	2.016
Multiracial	0.387	0.538	1.472	0.412	0.545	1.509
Other race	0.237	0.391	1.267	0.402	0.395	1.495
Parents' education	-0.002	0.046	0.988	0.012	0.046	1.012
Opportunity	0.241***	0.054	1.284	0.250***	0.057	1.284
Guardianship				0.104***	0.012	1.109
Constant	-3.948***	0.475	0.019	-4.936***	0.497	0.007
Nagelkerke R^2	0.033			0.066		
-2 Log Likelihood	2835.274***			2763.957***		
	88.9% correct			88.9% correct		

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

†$p < 0.10$

Model 2 also shows that African Americans and Native Americans were significantly more likely than whites to be victimized when they report having guardianship ($B = 0.577$, $p < .05$ and $B = 0.701$, $p < .05$, respectively). The guardianship model correctly classifies about 90% of the cases, and the pseudo R^2 suggests that this model does a better job of predicting victimization ($R^2\Delta = 0.066$).

Table 3 presents the logistic regression results for cyberbullying offending. Model 3 correctly classifies over 93% of the cases and it does poor job of predicting offending ($R^2\Delta = 0.016$). The results suggest that adolescents who spent more time online were significantly more likely to have an increased likelihood of bullying others ($B = 0.244$, $p < .01$); hence, this supports hypothesis 3.

In model 4, differential association is added to the cyberbullying offending model. Results show that when youths spent more time online and have friends who cyberbullied others, they were significantly more likely to cyberbully others as well ($B = 0.256$, $p < .01$ and $B = 0.624$, $p < .001$, respectively); thus, hypothesis 4 was supported. The differential association model correctly classifies 94% of the cases. The pseudo R^2 indicates that this model does a better job of predicting offending ($R^2\Delta = 0.298$).

The relationship between victimization and offending is shown in model 5. The victimization model suggests a relationship between cyberbullying offending and victimization because adolescents who have been victimized were significantly more likely to cyberbully others when they have opportunities to access the Internet and friends who are cyberbullies ($B = 1.884$, $p < .001$, $B = 0.204$, $p < .05$, and $B = 0.522$, $p < .001$, respectively). This finding supports the fifth hypothesis because youths who have been cyberbullied were 6½ times more likely to become cyberbully offenders. Model 5 correctly classifies more than 94% of the cases. The

Table 3

Logistic Regression on Cyberbullying Offending (n = 4,159)

	Model 3			Model 4			Model 5			Model 6		
	Opportunity			Differential Association			Victimization			Interaction		
Variables	**B**	**S.E.**	**EXP(B)**	**B**	**S.E.**	**EXP(B)**	**B**	**S.E.**	**EXP(B)**	**B**	**S.E.**	**EXP(B)**
Male	0.015	0.127	1.015	-0.138	0.148	0.871	0.075	0.155	1.078	0.075	0.155	1.078
Age	0.063†	0.033	1.065	0.041	0.038	1.042	0.024	0.040	1.024	0.024	0.040	1.024
White is reference group												
African American	-0.341	0.276	0.711	-0.355	0.321	0.701	-0.468	0.344	0.627	-0.466	0.344	0.627
Hispanic	-0.021	0.281	0.979	-0.156	0.330	0.855	-0.138	0.352	0.871	-0.136	0.352	0.873
Asian	-0.373	0.287	0.689	-0.380	0.334	0.684	-0.344	0.356	0.709	-0.343	0.356	0.710
Native American	-0.022	0.371	0.978	-0.344	0.450	0.709	-0.633	0.489	0.531	-0.626	0.490	0.535
Multiracial	-0.040	0.652	0.961	-0.324	0.745	0.723	-0.368	0.808	0.692	-0.359	0.807	0.699
Other race	0.026	0.432	1.027	-0.204	0.526	0.816	-0.127	0.544	0.881	-0.123	0.544	0.884
Parents' education	0.009	0.058	1.009	0.063	0.066	1.065	0.050	0.068	1.051	0.050	0.068	1.051
Opportunity	0.244**	0.070	1.276	0.256**	0.079	1.292	0.204*	0.082	1.227	0.192†	0.104	1.212
Differential association				0.624***	0.031	1.866	0.522***	0.032	1.686	0.506***	0.094	1.659
Victimization							1.884***	0.159	6.582	1.886***	0.159	6.590
Differential Association x Opportunity										0.005	0.027	1.005
Constant	-4.193***	0.576	0.015	-4.732***	0.678	0.009	-4.703***	0.710	0.009	-4.669***	0.733	0.009
Nagelkerke R^2	0.016			0.298			0.368			0.368		
-2 Log Likelihood	1989.688**			1510.257***			1381.217***			1381.185***		
	93.4% correct			94.0% correct			94.5% correct			94.5% correct		

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

†$p < 0.10$

NOTE: A second interaction was computed between differential association and victimization; however, there is only a slight change of coefficients and log likelihood from the first interaction, thus, they are not reported here.

pseudo R^2 indicates that with the addition of the victimization variable in this model, there was an increase in predicting offending ($R^2\Delta = 0.368$).

Model 6 adds the interaction between the differential association and opportunity on cyberbully offending. The model correctly classifies over 94% of the cases while there was no change in the pseudo R^2 ($R^2\Delta = 0.368$). The results suggest that victims of cyberbullying who are friends with cyberbullies were significantly more likely to offend others via technology ($B = 1.886$, $p < .001$ and $B = 0.506$, $p < .001$, respectively). The findings also show a positive interaction between differential association and opportunity, however, the interaction was not statistically significant. Therefore, hypothesis six was not supported.

A receiver operating characteristic (ROC) curve analysis was also computed to examine the goodness-of-fit for model 6 because many respondents did not cyberbully others in the last 30 days, thus, the percent correctly classified may be misleading. Model 6 was chosen for this analysis because it includes all the variables in this study and the differential association-opportunity interaction. As noted above, a ROC curve analysis is a measure of goodness-of-fit for the logistic regression model, and it does this by measuring the sensitivity (true positive rate) and specificity (false positive rate) levels to determine all possible cutoff points (Gorr, 2009). The ROC curve is generated by plotting the sensitivity level against the specificity level. The area under the curve (AUC) shows how well the predicted probabilities classified or fit the cases in the model. The AUC values closer to 1.0 mean the predicted probabilities reliably classify cyberbully offenders and non-offenders where values closer to 0.5 indicate that the predicted probabilities did no better than chance at classifying both groups. For model 6, the results show the AUC value is 0.88, which indicates that the predicted probabilities did better than chance at classifying offenders and non-offenders (see Figure 1). This can also be seen in figure 1 where

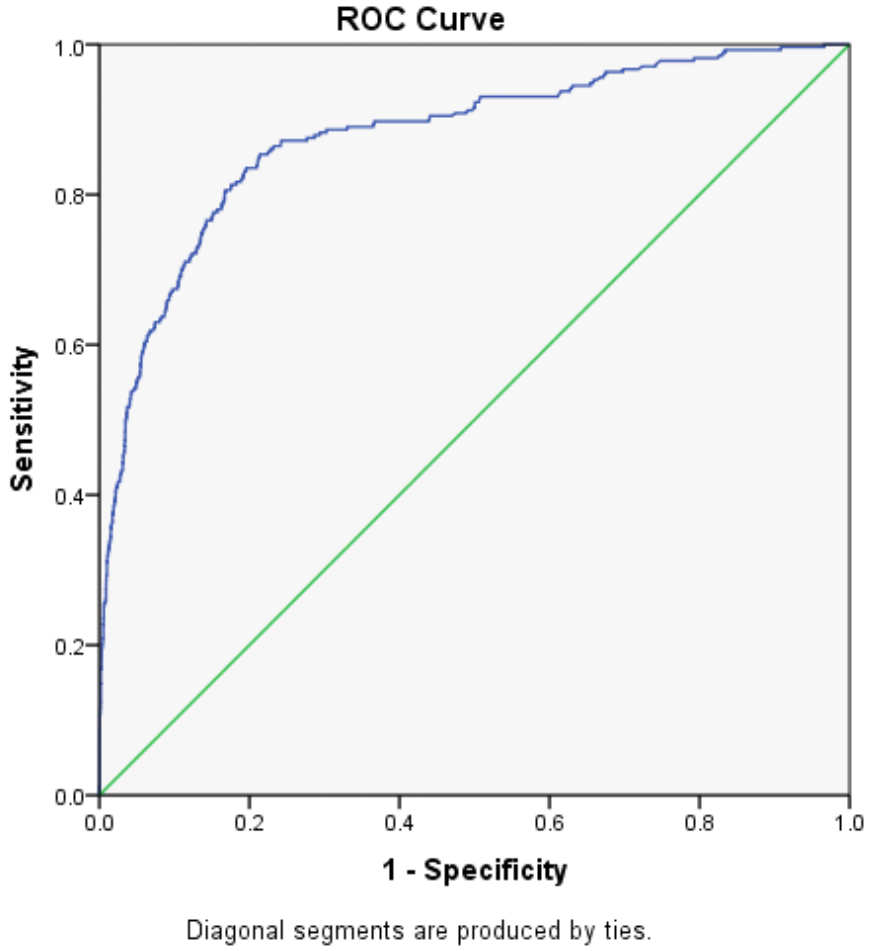

Figure 1. Receiver operating characteristic curve for model 6

the slope is closer to 1 on the sensitivity or true positive rate side of the figure.

One of the difficulties of logistic regression is the results are not easy for non-specialists to interpret (Burruss & Kempf-Leonard, 2002). To make the interpretation of the multivariate effects in logistic regression easier to understand, I have developed a case scenario based on the results from model 5. Figure 2 shows an average victim/non-victim respondent: fourteen-year-old, white, male, parents' education status, opportunity, and percent likelihood to cyberbully at each level of differential association. The figure shows the escalation of the percent likelihood to cyberbully others at each level of differential association for victim/non-victim. Victims are

more likely to become offenders as the level of differential association increases. For example, at level five, the victims are 63% likely to cyberbully compared to non-victims who are 21% likely to offend. At the highest level of differential association, the victims are almost at 90% likelihood to offend compared to the non-victims who are at 55%. It should be noted that the percent difference between the groups is not clearly linear as the differential association level increases. This indicates that as the differential association level increases, the gap of cyberbullying between victims and non-victims is becoming smaller because victims are less likely to offend while non-victims are more likely to offend. Stated differently, an increase in the percent likelihood to offend among victims and non-victims is not consistent at each differential association level.

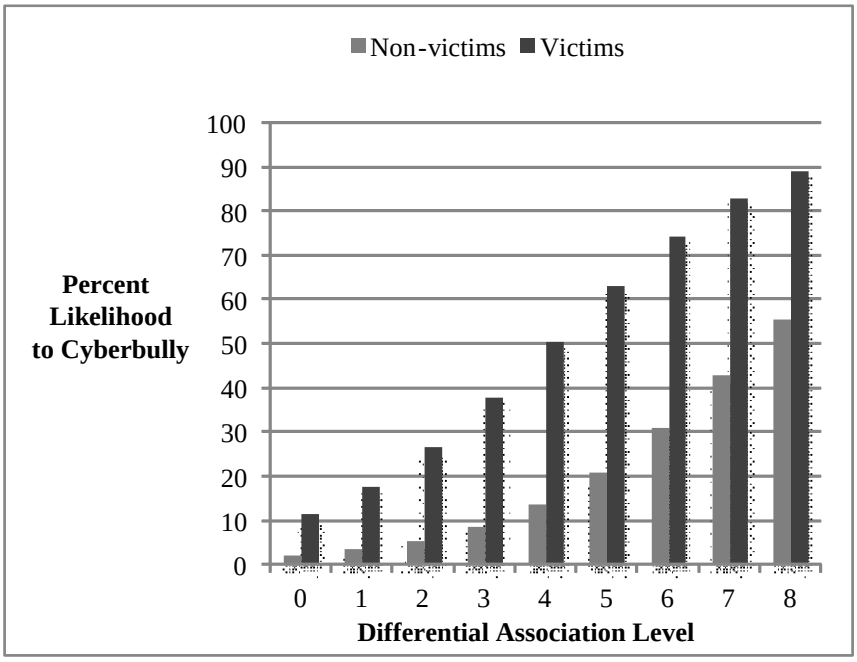

Figure 2. Case Scenario: Percent likelihood of engaging in cyberbullying by victim status

CHAPTER 5

DISCUSSION AND CONCLUSION

The purposes of this study include: 1) using aspects of SLT and RAT to explain cyberbullying; 2) integrating differential association with opportunity to explain the bullying deviance; and 3) exploring the demographics of youths who are involved in this behavior. This study only explored cyberbullying victimization and offending behavior that happened in the last 30 days, and hence, any behavior that occurred prior to the 30 days was not examined. Moreover, this study partially tested the application of SLT and RAT, specifically the concepts of differential association, opportunity, and guardianship.

Based on the results of this study, support was found for aspects of SLT and RAT. The results suggest that adolescents who spent an increased amount of time online were more likely to become cyberbully victims and/or offenders (Bossler et al., 2012; Mesch, 2009; Navarro & Jasinski, 2012). Adding to the victimization literature, the victimization models show that males were less likely than females to become cyberbully victims. Similar to past research, no evidence of a gender effect was found in the offending models (Hinduja & Patchin, 2008; Mishna et al., 2012).

The findings in this study also support past findings that having increased guardianship does little to impact cyberbullying (Bossler et al., 2012; Navarro & Jasinski, 2012). For example, the guardianship and victimization model suggests that there is a correlation between cyberbullies and cyberbully victims when parents or teachers talked to adolescents about safe technology use, which is incongruent with previous research (Mesch, 2009). However, the temporal order of this relationship is important to consider; perhaps parents or teachers conversed with youths about being safe while using technology after these youths had been

victimized (Marcum, 2008). Moreover, it may be that parents or teachers who spoke with youths about safe computer and cell phone use created a backlash where youths increased their cyberbullying activity because of the discussion. It may also be that youths engaged in cyberbullying behavior in a shared space such as the family room or classroom where they were caught performing this behavior; thus, parents or teachers had to discuss proper computer use with the youths. Because of the questions of temporal order, future research is needed to disentangle the guardianship and victimization relationship.

In addition, the guardianship and victimization model shows the only race effect in this study was that African Americans and Native Americans were more likely than whites to become victimized online. Again, this could indicate that African Americans and Native Americans were offered advice by parents or teachers after they had been cyberbullied, though this cannot be discerned from cross-sectional analyses. It may also be that African Americans and Native Americans, more so than whites, have a higher level of exposure to computers and the Internet at school, libraries, and community technology centers than at home, and as noted earlier, these groups are less likely than whites to own computers and have Internet access at home (Fairlie, 2007). Because of a higher exposure to computers and the Internet away from home, African Americans and Native Americans have more opportunities to engage in unsupervised computer and Internet use; thus, they were more likely to be victimized online. Further, their online victimizations resulted in meeting with teachers or parents about safe computer and Internet use.

The findings also say something about differential association; youths who engaged in cyberbullying may have learned the behavior from their deviant friends who engage in cyberbullying. Interestingly, victims of cyberbullying were more likely to become offenders

when they had access to the Internet and friends who are cyberbullies. Further, the temporal order of this effect should be interpreted with caution because it may be that 1) victims become cyberbullies in retaliation; 2) cyberbullies become victims because of their risky behavior in cyberspace; or 3) cyberbullies become victims and then offend others in retaliation. However, this cross-sectional study cannot discern the temporal order of this effect. Moreover, the results from the moderating effect suggest that the interaction between access to the Internet and deviant friends did increase the likelihood of offending, however, this relationship was not significant.

Recommendations and Policy Implications

The results in this study indicate that participants who spent more time online were more likely to expose themselves to motivated offenders and motivated offenders who spent an increased amount of time in cyberspace were at higher odds of coming into contact with potential victims. Based on these findings, prevention programs should be aimed at encouraging adolescents to reduce their Internet use (Marcum, 2008). School administrators, teachers, and parents may be required to work together to develop a program that educates youths about safe technology and online use and the dangers of the cyber-world to decrease the youths' likelihood of becoming victimized. This program could also provide parents and school officials with filter software and monitor devices to prevent cyberbullying behavior among youths. The findings also suggest that adolescents were significantly more likely to cyberbully others when they had friends who are cyberbullies. Therefore, school officials and parents should offer a curriculum on the risk of associating with deviant peers who engage in online bullying to prevent future deviance (Bossler et al., 2012).

Another topic that school officials and parents should educate adolescents on is the consequences of misusing technology and the Internet, specifically in schools that have anti-

cyberbullying policies or in states that have online harassment or cyberbullying laws. Hopefully by offering education on the consequences of cyberbullying, this would decrease the misuse of technology and social media. It may be that when youths understand the consequences of their actions, they will be less likely to engage in cyberbullying behaviors that could jeopardize their future.

Limitations

There are a couple of limitations to this study worth noting. First, it was unclear whether or not the guardianship items were valid measures of guardianship. These items were taken from the online harassment section of the survey instrument, which was measuring sexting; therefore, it could be that these items were measuring sexting behaviors instead of cyberbullying behaviors. Because this study shows no support for the guardianship factor of RAT, future research should develop appropriate measures to examine this factor.

Another limitation is the causal ordering link between victimization and offending. In models 5 and 6, the victimization independent variable shows a strong effect with the offending dependent variable. Because this is a cross-sectional study, it was unclear whether 1) victimization causes offending; 2) offending causes victimization; or 3) the causation goes both ways. A review of literature, although limited, tends to suggest that the causation goes both ways. For example, Li (2007) found that most cyberbullies were also cyberbully victims. By the same token, Mishna et al. (2012) suggest that cyberspace makes it easier for youths to act as both bully and bully victim because achieving revenge is easier through electronic communication than in a face to face encounter. It may be important for future research to gather longitudinal data to identify the causal ordering link between victimization and offending.

Directions for Future Research

Despite these limitations, the findings in this study contributed to the literature of cyberbullying, SLT, and RAT. As mentioned earlier, I examined the cyberbullying offending and victimization behaviors in the last 30 days and conducted a partial test of SLT and RAT. Future research should examine cyberbullying offending and victimization behavior in the lifetime span of youths to determine whether more youths have cyberbullied others or have been victimized online by others. Further, future research is needed to develop measures that examine all the concepts of SLT and RAT. For example, measures should be developed to test the imitation, differential reinforcement, and definition concepts of SLT and the value, physical visibility, and inertia components of RAT.

Moreover, the results suggest that guardianship increased the impact of cyberbullying victimization and adolescents who have been cyberbullied were more likely to become offenders. Future research should provide measures that look at the backlash component of providing guidance on proper computer and Internet use, as well as measures that examine whether cyberbullying behavior that happens in a shared space leads to a discussion about safe technology use. Additionally, longitudinal data could be used to disentangle the guardianship and victimization relationship. Future research is also needed to sort out the victim and offender nexus. Longitudinal data should be used to determine whether 1) victimization causes offending, 2) offending causes victimization, or 3) offending causes victimization, which, in turn, causes offending. Future researchers must develop measures that examine each of these three causal relationships.

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APPENDICES

APPENDIX A

Table 4

Correlation Matrix (n = 4,159)

No.	Variables	1	2	3	4	5	6	7	8
1	Male	—							
2	Age	0.090**	—						
3	Parents' education	0.048**	-0.021	—					
4	Opportunity	-0.034*	0.068**	0.140**	—				
5	Guardianship	-0.135**	-0.097**	-0.064**	-0.013	—			
6	Differential association	0.004	0.051**	-0.017	0.035*	0.080**	—		
7	Victimization	-0.072**	0.040*	0.012	0.080**	0.128**	.348**	—	
8	Offending	0.003	0.037*	0.007	0.054**	0.068**	0.480**	0.360**	—

* $p < 0.05$, ** $p < 0.01$.

NOTE: Race was omitted because it is a categorical variable.

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