

**The Effects of Cyberbullying Victimization on Psychological Adjustments
Among College Students**

BY

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THESIS

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This dissertation is dedicated to my family, who have always supported me and encouraged me to pursue my dreams. It is also dedicated to adolescents who are suffering from mental illnesses and who have inspired me to make mental health nursing my career. I hope that this study is my first step in helping them to achieve psychological well-being.

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LIST OF ABBREVIATIONS

UIC	University of Illinois at Chicago
CVS	Cyberbullying Victimization Scale
SAMA	Stress Appraisal Measure for Adolescents
SRCS	Self-Report Coping Scale
MSPSS	Multidimensional Scale of Perceived Social Support
DASS-21	Depression, Anxiety, and Stress Scales
RSE	Rosenberg Self-Esteem Scale
IRB	Institutional Review Board
PI	Principal Investigator
RA	Research Assistant
VIF	Variance Inflation Factor
CFI	Comparative Factor Index
RMSEA	Root Mean Square Error of Approximation
SRMR	Standardized Root Mean Square Residual
SD	Standard Deviation

SUMMARY

Between 4% and 30% of the youth in the U.S. reported having been cyberbullied. Additionally, 55.3% of college students reported being victims of cyberbullying at least once in their lifetime. Consequently, victims of cyberbullying have a higher level of depression and anxiety than those not experiencing cyberbullying, and they have low self-esteem. As we do not yet know who copes well and who does not cope well with cyberbullying victimization, a study of the coping strategies is needed to understand how particular ways of coping affect the psychological well-being of the victims.

The purposes of this study were to examine the influence of cognitive appraisals, coping strategies, and perceived social supports on psychological adjustments among cyberbullying victims and to examine the relationships between primary cognitive appraisals and coping strategies using a model guided by the Transactional Model of Stress and Coping.

The study used a descriptive, associational, cross-sectional design. A convenience sample of 121 college students in the University of Illinois at Chicago (UIC) was participated in this study. The recruitment of participants was performed using face-to-face recruitment. Inclusion criteria: (a) are undergraduate male and female student, (b) are between 18 and 25 years old, (c) are able to read and write English, and (d) have experienced willful and repeated harm inflicted through the use of computer, cell phones, or electronic devices in the last 12 months. The questionnaire includes a socio-demographic data sheet and seven self-report measurements. Each of scale demonstrates acceptable reliability and validity. Data were analyzed suing multiple linear regressions and path analyses.

SUMMARY (continued)

Study results indicate that victims of cyberbullying who had increased perception of threat cognitive appraisal and used internalizing coping strategy more frequently were more likely to report an increased level of depression. In addition, victims of cyberbullying who more frequently used internalizing coping strategy were more likely to report increased levels of anxiety.

Victims of cyberbullying who had increased perception of threat cognitive appraisal were more likely to use problem solving, seeking social support, and internalizing coping strategies and that those who had increased perception of control cognitive appraisal were more likely to use seeking social support coping strategy.

The current study is the first to examine a path analysis model guided by the Transactional Model of Stress and Coping that hypothesized that primary cognitive appraisals lead to coping strategies, which in turn lead to psychological adjustments. Cyberbullying victimization only indirectly affects levels of depression and anxiety. Challenge and threat cognitive appraisals and externalizing and internalizing coping strategies mediated the relationship between cyberbullying victimization and depression and anxiety.

The study findings expand our knowledge of which cyberbullying victims are at risk of depression and anxiety and of how and why some victims develop depression and anxiety. Health care professionals and researchers can use the findings to develop interventions to help cyberbullying victims manage the resulting depression and anxiety through the mediation paths of cognitive appraisals and coping strategies identified in this study.

I. INTRODUCTION

A. Background

Between 4% and 30% of the youth in the U.S. reported having been cyberbullied (Kowalski & Limber, 2007; Patchin & Hinduja, 2006; Wolak, Mitchell, & Finkelhor, 2007; Ybarra & Mitchell, 2004a). Additionally, 55.3% of college students reported being victims of cyberbullying at least once in their lifetime (Dilmac, 2009). Hinduja and Patchin (2009) defined cyberbullying as “willful and repeated harm inflicted through the use of computers, cell phones, and other electronic devices” (p. 5). More girls than boys reported being cyberbullied (15.1% vs. 7.0%) (Kowalski & Limber, 2007), and 31% of the victims knew who was cyberbullying them (Wolak et al., 2007; Ybarra & Mitchell, 2004a).

Victims of cyberbullying experience negative emotions, such as frustration, anger, hopelessness, and sadness (Juvonen & Gross, 2008; Patchin & Hinduja, 2006). Consequently, victims of cyberbullying have a higher level of depression and anxiety than those not experiencing cyberbullying, and they have low self-esteem (Hay & Meldrum, 2010; Juvonen & Gross, 2008; Ybarra & Mitchell, 2004b).

The Transactional Model of Stress and Coping has been used to explain the relations between the way victims cope with traditional bullying victimization and their psychological adjustments. For the purposes of this study, psychological adjustment is defined as the absence of depression and anxiety and the existence of high self-esteem. The model consists of four concepts that are reciprocally related and that influence psychological adjustments. These concepts are (1) the stressor, (2) cognitive appraisal, (3) coping strategies, and (4) perceived social supports (Lazarus & Folkman, 1984).

The stressor is the experience of cyberbullying victimization. Pre-existing factors, such as gender, race, and the experience of traditional victimization, influence the impact of cyberbullying (Kowalski & Limber, 2007; Kowalski, Morgan, & Limber, 2012; Li, 2007).

Cognitive appraisal is an individual's evaluation of the significance of what is happening with regard to his or her well-being (Lazarus & Folkman, 1984). There are two main types of cognitive appraisal: primary and secondary. Primary appraisal includes threat and challenge appraisal, and secondary appraisal consists of control appraisal. Hunter and Boyle (2004) found that challenge appraisals were related to coping strategies involving problem solving and seeking social support. Moreover, Hunter, Mora-Merchan, and Ortega (2004) suggested that the victim's perception of bullying as a challenge rather than a threat might reduce his or her level of distress.

Coping strategies refer to cognitive and behavioral efforts to manage a stress event (Lazarus & Folkman, 1984). The two main types of coping strategies are approach and avoidance (Kochenderfer-Ladd & Skinner, 2002). Approach coping strategies are direct attempts to change the stressful situation and include problem solving and seeking social support. Avoidance coping strategies are indirect attempts to evade the stressor and include cognitive distancing, internalizing, and externalizing. Victims who were bullied at school tended to use avoidance coping strategies instead of approach coping strategies (Cassidy & Taylor, 2005; Kochenderfer-Ladd & Skinner, 2002). Victims of traditional bullying who used avoidance coping strategies were more likely to experience higher levels of depression, higher levels of anxiety, and lower levels of self-esteem (Lodge & Feldman, 2007; Mahady Wilton, Craig, & Pepler, 2000). As was the case with traditional bullying victimization, recent studies have found that victims of cyberbullying who used avoidance coping strategies were more likely to

experience high levels of depression (Völlink, Bolman, Dehue, & Jacobs, 2013; Völlink, Bolman, Eppingbroek, & Dehue, 2013).

Perceived social supports are related to one's psychological adjustments to cyberbullying. Students who were victimized and perceived little social support from family, friends, or a significant other have been found to be more likely to have depression, anxiety, and low self-esteem (Holt & Espelage, 2007; Matsunaga, 2010; Pouwelse, Bolman, Lodewijkx, & Spaa, 2011).

B. Statement of Problem

Studies have found that 10% to 20% of college students are victims of cyberbullying (Dilmac, 2009; Finn, 2004; Schenk, 2011). Victims of cyberbullying have been reported to make more frequent suicide attempts and to exhibit higher levels of depression and anxiety symptoms than those not experiencing cyberbullying (Gámez-Guadix, Orue, Smith, & Calvete, 2013; Hair, 2006).

Previous studies have identified several characteristics of cyberbullying victimization and its psychological impacts (Kiriakidis & Kavoura, 2010). Although cyberbullying victimization is reported among college students, only a few studies have investigated the psychological impacts of cyberbullying victimization on such students (Dilmac, 2009; Finn, 2004; Schenk, 2011). In addition, a limited number of studies have attempted to explain how victims cope with cyberbullying as well as to determine whether cognitive appraisals, coping strategies, and perceived social supports influence psychological adjustments among cyberbullying victims. As we do not yet know who copes well and who does not cope well with cyberbullying victimization, a study of the coping strategies is needed to understand how particular ways of coping affect the psychological well-being of the victims.

C. Significance of the Study

Studies on cyberbullying are relatively new, and almost all the studies have been limited to describing the prevalence of cyberbullying victimization, differences in the prevalence according to gender or age, and the negative outcomes. Unlike previous studies, the current study explains how specific cognitive appraisals and coping strategies influence levels of depression, anxiety, and self-esteem. In addition, this study is the first to examine cognitive appraisals and coping strategies guided by the Transactional Model of Stress and Coping. Thus, the results of the study will provide insight into the applicability of the model to college student cyberbullying victims. In addition, the study will provide information that can be used to design intervention to help people cope more effectively with cyberbullying victimization.

D. Purposes of the Study

The purposes of this study are (1) to describe the experience of cyberbullying victims and their psychological adjustments, (2) to examine the influence of cognitive appraisals, coping strategies, and perceived social supports on psychological adjustments among cyberbullying victims, and (3) to examine relationships between primary cognitive appraisals and coping strategies guided by the Transactional Model of Stress and Coping.

E. Research Hypotheses

While controlling for socio-demographics, experience of cyberbullying victimization, and experience of traditional bullying victimization, the following hypotheses were tested:

H1: increased perception of challenge cognitive appraisal and increased perception of control cognitive appraisal will predict

H1.a. decreased levels of depression

H1.b. decreased levels of anxiety

H1.c. increased levels of self-esteem

H2: increased perception of threat cognitive appraisal will predict

H2.a. increased levels of depression

H2.b. increased levels of anxiety

H2.c. decreased levels of self-esteem

H3: increased use of approach coping strategies—problem-solving and seeking social support—will predict

H3.a. decreased levels of depression

H3.b. decreased levels of anxiety

H3.c. increased levels of self-esteem

H4: increased use of avoidance coping strategies—cognitive distancing, externalizing, and internalizing—will predict

H4.a. increased levels of depression

H4.b. increased levels of anxiety

H4.c. decreased levels of self-esteem

H5: high levels of perceived social support from family, friends, or a significant other will predict

H5.a. decreased levels of depression

H5.b. decreased levels of anxiety

H5.c. increased levels of self-esteem

H6: increased perception of challenge cognitive appraisal and increased perception of control cognitive appraisal will predict

H6.a. increased use of approach coping strategies (i.e., problem solving and seeking social support)

H6.b. decreased use of avoidance coping strategies (i.e., cognitive distancing, externalizing, and internalizing)

H7: increased perception of threat cognitive appraisal will predict

H7.a. decreased use of approach coping strategies (i.e., problem solving and seeking social support)

H7.b. increased use of avoidance coping strategies (i.e., cognitive distancing, externalizing, and internalizing)

In addition, the mediating effects of cognitive appraisals and coping strategies were examined through testing of the following hypotheses:

- H8.a. the relationship between the experience of cyberbullying victimization and depression will be mediated by primary cognitive appraisals and coping strategies
- H8.b. the relationship between the experience of cyberbullying victimization and anxiety will be mediated by primary cognitive appraisals and coping strategies
- H8.c. the relationship between the experience of cyberbullying victimization and self-esteem will be mediated by primary cognitive appraisals and coping strategies

II. CONCEPTUAL FRAMEWORK AND RELATED LITERATURE

A. Conceptual Framework

The transactional model of stress and coping developed by Lazarus and Folkman (1984) will be used to guide the study. This theoretical model focuses on the cognitive appraisal process and the ways of coping, which are shaped in the person-environment relationship. The five key concepts in this model are stress, cognitive appraisal, coping resources, coping strategies, and coping outcomes. Based on the transactional model, the five main concepts in the study are: (1) cyberbullying victimization, (2) cognitive appraisals, (3) coping strategies, (4) perceived social supports, and (5) psychological adjustments.

1. Cyberbullying Victimization

Cyberbullying victimization is considered to be a stress. Stress is a relationship between a person and the environment that is appraised by the person as taxing his or her resources and endangering his or her psychological well-being (Lazarus & Folkman, 1984). Cyberbullying victimization, which involves willful and repeated harm inflicted through the use of computers, cell phones, and other electronic devices, makes people experience negative emotions and threatens their sense of well-being (Hinduja & Patchin, 2009).

2. Cognitive Appraisals

The judgments made about stress hinge on cognitive appraisal. In the cognitive appraisal process, victims evaluate the significance of what is happening with regard to his or her well-being and what can be done, when they were cyberbullied. There are two main types of cognitive appraisal: primary and secondary. Primary appraisal is a person's evaluation of the significance of a situation in terms of its being either a threat or a challenge. Threat appraisal concerns harms or losses that have not yet taken place but are anticipated to occur; such appraisal

is related to negative emotions such as fear, anxiety, and anger. In contrast, challenge appraisal activates coping efforts and is characterized by positive emotions such as eagerness, excitement, and exhilaration. Secondary appraisal or control appraisal is a person's evaluation of what can be done through consideration of coping resources and of his or her ability to implement the associated coping strategies (Lazarus & Folkman, 1984). This evaluation process influences the subsequent coping strategies applied.

3. Coping Strategies

Coping strategies are ongoing processes and refer to cognitive and behavioral efforts to manage a stressful event (Lazarus & Folkman, 1984). Such strategies reflect how victims of cyberbullying appraise and manage the cyberbullying. There are two distinct types of coping strategies: approach and avoidance. Kochenderfer-Ladd and Skinner (2002) confirmed these two coping strategies and categorized the sub-domains. Approach coping strategies are direct attempts to change the stressful situation and include problem-solving and seeking social support. The problem solving strategy involves the victim's coping through independent action, and the seeking social support strategy involves the victim's inclusion of others in the coping process. Avoidance coping strategies are indirect attempts to evade the stressor and include cognitive distancing, internalizing, and externalizing. Cognitive distancing involves the victim's coping with negative emotional reactions by cognitively reframing or ignoring stressful events. Internalizing refers to the victim's coping in a way that focuses emotional reactions inward. In contrast, externalizing refers to the victim's coping by directing emotional reactions toward others. The types of coping strategies used by a victim of cyberbullying may influence the relationship between victimization and psychological adjustments.

4. Perceived Social Supports

Perceived social supports are considered to be coping resources. The transactional model of stress and coping emphasizes the individual's relationship to the social environment where social relationships emerge (Lazarus & Folkman, 1984). The individual subjectively evaluates the supportiveness of each social relationship, which is referred to as perceived social support. Perceived social support is a coping resource that affects the cognitive appraisal, facilitates coping strategies, and buffers the impacts of cyberbullying on victims' psychological adjustments. The perceived social support could facilitate management of stress or buffer the effects of stress in the coping process.

5. Psychological Adjustments

Psychological adjustments are considered to be coping outcomes. Coping outcomes refer to the results of an individual's adaptation to stress. The coping outcomes are the consequences of the cognitive appraisals and the coping resources used and are influenced by the coping strategies applied. The psychological adjustments are influenced by the cognitive appraisals, coping strategies, and perceived social support of cyberbullying victims.

The relationships between the key concepts are illustrated in the conceptual model (see Figure 1), which is modified from the transactional model. This conceptual model can be used to explain how cognitive appraisals, coping strategies, and perceived social supports affect psychological adjustments among cyberbullying victims. Through this conceptual model, we can come to understand how victims cope with cyberbullying and what factors influence psychological adjustments.

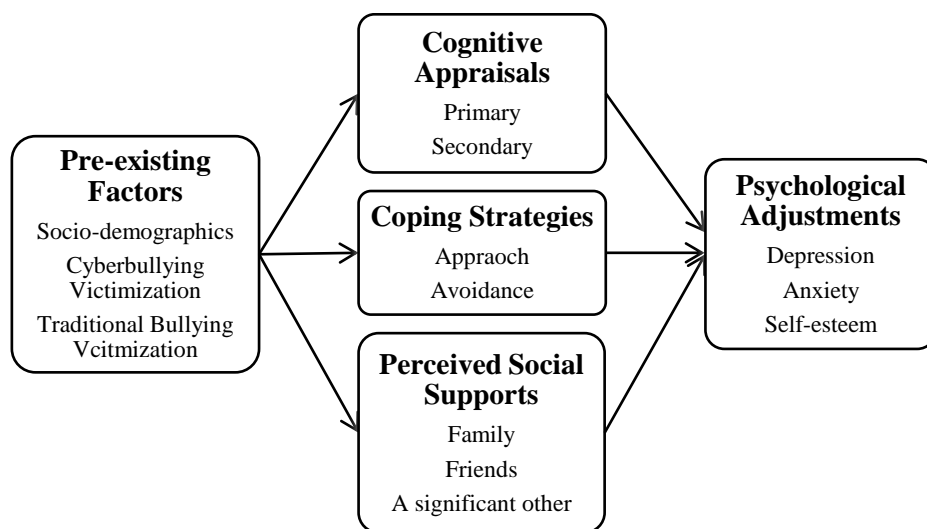


Figure 1: Model Modified from the Transactional Model of Stress and Coping

B. Cyberbullying Victimization

In the U.S., it is estimated that over 16% of youth have been bullied in the past six months (National Institute of Child Health and Human Development, 2001). For the past two decades, bullying has become widespread in American schools and has been recognized as a significant problem for youth. Moreover, bullying continues in college: 11% of undergraduate students have been bullied by another student or a teacher (Chapell et al., 2004). Recently, as new communication technology has developed, so has cyberbullying among adolescents and college students. It is estimated that between 4% and 30% of the youth in the U.S. have been cyberbullied (Kowalski & Limber, 2007; Ybarra & Mitchell, 2004a; Ybarra, Mitchell, Wolak, & Finkelhor, 2006). Similarly, it is estimated that between 10% and 21.9% of college students have been cyberbullied (Dilmac, 2009; Finn, 2004; Schenk, 2011).

Cyberbullying is an indirect form of bullying and victimization, and it is defined as willful and repeated harm inflicted through the use of computers, cell phones, and other

electronic devices (Hinduja & Patchin, 2009). There are eight different types of cyberbullying behaviors: flaming, online harassment, cyberstalking, denigration, impersonation, outing, trickery, and exclusion (Willard, 2007). Recent studies have reported that the most common methods of cyberbullying involve use of instant messaging, chat rooms, e-mail, and blogging (Hinduja & Patchin, 2008; Kowalski & Limber, 2007; Ybarra & Mitchell, 2004a). Social networking and text messages are commonly used for cyberbullying among college students (MacDonald & Roberts-Pittman, 2010).

A major factor leading to cyberbullying among college students is use of the internet, an inseparable part of their daily routines and a major means of communication. In 2009, 93% of young adults used the internet. Young adults routinely use e-mail, blogs, social networking web sites, and instant messaging as dominant methods of online communication. Overall, 72% of young adults use social networking websites, and 16% of them have profiles on multiple sites (Pew Internet & American Life Project, 2009). Therefore, college students face risks of cyberbullying victimization.

The prevalence of cyberbullying victimization has been found to differ according to gender, age, and experience of traditional bullying among adolescents. Kowalski and Limber (2007) studied the prevalence of cyberbullying victimization among 3,767 middle school students. They found that more girls than boys reported being cyberbullied (15.1% vs. 7.0%) and more 8th graders engaged in cyberbullying victimization than 6th graders (12.2% vs. 8.4%). In addition, Ybarra et al. (2006) reported data from the Second Youth Safety Survey of 1,500 internet users aged between 10 and 17 years. They found similar characteristics among cyberbullying victims; cyberbullied were slightly older than non-involved youth (14.6 vs. 14.2 years). Other studies have found that there is a strong relationship between cyberbullying and

traditional bullying (Vandebosch & Van Cleemput, 2009). Traditional bullying refers to repeated physical or relational harm inflicted by one person or a group. Hinduja and Patchin (2008) studied 1,378 youth under the age of 18. They found that youth who reported being bullied by others in traditional ways were 2.6 times more likely to have been victims online as well. Li (2007) also reported that those who were traditional bullying victims were 2.5 times more likely to be cyberbullying victims in a study of 461 7th grade students in Canada and China. More recently, Kowalski et al. (2012) confirmed the relationship between traditional bullying victimization and cyberbullying victimization. They studied 4,531 students in grades 6 through 12 and found that more frequent traditional victimization was associated with a higher frequency of cyberbullying victimization and that this relationship was stronger for females than for males.

Although previous studies have revealed several characteristics of cyberbullying victimization, most of them have been conducted with adolescents. In contrast with the results for adolescents, Schenk (2011) found no significant difference in cyberbullying victimization according to age, gender, or frequency of internet use among 799 college students. Although cyberbullying is a growing and serious problem among college students, there is little understanding of who is at a high risk of becoming a victim of cyberbullying.

C. Psychological Adjustments of Cyberbullying Victimization

Psychological adjustment is defined as the behavior or psychological state that is experienced by an individual in response to cyberbullying victimization. Because victims of cyberbullying are being ignored, disrespected, threatened, picked on, or made fun of, they feel frustrated, angry, hopeless, scared, embarrassed, and/or sad (Juvonen & Gross, 2008; Patchin & Hinduja, 2006). These negative emotions are likely to threaten an individual's psychological well-being and result in psychological maladjustments. Few studies have examined the

experience of cyberbullying on psychological adjustments, such as absent of depression and anxiety and high self-esteem.

1. Depression

Depression is a significant public health problem among adolescents and young adults in the U.S (American College Health Association, 2012). Approximately 11% of college students report being diagnosed with or treated by a professional for depression within the last 12 months. Depression is consistently among the top 10 factors having a negative influence on students' academic performance (American College Health Association, 2012). Moreover, depression is a significant problem that leads to an increased risk of attempting or committing suicide (Zullig & Divin, 2012).

The experience of cyberbullying victimization is related to elevated levels of depression. Mitchell, Ybarra, and Finkelhor (2007) reported data from the Second Youth Safety Survey of 1,500 internet users aged between 10 and 17 years. They found that youth who were cyberbullied were 2.5 times more likely to report depressive symptoms than those who were not cyberbullied. More recently, Schneider, O'Donnell, Stueve, and Coulter (2011) reported data from the Metro West Adolescent Health Survey of 20,406 9th through 12th grade students. This survey reported that 33.9% of cyberbullying victims had depressive symptoms and that victims were 3.26 times more likely to have depressive symptoms than those who were not victimized. Not only among youth but also among college students, victims of cyberbullying have been found to exhibit a higher level of depressive symptoms than those not experiencing cyberbullying (Schenk, 2011). Moreover, the risk of depression is higher for victims of cyberbullying than for the victims of traditional bullying. Schneider et al. (2011) reported that more cyberbullying victims had more depressive symptoms than the victims of traditional bullying (33.9% vs. 26.6%). Moreover, in a

longitudinal study of 845 adolescents between 13 and 17 years old, Gámez-Guadix et al. (2013) found that the experience of cyberbullying victimization predicted higher levels of depressive symptoms 6 months after the experience.

2. Anxiety

Anxiety is also a significant public health problem among adolescents and young adults in the U.S. About 12% of college students report being diagnosed with or treated by a professional for anxiety within the last 12 months (American College Health Association, 2012). Along with depression, anxiety is consistently among the top 10 factors having a negative influence on students' academic performance (American College Health Association, 2012).

The experience of cyberbullying victimization is related to elevated levels of anxiety among youth. Juvonen and Gross (2008) investigated the frequency of cyberbullying victimization and the resulting level of anxiety among 1,454 12 to 17 year olds. They found that the victims of cyberbullying had a higher level of social anxiety than those not experiencing cyberbullying. Moreover, college students who were cyberbullied have been found to exhibit a higher level of anxiety than those who were not (Schenk, 2011).

3. Self-Esteem

Along with depression and anxiety, low self-esteem is a predictor of problems that directly and indirectly affect the academic and behavioral performance of students (Twenge & Campbell, 2001). Self-esteem is defined as a favorable or unfavorable attitude toward the self. Self-esteem is important not only because it may be one of the most significant factors associated with well-being, but also because self-esteem is related to stress (Twenge & Campbell, 2001). Because cyberbullying victimization is a stress, it might have a negative influence on self-esteem. However, only one study of cyberbullying found that victims had significantly lower

self-esteem than those who had no experience with cyberbullying (Justin W. Patchin & Sameer Hinduja, 2010) .

Few studies have examined the relationship between cyberbullying victimization and psychological adjustments, and only one study has explored the matter among college students (Schenk, 2011). Moreover, we do not fully understand who experiences depression or anxiety after cyberbullying victimization and who does not. Although studies consistently identify a relationship between cyberbullying victimization and psychological adjustments, it is not known what kind of coping process might account for the relationship. Studying differences in the ways of coping between persons who cope well with cyberbullying and those who do not is necessary to help reduce depression, anxiety, and low self-esteem.

D. Cognitive Appraisals

Cognitive appraisal types have been found to be directly associated with levels of psychological adjustment. For example, Hunter et al. (2004) examined influence of cognitive appraisals on the psychological distress among traditional bullying victims. They studied 219 undergraduate students and found that victims who had performed high levels of control reported that they had experienced lower levels of distress than victims who had performed low level of control. They also found that victims who performed threat appraisals more frequently than challenge appraisals felt greater distress than victims who performed challenge appraisals more frequently than threat appraisals. These results indicate that the perception of bullying as a challenge rather than a threat might reduce the level of distress.

In addition, research indicates that the type of cognitive appraisal performed is related to the choice of coping strategies. Ptacek, Smith, and Zanas (1992) asked 186 college students, whether they had experienced a stressful event and if so what appraisals and coping strategies

they had applied. Students experiencing a stressful event and who performed high levels of challenge appraisal tended to use more problem-focused coping strategies than those who performed had high levels of threat appraisal. Also, male students who had performed greater levels of perceived control appraisal exhibited lower reliance on blaming others for the stressful event, an avoidance coping strategy. Other studies have found that a high level of control appraisal was consistently associated with greater use of problem-focused coping strategies (Folkman, Lazarus, Dunkelschetter, DeLongis, & Gruen, 1986; Kliwer, Fearnow, & Walton, 1998).

The relationships between the types of cognitive appraisal performed and the coping strategies applied have been examined among traditional bullying victims. Hunter and Boyle (2002) examined the perceptions of control appraisals among victims of traditional bullying by studying 348 children aged 9 to 11 years. They found that there were different perceptions of control appraisals according to gender and the frequency and persistence of the bullying experience. Boys exhibited greater levels of control appraisal than girls. Girls who had experienced frequent traditional bullying performed lower levels of control appraisal than girls who had experienced infrequent bullying. In addition, both male and female victims of short-term bullying (under 4 weeks) were more likely to feel in control of the situation than were victims of long-term bullying (over 4 weeks). More recently, Hunter and Boyle (2004) explored appraisal types and coping strategies among victims of traditional bullying by studying 459 children aged 9 to 14 years. They found that challenge appraisals were related to coping strategies involving problem-solving and seeking social support. However, no study has been performed to examine the relationship between cognitive appraisal types and coping strategies among victims of cyberbullying. Therefore, examining the types of appraisal performed by

victims of cyberbullying is essential to understand why victims cope in certain ways and to reduce future distress among victims. A few studies have examined cognitive appraisal among victims of traditional bullying (Hunter & Boyle, 2004; Hunter et al., 2004), but no study has examined cognitive appraisals among cyberbullying victims. Learning about the appraisals performed during cyberbullying victimization may shed light on the relationship between cognitive appraisals, coping strategies, and psychological maladjustments among victims of cyberbullying.

E. Coping Strategies

In studies of traditional bullying, the uses of coping strategies were found to differ according to the frequency and duration of bullying victimization and gender. Children between 9 and 15 years old who were bullied at school tended to use avoidance coping strategies more frequently than approach coping strategies (Cassidy & Taylor, 2005; Kochenderfer-Ladd & Skinner, 2002). Victims who were frequently bullied reported more use of avoidance coping strategies than those bullied infrequently (Hunter & Boyle, 2004). Also, the types of coping strategies used were found to be associated with gender and with frequency and duration of bullying victimization (Hunter & Boyle, 2004). Female students sought social support more frequently than male students, and students who were bullied for over 4 weeks reported less seeking of social support than those who were bullied less than 4 weeks.

Researchers have tried to explain the relationship between the ways victims cope with traditional bullying and psychological adjustments using the transactional model. Kochenderfer-Ladd and Skinner (2002) examined coping strategies of traditional bullying victimization by studying 300 children aged 9 and 10 years. They reported that male victims who used cognitive distancing and externalizing coping strategies exhibited more depression and anxiety tendencies

than did non-victims. Other studies have examined the association between the use of avoidance coping strategies and psychological maladjustments among traditional bullying victims. Seiffge-Krenke and Klessinger (2000) examined the impacts of different coping strategies on 194 adolescents' depressive symptoms. They found that use of avoidance coping strategies led to an increase in depression in the short term and to depressive outcomes after 2 years. This study also reported that adolescents using an avoidance coping strategy consistently exhibited higher levels of depressive symptoms than did adolescents who used approach coping strategies (Seiffge-Krenke & Klessinger, 2000). Lodge and Feldman (2007) found relationships between use of avoidance coping strategies and lower levels of self-esteem in study of 379 adolescents aged between 10 and 13 years.

Although the studies that have examined the relationships between coping strategies and cyberbullying victimization are limited in number, they have had results similar to those of studies of traditional bullying victimization. Two 2013 studies conducted by Vollink et al. (2013) explored the relationships between the experience of cyberbullying victimization and coping strategies among 325 students aged 11 and 12 years. These studies found that the experience of cyberbullying victimization was associated with depression and that victims of cyberbullying who frequently used avoidance coping strategies were more likely to experience high levels of depression (Völlink, Bolman, Dehue, et al., 2013; Völlink, Bolman, Eppingbroek, et al., 2013).

However, limited information is available on college students' coping strategies for cyberbullying victimization. A few cyberbullying studies have only examined the responses to cyberbullying victimization among college students. Finn (2004) reported that victims were hesitant to tell authorities about being cyberbullied, and almost half of those who did report the experience to authorities were not satisfied with the outcome of their report.

F. Perceived Social Supports

Social support is an important concept to understand psychological adjustments among victims of cyberbullying. Some studies have examined differences in perceptions of social support between traditional bullying victims and non-victims. Demaray and Malecki (2003) studied 499 students in the 6th through 8th grades. Traditional bullying victims perceived less social support than students who were not bullied. Victims of traditional bullying also perceived less support from their classmates or peers than students who were not bullied. In addition, Holt and Espelage (2007) had similar findings in their study of the relationships among social support, traditional bullying victimization, and psychological maladjustments in a sample of 784 youth. Specifically, they found that victims of traditional bullying perceived that they received less social support than non-victims (Holt & Espelage, 2007).

Moreover, some studies have investigated the relationships between perceived social supports and the psychological adjustment among traditional bullying victims. Rigby (2000) and Pouwelse et al. (2011) examined the relationships among the experience of bullying victimization, social support, and psychological well-being in adolescents. Rigby (2000) found that frequent bullying experiences and low perceived social support were independently related to poor mental health among the victims. Pouwelse et al. (2011) reported that adolescents who perceived little social support from parents and peers were more likely to be depressed.

However, no study has been performed to examine the nature of social support with regard to cyberbullying victims among college students. This study investigated the association between perceived social support and psychological adjustments among cyberbullying victims.

III. METHODOLOGY

A. Research Design

The study used a descriptive, associational, cross-sectional design to examine the relationships among cognitive appraisals, coping strategies, perceived social supports, and psychological adjustments for college student cyberbullying victims. This research design is an appropriate design for predicting the effects of cognitive appraisals, coping strategies, and perceived social supports on psychological adjustment among college student cyberbullying victims.

B. Sample and Setting

A convenience sample of 121 college students in the University of Illinois at Chicago (UIC) participated in this study. UIC, a state-funded public research university, has approximately 17,000 undergraduate students in 15 colleges. In 2011, the university had an undergraduate enrollment of 8,067 males and 8,844 females. The student body is ethnically diverse. About 65% of UIC's undergraduate students are 24 years old or under (Office of Institutional Research, 2011) .

Inclusion criteria: (a) are undergraduate male and female student, (b) are between 18 and 25 years old, (c) are able to read and write English, and (d) have experienced willful and repeated harm inflicted through the use of computer, cell phones, or electronic devices in the last 12 months. Exclusion criteria: (a) are not current undergraduate male and female student, (b) are younger than 18 and older than 25 years, (c) are unable to read and write English, and (d) have not experienced willful and repeated harm inflicted through the use of computer, cell phones, or electronic devices in the last 12 months.

GPOWER version 3.1.3 was used to calculate the sample size. Demaray and Malecki (2003), Kochenderfer-Ladd and Skinner (2002), and Pouwelse et al. (2011) had effect size ranging from .11 to .35 and the mean of effect size is .23. A sample size of 98 was needed to obtain a power of .80 with a significance alpha level of .05 (two-tailed), and an effect size of .23 with 16 predictors: cognitive appraisals (3), coping strategies (5), and perceived social supports (3), traditional victimization (2), and socio-demographic factors (3). A total sample size was achieved a power of .80 with a significance alpha level of .05 (two-tailed), and an effect size of .23 for a multiple linear regression (Cohen, 1992).

For a sample size of path analysis, Hair (2006) suggested that the sample ratio should be large enough to include 5 observations for each estimated parameter. The sample size of the current study was calculated that 5 observations for each estimated parameter. Therefore, a sample size of 110 was needed with 15 paths and 7 error terms.

C. Measurements

The questionnaire includes a socio-demographic data sheet and seven measurement instruments: the (1) Traditional Bullying Victimization Scale, (2) Cyberbullying Victimization Scale, (3) Stress Appraisal Measure, (4) Self-Report Coping Scale, (5) Multidimensional Scale of Perceived Social Support, (6) Depression Anxiety Stress Scale-21, and (7) Rosenberg Self-Esteem Scale. All measurements for the study were self-report questionnaires. Each of scale demonstrates acceptable reliability and validity.

1. Traditional Bullying Victimization

Traditional bullying victimization is one of the pre-existing factors. Traditional bullying victimization was assessed using two subscales modified from the Problem Behavior Frequency Scales (PBFS). Specifically, the subscales were modified to assess the frequency of

overt and relational victimization in the past 12 months rather than in the past 30 days. In addition, the rating scale was modified to a 5-point Likert Scale. There two subscales were used to assess the frequency of victimization, one for overt victimization and one for relational victimization. Each subscale contains six items. For each item, the participant was asked to indicate how frequently a particular victimization has occurred in the 12 months prior to the survey. The overt victimization subscale measures college students' reports of the frequency with which other students have attempted or threatened to harm them in terms of their physical well-being. The relational victimization subscale was used to assess college students' reports of the frequency with which other students have attempted or threatened to harm their personal relationship. The participants were asked to indicate how often victimization has occurred in the past 12 months on a 5-point Likert Scale (never = 0; once or twice = 1; a few times = 2; many times = 3; every day = 4). Each six-item summary scale ranges from 0 to 24, with higher values representing higher levels of overt or relational victimization.

The Cronbach's alpha for the overt victimization subscale was .84, and the Cronbach's alpha of the relational victimization subscale was .85 (Henry, Tolan, Gorman-Smith, & Schoeny, 2012). Farrell, Kung, White, and Valois (2000) found the overt and relational victimization subscales can be used to examine specific domains of victimization in studies of problem behaviors for a sample of 988 urban and 1,895 rural middle school students. In the current study, the Cronbach's alpha for the overt victimization subscale was .78, and for the relational victimization subscale was .88.

2. Cyberbullying Victimization

Patchin and Hinduja (2010)'s Cyberbullying Victimization Scale (CVS) was modified to assess frequency of different types of cyberbullying victimization. This

questionnaire reflects the definition of cyberbullying and the different types of cyberbullying, such as e-mail, instant message, chat rooms, and My space. The CVS represents the respondent's experience in the past 12 months with nine different types of cyberbullying (e.g., someone posted mean and hurtful comments about me online). Specifically, participants were asked to indicate how often a particular type of cyberbullying victimization occurred in the 12 months prior to the survey on a 5-point Likert Scale (never = 0; once or twice = 1; a few times = 2; many times = 3; every day = 4). The scale ranges from 0 to 36, with 36 meaning they had experienced cyberbullying victimization most frequently in variety ways.

The reliability, factor structure, and validity of the CVS have been evaluated. Patchin and Hinduja surveyed the prevalence of cyberbullying in four studies of youth between 11 and 18 years old. They reported that the Cronbach's alpha for these four studies ranged from .74 to .93 in 2007 and 2010 (Patchin & Hinduja, 2010). In the current study, the Cronbach's alpha for the cyberbullying victimization scale was .71.

Patchin and Hinduja conducted the principal components extraction with oblique rotation to examine construct validity. The results of the factor analysis revealed that all items loaded on 1 factor (loadings ranged from .504 to .599; eigenvalue = 2.92). Recently, Patchin and Hinduja reported similar results that all items in the CVS loaded onto 1 component (loadings ranged from .675 to .715; eigenvalue range from 6.07 to 6.40) based on the 4 different studies during 2007 to 2010. Since both factor loadings of the CVS were more than 0.50, it can be considered as high concurrent validity (Waltz, Strickland, & Lenz, 2010).

3. Cognitive Appraisals

Cognitive appraisal was assessed using the Stress Appraisal Measure for Adolescents (SAMA; Rowley, Roesch, Jurica & Vaughn, 2005). The SAMA consists of two

primary appraisal dimensions (threat and challenge) and one secondary appraisal dimension (control). The research participants were asked to indicate how they think and feel if they were being cyberbullied. The SAMA includes 14 items: threat (6), challenge (4), and control (4). Threat appraisal concerns harms or losses that have not yet taken place but are anticipated to occur (e.g., I would perceive the situation as threatening). Challenge appraisal activates coping efforts and is characterized by positive emotions (e.g., I could overcome the situation). Control appraisal is a person's evaluation of what can be done through consideration of coping resources (e.g., there would be someone I could turn to for help). The participants were asked to indicate how they think or feel on a 5-point Likert Scale (not at all = 0; a little bit = 1; about half the time = 2; the majority time = 3; a great amount = 4). The mean of the responses for each subscale was used. The mean score ranges from 0 to 4, with higher values representing more frequent perception of cyberbullying as threat, challenge, and control appraisal.

For 172 students aged 14 to 18 years, the reliability for the challenge was .79, for threat .81, and resources .79 (Rowley et al., 2005). The resources appraisal is consistent with control appraisal. In the current study, the Cronbach's alpha for the challenge subscale was .86, for threat subscale was .87, and control subscale was .84.

Rowley et al. (2005) confirmed a three-factor model, which consists of two primary appraisal dimension (threat and challenge) and one secondary appraisal dimension (control). The three-factor model for the SAMA had good fit by testing the confirmatory factor analyses (CFI = .99, RMSEA = .02, and $p < .05$). Greater than .93 of Comparative Factor Index (CFI) indicates reasonable model fit (Bentler, 1990). Also, less than .05 of the Root Mean Square Errors of Approximation (RMSEA) can be considered as good model fit (Steiger, 1990). The SAMA has good convergent/discriminant validity. In the study of Rowley et al. (2005), each

appraisal factor was significantly correlated with relevant measures. Depression was positively correlated with threat (.47) and negatively correlated with both challenge (- .41) and control (- .42).

4. Coping Strategies

The coping strategies were assessed using the Self-Report Coping Scale (SRCS) developed by Causey and Dubow (1992) and modified by Kochenderfer-Ladd and Skinner (2002). The SRCS consists of five coping sub-domains based on Roth and Cohen's (1986) approach/avoidance conceptualization: problem solving, seeking social support, distancing, externalizing, and internalizing. The SRCS consists of two approach coping strategies (i.e. Problem Solving and Seeking Social Support) and three avoidance coping strategies (i.e. Cognitive Distancing, Externalizing, and Internalizing). Approach coping strategies were measured by problem solving (e.g., I would try to think of different ways to overcome the situation) and seeking social support (e.g., I would tell a friend or family member what happened). Avoidant coping strategies were measured by cognitive distancing (e.g., I would make believe that nothing happened), externalizing (e.g., I would yell to let off steam), and internalizing (e.g., I would worry about it). The SRCS includes 22 items: problem solving (5), seeking social support (5), cognitive distancing (5), externalizing (3), and Internalizing (4). Specifically, the participants were asked "If you were being cyberbullied, I..." and participants were asked to indicate how often, on a 5-point Likert Scale (never = 0; hardly ever =1; sometimes = 2; most of the time = 3; always = 4). The mean of the responses for each subscale were used. The mean score ranges from 0 to 4, with higher values representing more frequently applied coping strategies.

Kochenderfer-Ladd and Skinner (2002) examined reliability and validity of the SRCS for 356 children between 9 and 10 years old. The Cronbach's alpha of (1) Problem solving was .72, (2) Seeking social support .75, (3) Cognitive distancing .70, (4) Externalizing .60, and (5) Internalizing .57. In the current study, the Cronbach's alpha of (1) Problem solving was .80, (2) Seeking social support .87, (3) Cognitive distancing .79, (4) Externalizing .77, and (5) Internalizing .84.

The factor structure of the SRCS revealed that the factor loading of the subscales ranged .30 to .52. The factor structure of the SRCS is acceptable because minimally acceptable factor loading is .32 (Tabachnick & Fidell, 2007).

5. Perceived Social Supports

Perceived social supports were assessed using the Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet et al., 1988). The MSPSS has three subscales that assess perceptions of social support adequacy from family, friends, and a significant other. The significant other indicates a "special person", who may be interpreted to mean a boyfriend/girlfriend, teacher, counselor, etc. Each of the three subscales contains four items (e.g., there is a special person who is around when I am in need). The participants were asked to indicate how they feel on a 7-point Likert Scale (very strongly disagree = 1 to very strongly agree = 7). The mean of the responses for each subscale was used. The mean score ranges from 1 to 7, with higher values indicating higher levels of perceived social support.

The reliability, factor structure, and validity of the MSPSS have been evaluated among college students. Based on the findings of the Zimet, Dahlem, Zimet, and Farley (1988), the internal consistencies of the MSPSS was acceptable. Zimet et al. (1988) studied 275 undergraduate students. For the family, friends, and significant other, the Cronbach's alpha were

.87, .85, and .91, respectively. The test-retest reliability for the family, friends, and significant other subscales were .85, .75, and .72, respectively (Zimet et al., 1988). These values indicate good internal consistency and adequate stability over the time period for the MSPSS as a whole and for the three subscales. In the current study, the Cronbach's alpha for the family was .93, for the friends was .91, and for the significant other was .93.

Clara, Cox, Enns, Murray, and Torgrudc (2003) evaluated the structure of the MSPSS for 549 undergraduate students and 156 psychiatric outpatients. They found that the moderate inter-correlations between each subscale ($r = .39 \sim .62$) in both groups indicated that each subscales of MSPSS is independent of the construction of the others.

Zimet et al. (1988) and Clara et al. (2003) evaluated the construct validity of the MSPSS with a sample of university students. Zimet et al. (1988) found that all subscales of the MSPSS were negatively related to the depression and anxiety scales ($r = -.13$ to $-.25$, $p < .05$). Clara et al. (2003) also found similar relationship between MSPSS and depression scales ($r = -.06$ to $-.44$, $p < .05$). Therefore, concurrent validity in undergraduate students was supported with these significant relationships among MSPSS, depression measures, and anxiety measures.

6. Psychological Adjustments

This study used two instruments for assessing psychological adjustments: Depression, Anxiety, and Stress Scales (DASS-21) and Rosenberg Self-Esteem Scale (RSE).

a. Depression and Anxiety

The level of depression and anxiety were assessed using the Depression, Anxiety, and Stress Scales (DASS-21) (Arnett, 2000). The DASS-21 is a 21 item self-report measure yielding three subscales of seven items each: depression (e.g., I couldn't seem to experience any positive feeling at all), anxiety (e.g., I was aware of dryness of my mouth), and stress (e.g., I

found it hard to wind down). The participants were asked to indicate how much the statement applied to them over the past week on a 4-point Likert Scale (Did not apply to me at all = 0; Applied to me to some degree, or some of the time = 1; Applied to me to a considerable degree, or a good part of time = 2; applied to me very much, or most of the time = 3). For the current study, only the depression and anxiety subscales were used to assess levels of depression and anxiety. For each subscale, the score obtained from that responses were sum up and multiplied. The scores for the two DASS-21 subscales range from 0 to 42. Higher scores represent higher levels of depression and anxiety. For the depression subscale, a total score of 21 or higher indicates severe depression. For the anxiety subscale, a total score of 15 or higher indicates severe anxiety.

The DASS-21 has high reliability, consistent factor structure, and high convergent validity. Based on the findings of the Henry and Crawford (2005)'s, the internal consistencies of the DASS -21 was acceptable. Henry and Crawford (2005) studied 1,794 general adults population. For depression, anxiety, and stress, the Cronbach's alpha were .88, .82, and .90, respectively. In the current study, the Cronbach's alpha of the depression subscale was .90 and of the anxiety subscale was .80.

Henry and Crawford (2005) evaluated the structure of the DASS-21 and found that the three-factor model showed the best model fit ($CFI > .94$ and $p < .05$). They suggested that the DASS-21 subscales can validly be used to measure the dimensions of depression, anxiety and stress. In addition, the DASS-21 has good convergent/discriminant validity. In Henry and Crawford (2005)'s research, the correlation between Positive Affectivity and each subscale of DASS-21 were negative (-0.48 for depression, -0.29 for anxiety, and -0.28 for stress).

b. Self-esteem

Self-esteem was assessed using the Rosenberg Self-Esteem Scale (RSE). The RSE is a 10 item self-report measure to assess one's level of self-esteem (e.g., on the whole, I am satisfied with myself). The participants were asked to indicate how they feel about themselves with a 4-point Likert Scale (strongly disagree = 1 to strongly agree = 4). The mean of the responses for each item was used. The mean score of 10 items ranges from 1 to 4, with higher values representing higher levels of self-esteem.

The RSE has high reliability, consistent factor structure, and high convergent validity. Based on the findings of the Robins, Hendin, and Trzesniewski (2001), the internal consistency of the RSE was acceptable. For a sample of 508 undergraduate students, the Cronbach's alpha was .88 (Robins et al., 2001). In the current study, the Cronbach's alpha the self-esteem scale was .96.

Robins et al. (2001) evaluated the structure of the RSE and found that the single-factor model showed the best model fit ($CFI > .90$ and $p < .05$). Robins et al. (2001) also examined the convergent correlations between RSE and the six assessments: Domain-specific self-evaluations, self-evaluation bias, personality, psychological and physical well-being, group behavior, and academic outcomes. The convergent correlations in the total sample ranged from .89 to .94. The findings support that the RSE has good convergent validity.

7. Socio-demographic questionnaire

The socio-demographic includes age, gender, sexual orientation, race/ethnicity, and religion, and service use. The socio-demographic questionnaire is based on the items from the 2009 Youth Risk Behavior Survey (YRBS) conducted by Centers for Disease Control and Prevention (CDC).

The service use was assessed using the modified Service Use Measure (Tolan, Gorman-Smith, & Henry, 2010). The service use is modified to assess psychiatric or emotional services used by the research participants in the past 12 months. The participants were asked to indicate which service they used from a list of three psychiatric or emotional services (e.g., psychiatric hospital, detox unit, or community mental health center).

D. Data Collection Procedure

Data collection was conducted between February and April 2013. After the approval from the Institutional Review Board (IRB), the Primary Investigator (PI) and Recruitment Assistants (RA), undergraduate or graduate students at UIC, recruited study participants. The PI confirmed that the RAs have completed the Collaborative Institutional Training Initiative (CITI) and that they are aware of regulatory requirements and accepted standards for protection of human subjects. All RAs received a four-hour training from the PI. During the training, the PI explained the study purpose and procedures, the inclusion and exclusion criteria, the participant recruitment process, the screening process, the informed consent process, and questionnaire content. The RAs' primary responsibility was recruitment and screening. The PI provided the RAs opportunities to practice the recruitment and screening process.

The recruitment of participants was performed using face-to-face recruitment. The PI scheduled dates with selected program directors and reserved a room in campus buildings. The PI and RAs distributed the flyer, which includes the purpose of the study, participant eligibility criteria, study procedures, and the PI's name and contact information. The flyer invited interested undergraduate students to contact the PI to schedule an appointment for data collection. During this screening process, the PI and RAs determined if the students meet the selection criteria. Those meeting the selection criteria were invited to volunteer to participate in the study. Those

who wish to participate were given an explanation of the data collection process and if they continue to wish to participate, they were escorted to a reserved private room where the PI obtained written informed consent. The PI obtained informed consent and administered the questionnaire. The study participants had given a packet containing the survey questionnaires to complete. The PI was present during survey completion to address any questions posed by participants about the questionnaires. The participants completed the packet of questionnaires in a private room. Completing the questionnaire packet takes 20 to 30 minutes. No identifying information was included on the questionnaires. After data collection, the PI provided each participant a booklet on cyberbullying resources at UIC.

E. Statistical Analysis

Data was analyzed using SPSS version 19.0 and Stata version 12.0. Prior to the data analysis, the data was checked for data file accuracy, missing data, and outliers. The accuracy of the data file and any outliers were evaluated by double-checking data entry and by conducting a descriptive statistical analysis.

The missing value analysis procedure was performed to examine the pattern of missing data and to impute missing values. Missing data was ignored when both of two conditions exist: missing patterns are found to be completely random, and several missing values of less than 5% on each variable are present.

The reliability of each instrument was evaluated using Cronbach's alpha. A Cronbach's alpha of 0.70 is recommended (Netemeyer, Bearden, & Sharma, 2003). All scales demonstrate acceptable reliability.

Descriptive statistics were used to summarize the data for the socio-demographics, traditional victimization, cyberbullying victimization, cognitive appraisals, coping strategies,

perceived social supports, and psychological adjustments. A Pearson's correlation analyses were performed to examine the bivariate relationships between variables.

Multiple linear regressions were performed to examine the Hypotheses 1 to 7. Histograms and normal probability plots of the residuals were evaluated to check for linearity, homoscedasticity, and normality of residual. The Variance Inflation Factor (VIF) and tolerance statistics were used to diagnose multicollinearity. The assumptions for linearity, homoscedasticity, and normality were met. The VIF and tolerance statistics showed that there is no colinearity between predictors.

Path analyses were conducted to examine the relationships between primary cognitive appraisals and coping strategies (Hypotheses 8.). A path analysis was appropriate to explain multiple causal influences and to examine the comparative strength of both direct and indirect relationships among variables within a hypothesized model (Lleras, 2005). Path analyses used Sequential Equation Modeling in Stata. Modeling fit evaluated through traditional structural equation modeling fit indexes: Chi-Square Test of Model Fit, Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), and Comparative fit index (CFI). Low χ^2 relative to degrees of freedom with an insignificant p value ($p > 0.05$) was considered a good fit. Less than 0.07 of RMSEA was considered a good fit (Steiger, 2007). Less than 0.08 of SPMR was considered a good fit (Hu & Bentler, 1999). Greater than 0.95 of CFI was considered a good fit (Hu & Bentler, 1999).

Statistical data analyses were performed based on a two-tailed test with a significance level of .05.

IV. RESULTS

A. Description of the Sample

The sample consisted of a total 121 of college students ($n = 75$ females and 46 males) who ranged in age from 18 to 25 years. They had a mean age of 19.68 years ($SD = 1.60$). The majority of these students (92.6%) reported that they were straight. The reported race/ethnicity was Asian and Pacific Islander (30.6%), Black (28.9%), Hispanic (23.1%), and White (17.4%). Most of the sample (41.3%) reported that they were freshman, and almost a third reported that they were Christian (32.2%). Only 34 of the 121 students reported receiving help from either a community mental health center, psychiatric hospital, or detox unit, and nine of the 121 students reported using prescribed medicine for mental illness. See Table 1.

TABLE I.
SOCIO-DEMOGRAPHIC CHARACTERISTICS OF SAMPLE

	Categories/ Mean \pm SD	N=121	%
Gender	Female	75	62.0
	Male	46	38.0
Age	18 – 25 years / 19.68 \pm 1.60		
Sexual Orientation	Straight	112	92.6
	Gay or Lesbian	5	4.1
	Bisexual	3	2.5
	Asexual	1	0.8
Race/Ethnicity	Asian and Pacific Islander	36	30.6
	Black	35	28.9
	Hispanic	28	23.1
	White	21	17.4
Year of College	Freshman	50	41.3
	Sophomore	28	23.1
	Junior	28	23.1
	Senior	15	12.4
Religion	Christian	39	32.2
	Catholic	29	24.0
	Muslim	17	14.0
	Other	11	9.1
	None	25	20.7
Resource Utilization	Community Mental Health Center	23	19.5
	Psychiatric Hospital	8	6.7
	Detox Unit	3	2.5
	None	87	71.9
Have Been Prescribed Medication	Yes	9	7.4
	No	112	92.6

All participants reported having experienced some form of cyberbullying at least a few times in the last year. The most commonly reported type of cyberbullying victimization for both males and females was the posting of mean or hurtful comments about them online (32.2%), followed by having rumors about them spread online for females (22.7%) and being threatened online to be hurt for males (21.7%). See Table 2. The most commonly reported environment for

cyberbullying victimization was Facebook (76.0%), followed by text messages by cell phone (47.9%) and orally by cell phone (33.1%). See Table 2.

TABLE II.

PREVALENCE OF STUDENTS INVOLVED IN VARIOUS FORMS OF CYBERBULLYING AS A VICTIM “AT LEAST A FEW TIMES IN THE LAST YEAR” AND ENVIRONMENTS OF CYBERBULLYING VICTIMIZATION

	A few times or more N (%)		
	Total n = 121	Female n = 72	Male n = 46
Forms of Cyberbullying Victimization (Mean ± SD)	5.36 ± 3.41	5.07 ± 3.31	5.83 ± 3.55
Someone cyberbullied me	47 (39.5)	23 (31.5)	24 (52.2)
Someone posted mean or hurtful comments about me online	39 (32.2)	23 (30.7)	16 (34.8)
Someone spread rumors about me online	23 (19.0)	17 (22.7)	6 (13.0)
Someone threatened to hurt me online	18 (14.9)	8 (10.7)	10 (21.7)
Someone threatened to hurt me through a cell phone text message	18 (14.9)	12 (16.0)	6 (13.0)
Someone pretended to be me online and acted in a way that was mean or hurtful to me	7 (5.8)	3 (4.0)	4 (8.7)
Someone posted a mean or hurtful picture of me online	4 (3.3)	3 (4.0)	1 (2.2)
Someone posted a mean or hurtful video of me online	3 (2.5)	1 (1.3)	2 (4.3)
Someone created a mean or hurtful web page about me	1 (0.8)	--	1(2.2)
Environments of Cyberbullying Victimization			
Facebook	92 (76.0)	60 (80.0)	32 (69.6)
Cell phone text messages	58 (47.9)	37 (49.3)	21 (45.7)
Orally by cell phone	40 (33.1)	26 (34.7)	14 (30.4)
Twitter	26 (21.5)	21 (28.0)	5 (10.9)
Playing an online game using Xbox, Play-station, Wii, PSP	25 (20.7)	4 (5.3)	21 (45.7)
In a chat room	24 (19.8)	11 (14.7)	13 (28.3)
Computer instant messages	19 (15.7)	11 (14.7)	8 (17.4)
YouTube	19 (15.7)	9 (12.0)	10 (21.7)
A massive multiplayer online game	15 (12.4)	3 (4.0)	12 (26.1)
E-mail	14 (11.6)	11 (14.7)	3 (6.5)
PictureMail or VideoMail	6 (5.0)	4 (5.3)	2 (4.3)
A different social networking web site	6 (5.0)	3 (4.0)	3 (6.5)
MySpace	5 (4.1)	1 (1.3)	4 (8.7)
Virtual worlds	2 (1.7)	2 (2.7)	-

The mean scores of cognitive appraisals, coping strategies, and perceived social supports are presented in Table 3. Higher values for cognitive appraisals represent more frequent perception of cyberbullying. Challenge cognitive appraisal and control cognitive appraisal had higher values than the threat cognitive appraisal for both males and females. Higher values for coping strategies indicate more frequent utilization of that particular coping strategy. Problem solving, seeking social support, and cognitive distancing showed higher values for females, whereas problem solving and cognitive distancing showed higher values for males. Higher values for perceived social support indicate higher levels of perceived social support. Perceived social support from friends and a significant other showed higher values than perceived social support from family for both males and females. See Table 3.

TABLE III.

**DESCRIPTIVE STATISTICS FOR COGNITIVE APPRAISALS, COPING STRATEGIES,
AND PERCEIVED SOCIAL SUPPORTS**

			Total	Female	Male
Variables		Range	Mean \pm SD	Mean \pm SD	Mean \pm SD
Cognitive Appraisals	Challenge	0 - 4	3.05 \pm 0.91	2.95 \pm 0.94	3.20 \pm 0.82
	Threat	0 - 4	1.28 \pm 0.91	1.40 \pm 0.91	1.08 \pm 0.87
	Control	0 - 4	2.79 \pm 1.11	2.86 \pm 1.08	2.67 \pm 1.15
Approach Coping	Problem Solving	0 - 4	2.12 \pm 0.82	2.04 \pm 0.87	2.25 \pm 0.71
	Seeking Social Support	0 - 4	1.76 \pm 1.10	1.97 \pm 1.13	1.42 \pm 0.95
Avoidance Coping	Cognitive Distancing	0 - 4	1.97 \pm 0.88	1.87 \pm 0.83	2.11 \pm 0.94
	Externalizing	0 - 4	1.15 \pm 1.02	1.23 \pm 1.10	1.03 \pm 0.88
	Internalizing	0 - 4	1.54 \pm 1.01	1.64 \pm 1.05	1.38 \pm 0.92
Perceived Social Support	Family	1 - 7	4.29 \pm 1.84	4.40 \pm 1.99	4.12 \pm 1.57
	Friends	1 - 7	5.27 \pm 1.54	5.33 \pm 1.64	5.16 \pm 1.37
	A Significant Other	1 - 7	5.35 \pm 1.64	5.57 \pm 1.55	4.98 \pm 1.75

The mean scores and prevalence of the psychological adjustments are presented in Table 4. Over 55% of the cyberbullying victims reported experiencing some level of depression, ranging from mild to extremely severe. While approximately 23% reported being severely or extremely severely depressed, the mean level of depression was 13.55 (SD = 0.16) for females and 11.36 (SD = 9.98) for males, indicating mild depression. Approximately 70% of the cyberbullying victims reported experiencing some level of anxiety, ranging from mild to extremely severe. Over 28% of them reported being severely or extremely severely anxious. The mean level of anxiety reported was 12.87 (SD = 10.72) for females and 12.36 (SD = 8.27) for males, indicating moderate anxiety. The mean score of self-esteem for males and females was 2.64 (SD = 0.18). See Table 4.

TABLE IV.

DESCRIPTIVE STATISTICS FOR PSYCHOLOGICAL ADJUSTMENTS					
			Total	Female	Male
N (%)			Mean ± SD	Mean ± SD	Mean ± SD
Depression	Normal (0 – 9)	53 (44.5)	12.74 ± 11.04	13.55 ± 11.61	11.36 ± 9.98
	Mild (10 – 13)	19 (16.0)			
	Moderate (14 – 20)	19 (16.0)			
	Severe (21 – 27)	13 (10.9)			
	Extremely Severe (28 – 42)	15 (12.6)			
Anxiety	Normal (0 – 7)	36 (31.3)	12.68 ± 9.82	12.87 ± 10.72	12.36 ± 8.27
	Mild (8 – 9)	11 (9.6)			
	Moderate (10 – 14)	24 (20.9)			
	Severe (15 – 19)	15 (13.0)			
	Extremely Severe (20 – 42)	29 (25.2)			
Self-esteem	(1 – 4)		2.64 ± 0.18	2.66 ± 0.18	2.60 ± 0.18

B. Cognitive Appraisals and Psychological Adjustments

Significant negative Pearson correlations existed between challenge cognitive appraisal and depression ($r = -0.29$; $p < .01$), between challenge cognitive appraisal and anxiety ($r = -0.34$; $p < .01$), between control cognitive appraisal and depression ($r = -0.22$; $p < .05$), and between control cognitive appraisal and anxiety ($r = -0.24$; $p < .05$). Significant positive Pearson correlations were found between challenge cognitive appraisal and self-esteem ($r = 0.34$; $p < .01$), between threat cognitive appraisal and depression ($r = -0.39$; $p < .01$), and between threat cognitive appraisal and anxiety ($r = -0.36$; $p < .01$). See Table 5.

TABLE V.
CORRELATIONS BETWEEN COGNITIVE APPRAISALS AND
PSYCHOLOGICAL ADJUSTMENTS

		Depression	Anxiety	Self-esteem
Cognitive Appraisals	Challenge	- 0.29**	- 0.34**	0.34**
	Threat	0.39**	0.36**	- 0.15
	Control	- 0.22*	- 0.24*	0.18

*, $p < .05$; **, $p < .01$

Histograms and normal probability plots of the residuals were evaluated to check for linearity, homoscedasticity, and normality of residuals. The VIF and tolerance statistics were used to diagnose multicollinearity. The assumptions for linearity, homoscedasticity, and normality were met. The VIF and tolerance statistics showed that there is no colinearity between predictors. The results of regression diagnostics for the all estimated multiple linear regressions confirmed that the assumptions for multiple linear regressions were not violated.

1. **Depression**

While controlling for gender, race, cyberbullying victimization, and traditional victimization, the multiple linear regression model of challenge, threat, and control on depression was statistically significant ($F [8,103] = 3.88, p < .01$). The model explained 23% of the total variance in depression. Increased perception of challenge cognitive appraisal and increased perception of control cognitive appraisal did not predict the decreased levels of depression as hypothesized in H1.a. H1.a. was not supported. Increased perception of threat cognitive appraisal predicted the increased levels of depression as hypothesized in H2.a. H2.a was supported. See Table 6.

2. **Anxiety**

While controlling for gender, race, cyberbullying victimization, and traditional victimization, the multiple linear regression model of challenge, threat, and control on anxiety was statistically significant ($F [8, 99] = 3.13, p < .01$). It explained 20% of the variance in anxiety. Increased perception of challenge cognitive appraisal and increased perception of control cognitive appraisal did not predict the decreased levels of anxiety as hypothesized in H1.b. H1.b. was not supported. Increased perception of threat cognitive appraisal did not predict the increased levels of anxiety as hypothesized in H2.b. H2.b. was not supported. See Table 6.

3. **Self-esteem**

While controlling for gender, race, cyberbullying victimization, and traditional victimization, the multiple linear regression model of challenge, threat, and control on self-esteem was statistically significant ($F [8,103] = 2.74, p < .01$). It explained 18% of the variance in self-esteem. Increased perception of challenge cognitive appraisal, but not increased perception of control cognitive appraisal, predicted the increased levels of self-esteem as

hypothesized in H1.c. H1.c was partially supported. Increased perception of threat cognitive appraisal did not predict decreased levels of self-esteem as hypothesized in H2.c. H2.c was not supported. See Table 6.

TABLE VI.

REGRESSION ANALYSES PREDICTING PSYCHOLOGICAL ADJUSTMENTS
FROM COGNITIVE APPRAISALS

Predictor	Depression [†]			Anxiety [†]			Self-Esteem [†]		
	<i>b</i>	<i>SE_b</i>	<i>t</i>	<i>b</i>	<i>SE_b</i>	<i>t</i>	<i>b</i>	<i>SE_b</i>	<i>t</i>
Challenge	-0.76	1.54	-0.49	-1.68	1.43	-1.17	0.09	0.03	3.19 [*]
Threat	3.68	1.42	2.60 ^{**}	2.21	1.33	1.66	0.02	0.02	1.04
Control	-1.31	1.08	-1.22	-0.86	1.00	-0.86	-0.01	0.02	-0.66
<i>R</i> ² (<i>Adj. R</i> ²)	0.23 (0.17)			0.20 (0.14)			0.18 (0.11)		
F (<i>df</i>)	3.88 (8,103) ^{**}			3.13 (8,99) ^{**}			2.74 (8,103) ^{**}		

[†]: Controlled for gender, race, cyberbullying victimization, and traditional victimization;

*: $p < .05$; **: $p < .01$

C. Coping Strategies and Psychological Adjustments

Significant positive Pearson correlations were found between problem solving and depression ($r = 0.24$; $p < .01$), between externalizing and depression ($r = 0.30$; $p < .01$), between internalizing and depression ($r = 0.50$; $p < .01$), between problem solving and anxiety ($r = 0.27$; $p < .01$), between externalizing and anxiety ($r = 0.36$; $p < .01$), and between internalizing and anxiety ($r = 0.51$; $p < .01$). See Table 7.

TABLE VII.
CORRELATIONS BETWEEN COPING STRATEGIES AND
PSYCHOLOGICAL ADJUSTMENTS

		Depression	Anxiety	Self-esteem
Approach Coping	Problem Solving	0.24**	0.27**	- 0.08
	Seeking Social Support	0.16	0.12	- 0.04
Avoidance Coping	Cognitive Distancing	0.06	- 0.01	- 0.02
	Externalizing	0.30**	0.36**	- 0.09
	Internalizing	0.50**	0.51**	- 0.14

*: $p < .05$; **: $p < .01$

1. Depression

While controlling for gender, race, cyberbullying victimization, and traditional victimization, the multiple linear regression model of problem solving, seeking social support, cognitive distancing, externalizing, and internalizing on depression was statistically significant ($F [10,103] = 4.69$, $p < .01$). The model explained 31% of the total variance in depression. Increased use of internalizing was the significant predictor of increased levels of depression. Increased use of approach coping strategies — problem solving and seeking social support — did not predict the decreased levels of depression as hypothesized in H3.a. H3.a. was not supported. Of the avoidance coping strategies — cognitive distancing, externalizing, and

internalizing — only increased use of internalizing predicted the increased levels of depression.

As such, H4.a. was partially supported. See Table 8.

2. Anxiety

While controlling for gender, race, cyberbullying victimization, and traditional victimization, the multiple linear regression model of problem solving, seeking social support, cognitive distancing, externalizing, and internalizing on anxiety was statistically significant ($F [10, 99] = 4.29, p < .01$). The model explained 30% of the total variance in anxiety. Increased use of internalizing was the significant predictor of increased levels of anxiety. Increased use of approach coping strategies — problem solving and seeking social support — did not predict the decreased levels of anxiety as hypothesized in H3.b. H3.b. was not supported. Of the avoidance coping strategies — cognitive distancing, externalizing, and internalizing — only increased use of internalizing predicted the increased levels of anxiety. As such, H4.b. was partially supported. See Table 8.

3. Self-esteem

While controlling for gender, race, cyberbullying victimization, and traditional victimization, the multiple linear regression model of problem solving, seeking social support, cognitive distancing, externalizing, and internalizing on self-esteem was not statistically significant. Increased use of approach coping strategies did not predict increased levels of self-esteem, and increased use of avoidance coping strategies did not predict decreased levels of self-esteem. As such, H3.c. and H4.c. were not supported. See Table 8.

TABLE VIII.
REGRESSION ANALYSES PREDICTING PSYCHOLOGICAL ADJUSTMENTS
FROM COPING STRATEGIES

	Depression [†]			Anxiety [†]			Self-esteem [†]		
	<i>b</i>	<i>SE_b</i>	<i>t</i>	<i>b</i>	<i>SE_b</i>	<i>t</i>	<i>b</i>	<i>SE_b</i>	<i>t</i>
Approach Coping									
Problem Solving	0.62	1.32	0.47	0.87	1.21	0.71	0.00	0.03	0.05
Seeking Social Support	0.27	0.93	0.29	0.36	0.85	0.43	-0.01	0.02	-0.58
Avoidance Coping									
Cognitive Distancing	1.34	1.04	1.29	0.46	0.97	0.47	0.00	0.02	0.05
Externalizing	0.84	0.96	0.88	1.75	0.89	1.98	-0.01	0.02	-0.68
Internalizing	4.57	1.09	4.2 ^{**}	3.70	1.02	3.63 ^{**}	-0.01	0.02	-0.55
<i>R</i> ² (Adj. <i>R</i> ²)	0.31(0.25)			0.30 (0.23)			0.11(0.02)		
F (<i>df</i>)	4.69 (10,103) ^{**}			4.29 (10,99) ^{**}			1.25 (10, 104)		

[†]: Controlled for gender, race, cyberbullying victimization, and traditional victimization;

*: $p < .05$; **: $p < .01$

D. Perceived Social Supports and Psychological Adjustments

Significant negative Pearson correlations existed between perceived social support from friends and depression ($r = -0.21$; $p < .05$) and between perceived social support from a significant other and depression ($r = -0.25$; $p < .01$). Significant positive Pearson correlations were found between perceived social support from friends and self-esteem ($r = 0.24$; $p < .01$) and between perceived social support from a significant other and self-esteem ($r = 0.27$; $p < .01$). See Table 9.

TABLE IX.
CORRELATIONS BETWEEN PERCEIVED SOCIAL SUPPORTS
AND PSYCHOLOGICAL ADJUSTMENTS

		Depression	Anxiety	Self-esteem
Perceived Social Support	Family	- 0.15	-0.10	0.06
	Friends	- 0.21 *	-0.19	0.24 **
	A Significant Other	- 0.25 **	-0.17	0.27 **

*: $p < .05$; **: $p < .01$

1. Depression

While controlling for gender, race, cyberbullying victimization, and traditional victimization, the multiple linear regression model of perceived social supports from family, friends, and a significant other on depression was statistically significant ($F [8, 101] = 2.80$, $p < .01$). However, high levels of perceived social support from family, friends, or a significant other did not predict the decreased levels of depression, and as such, H5.a. was not supported. See Table 10.

2. Anxiety

While controlling for gender, race, cyberbullying victimization, and traditional victimization, the multiple linear regression model of perceived social supports from family,

friends, and a significant other on anxiety was not statistically significant. High levels of perceived social support from family, friends, or a significant other did not predict the decreased levels of anxiety, and as such, H5.b. was not supported. See Table 10.

3. Self-esteem

While controlling for gender, race, cyberbullying victimization, and traditional victimization, the multiple linear regression model of perceived social supports from family, friends, and a significant other on self-esteem was statistically significant ($F [8,102] = 2.38$, $p < .05$). However, high levels of perceived social support from family, friends, or a significant other did not predict the increased levels of self-esteem and as such, H5.c. was not supported. See Table 10.

TABLE X.

REGRESSION ANALYSES PREDICTING PSYCHOLOGICAL ADJUSTMENTS
FROM PERCEIVED SOCIAL SUPPORTS

Predictor	Depression [†]			Anxiety [†]			Self-esteem [†]		
	<i>b</i>	<i>SE_b</i>	<i>t</i>	<i>b</i>	<i>SE_b</i>	<i>t</i>	<i>b</i>	<i>SE_b</i>	<i>t</i>
Family	0.13	0.70	0.18	-0.13	0.67	-0.19	-0.01	0.01	-1.26
Friends	-0.62	0.96	-0.65	-0.74	0.90	-0.82	0.02	0.02	1.05
A Significant Other	-1.33	0.90	-1.48	-0.12	0.85	-0.14	0.02	0.02	1.46
R^2 (Adj. R^2)	0.18 (0.12)			0.12 (0.04)			0.16 (0.09)		
F	2.80 (8,101)**			1.59 (8,97)			2.38 (8,102)*		

[†]: Controlled for gender, race, cyberbullying victimization, and traditional victimization;

*: $p < .05$; **: $p < .01$

E. Cognitive Appraisals and Coping Strategies

Significant positive Pearson correlations were found between threat cognitive appraisals and problem solving ($r = 0.34$; $p < .01$), between threat cognitive appraisals and seeking social support ($r = 0.27$; $p < .01$), between threat cognitive appraisals and externalizing ($r = 0.31$; $p < .01$), between threat cognitive appraisals and internalizing ($r = 0.58$; $p < .01$), and between control cognitive appraisals and seeking social support ($r = 0.36$; $p < .01$). Significant negative Pearson correlations existed between challenge cognitive appraisals and externalizing ($r = -0.34$; $p < .01$), between challenge cognitive appraisals and internalizing ($r = -0.39$; $p < .01$), between control cognitive appraisals and externalizing ($r = -0.24$; $p < .01$), and between control cognitive appraisals and internalizing ($r = -0.23$; $p < .05$). See Table 11.

TABLE XI.
CORRELATIONS BETWEEN COGNITIVE APPRAISALS
AND COPING STRATEGIES

	Approach Coping Strategy		Avoidance Coping strategy		
	Problem Solving	Seeking Social Support	Cognitive Distancing	Externalizing	Internalizing
Challenge	-0.01	0.01	0.1	-0.34**	-0.39**
Threat	0.34**	0.27**	-0.15	0.31**	0.58**
Control	-0.03	0.36**	-0.1	-0.24**	-0.23*

*: $p < .05$; **: $p < .01$

1. Approach Coping Strategies

While controlling for gender, race, cyberbullying victimization, and traditional victimization, the multiple linear regression model of problem solving on challenge, threat, and control was statistically significant ($F [8, 103] = 4.08$, $p < .01$), and the multiple linear regression

model of seeking social support on challenge, threat, and control was statistically significant ($F [8, 104] = 7.61, p < .01$) as well. The model explained 24% of the total variance in problem solving and 37% of the total variance in seeking social support. Increased perception of threat cognitive appraisal was the significant predictor of the increased use of problem solving and seeking social support. Of the control appraisal, increased perception of control cognitive appraisal was the significant predictor of increased use of seeking social support. Increased perception of challenge cognitive appraisal did not predict increased use of problem solving or seeking social support, whereas increased control cognitive appraisal predicted increased use of seeking social support coping strategies but not problem solving coping strategies. Thus, H6.a. was partially supported. Increased perception of threat cognitive appraisal predicted the increased use of problem solving and seeking social support coping strategies, not the decreased use of these approach coping strategies. H7.a was not supported. See Table 12.

2. Avoidance Coping Strategies

While controlling for gender, race, cyberbullying victimization, and traditional victimization, the multiple linear regression model of externalizing on challenge, threat, and control was statistically significant ($F [8, 104] = 3.84, p < .01$), and the multiple linear regression model of internalizing on challenge, threat, and control was statistically significant ($F [8, 103] = 8.62, p < .01$) as well. The model explained 23% of the total variance in externalizing and 40% of the total variance in internalizing. Increased perception of threat cognitive appraisal was the significant predictor of increased use of internalizing coping strategies. Increased perception of challenge cognitive appraisal and increased perception of control cognitive appraisal did not predict the decreased use of cognitive distancing, externalizing, and internalizing coping strategies as hypothesized in H6.b. H6.b. was not supported. Increased perception of threat

cognitive appraisal predicted the increased use of internalizing coping strategies, but not of cognitive distancing and externalizing. Thus, H7.b. was partially supported. See Table 12.

TABLE XII.
REGRESSION ANALYSES PREDICTING COPING STRATEGIES
FROM COGNITIVE APPRAISALS

Predictor	Approach Coping Strategy				Avoidance Coping Strategy					
	Problem Solving [†]		Seeking Social Support [†]		Cognitive Distancing [†]		Externalizing [†]		Internalizing [†]	
	<i>b</i> (<i>SE_b</i>)	<i>t</i>	<i>b</i> (<i>SE_b</i>)	<i>t</i>	<i>b</i> (<i>SE_b</i>)	<i>t</i>	<i>b</i> (<i>SE_b</i>)	<i>t</i>	<i>b</i> (<i>SE_b</i>)	<i>t</i>
Challenge	0.17 (0.12)	1.46	-0.20 (0.14)	-1.43	0.17 (0.16)	1.22	-0.23 (0.15)	-1.56	-0.06 (0.13)	-0.48
Threat	0.43 (0.10)	4.18**	0.42 (0.12)	3.37*	-0.14 (0.12)	-1.16	0.19 (0.13)	1.45	0.57 (0.11)	5.03**
Control	-0.02 (0.08)	-0.26	0.48 (0.10)	4.96**	-0.15 (0.09)	-1.59	-0.11 (0.10)	-1.05	-0.09 (0.09)	-1.04
<i>R</i> ² (Adj. <i>R</i> ²)	0.24 (0.18)		0.37 (0.32)		0.09 (0.02)		0.23 (0.17)		0.40 (0.36)	
F(<i>df</i>)	4.08(8,103)**		7.61(8,104)**		1.3(8,104)		3.84(8,104)*		8.62(8,103)**	

†: Controlled for gender, race, cyberbullying victimization, and traditional victimization;

*: $p < .05$; **: $p < .01$

F. Mediation Paths of Primary Cognitive Appraisals and Coping Strategies

1. Depression

Figure 2 presents the results of the path analysis models used to evaluate the mediating effects of primary cognitive appraisals and coping strategies on the relationship between the experience of cyberbullying victimization and depression. The hypothesized model exhibited lack of model fit according to the traditional structural equation modeling fit index ($\chi^2(12, 28) = 32.57, p < .01$; RMSEA = .12; SRMR = .07; CFI = .90). Model modification was performed based on modification index through correlation of error terms between challenge and threat, between problem solving and seeking social support, and between problem solving and internalizing. The assessment of the goodness of fit of the modified model showed improvement to a good fit ($\chi^2(10, 28) = 14.63, p = 0.146$; RMSEA = 0.06; SRMR = 0.05; CFI = 0.98). The modified hypothetical model accounted for 22% of the variance in depression ($R^2 = 0.22$). See Figure 2.

Cyberbullying victimization accounted for significant variance in challenge and threat, with standardized path coefficients (β s) of - 0.10 and 0.11, respectively. The challenge, in turn, accounted for significant variance in problem solving ($\beta = 0.20$), seeking social support ($\beta = 0.27$), and externalizing ($\beta = - 0.27$). On the other hands, the threat accounted for significant variance in problem solving ($\beta = 0.39$), seeking social support ($\beta = 0.47$), and internalizing ($\beta = 0.60$). In addition, the influence of threat on depression was mediated by internalizing ($\beta = 4.59$). Thus, the students who reported more frequent cyberbullying also reported greater perception of threat, which was associated with greater use of internalizing coping strategy that was associated with higher levels of depression. Thus, threat cognitive appraisal and internalizing coping strategy mediated the relationship between the experience of cyberbullying

victimization and depression. Challenge cognitive appraisal and approach coping strategies did not mediate the relationship between the experience of cyberbullying victimization and depression. In addition, threat cognitive appraisal and externalizing coping strategy did not mediate the relationship between the experience of cyberbullying victimization and depression. Thus, H8.a. was partially supported.

2. Anxiety

Figure 3 presents the results of the path analysis models used to evaluate the mediating effects of primary cognitive appraisals and coping strategies on the relationship between experience of cyberbullying victimization and anxiety. The hypothesized model exhibited lack of model fit according to the traditional structural equation modeling fit index ($\chi^2(12, 28) = 28.63, p < .01$; RMSEA = .11; SRMR = .07; CFI = .91). Model modification was performed based on modification index through correlation of error terms between challenge and threat, between problem solving and seeking social support, and between problem solving and internalizing. The assessment of the goodness of fit of the modified model showed improvement to a good fit ($\chi^2(10, 28) = 14.05, p = 0.171$; RMSEA = 0.06; SRMR = 0.05; CFI = 0.98). The modified hypothetical model accounted for 23% of the variance in the levels of anxiety ($R^2 = 0.22$). See Figure 3.

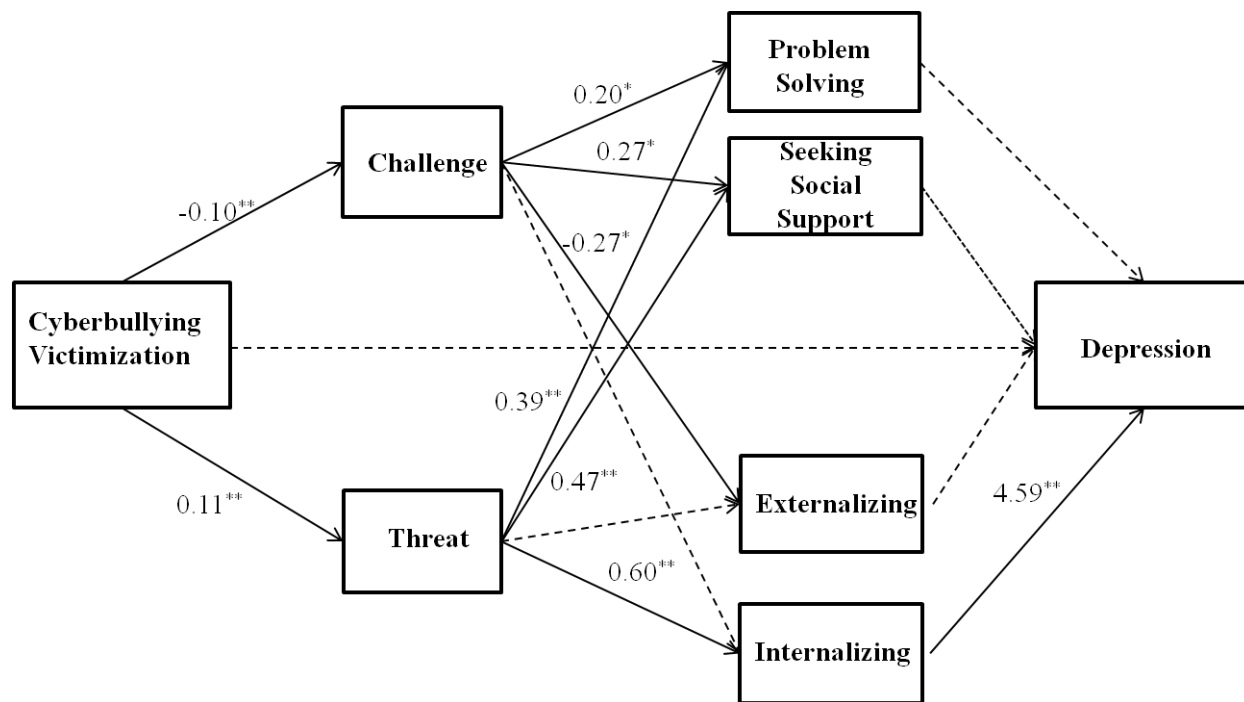
Cyberbullying victimization accounted for significant variance in challenge and threat, with standardized path coefficients (β s) of - 0.10 and 0.11, respectively. The challenge, in turn, accounted for significant variance in problem solving ($\beta = 0.21$), seeking social support ($\beta = 0.27$), and externalizing ($\beta = - 0.31$). On the other hands, the threat accounted for significant variance in problem solving ($\beta = 0.40$), seeking social support ($\beta = 0.44$), and internalizing ($\beta = 0.61$). Challenge cognitive appraisal and externalizing coping strategy mediated the effects of

the experience of cyberbullying victimization on anxiety ($\beta = 1.78$). Additionally, threat cognitive appraisal and internalizing coping strategy mediated the effects of the experience of cyberbullying victimization on anxiety ($\beta = 3.60$). Thus, the students who reported more frequent cyberbullying also reported less perception of challenge cognitive appraisal, which was associated with greater use of externalizing coping strategy, and higher levels of anxiety. On the other hands, the students who reported more frequent cyberbullying and reported greater perception of threat cognitive appraisal, experienced greater use of internalizing coping strategy, and higher levels of anxiety. Thus, H8.b. was partially supported.

3. Self-esteem

The results of the path analysis models were used to evaluate the mediating effects of primary cognitive appraisals and coping strategies on the relationship between the experience of cyberbullying victimization and self-esteem. The hypothesized model exhibited lack of model fit according to the traditional structural equation modeling fit index ($\chi^2(12, 28) = 40.95, p < .01$; RMSEA = .15; SRMR = .07; CFI = .84). Model modification was performed based on modification index through correlation of error terms between challenge and threat, between problem solving and seeking social support, and between problem solving and internalizing. The assessment of the goodness of fit of the modified model exhibited lack of model fit as well ($\chi^2(10, 28) = 24.86, p > .05$; RMSEA = 0.12; SRMR = 0.06; CFI = 0.92). The cognitive appraisals and coping strategies did not mediate the relationship between the experience of cyberbullying victimization and self-esteem as hypothesized in H8.c. Thus, H8.c. was not supported. See Figure 4.

Figure 2. Mediational Model for Associations among Cyberbullying Victimization, Cognitive Appraisals, Coping Strategies, and Depression

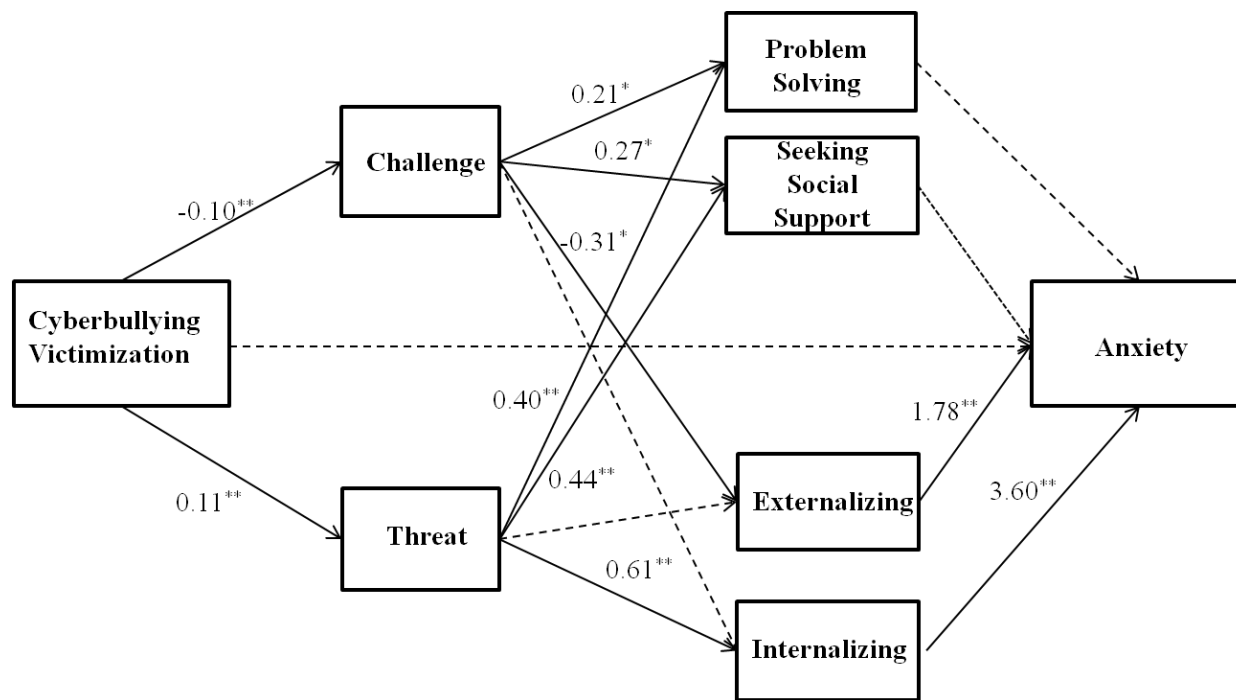


*: $p < .05$; **: $p < .01$

—>: Significant path

- - ->: Non-significant path

Figure 3. Mediational Model for Associations among Cyberbullying Victimization, Cognitive Appraisals, Coping Strategies, and Anxiety

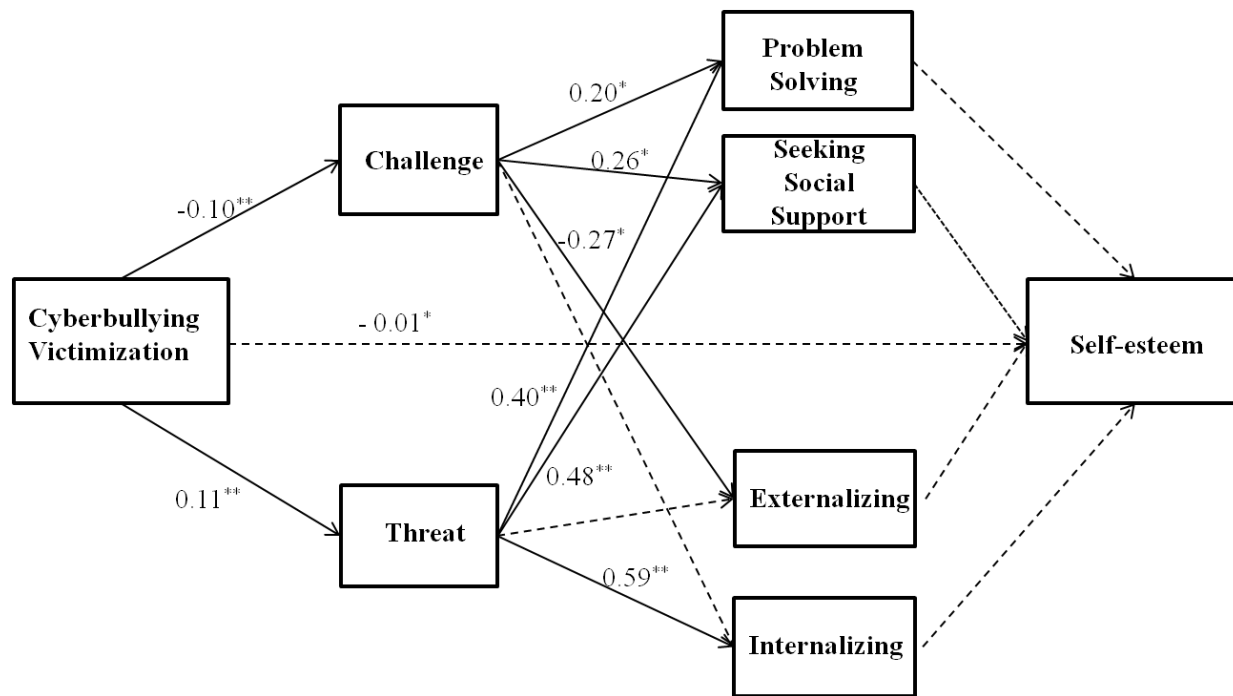


*: $p < .05$; **: $p < .01$

—▶: Significant path

- - -▶: Non-significant path

Figure 4. Mediational Model for Associations among Cyberbullying Victimization, Cognitive Appraisals, Coping Strategies, and Self-esteem



*: $p < .05$; **: $p < .01$

—: Significant path

---: Non-significant path

V. DISCUSSION

The current study is intended to examine the influence of cognitive appraisals, coping strategies, and perceived social supports on psychological adjustments among 121 college student cyberbullying victims. Study results indicate that victims of cyberbullying who had increased perception of challenge cognitive appraisal were more likely to report an increased level of self-esteem. On the other hand, victims of cyberbullying who had increased perception of threat cognitive appraisal were more likely to report an increased level of depression. The study did not find any relationships between control appraisal and psychological adjustments. The finding regarding the relationship between threat cognitive appraisal and depression is similar to the results of Hunter, Mora-Merchan, and Ortega (2004), who found that victims of traditional bullying who perceived the bullying as a threat reported greater distress than victims who perceived the bullying as a challenge. Hunter et al. focused on younger adolescents who had experienced traditional bullying, whereas the current study's sample consisted of students in late adolescence who had primarily experienced cyberbullying victimization. Therefore, the two studies' results indicate that increased perception of threat cognitive appraisal predicts an increased level of depression across age groups and for victims of both traditional bullying and cyberbullying. As to the relationship between perception of challenge cognitive appraisal and self-esteem, no previous study has examined the relationship between primary cognitive appraisals and self-esteem among cyberbullying victims.

Additionally, the current study's results revealed that victims of cyberbullying who had increased perception of threat cognitive appraisal were more likely to use problem solving, seeking social support, and internalizing coping strategies and that those who had increased perception of control cognitive appraisal were more likely to use seeking social support coping

strategy. While Rosenberg, Schooler, Schoenbach, and Rosenberg (1995) and Folkman et al. (1986) found that control cognitive appraisal determined coping strategies, the current study identified both control and threat cognitive appraisals as determinants of coping strategies among cyberbullying victims. In addition, the current study's findings contrast with the results of Hunter et al. (2004), who reported that only challenge cognitive appraisal predicted seeking of social support among traditional bullying victims. The difference between the results of the current study and Hunter et al. can probably be attributed to the different ages and bullying experiences of the studies' participants.

The current study found that victims of cyberbullying who more frequently used internalizing coping strategy were more likely to report increased levels of both depression and anxiety. Internalizing coping strategy, an avoidance coping strategy, was found to be the only coping strategy predictor of increased levels of depression and anxiety. Previous studies have concluded that avoidance coping strategies lead to increased levels of depression and anxiety (Kochenderfer-Ladd and Skinner, 2002; Seiffge-Krenke & Klessinger, 2000). The relationships between use of internalizing coping strategy and both depression and anxiety seem to be robust among both traditional bullying victims and cyberbullying victims.

The current study is the first to examine a path analysis model guided by the Transactional Model of Stress and Coping that hypothesized that primary cognitive appraisals lead to coping strategies, which in turn lead to psychological adjustments. The current study predicted 24 mediation paths. However, only three significant mediation paths were identified. Threat cognitive appraisal and internalizing coping strategy mediated the relationship between cyberbullying victimization and depression. Those study participants who reported more frequent cyberbullying exhibited greater perception of threat, greater use of internalizing coping

strategy, and higher levels of depression. This result supports the finding of Vollink et al. (2013) that use of avoidance coping strategy lead to the occurrence of more depressive symptoms among cyberbullying victims.

Similar to the mediation path for cyberbullying victimization and depression, threat cognitive appraisal and internalizing coping strategy mediated the relationship between cyberbullying victimization and anxiety. The study participants who reported more frequent cyberbullying exhibited greater perception of threat, greater use of internalizing coping strategy, and higher levels of anxiety. This finding supports the conclusion that self-blame, a type of internalization, mediates the relationships between bullying victimization and anxiety (Hair, 2006).

In the last mediation path, challenge cognitive appraisal and externalizing coping strategy were found to mediate the relationship between cyberbullying victimization and anxiety. The study participants who reported more frequent cyberbullying and did not perceive it as a challenge, used more externalizing coping strategy, and experienced higher levels of anxiety. This finding indicates that threat cognitive appraisal and challenge cognitive appraisal both influenced the use of avoidance coping strategies such as internalizing and externalizing. The finding contrasts with the results of Ptacek et al. (1992) in which challenge cognitive appraisal led to approach coping strategy. However Ptacek et al. examined all college students, whereas the current study examined college student cyberbullying victims. Thus, the mediation paths identified in the current study might be specific to cyberbullying victims. No previous study has examined the relationships between challenge cognitive appraisal and avoidance coping strategies in cyberbullying victims. In addition, the current study found that more frequent use of externalizing led to increased levels of anxiety, which is consistent with the finding of

Kochenderfer-Ladd and Skinner (2002) that externalizing is a possible predictor of anxiety in bullying victims.

Based on the current study's results, cyberbullying victimization only indirectly affects levels of depression and anxiety. In contrast, previous studies have found that cyberbullying victimization directly contributes to higher levels of depression (Bonanno & Hymel, 2013; Gámez-Guadix et al., 2013; Völlink, Bolman, Eppingbroek, et al., 2013). Völlink, Bolman, Eppingbroek, et al. (2013) reported direct effects of cyberbullying victimization on depression among younger adolescents, and Völlink, Bolman, Dehue, et al. (2013) reported a mediating effect of a cyberbullying-specific coping strategy on the relationship between coping strategies in general and depression among younger adolescents. While cyberbullying victimization may directly affect levels of depression and anxiety among younger adolescents, the results of the current study support the possibility that levels of depression and anxiety may differ based on how college student victims perceive the experience of cyberbullying and how they cope with this experience.

The current study found no mediating effect for primary cognitive appraisals and coping strategies on the relationship between cyberbullying victimization and self-esteem. The Rosenberg Self-Esteem Scale assessed cyberbullying victims' global self-esteem. Rosenberg et al. (1995) found that global self-esteem was less relevant to a specific behavior and that self-esteem related to a specific behavior has a stronger relationship with that behavior. Therefore, self-esteem related to cyberbullying rather than global self-esteem should be used to explore how the primary cognitive appraisals and coping strategies mediate the relation between cyberbullying victimization and self-esteem.

Previous studies have found that perceived social support was a significant predictor of psychological adjustments among traditional bullying victims (Pouwelse et al., 2011; Rigby, 2000). However, the current study found no effects of perceived social support on psychological adjustments among cyberbullying victims. Only 10 of the 121 study participants reported their cyberbullying experience to parents and/or authorities, a finding similar to that of Dehue, Bolman, and Völlink (2008), who found that only one-third of cyberbullying victims reported their experience to others. In addition, Völlink, Bolman, Dehue, et al. (2013) found no difference in perceived social supports between adolescent cyberbullying victims and adolescents who were not exposed to cyberbullying.

A. Implications for Practice

As part of an intervention for decreasing levels of depression, cyberbullying victims should be encouraged to perceive less threat and to use less internalizing coping strategy. To decrease anxiety, victims should be encouraged to use less threat cognitive appraisal and more challenge cognitive appraisal and to use externalizing and internalizing coping strategies less frequently.

Primary health care providers and college health services should be cognizant of cyberbullying. Moreover, college health services should conduct routine assessments of cyberbullying on campus using verified questionnaires that address cyberbullying victimization, cyberbullying perpetration, cognitive appraisals, coping strategies, and psychological adjustments. These assessments would help to identify cyberbullying victims and those victims at risk of experiencing negative psychological adjustments.

In addition, a school-based group workshop is needed to reduce and/or prevent negative psychological adjustments when students are cyberbullied. The workshop should include

contents that (1) raise students' awareness of the prevalence of cyberbullying victimization, (2) inform students about the relationship between cognitive appraisal, coping strategies, and depression and anxiety, (3) provide effective strategies for reducing the risk of depression and anxiety, and (4) provide information on school resources for cyberbullying victims.

Finally, health professionals and college health services should provide individualized intervention for college students who are at risk of depression and anxiety after experiencing cyberbullying victimization. This face-to-face intervention should (1) provide detailed information on how threat and challenge appraisals and externalizing and internalizing coping strategies can affect the victim's depression and anxiety, (2) provide strategies that will help the victim to perceive less threat and more challenge cognitive appraisal and to use less externalizing and internalizing coping strategy, and (3) motivate the victim to practice using problem solving and seeking social support coping strategies. Such intervention could help victims cope more effectively with their cyberbullying experience and to reduce their levels of depression and anxiety.

B. Implications for Research

Additional information is needed to fully understand cyberbullying victims' experience and its long-term effects. In this study, over 80% of the victims of cyberbullying reported that they had been bullied by traditional means as well. Dehue (2013) and Ybarra, Diener-West, and Leaf (2007) argued that victims of cyberbullying are likely to have been victims of traditional bullying. Also, some victims of cyberbullying also bully others (i.e. bully-victims) (Dehue, 2013; Völlink, Bolman, Dehue, et al., 2013). Use of coping strategies has been found to differ significantly between cyberbullying victims who do and do not bully others (Völlink, Bolman, Dehue, et al., 2013). Therefore, to understand the unique characteristics of cyberbullying victims

in more depth, future studies similar to the current one should include a sample of cyberbullying victims, bullies, bully-victims (i.e., victims who also bully others), bystanders, and non-involved persons.

The study addressed the frequency of cyberbullying victimization but did not examine the duration and severity of the experience. More in-depth information is needed on the duration and severity of cyberbullying victimization. Qualitative research methods should be used to improve the breadth of understanding of cyberbullying victimization. For instance, the focus group interview is useful for exploring the full nature of individuals' experiences (Vaughn, Schumm, & Sinagub, 1996) and thus could provide additional information about the duration and severity of cyberbullying victimization. In addition, this qualitative research method could be used to learn more about how victims cope and which coping strategies they perceive as most effective.

Moreover, further study is needed to explore the relationship between the use of different coping strategies and the specific forms of cyberbullying victimization experienced. In the current study, most of the victims were cyberbullied through Facebook (76.0%) followed by text messages by cell phone (47.9%) and orally by cell phone (33.1%). Gorzig and Frumkin (2013) found that students who had been cyberbullied through social networking services (SNS) and instant messaging (IM) by cell phone were more likely to have greater psychological distress than those who had been cyberbullied through stationary devices. The researchers concluded that because SNS and IM can be accessed through mobile devices, they can be accessed and used for cyberbullying more frequently. Thus the coping strategies associated with cyberbullying victimization could differ based on the form of cyberbullying victimization. Therefore, further research is needed to explore how victims cope when exposed to different cyberbullying

environments. Such research may support the development of focused interventions to help victims who are exposed to varying forms of cyberbullying cope more effectively.

No previous study has examined the relationships between cognitive appraisals and coping strategies among cyberbullying victims. More research is needed to determine how different cyberbullying victims cope based on different cognitive appraisals. Therefore, further research is needed to replicate mediation paths for cognitive appraisals and coping strategies to clarify the impact of cognitive appraisals and coping strategies on depression and anxiety among cyberbullying victims.

C. Strengths

Studies on cyberbullying are relatively new, and almost of all the studies have been limited to describing the prevalence of cyberbullying victimization, differences in the prevalence according to gender or age, and the negative outcomes. Unlike the previous studies, the current study revealed how specific cognitive appraisals and coping strategies influence levels of depression and anxiety. This study is the first to examine primary cognitive appraisals and coping strategies using a model guided by the Transactional Model of Stress and Coping. This study is also the first to simultaneously examine the primary cognitive appraisals and coping strategies as mediators in the relationships between cyberbullying and depression and anxiety. The research has shown that different aspects of the Transactional Model of Stress and Coping are relevant in developing a greater understanding of which cyberbullying victims are at risk of depression and anxiety and of how and why some victims develop depression and anxiety. The results provide supporting evidence for developing interventions to help cyberbullying victims manage their depression and anxiety through the mediation paths of primary cognitive appraisals and coping strategies identified in this study.

Although previous studies have examined the prevalence of cyberbullying, most of them have used a single-item questionnaire. This study used multi-item scales to better understand the prevalence and characteristics of cyberbullying victimization. The multi-item questionnaire is more reliable and less prone to random measurement errors than a single-item scale. However, the questionnaire used for the study did not explore exactly what happened to the victims when they were bullied or the severity of the experience.

D. Limitations

Like most previous studies on cyberbullying, the current study used a cross-sectional research design. Therefore, the study could not determine the causality or long-term effects of cognitive appraisals and coping strategies among cyberbullying victims. In the future, a longitudinal study design is needed to examine the long-term effects of cyberbullying victimization. The study used a convenience sampling method. Therefore, the findings of the study have limited generalizability for cyberbullying victims in other regions and age groups. Although the results of this study included late adolescent experience of some cyberbullying victims, the results have limited applicability to early adolescent victims. Since the study participants are homogeneous and might have experienced cyberbullying less frequently, the influence of cyberbullying victimization on psychological adjustments could be underestimated.

Specific cognitions and behaviors related to cyberbullying victimization that occurred in the past may not be accurately recalled. The self-reported measurements tend to result in higher reported prevalence rates than other measurements (Baldry & Farrington, 2000). However, a retrospective self-reporting questionnaire has been found to be more reliable than other research measurements when early experience of disruptive behavior is being investigated (Brewin, Andrews, & Gotlib, 1993; Burke, Loeber, John, & Lahey, 2002). In the current study, use of self-

reported data was necessary to assess perceptions of primary cognitive appraisals and coping strategies, but future studies should be cross-validated with, for example, peer or teacher data or observational data.

The current study did not control for the act of bullying others. To achieve a more comprehensive understanding of cyberbullying victimization, future studies similar to this one should include both pure cyberbullying bullies and bully-victims (i.e., victims who also bully others).

E. Conclusion

The purposes of this study were to examine the influence of primary cognitive appraisals, coping strategies, and perceived social supports on psychological adjustments among cyberbullying victims and to examine the relationships between primary cognitive appraisals and coping strategies using a model guided by the Transactional Model of Stress and Coping. The study findings expand our knowledge of which cyberbullying victims are at risk of depression and anxiety and of how and why some victims develop depression and anxiety. Health care professionals and researchers can use the findings to develop interventions to help cyberbullying victims manage the resulting depression and anxiety through the mediation paths of cognitive appraisals and coping strategies identified in this study.

CITED LITERATURE

- Arnett, J. J. (2000). Emerging adulthood. A theory of development from the late teens through the twenties. *Am Psychol*, 55(5), 469-480.
- Baldry, A. C., & Farrington, D. P. (2000). Bullies and delinquents: personal characteristics and parental styles. *Journal of Community & Applied Social Psychology*, 10(1), 17-31. doi: 10.1002/(sici)1099-1298(200001/02)10:1<17::aid-casp526>3.0.co;2-m
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107(2), 238-246. doi: 10.1037/0033-2909.107.2.238
- Bonanno, R. A., & Hymel, S. (2013). Cyber bullying and internalizing difficulties: above and beyond the impact of traditional forms of bullying. *J Youth Adolesc*, 42(5), 685-697. doi: 10.1007/s10964-013-9937-1
- Brewin, C., Andrews, B., & Gotlib, I. H. (1993). Psychopathology and early experience: a reappraisal of retrospective reports. *Psychological Bulletin*, 113(1), 82-98.
- National Institute of Child Health and Human Development (2001). *Bullying widespread in U.S. schools, Survey finds*. (Vol. 2011).
- Burke, J. D., Loeber, R. M., John, S., & Lahey, B. B. (2002). Question for DSM-V: Which better predicts persistent conduct disorder--delinquent acts or conduct symptoms? *Criminal Behaviour and Mental Health*, 12(1), 37-52.
- Cassidy, T., & Taylor, L. (2005). Coping and psychological distress as a function of the bully victim dichotomy in older children. *Social Psychology of Education*, 8(3), 249-262.
- Causey, D. L., & Dubow, E. F. (1992). Development of a self-report coping measure for elementary school children. *J Clin Child Psychol*, 21(1), 47.
- Chapell, M., Casey, D., De la Cruz, C., Ferrell, J., Forman, J., Lipkin, R., . . . Whittaker, S. (2004). Bullying in college by students and teachers. *Adolescence*, 39(153), 53-64.
- Clara, I. P., Cox, B. J., Enns, M. W., Murray, L. T., & Torgudc, L. J. (2003). Confirmatory factor analysis of the multidimensional scale of perceived social support in clinically distressed and student samples. [Article; Proceedings Paper]. *Journal of Personality Assessment*, 81(3), 265-270. doi: 10.1207/s15327752jpa8103_09
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159. doi: 10.1037/0033-2909.112.1.155
- Dehue, F. (2013). Cyberbullying research: New perspectives and alternative methodologies. Introduction to the special issue. *Journal of Community & Applied Social Psychology*, 23(1), 1-6. doi: 10.1002/casp.2139

- Dehue, F., Bolman, C., & Vèollink, T. (2008). Cyberbullying: Youngsters' experiences and parental perception. *CyberPsychology and Behavior*, 11(2), 217-223.
- Demaray, M. K., & Malecki, C. K. (2003). Perceptions of the frequency and importance of social support by students classified as victims, bullies, and bully/victims in an urban middle school. *School Psychology Review*, 32(3), 471-489.
- Dilmac, B. (2009). Psychological needs as a predictor of cyber bullying: A preliminary report on college students. *Kuram Ve Uygulamada Egitim Bilimleri*, 9(3), 1307-1325.
- Farrell, A. D., Kung, E. M., White, K. S., & Valois, R. F. (2000). The structure of self-reported aggression, drug use, and delinquent behaviors during early adolescence. *J Clin Child Psychol*, 29(2), 282-292. doi: 10.1207/S15374424jccp2902_13
- Finn, J. (2004). A survey of online harassment at a university campus. *J Interpers Violence*, 19(4), 468-483. doi: 10.1177/0886260503262083
- Folkman, S., Lazarus, R. S., Dunkelshetter, C., DeLongis, A., & Gruen, R. J. (1986). Dymics of a stressful encounter: Cognitive appraisal, coping, and encounter outcomes. *Journal of Personality and Social Psychology*, 50(5), 992-1003. doi: 10.1037//0022-3514.50.5.992
- Gámez-Guadix, M., Orue, I., Smith, P. K., & Calvete, E. (2013). Longitudinal and reciprocal relations of cyberbullying with depression, substance use, and problematic internet use among adolescents. *Journal of Adolescent Health*(0). doi: <http://dx.doi.org/10.1016/j.jadohealth.2013.03.030>
- Gorzig, A., & Frumkin, L. A. (2013). Cyberbullying experiences on-the-go: When social media can become distressing. *Cyberpsychology Cyberpsychology*, 7(1).
- Hair, J. F. (2006). *Multivariate data analysis*. Upper Saddle River, N.J: Pearson Prentice Hall.
- Hay, C., & Meldrum, R. (2010). Bullying victimization and adolescent self-harm: Testing hypotheses from general strain theory. *J Youth Adolesc*, 39(5), 446.
- Henry, D. B., Tolan, P. H., Gorman-Smith, D., & Schoeny, M. E. (2012). Risk and direct protective factors for youth violence results from the Centers for Disease Control and Prevention's Multisite Violence Prevention Project. *Am J Prev Med*, 43(2), S51-S59. doi: 10.1016/j.amepre.2012.04.025
- Hinduja, S., & Patchin, J. W. (2008). Cyberbullying: An exploratory analysis of factors related to offending and victimization. *Deviant Behavior*, 29(2), 129-129-156. doi: 10.1080/01639620701457816
- Hinduja, S., & Patchin, J. W. (2009). *Bullying beyond the schoolyard: preventing and responding to cyberbullying*. California: Corwin Press.

- Holt, M. K., & Espelage, D. L. (2007). Perceived social support among bullies, victims, and bully-victims. *J Youth Adolesc*, 36(8), 984-994. doi: 10.1007/s10964-006-9153-3
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1-55. doi: 10.1080/10705519909540118
- Hunter, S. C., & Boyle, J. M. E. (2002). Perceptions of control in the victims of school bullying: the importance of early intervention. *Educational Research*, 44(3), 323-336. doi: 10.1080/0013188022000031614
- Hunter, S. C., & Boyle, J. M. E. (2004). Appraisal and coping strategy use in victims of school bullying. *British Journal of Educational Psychology*, 74(1), 83-107.
- Hunter, S. C., Mora-Merchan, J., & Ortega, R. (2004). The long-term effects of coping strategy use in victims of bullying. *Span J Psychol*, 7(1), 3-12.
- Juvonen, J., & Gross, E. F. (2008). Extending the school grounds?—Bullying experiences in cyberspace. [Article]. *Journal of School Health*, 78(9), 496-505. doi: 10.1111/j.1746-1561.2008.00335.x
- Kiriakidis, S. P., & Kavoura, A. (2010). Cyberbullying: a review of the literature on harassment through the internet and other electronic means. [Review]. *Fam Community Health*, 33(2), 82-93. doi: 10.1097/FCH.0b013e3181d593e4
- Kliewer, W., Fearnow, M. D., & Walton, M. N. (1998). Dispositional, environmental, and context-specific predictors of children's threat perceptions in everyday stressful situations. *J Youth Adolesc*, 27(1), 83-100.
- Kochenderfer-Ladd, B., & Skinner, K. (2002). Children's coping strategies: Moderators of the effects of peer victimization? *Dev Psychol*, 38(2), 267-278. doi: 10.1037/0022-3514.56.2.267.
- Kowalski, R. M., & Limber, S. P. (2007). Electronic bullying among middle school students. *Journal of Adolescent Health*, 41(6,Suppl), S22-S22-S30. doi: 10.1016/j.jadohealth.2007.08.017
- Kowalski, R. M., Morgan, C. A., & Limber, S. P. (2012). Traditional bullying as a potential warning sign of cyberbullying. *School Psychology International*, 33(5), 505-519. doi: 10.1177/0143034312445244
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer Pub. Co.
- Li, Q. (2007). Bullying in the new playground: Research into cyberbullying and cyber victimisation. *Australasian Journal of Educational Technology*, 23(4), 435-454.

- Lleras, C. (2005). Path Analysis. In K. Kempf-Leonard (Ed.), *Encyclopedia of social measurement* (Vol. 3, pp. 25-30). Amsterdam Elsevier Academic Press (Eds.).
- Lodge, J., & Feldman, S. S. (2007). Avoidant coping as a mediator between appearance-related victimization and self-esteem in young Australian adolescents. *British Journal of Developmental Psychology*, 25(4), 633-642. doi: 10.1348/026151007x185310
- MacDonald, C. D., & Roberts-Pittman, B. (2010). Cyberbullying among college students: prevalence and demographic differences. *Procedia - Social and Behavioral Sciences*, 9(0), 2003-2009. doi: 10.1016/j.sbspro.2010.12.436
- Mahady Wilton, M. M., Craig, W. M., & Pepler, D. J. (2000). Emotional regulation and display in classroom victims of bullying: Characteristic expressions of affect, coping styles and relevant contextual factors. *Social Development*, 9(2), 226-245. doi: 10.1111/1467-9507.00121
- Matsunaga, M. (2010). Testing a mediational model of bullied victims' evaluation of received support and post-bullying adaptation: A Japan-US cross-cultural comparison. *Communication Monographs*, 77(3), 312-340. doi: 10.1080/03637751003758235
- Mitchell, K. J., Ybarra, M., & Finkelhor, D. (2007). The relative importance of online victimization in understanding depression, delinquency, and substance use. *Child Maltreat*, 12(4), 314-324. doi: 10.1177/1077559507305996
- American College Health Association National college health assessment (2012). *Fall 2011 reference group executive summary* (Vol. 2012): American College Health Association.
- Netemeyer, R. G., Bearden, W. O., & Sharma, S. (2003). *Scaling procedures : Issues and applications*. Thousand Oaks, Calif.: Sage Publications.
- Patchin, J. W., & Hinduja, S. (2006). Bullies move beyond the schoolyard: A preliminary look at cyberbullying. *Youth Violence and Juvenile Justice*, 4(2), 148-169. doi: 10.1177/1541204006286288
- Patchin, J. W., & Hinduja, S. (2010). Cyberbullying and self-esteem. *Journal of School Health*, 80(12), 614-621. doi: 10.1111/j.1746-1561.2010.00548.x
- Patchin, J. W., & Hinduja, S. (2010). Cyberbullying and self-esteem. *J Sch Health*, 80(12), 614-621; quiz 622-614. doi: 10.1111/j.1746-1561.2010.00548.x
- Pouwelse, M., Bolman, C., Lodewijkx, H., & Spaa, M. (2011). Gender differences and social support: Mediators or moderators between peer victimization and depressive feelings? *Psychology in the Schools*, 48(8), 800-814. doi: 10.1002/ab.20043
- Ptacek, J. T., Smith, R. E., & Zanas, J. (1992). Gender, appraisal, and coping: A longitudinal analysis. *J Pers*, 60(4), 747-770. doi: 10.1111/j.1467-6494.1992.tb00272.x

- Rigby, K. (2000). Effects of peer victimization in schools and perceived social support on adolescent well-being. *Journal of Adolescence*, 23(1), 57-68. doi: 10.1006/jado.1999.0289
- Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg self-esteem scale. *Personality and Social Psychology Bulletin*, 27(2), 151-161. doi: 10.1177/0146167201272002
- Rosenberg, M., Schooler, C., Schoenbach, C., & Rosenberg, F. (1995). Global self-esteem and specific self-esteem: Different concepts, different outcomes. *American Sociological Review*, 60(1), 141-156. doi: 10.2307/2096350
- Roth, S., & Cohen, L. J. (1986). Approach, avoidance, and coping with stress. *American Psychologist*, 41(7), 813-819. doi: 10.1016/0191-8869(81)90052-0.1982-05799-00110.1016/0191-8869(81)90052-010.1037/0003-066x.41.7.813
- Rowley, A. A., Roesch, S. C., Jurica, B. J., & Vaughn, A. A. (2005). Developing and validating a stress appraisal measure for minority adolescents. *Journal of Adolescence*, 28(4), 547-557. doi: 10.1016/j.adolescence.2004.10.010
- Schenk, A. M. (2011). *Psychological Impact of Cyberbully Victimization among College Students*. M.S. 1501716, West Virginia University, United States -- West Virginia. ProQuest Dissertations & Theses A&I database.
- Schneider, S. K., O'Donnell, L., Stueve, A., & Coulter, R. W. S. (2011). Cyberbullying, school bullying, and psychological distress: A regional census of high school students. *Am J Public Health*, 102(1), 171-177. doi: 10.2105/ajph.2011.300308
- Seiffge-Krenke, I., & Klessinger, N. (2000). Long-term effects of avoidant coping on adolescents' depressive symptoms. *J Youth Adolesc*, 29(6), 617-630. doi: 10.1023/a:1026440304695
- Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research*, 25(2), 173-180. doi: 10.1207/s15327906mbr2502_4
- Steiger, J. H. (2007). Understanding the limitations of global fit assessment in structural equation modeling. *Personality and Individual Differences*, 42(5), 893-898. doi: <http://dx.doi.org/10.1016/j.paid.2006.09.017>
- Office of Institutional Research (2011). *Student demographic characteristics*. The student data book. University of Illinois at Chicago. Retrieved from http://www.oir.uic.edu/students/student_data_book.asp

- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson/Allyn & Bacon.
- Tolan, P. H., Gorman-Smith, D., & Henry, D. B. (2010). *Chicago youth development study: Service use measure*. Institute for Juvenile Research, Department of Psychiatry, The University of Illinois at Chicago. Chicago, IL.
- Twenge, J. M., & Campbell, W. K. (2001). Age and birth cohort differences in self-esteem: A cross-temporal meta-analysis. *Personality and Social Psychology Review*, 5(4), 321-344. doi: 10.1207/s15327957pspr0504_3
- Vandebosch, H., & Van Cleemput, K. (2009). Cyberbullying among youngsters: Profiles of bullies and victims. *New Media & Society*, 11(8), 1349-1349-1371. doi: 10.1177/1461444809341263
- Vaughn, S., Schumm, J. S., & Sinagub, J. M. (1996). *Focus group interviews in education and psychology*. Thousand Oaks: Sage Publications.
- Völlink, T., Bolman, C. A. W., Dehue, F., & Jacobs, N. C. L. (2013). Coping with cyberbullying: Differences between victims, bully-victims and children not involved in bullying. *Journal of Community & Applied Social Psychology*, 23(1), 7-24. doi: 10.1002/casp.2142
- Völlink, T., Bolman, C. A. W., Eppingbroek, A., & Dehue, F. (2013). Emotion-focused coping worsens depressive feelings and health complaints in cyberbullied children. *Journal of Criminology*, 2013, 10. doi: 10.1155/2013/416976
- Waltz, C. F., Strickland, O. L., & Lenz, E. R. L. (2010). *Measurement in nursing health research*. New York: Springer Publishing Company, LLC.
- Willard, N. (2007). Educator's guide to cyberbullying and cyberthreats Retrieved August 30, 2012, from <http://cyberbully.org>
- Pew Internet & American Life Project (2009). *Wireless internet use*. Pew Internet & American Life Project. U.S.
- Wolak, J., Mitchell, K. J., & Finkelhor, D. (2007). Does online harassment constitute bullying? An exploration of online harassment by known peers and online-only contacts. *Journal of Adolescent Health*, 41(6, Supplement), S51-S58. doi: 10.1016/j.jadohealth.2007.08.019
- Ybarra, M. L., Diener-West, M., & Leaf, P. J. (2007). Examining the overlap in internet harassment and school bullying: Implications for school intervention. *Journal of Adolescent Health*, 41(6, Supplement), S42-S50. doi: 10.1016/j.jadohealth.2007.09.004
- Ybarra, M. L., & Mitchell, K. J. (2004a). Online aggressor/targets, aggressors, and targets: a comparison of associated youth characteristics. *Journal of Child Psychology and Psychiatry*, 45(7), 1308-1316. doi: 10.1111/j.1469-7610.2004.00328.x

- Ybarra, M. L., & Mitchell, K. J. (2004b). Youth engaging in online harassment: associations with caregiver-child relationships, Internet use, and personal characteristics. *Journal of Adolescence*, 27(3), 319-336. doi: 10.1016/j.adolescence.2004.03.007
- Ybarra, M. L., Mitchell, K. J., Wolak, J., & Finkelhor, D. (2006). Examining characteristics and associated distress related to internet harassment: Findings from the Second Youth Internet Safety Survey. *Pediatrics*, 118(4), e1169-e1177. doi: 10.1542/peds.2006-0815
- Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. [Article]. *Journal of Personality Assessment*, 52(1), 30.
- Zullig, K. J., & Divin, A. L. (2012). The association between non-medical prescription drug use, depressive symptoms, and suicidality among college students. *Addict Behav*, 37(8), 890-899. doi: 10.1016/j.addbeh.2012.02.008

APPENDICES

APPENDIX A

University of Illinois at Chicago IRB Approval Letter

UNIVERSITY OF ILLINOIS
AT CHICAGO

Office for the Protection of Research Subjects (OPRS)
Office of the Vice Chancellor for Research (MC 672)
203 Administrative Office Building
1737 West Polk Street
Chicago, Illinois 60612-7227

Approval Notice
Initial Review (Response To Modifications)

February 8, 2013

Hyunjoo Na
Health Systems Science
845 S Damen Ave
M/C 802
Chicago, IL 60612
Phone: (312) 909-2036

RE: Protocol # 2013-0049

“The Effects of Cognitive Appraisals, Coping Strategies, and Perceived Social Supports on Psychological Adjustments among College Students Cyberbullying Victims”

Please note that while the rationale is just adequate to exclude all minors in this study, it is unlikely that 17 year old college students are qualitatively different than 18 year olds. Developmental Stages, while often given general age brackets, are about more than age. In future studies, simply request a waiver of parental permission for the 17 year olds.

Dear Ms. Na:

Your Initial Review (Response To Modifications) was reviewed and approved by the Expedited review process on February 7, 2013. You may now begin your research

Please note the following information about your approved research protocol:

<u>Protocol Approval Period:</u>	February 7, 2013 - February 7, 2014
<u>Approved Subject Enrollment #:</u>	200
<u>Additional Determinations for Research Involving Minors:</u> These determinations have not been made for this study since it has not been approved for enrollment of minors.	
<u>Performance Sites:</u>	UIC

APPENDIX A (continued)

University of Illinois at Chicago IRB Approval Letter

Sponsor:

None

Research Protocol(s):

- a) The Effects of Cognitive Appraisals, Coping Strategies, and Perceived Social Supports on Psychological Adjustments among College Students Cyberbullying Victims; Version 3, 02/05/2013

Recruitment Material(s):

- a) Flyer; Version 3, 02/05/2013
- b) Checklist for screening eligibility; Version 3, 02/05/2013

Informed Consent(s):

- a) Informed Consent; Version 3, 02/05/2013
- b) Waiver of documentation of informed consent has been granted under 45 CFR 46.116(d) for screening purposes only (minimal risk; verbal consent to collect minimal screening data obtained; written consent will be obtained at enrollment);

Your research meets the criteria for expedited review as defined in 45 CFR 46.110(b)(1) under the following specific category:

(7) Research on individual or group characteristics or behavior (including but not limited to research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Please note the Review History of this submission:

Receipt Date	Submission Type	Review Process	Review Date	Review Action
01/10/2013	Initial Review	Expedited	01/14/2013	Modifications Required
01/23/2013	Response To Modifications	Expedited	01/24/2013	Modifications Required
02/05/2013	Response To Modifications	Expedited	02/07/2013	Approved

Please remember to:

→ Use your **research protocol number** (2013-0049) on any documents or correspondence with the IRB concerning your research protocol.

→ Review and comply with all requirements on the enclosure,
"UIC Investigator Responsibilities, Protection of Human Research Subjects"

APPENDIX A (continued)

University of Illinois at Chicago IRB Approval Letter

<http://tiger.uic.edu/depts/ovcr/research/protocolreview/irb/policies/0924.pdf>

Please note that the UIC IRB has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

Please be aware that if the scope of work in the grant/project changes, the protocol must be amended and approved by the UIC IRB before the initiation of the change.

We wish you the best as you conduct your research. If you have any questions or need further help, please contact OPRS at (312) 996-1711 or me at (312) 413-1835. Please send any correspondence about this protocol to OPRS at 203 AOB, M/C 672.

Sincerely,

Kathleen Loviscek, M.S.
IRB Coordinator, IRB # 2
Office for the Protection of Research

Subjects

Enclosure(s):

- 1. UIC Investigator Responsibilities, Protection of Human Research Subjects**
- 2. Informed Consent Document(s):**
 - a) Informed Consent; Version 3, 02/05/2013
- 3. Recruiting Material(s):**
 - a) Flyer; Version 3, 02/05/2013
 - b) Checklist for screening eligibility; Version 3, 02/05/2013

cc: Arlene Miller, PhD, RN, Health Systems Science
Barbara L. Dancy, Health Systems Science, M/C 802

APPENDIX A (continued)

University of Illinois at Chicago IRB Approval Letter (Amendment)

UNIVERSITY OF ILLINOIS
AT CHICAGO

Office for the Protection of Research Subjects (OPRS)
Office of the Vice Chancellor for Research (MC 672)
203 Administrative Office Building
1737 West Polk Street
Chicago, Illinois 60612-7227

Approval Notice
Amendment to Research Protocol and/or Consent Document – Expedited Review
UIC Amendment # 1

March 4, 2013

Hyunjoo Na
Health Systems Science
845 S Damen Ave., M/C 802
Chicago, IL 60612
Phone: (312) 909-2036 / Fax: (312) 996-8945

RE: Protocol # 2013-0049
“The Effects of Cognitive Appraisals, Coping Strategies, and Perceived Social Supports on Psychological Adjustments among College Students Cyberbullying Victims”

Dear Ms. Na:

Members of Institutional Review Board (IRB) #2 have reviewed this amendment to your research and/or consent form under expedited procedures for minor changes to previously approved research allowed by Federal regulations [45 CFR 46.110(b)(2) and/or 21 CFR 56.110(b)(2)]. The amendment to your research was determined to be acceptable and may now be implemented.

Please note the following information about your approved amendment:

Amendment Approval Date: February 28, 2013

Amendment:

Summary: UIC Amendment #1 dated February 19, 2013, received February 20, 2013, is an investigator-initiated amendment to:

- 1) Revise the recruitment process. The recruitment of participants will include the use of UIC event calendar. This revision is included in the revised protocol.
- 2) To add Gina Davis as Research Assistant. Her training is complete.

APPENDIX A (continued)

University of Illinois at Chicago IRB Approval Letter (Amendment)

3) To revise recruitment flyer from version 3 to version 4, 2/19/2013

4) To add Events Calendar Contents, version 1, 2/19/2013

Research Protocol(s):

- a) The Effects of Cognitive Appraisals, Coping Strategies, and Perceived Social Supports on Psychological Adjustments among College Students Cyberbullying Victims; Version #4; 02/19/2013

Recruiting Material(s):

- a) Flyer; Version #4, 02/19/2013
b) Event Calendar Contents, Version #1, 02/19/13

Please note the Review History of this submission:

Receipt Date	Submission Type	Review Process	Review Date	Review Action
02/20/2013	Amendment	Expedited	02/28/2013	Approved

Please be sure to:

→ Use only the IRB-approved and stamped consent document(s) and/or HIPAA Authorization form(s) enclosed with this letter when enrolling subjects.

→ Use your research protocol number (2013-0049) on any documents or correspondence with the IRB concerning your research protocol.

→ Review and comply with all requirements on the enclosure,

"UIC Investigator Responsibilities, Protection of Human Research Subjects"

(<http://tiger.uic.edu/depts/ovcr/research/protocolreview/irb/policies/0924.pdf>)

Please note that the UIC IRB #2 has the right to ask further questions, seek additional information, or monitor the conduct of your research and the consent process.

Please be aware that if the scope of work in the grant/project changes, the protocol must be amended and approved by the UIC IRB before the initiation of the change.

APPENDIX A (continued)

University of Illinois at Chicago IRB Approval Letter (Amendment)

We wish you the best as you conduct your research. If you have any questions or need further help, please contact the OPRS at (312) 996-1711 or me at (312) 355-2939. Please send any correspondence about this protocol to OPRS at 203 AOB, M/C 672.

Sincerely,

Jewell Hamilton, MSW
IRB Coordinator, IRB # 2
Office for the Protection of Research Subjects

Enclosure(s):

1. Recruiting Material(s):

- a) Flyer; Version #4, 02/19/2013
- b) Event Calendar Contents, Version #1, 02/19/13

cc: Barbara L. Dancy, Faculty Sponsor, Health Systems Science, M/C 802
Arlene Miller, PhD, RN, Health Systems Science, M/C 802

APPENDIX B

Survey Questionnaire in This Study (Traditional Bullying Victimization)

The following questions ask about your potential **experience of victimization** in the past 12 months. I will ask you several behaviors. Please indicate whether or not you have experienced each behavior in the past 12 months, and if so, how often. Please read each statement and circle *ONE* appropriate response.

In the past 12 months, how frequently have you:

1. Been hit by others?

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

2. Been pushed or shoved by others?

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

3. Been yelled at or called mean names by others?

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

4. Had someone threaten to hit or physically harm you?

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

5. Been threatened or injured by someone with a weapon (gun, knife, club, etc.)?

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

6. Had someone ask you to fight?

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

APPENDIX B (continued)

Survey Questionnaire in This Study (Traditional Bullying Victimization)

Please read each statement and circle *ONE* appropriate response.

In the past 12 months, how frequently have you (con't):

7. Had someone say he/she wouldn't like you unless you did what he/she wanted you to do?

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

8. Had someone spread a false rumor about you?

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

9. Been left out on purpose by others when it was time to do an activity?

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

10. Had someone try to keep others from liking you by saying mean things about you?

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

11. Had someone tell lies about you to make others not like you anymore?

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

12. Had someone who was mad at you try to get back at you by not letting you be in his/her group anymore?

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

APPENDIX B (continued)

Survey Questionnaire in This Study (Cyberbullying Victimization)

Cyberbullying is willful and repeated harm inflicted through the use of computers, cell phones, and other electronic devices. The following questions ask about your potential experience of **cyberbullying victimization** in the past 12 months. I will ask you about several behaviors. Please indicate whether or not you have experienced each behavior in the past 12 months, and if so, how often.

Please read each statement and provide an answer that best describes the frequency with which you have experienced cyberbullying. Please circle *ONE* number for your answer to each question unless you are given other instructions. (1-2).

1. In the past 12 months, how frequently have you been cyberbullied yourself?

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

2. In the past 12 months, how frequently have you been cyberbullied in these ways? (2-a – 2-h)

2-a. Someone posted mean or hurtful comments about me online.

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

2-b. Someone posted a mean or hurtful picture of me online.

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

2-c. Someone posted a mean or hurtful video of me online.

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

2-d. Someone created a mean or hurtful web page about me.

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

APPENDIX B (continued)

Survey Questionnaire in This Study (Cyberbullying Victimization)

2-e. Someone spread rumors about me online.

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

2-f. Someone threatened to hurt me through a cell phone text message.

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

2-g. Someone threatened to hurt me online.

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

2-h. Someone pretended to be me online and acted in a way that was mean or hurtful to me.

1) Never 2) Once or twice 3) A few times 4) Many times 5) Every day

3. In the past 12 months, how have you been cyberbullied in these online environments?

Please check the space beside each statement or phrase that best applies to you. Please check as many as apply. (1-15)

1. In a chat room		8. Facebook	
2. E-mail		9. A different social networking web site (other than MySpace or Facebook)	
3. Computer instant messages		10. Twitter	
4. Cell phone text messages		11. YouTube	
5. Orally by cell phone		12. Virtual worlds such as Second Life, Gaia, or Habbo Hotel	
6. PictureMail or VideoMail		13. A massive multiplayer online game such as World of Warcraft, Everquest, Guild Wars, or Runescape	
7. MySpace		14. Playing an online game using Xbox, Playstation, Wii, PSP, or a similar device)	
15. Other (Please specify : _____)			

APPENDIX B (continued)

Survey Questionnaire in This Study (Cognitive Appraisals)

The following questions ask about how you thought and felt when you were cyberbullied in the past 12 months. (1-14)

Please read each statement and circle **ONE** number that best describes your thought or feeling. There are no right or wrong answers. There is no need to spend a lot of time on any statement. (0 = Not at all; 1 = A little bit; 2 = About half the time; 3 = The majority time; 4 = A great amount)

In the past 12 months, how much did you think or feel the following when you were cyberbullied?

	Not at All	A little bit	About half the time	The majority time	A Great Amount
1. I could overcome the situation.	0	1	2	3	4
2. I perceived the situation as threatening.	0	1	2	3	4
3. There was someone I could turn to for help.	0	1	2	3	4
4. I could positively deal with the situation.	0	1	2	3	4
5. I had what it took to beat the situation	0	1	2	3	4
6. I felt anxious.	0	1	2	3	4
7. The situation impacted me greatly.	0	1	2	3	4
8. There was help available to me.	0	1	2	3	4
9. The outcome of the situation would be negative.	0	1	2	3	4
10. The situation had serious implications for my life.	0	1	2	3	4
11. I had the resources available to me to overcome the situation.	0	1	2	3	4
12. I had the skills necessary to overcome the situation.	0	1	2	3	4
13. The situation had a negative impact on me.	0	1	2	3	4
14. There were long-term consequences as the result of the situation.	0	1	2	3	4

APPENDIX B (continued)

Survey Questionnaire in This Study (Coping Strategies)

The following questions ask about your potential coping strategies of cyberbullying victimization **in the past 12 months**. Please read each statement and provide an answer that best describes the frequency with which you have **responded to being cyberbullied in the past 12 months**. Please circle ONE number for your answer to each question. (1-22).

In the past 12 months, how frequently have you:

1. I tried to think of different ways to solve it.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

2. I changed something to things would work out.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

3. I did something to make up for it.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

4. I went over in my mind what to do or say.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

5. I could do something to change this situation.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

6. I told a friend or family member what happened.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

7. I talked to somebody about how it made me feel.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

APPENDIX B (continued)

Survey Questionnaire in This Study (Coping Strategies)

Please circle ONE number for your answer to each question.

In the past 12 months, how frequently have you (con't):

8. I got help from a friend.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

9. I asked a family member for advice.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

10. I got help from a family member.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

11. I made believe nothing happened.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

12. I forgot the whole thing.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

13. I told myself it didn't matter.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

14. I refused to think about it.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

15. I would say I didn't care.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

APPENDIX B (continued)

Survey Questionnaire in This Study (Coping Strategies)

Please circle ONE number for your answer to each question.

In the past 12 months, how frequently have you (con't):

16. I yelled to let off steam.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

17. I swore out loud.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

18. I got mad and throw or hit something.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

19. I worried about it.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

20. I just felt sorry for myself.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

21. I worried that others would think badly of me.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

22. I got mad at myself for doing something that I shouldn't have done.

1) Never 2) Hardly ever 3) Sometimes 4) Most of the time 5) Always

APPENDIX B (continued)

Survey Questionnaire in This Study (Perceived Social Supports)

The following questions ask about your perceived social support from family, friends, and a significant other when you were cyberbullied in the past 12 months. A significant other indicates a “special person,” who may be variously interpreted to be a boyfriend/girlfriend, teacher, counselor, etc.

Please read each statement below and circle **ONE** number that best describes your thought or feeling. (1-12)

In the past 12 months, how much did you think or feel the following when you were cyberbullied in the past 12 months?

	Very Strongly Disagree	Strongly Disagree	Mildly Disagree	Neutral	Mildly Agree	Strongly Agree	Very Strongly Agree
1. There was a special person who is around when I am in need.	1	2	3	4	5	6	7
2. There was a special person with whom I can share joys and sorrows.	1	2	3	4	5	6	7
3. My family really tried to help me.	1	2	3	4	5	6	7
4. I got the emotional help and support I need from my family.	1	2	3	4	5	6	7
5. I had a special person who is a real source of comfort to me.	1	2	3	4	5	6	7
6. My friends really tried to help me.	1	2	3	4	5	6	7
7. I could count on my friends when things go wrong.	1	2	3	4	5	6	7
8. I could talk about my problems with my family.	1	2	3	4	5	6	7
9. I had friends with whom I can share my joys and sorrows.	1	2	3	4	5	6	7
10. There was a special person in my life who cares about my feelings.	1	2	3	4	5	6	7
11. My family was willing to help me make decisions.	1	2	3	4	5	6	7
12. I could talk about my problems with my friends.	1	2	3	4	5	6	7

APPENDIX B (continued)

Survey Questionnaire in This Study (Depression and Anxiety)

The following questions are about your level of depression, anxiety, and stress that you may have done in the past week. Please read each statement and circle **ONE** number 0, 1, 2, or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. There is no need to spend a lot of time on any statement.

The rating scale is as follows: 0 Did not apply to me at all

1 Applied to me to some degree, or some of the time

2 Applied to me to considerable degree, or a good part of time

3 Applied to me very much, or most of the time

How much did you think or feel the following?

1. I found it hard to wind down	0	1	2	3
2. I was aware of dryness of my mouth	0	1	2	3
3. I couldn't seem to experience any positive feeling at all	0	1	2	3
4. I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5. I found it difficult to work up the initiative to do things	0	1	2	3
6. I tended to over-react to situations	0	1	2	3
7. I experienced trembling (e.g., in the hands)	0	1	2	3
8. I felt that I was using a lot of nervous energy	0	1	2	3
9. I was worried about situations in which I might panic and make fool of myself	0	1	2	3
10. I felt that I had nothing to look forward to	0	1	2	3
11. I found myself getting agitated	0	1	2	3
12. I found it difficult to relax	0	1	2	3
13. I felt down-hearted and blue	0	1	2	3
14. I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15. I felt I was close to panic	0	1	2	3
16. I was unable to become enthusiastic about anything	0	1	2	3
17. I felt I wasn't worth much as a person	0	1	2	3
18. I felt that I was rather touchy	0	1	2	3
19. I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)	0	1	2	3
20. I felt scared without any good reason	0	1	2	3
21. I felt that life was meaningless	0	1	2	3

APPENDIX B (continued)

Survey Questionnaire in This Study (Self-esteem)

Below is a list of statements dealing with your general feelings about yourself. Please read each statement and circle ***ONE response*** that best describes your feeling. If you strongly agree, circle SA. If you agree with the statement, circle A. If you disagree, circle D. If you strongly disagree, circle SD.

How much did you think or feel the following?

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. On the whole, I am satisfied with myself.	SA	A	D	SD
2. At times, I think I am no good at all.	SA	A	D	SD
3. I feel that I have a number of good qualities.	SA	A	D	SD
4. I am able to do things as well as most other people.	SA	A	D	SD
5. I feel I do not have much to be proud of.	SA	A	D	SD
6. I certainly feel useless at times.	SA	A	D	SD
7. I feel that I'm a person of worth, at least on an equal plane with others.	SA	A	D	SD
8. I wish I could have more respect for myself.	SA	A	D	SD
9. All in all, I am inclined to feel that I am a failure.	SA	A	D	SD
10. I take a positive attitude toward myself.	SA	A	D	SD

APPENDIX B (continued)

Survey Questionnaire in This Study (Socio-demographic)

The following question asks about your personal characteristics. Please read each statement and circle **ONE** response that best applies to you.

1. What is your age? _____
2. What is your gender (check one)? ___Female ___Male
3. Do you consider yourself to be one or more of the following (check all that apply):
 ___Straight
 ___Gay or lesbian
 ___Bisexual
 ___Transgender
4. Are you Hispanic or Latino? ___Yes ___No
5. What is your race (check one)?
 ___American Indian or Alaska Native
 ___Asian
 ___Black or African American
 ___Native Hawaiian or Other Pacific Islander
 ___White
6. What is your current class status (check one)?
 ___Freshman
 ___Sophomore
 ___Junior
 ___Senior
 ___Graduate Student
 ___Others

APPENDIX B (continued)

Survey Questionnaire in This Study (Socio-demographic)

7. What is your religion (check one)?

☐ None or No Religion

☐ Protestant

☐ Catholic

☐ Other Christian

☐ Jewish

☐ Muslim

☐ Buddhist

☐ Other religion (Please specify: _____)

8. Sometimes when people need help dealing with stress, they talk to other people, or professionals. Below is a list of places where people receive help. Check whether you have received help from any of these places in the last 12 months. **Please check all for apply.**

	Yes	No
1) Psychiatric hospital, general hospital psychiatric unit, or hospital emergency room		
2) Detox unit, inpatient drug/alcohol unit, residential treatment center, outpatient drug or alcohol unit		
3) Community mental health center, in home counseling, or counseling center		

9. Have you been prescribed medication for mental illness by mental health provider (e.g., Medical Doctor, Psychiatric Nurse Practitioner, etc.)? ☐ Yes ☐ No

If YES, Please specify the illness (_____)

APPENDIX C
Bivariate Correlation Table

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Cyberbullying Victimization	Pearson Correlation	1	-.385**	.432**	-.169	.094	-.063	.048	.188*	.295**	-.173	-.356**	-.327**	.231*	.233*	-.241**
	Sig. (2-tailed)		.000	.000	.069	.310	.499	.606	.041	.001	.062	.000	.000	.012	.013	.009
	N	119	117	119	116	118	118	119	119	118	117	117	116	117	113	118
2. Challenge Cognitive Appraisal	Pearson Correlation	-.385**	1	-.531**	.563**	-.013	.014	.096	-.338**	-.390**	.206*	.471**	.413**	-.290**	-.344**	.339**
	Sig. (2-tailed)	.000		.000	.000	.889	.883	.298	.000	.000	.025	.000	.000	.001	.000	.000
	N	117	119	119	116	118	118	119	119	118	117	117	116	118	113	118
3. Threat Cognitive Appraisal	Pearson Correlation	.432**	-.531**	1	-.210*	.335**	.270**	-.149	.308**	.584**	.005	-.224*	-.096	.387**	.361**	-.153
	Sig. (2-tailed)	.000	.000		.023	.000	.003	.104	.001	.000	.954	.014	.303	.000	.000	.096
	N	119	119	121	118	120	120	121	121	120	119	119	118	119	115	120
4. Control Cognitive Appraisal	Pearson Correlation	-.169	.563**	-.210*	1	-.026	.359**	-.104	-.244**	-.227*	.513**	.527**	.583**	-.217*	-.236*	.180
	Sig. (2-tailed)	.069	.000	.023		.779	.000	.262	.008	.014	.000	.000	.000	.019	.012	.052
	N	116	116	118	118	117	117	118	118	117	116	116	115	116	113	117
5. Problem Solving	Pearson Correlation	.094	-.013	.335**	-.026	1	.323**	-.143	.189*	.419**	.039	.015	.030	.240**	.269**	-.079
	Sig. (2-tailed)	.310	.889	.000	.779		.000	.120	.038	.000	.675	.873	.747	.009	.004	.393
	N	118	118	120	117	120	119	120	120	119	118	118	117	118	114	119
6. Seeking Social Support	Pearson Correlation	-.063	.014	.270**	.359**	.323**	1	-.146	.098	.213*	.530**	.431**	.463**	.160	.124	-.038
	Sig. (2-tailed)	.499	.883	.003	.000	.000		.112	.286	.020	.000	.000	.000	.084	.189	.684
	N	118	118	120	117	119	120	120	120	119	118	118	117	118	114	119
7. Cognitive Distancing	Pearson Correlation	.048	.096	-.149	-.104	-.143	-.146	1	-.071	-.077	-.009	.002	-.087	.058	-.006	-.024
	Sig. (2-tailed)	.606	.298	.104	.262	.120	.112		.440	.401	.924	.981	.349	.531	.950	.796
	N	119	119	121	118	120	120	121	121	120	119	119	118	119	115	120
8. Externalizing	Pearson Correlation	.188*	-.338**	.308**	-.244**	.189*	.098	-.071	1	.379**	-.259**	-.171	-.171	.301**	.355**	-.094
	Sig. (2-tailed)	.041	.000	.001	.008	.038	.286	.440		.000	.004	.063	.064	.001	.000	.310
	N	119	119	121	118	120	120	121	121	120	119	119	118	119	115	120
9. Internalizing	Pearson Correlation	.295**	-.390**	.584**	-.227*	.419**	.213*	-.077	.379**	1	-.085	-.197*	-.193*	.504**	.508**	-.143
	Sig. (2-tailed)	.001	.000	.000	.014	.000	.020	.401	.000		.360	.033	.037	.000	.000	.120
	N	118	118	120	117	119	119	120	120	120	118	118	117	118	114	119
10. Family	Pearson Correlation	-.173	.206*	.005	.513**	.039	.530**	-.009	-.259**	-.085	1	.518**	.550**	-.147	-.097	.061
	Sig. (2-tailed)	.062	.025	.954	.000	.675	.000	.924	.004	.360		.000	.000	.115	.308	.511
	N	117	117	119	116	118	118	119	119	118	119	117	116	117	113	118
11. Friend	Pearson Correlation	-.356**	.471**	-.224*	.527**	.015	.431**	.002	-.171	-.197*	.518**	1	.686**	-.208*	-.185*	.239**
	Sig. (2-tailed)	.000	.000	.014	.000	.873	.000	.981	.063	.033	.000		.000	.024	.050	.009
	N	117	117	119	116	118	118	119	119	118	117	119	117	117	113	118
12. Significant Other	Pearson Correlation	-.327**	.413**	-.096	.583**	.030	.463**	-.087	-.171	-.193*	.550**	.686**	1	-.251**	-.172	.270**
	Sig. (2-tailed)	.000	.000	.303	.000	.747	.000	.349	.064	.037	.000	.000		.007	.070	.003
	N	116	116	118	115	117	117	118	118	117	116	117	118	116	112	117

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

APPENDIX C (continued)

Bivariate Correlation Table

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
13. Depression	Pearson Correlation	.231*	-.290**	.387**	-.217*	.240**	.160	.058	.301**	.504**	-.147	-.208*	-.251**	1	.671**	-.163
	Sig. (2-tailed)	.012	.001	.000	.019	.009	.084	.531	.001	.000	.115	.024	.007		.000	.078
	N	117	118	119	116	118	118	119	119	118	117	117	116	119	114	118
14. Anxiety	Pearson Correlation	.233*	-.344**	.361**	-.236*	.269**	.124	-.006	.355**	.508**	-.097	-.185*	-.172	.671**	1	-.039
	Sig. (2-tailed)	.013	.000	.000	.012	.004	.189	.950	.000	.000	.308	.050	.070	.000		.679
	N	113	113	115	113	114	114	115	115	114	113	113	112	114	115	114
15. Self-esteem	Pearson Correlation	-.241**	.339**	-.153	.180	-.079	-.038	-.024	-.094	-.143	.061	.239**	.270**	-.163	-.039	1
	Sig. (2-tailed)	.009	.000	.096	.052	.393	.684	.796	.310	.120	.511	.009	.003	.078	.679	
	N	118	118	120	117	119	119	120	120	119	118	118	117	118	114	120

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

VITA

NAME Hyunjoo Na

EDUCATION

2010 – 2013	Doctor of Philosophy in Nursing University of Illinois at Chicago, College of Nursing, Chicago, Illinois
2005 – 2008	Master of Science in Nursing The Catholic University of Korea, Seoul, Korea
2000 – 2004	Bachelor of Science in Nursing The Catholic University of Korea, Seoul, Korea

PROFESSIONAL EXPERIENCE

2011 – Present	Research Assistant Community Engagement and Research Core, Center for Clinical and Translational Science, University of Illinois at Chicago, Chicago, IL
2010	Lecturer Seokang University, Gwangju, Korea
2009	Lecturer Chunnam Techno College, Jeollanamdo, Korea
2009 – 2010	Registered Nurse Changpyeong Woori Hospital, Jeollanamdo, Korea
2006 – 2009	Research/Teaching Assistant College of Nursing, The Catholic University of Korea, Seoul, Korea
2004 – 2006	Registered Nurse Kangnam St. Mary's Hospital, Seoul, Korea

PUBLICATION

Na, H., & Yang, S. (2009). Effects of listening to music on auditory hallucination and psychiatric symptoms in people with schizophrenia. *Journal of Korean Academy of Nursing*, 39(1): 62-71.

PRESENTATIONS

- Na, H. & Dancy, B. L. (2013, March) A review of coping strategies among adolescent bullying victims, Poster session presented at the Annual Conference of the Midwest Nursing Research Society, Chicago, IL
- Park, S. H., & Na, H. (2012, October) Relationship among weight perception, depression, and suicide ideation among U.S. high school students, Poster session presented at the Chicago International Nursing Conference of the Global Korean Nursing Foundation, Chicago, IL
- Na, H., Choi, H., & Dancy, B. L. (2011, October) Association of suicide attempts with bully victimization among U.S. adolescents: Differential mediating effect of depression by gender and race/ethnicity, Poster session presented at the Annual Conference of the American School Health Association, Louisville, KY
- Na, H., Yang, S. (2008, September) The effects of listening to music on auditory hallucination and psychiatric symptoms in schizophrenia, Poster session presented at the Annual Conference of the Korean Society of Nursing Science, Seoul, Korea

PROFESSIONAL AND COMMUNITY SERVICE

- | | |
|------|--|
| 2012 | International Students Representative
Graduate Student Nurses Organization, University of Illinois at Chicago,
Chicago, IL |
| 2005 | Coordinator and Secretary
Korean Psychiatric Mental Health Nurses Association, Seoul, Korea |

HONOR/AWARD/SCHOLARSHIPS

- | | |
|------|---|
| 2013 | Virginia M. Ohlson Scholarship
Global Health Leadership Office, College of Nursing, University of
Illinois at Chicago |
| 2012 | Sigma Theta Tau International Honor Society of Nursing |
| 2012 | The 2012 Academy of International Leadership Development Award
College of Nursing, University of Illinois at Chicago |
| 2006 | Merit-based Scholarship, The Catholic University of Korea |
| 2000 | Merit-based Scholarship, The Catholic University of Korea |

LICENSES

2008	Psychiatric Mental Health Nurse, Korea
2007	Registered Nurse, New York
2004	Registered Nurse, Korea
2004	School Health Teacher (Grade II), Korea

COMPLETED CONTINUING EDUCATION

Mar. 2007 – Feb. 2008	Psychiatric Mental Health Nurse Training Program Kangnam Mary's Hospital, Seoul, Korea
July 2007 – Aug. 2007	The Cultural Enrichment Program: Nursing and Health Care in the United States The Catholic University of America School of Nursing Washington DC

PROFESSIONAL AFFILIATIONS

2013 – present	International Society of Psychiatric-Mental Health Nurses
2012 – present	Midwest Nursing Research Society
2011 – present	American School Health Association
2007 – present	Korean Society of Nursing Science
2005 – present	Korean Psychiatric Mental Health Nurses Association
2004 – present	Korean Nurse Association