Developing a Measure of Cyberbullying Perpetration and Victimization

by

Matthew Savage

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

Approved July 2012 by the
Graduate Supervisory Committee:

Anthony Roberto, Chair
Kellie E. Palazzolo
Marilyn S. Thompson

ARIZONA STATE UNIVERSITY

August 2012

ABSTRACT

This research addressed concerns regarding the measurement of cyberbullying and aimed to develop a reliable and valid measure of cyberbullying perpetration and victimization. Despite the growing body of literature on cyberbullying, several measurement concerns were identified and addressed in two pilot studies. These concerns included the most appropriate time frame for behavioral recall, use of the term "cyberbullying" in questionnaire instructions, whether to refer to power in instances of cyberbullying, and best practices for designing self-report measures to reflect how young adults understand and communicate about cyberbullying. Mixed methodology was employed in two pilot studies to address these concerns and to determine how to best design a measure which participants could respond to accurately and honestly. Pilot study one consisted of an experimental examination of time frame for recall and use of the term on the outcomes of honesty, accuracy, and social desirability. Pilot study two involved a qualitative examination of several measurement concerns through focus groups held with young adults. Results suggested that one academic year was the most appropriate time frame for behavioral recall, to avoid use of the term "cyberbullying" in questionnaire instructions, to include references to power, and other suggestions for the improving the method in the main study to bolster participants' attention. These findings informed the development of a final measure in the main study which aimed to be both practical in its ability to capture prevalence and precise in its ability to measure frequency. The main study involved examining the psychometric properties, reliability, and validity of the

final measure. Results of the main study indicated that the final measure exhibited qualities of an index and was assessed as such. Further, structural equation modeling techniques and test-retest procedures indicated the measure had good reliability. And, good predictive validity and satisfactory convergent validity was established for the final measure. Results derived from the measure concerning prevalence, frequency, and chronicity are presented within the scope of findings in cyberbullying literature. Implications for practice and future directions for research with the measure developed here are discussed.

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Chapter 1

LITERATURE REVIEW

Cyberbullying, or the deliberate and repeated misuse of communication technology by an individual or group to threaten or harm others (Roberto & Eden, 2010), is a phenomenon that has emerged as a topic of social significance and scientific inquiry in the last ten years (David-Ferdon & Hertz, 2007). Despite the growing body of literature on this important topic, how to best measure cyberbullying remains an open question within current research. There is a clear need for a systematic review of cyberbullying measurement for the purpose of moving toward a practical and precise measure of perpetration and victimization. A reliable and valid measure of perpetration and victimization is necessary for proper assessment of cyberbullying prevalence and for the planning and evaluating health communication campaigns. Therefore, the purpose of this chapter is to provide a review of the cyberbullying literature, with a focus on measurement.

Several important factors underscore the need for research addressing cyberbullying measurement. Accurate assessment of cyberbullying is essential to intervention planning and evaluation, underscoring the need to address operational choices and measurement approaches. Across the literature on cyberbullying, researchers (e.g., Ybarra, 2004) have posited cyberbullying measures to facilitate cross-national comparisons and to accurately estimate prevalence rates. Yet, as will be argued herein, cyberbullying studies have produced ambiguous results with considerable differences of prevalence rates

across studies, which raises the issue of whether rates of cyberbullying differ across samples or if differences reflect measurement imprecision. Measurement concerns include: (a) variations in time frames used for behavioral recall; (b) best practices for use of the term cyberbullying in questionnaire and survey directions; (c) whether available scales and indexes actually assess the subset of behaviors intended to be captured by the conceptual definition of cyberbullying; (d) a focus on measuring victimization over perpetrations; and (e) how to accurately classify someone as a cyberbullying perpetrator or victim. Similar issues have been examined with regard to traditional bullying in the last decade (e.g., Espelage & Swearer, 2003; Furlong, Sharkey, Felix, Tanigawa, & Green, 2010; Grief & Furlong, 2006), whereas cyberbullying scholars have just begun addressing these important cyberbullying measurement concerns.

Research that empirically addresses these concerns is necessary to advance a measure of cyberbullying that is both practical and precise. Goals of practicality and precision concerning the measurement of traditional bullying were recently outlines and addressed by Felix, Sharkey, Green, Furlong, and Tanigawa (2011). These scholars deserve credit for putting forward these important considerations for measurement which are applied to cyberbullying here. Practically, the measure of cyberbullying should be able to discern between those who are and who are not cyberbully perpetrators and victims. Measuring prevalence is necessary to gather meaningful epidemiological data that can be used to evaluate intervention programs at school and community levels. Prevalence data is incredibly useful for informing policy decisions and assessing

target populations for preventative efforts such as health communication campaigns. Further, the measure of cyberbullying should also be precise in its ability to capture the behaviors of cyberbully perpetrators and the experiences of cyberbully victims. Scales that capture continuous data concerning the nuanced behaviors of cyberbully perpetrators and the experiences of cyberbully victims are important for individual differences research. Precision can be achieved only through the assessment of psychometric properties of scales which aim to measure cyberbullying perpetration and victimization. Others have certainly offered measures that work toward accomplishing one of these goals or the other, but there is still room for the development of a measure which accomplishes both ends.

Thus, a series of studies will be advanced here that meet these needs and goals. These studies are crucial to the advancement of both basic and applied cyberbullying research. Initially, a general overview of cyberbullying research is presented. Next, a presentation of cyberbullying measures is provided with a focus on evaluating the time frame for recall of cyberbullying behaviors and experiences. This is followed by a discussion about the use of the term cyberbullying in measures of perpetration and victimization. Subsequently, the need to seek feedback of young adults is advanced. Last, scale construction is addressed with a focus on the evaluation of reliability and validity for a final measure of cyberbullying perpetration and victimization.

Cyberbullying

Investigations of cyberbullying perpetration and victimization have likely gained popularity because of the saturation of technology into all sectors of the public sphere. In 2008, Rainie described that teens' use of communication technology has significantly risen in recent years; data indicate that 94% of teens use the internet, 58% have a social networking, and 71% own a cellular phone. Although research on the topic of cyberbullying is somewhat new and comes from several disciplines, three reviews of literature have recently become available that synthesize scholarship on the topic cyberbullying from a communication perspective (Ramirez, Palazzolo, Savage, & Deiss, 2011; Roberto & Eden, 2010; Tokunaga, 2010). These reviews acknowledge that cyberbullying research is in its early stages and attempt to provide some clarity to the state of research on this important topic. These scholars' foundations are further developed here by reviewing the newest sources of cyberbullying literature to expand on key components of available cyberbullying research. Specifically, discussions of the conceptualization, prevalence, and frequency of cyberbulling among specific age groups, will be presented next.

Conceptualization. Cyberbullying research has gained tremendous momentum in the last ten years. The term *electronic aggression* was put forward by the Centers for Disease Control and Prevention (CDC, 2008) to capture all types of technologically mediated aggression, such as Internet harassment and Internet bullying. Electronic aggression is defined online by the CDC as "any type of harassment or bullying that occurs via email, a chat room, instant messaging, a

website (including blogs), or text messaging" (p. 1). However, the term electronic aggression is used infrequently in popular press and scholarly literature, as behaviors such as those discussed are associated with the widely utilized term *cyberbullying*.

Cyberbullying has been used as an umbrella term in research to describe a range of constructs including cyberharassment (e.g., Beran & Li, 2005, 2007), cyber victimization (e.g., Dempsey, Sulkowski, Nichols, & Storch, 2009), cyber stalking (e.g., Spitzberg & Hoobler, 2002), internet bullying (Williams & Guerra, 2007), online harassment (e.g., Wolak, Mitchell, & Finkelhor, 2007), online aggression (Ybarra, 2004; Ybarra & Mitchell, 2004), and internet harassment (Ybarra, Mitchell, Wolak, & Finkelhor, 2006). Cyberbullying was concisely defined by Patchin and Hinduja (2006) as "willful and repeated harm inflicted through the medium of electronic text" (p. 152). This conceptual definition provides an excellent starting place for describing the phenomenon, but lacks important considerations of cyberbullying characteristics and how cyberbullying fits into the larger literature concerning traditional bullying.

Cyberbullying has been defined in several ways, with a fair amount of overlap between definitions. Differences in definitions have led to research that uses the same term but refers to different meanings based on inconsistencies related to the emergence of cyberbullying as an extension of traditional bullying. Cyberbullying and traditional bullying differ from one another in some important ways, despite the fact that cyberbullying conceptualization and research is largely guided by findings in the traditional bullying literature. Traditional bullying is

defined by three essential elements: (1) aggressive acts made with harmful intent; (2) repetition; and (3) an imbalance of power between the perpetrator and target (Smith et al., 2002). A discussion of each of these elements as compared and contrasted between traditional bullying and cyberbullying may offer a better understanding of how cyberbullying is conceptualized.

Olweus, the most cited researcher in the topic of traditional bullying, suggests that bullying occurs in the most general of ways when a person or group of people engage in any "negative action" intended to inflict injury, hurt, or discomfort on others (2003). Researchers largely agree that the primary prerequisite for an event to be considered bullying is the inclusion of an aggressive behavior that distresses the victim (Stephenson & Smith, 1989). To that end, traditional bullying and cyberbullying share considerable overlap in their core motivations regarding intentional hurt. Cyberbullies wish to inflict harm on their targets and execute a series of calculated behaviors to cause them distress. Cyberbullying is not teasing or joking with the use of technology, it is an intentional means to hurt others.

In addition to harmful intent, there are important considerations to discuss with regard to repetition in traditional bullying and cyberbullying. Traditional bullies must repeatedly hurt their victims for the behavior to be considered bullying. Multiple hurtful events are required to fulfill the repetitive requirement of traditional bullying. Importantly, traditional bullying incidents usually happen at school. On the other hand, cyberbullies are able to hurt their victims outside of school settings, following them into their homes (Patchin & Hinduja, 2006), and

are able to repetitively hurt their victim with one hurtful action. For example, a cyberbully might post an embarrassing photo of their victim on a social networking site. Although they have not technically repeatedly attacked the victim, the cyberbullying action becomes repeated through exposure to others. This variance in how repetition can present itself in traditional bullying and cyberbullying sheds some light on the nuanced differences between the two concepts.

A more significant departure between cyberbullying and traditional bullying presents itself when considering distinctions of power between perpetrators and victims. Scholars (e.g., Vandebosch & Van Cleemput, 2008; Wolak, Mitchell, & Finkelhor, 2007) assert that use of the term bullying refers only to when an individual with more power is harassing an individual with less power. Power in cases of traditional bullying can come from physical strength, popularity, or intelligence (e.g., Felix et al., 2011). Although a cyberbully may follow the pattern of a traditional bully by targeting victims who are perceived as less powerful than themselves in the physical world (Williams & Guerra, 2007), other bases of power might exist for cyberbullies. For example, when it comes to the use of technology, power can be derived from technological proficiency (Patchin & Hinduja, 2006). The balance of power is tipped in the direction of those who are more skilled in navigating the Internet and using electronic devices. To that end, those who perceive themselves as disempowered offline may take revenge on the Internet or using electronic devices. Though some scholars challenge the notion that technological proficiency allows for a "revenge of the

nerds" (e.g., Vandebosch & Van Cleemput, 2007), power may be the principal difference between traditional bullying and cyberbullying due to the anonymity that can be utilized by cyberbullies. Anonymity and power might interact in an episode of cyberbullying such that power is forfeited by a victim who does not know the identity of his or her perpetrator. Knowing whether perpetrators and victims differ in traditional bases of power can be impossible when the perpetrator is anonymous. Perhaps there is a more useful way to consider notions of power in episodes of cyberbullying that more broadly considers how power is communicated within anonymous interactions. Empirically examining power in instances of cyberbullying would likely provide particularly important contributions to scholars' understanding of cyberbullying.

Summarizing these similarities and differences between traditional bullying and cyberbullying helps to move us closer to a conceptual definition of cyberbullying for the present study. Cyberbullying has been defined in several ways (for a recent review, see Tokunaga, 2010), with a fair amount of overlap between the definitions with regard to harmful intent and repetition. Each definition of cyberbullying contains some aggressive, hostile, or harmful act that is intentionally perpetrated by a bully through an electronic device. Additionally, repetition is another crucial element generally agreed upon across scholars' conceptualization of cyberbullying. However, power is not a component of cyberbullying that was considered important in early cyberbullying research and has only begun to be emphasized in the definition of cyberbullying. Whereas the term cyberbullying was used to describe a range of hurtful behaviors that occurred

via technological mediums in early scholarship, the term cyberbullying is becoming increasingly reserved for behaviors that meet the three part criteria (i.e., intention, repetition, and power imbalance) of traditional bullying through the use of technology. Indeed, some scholars argue that for behaviors to be "true" cyberbullying, they must intend to hurt and be perceived as hurtful, be part of a repetitive pattern of negative offline or online actions, and be performed in a relationship characterized by a power imbalance (Wolak, Mitchell, & Finkelhor, 2007). This distinction in the literature suggests that the role of power in cyberbullying certainly warrants empirical attention. While attention is paid to power in the present study, a less stringent (that is, a more broad) definition of cyberbullying is utilized for this review.

For the purposes of the present investigation, a communicative definition of cyberbullying put forward by Roberto and Eden (2010) is used. These scholars examined over 20 recently published peer-reviewed manuscripts, empirical studies, and personal narratives on cyberbullying and put forward the definition of cyberbullying as the "deliberate and repeated misuse of communication technology by an individual or group to threaten or harm others" (p. 2). Specifically, Roberto and Eden (2010) determined that the definition must contain several parts. First, cyberbullying involves the use of *communication technology* (i.e., communication across one or more digital media). Second, cyberbullying entails the use of communication technologies to *threaten or harm* others. Examples of cyberbullying messages include threats of physical harm or messages intended to produce psychological harm (e.g., messages that insult,

attack, embarrass, exclude, spread rumors about, or harm the relationships of the cyberbullying victim). Third, cyberbullying is *deliberate*. This element of the definition is designed to differentiate cyberbullying from teasing that is done in a friendly or playful way. Fourth, though it is feasible that a single message sent from a single source to a single receiver via communication technology could qualify as cyberbullying in extreme instances (e.g., a death threat sent over the web via email or to a cellular phone via a text message), cyberbullying typically consists of *repeated* conduct. Finally, *an individual or group* can carry out cyberbullying. That is, cyberbullying can include a single individual working alone, or multiple individuals working collectively, to threaten or harm another individual.

Prevalence. A review of recent empirical studies of cyberbullying shows that large proportions of adolescents are victims of cyberbullying. Results of recent investigations using survey methodologies indicated a range of 20% to 40% of youth surveyed report being victimized by a cyberbully (Aricak et al., 2008; Dehue, Bolman, Vollink, 2008; Hinduja & Patchin, 2008; Li, 2006, 2007a, 2007b, 2008; Patchin & Hinduja, 2006; Smith et al., 2008; Topcu, Erdur-Baker, & Capa-Aydin, 2008; Ybarra & Mitchell, 2008). Interestingly, certain investigations only asked respondents to report on particular time frames (Dehue et al., 2008; Williams & Guerra, 2007; Wolak et al., 2007; Ybarra, 2004; Ybarra & Mitchell, 2004, 2008). Framing questions of victim frequency in this way may skew respondents' estimates to be lower because of the attenuated time frame or

potentially higher due to recent focal incidents. This point will be returned to later in this review.

Age and samples examined. Although the use of the term bully may evoke thoughts of young children and school playgrounds, cyberbullying is not restricted by age and can occur anytime from elementary school to college and beyond. For instance, flaming is a concept related to cyberbullying, and refers to abusive or harsh language used against children and adults on the Internet (Lea, O'Shea, Fung, & Spears, 1992; Witmer, 1997). And, scholars in other areas of research have argued that bullying is a useful description for persistent aggressive behavior in adults, such as workplace bullying (Tracy, Lutgen-Sandvik, & Alberts, 2006). All age groups deal with some aspect of cyberbullying; however, a significant portion of the research is focused on adolescents and teens. Most cyberbullying scholarship investigates minors (i.e., those under 18); further, only one published article examines cyberbullying among adults (Slonje & Smith, 2008).

The association between age and cyberbullying victimization is commonly investigated in cyberbullying studies. However, inconsistent results are apparent in the literature reviewed here. A majority of studies did not find a significant association between age and cyberbullying victimization (Beran & Li, 2007; Didden et al., 2009; Juvoven & Gross, 2008; Katzer, Fetchenhauer, & Belschak, 2009; Patchin & Hinduja, 2006; Smith et al., 2008; Varjas, Henrich, & Meyers, 2009; Wolak et al., 2007; Ybarra, 2004). Yet, the relationship between age and cyberbullying victimization has been substantiated in a number of other

investigations (Dehue et al., 2008; Hinduja & Patchin, 2008; Kowalski & Limber, 2007; Slonje & Smith, 2008; Ybarra, Diner-West, & Leaf, 2007; Ybarra & Mitchell, 2008). The implications of clarifying this relationship are important for educational practitioners and researchers. Practitioners would benefit from this clarification as it would help them to make informed decisions about where resources aimed at cyberbullying prevention should be targeted. Researchers would also be able to make informed hypotheses and clarify the samples in which cyberbullying should be examined.

The age range and samples studied may explain the conflicting findings concerning the relationship between age and victimization. Studies with more restricted age ranges allow for some insight into particular trends in the data. In Kowalski and Limber's (2007) study of 11-14 year olds and Ybarra et al.'s (2006, 2007) study of 10-15 year olds, positive associations were found between age and frequency of victimization. Slonje and Smith (2008), in contrast, uncovered an inverse relationship between age and victimization in their larger range sample of 12-20 year olds. Similar negative trends are reported in other studies that examined large age ranges (e.g., Dehue et al., 2008). But, by far, most studies that lacked significant results used samples with diverse age groups (e.g., Didden et al., 2009; Juvoven & Gross, 2008; Katzer et al., 2009; Patchin & Hinduja, 2006; Smith et al., 2008; Wolak et al., 2007; Ybarra, 2004).

Williams and Guerra (2007) offer an argument that the relationship between age and victimization may be curvilinear, as 4.5% of fifth graders, 12.9% of eighth graders, and 9.9% of high school students in their study reported being

victims of cyberbullying. The collective data discussed here might indicate that a quadratic relationship exists between age and frequency of victimization. If the curvilinear argument is accurate, then studies in which no linear age associations are found should have samples with larger ranges of age than studies that demonstrate age effects. Moreover, the null results on age and victimization located in the literature are troubling because we do not know at what age cyberbullying victimization ends, leaving uncertainty with regard to where resources aimed at cyberbullying research and prevention should be focused. Therefore, work should be conducted to examine whether young adults, such as college students, remain victims of cyberbullying too. Preliminary evidence suggests that this is the case (Deiss, Savage, & Tokunaga, 2012; Savage & Deiss, 2010), and toward that end, college students will be examined here.

Self-report survey research. A constant characteristic of quantitative studies on cyberbullying is the methodology employed: self-report survey research. Self-report surveys are the preferred method for assessing bullying behavior in schools because they require few personnel for administration, are less expensive, and present few time-related challenges. This consistent approach to measuring cyberbullying perpetration and victimization is both advantageous and problematic. The strength is that the different scales, items, and measures employed can be compared and contrasted with respect to the findings derived from these measures. On the other hand, the limitation is that there is overwhelming inconsistency in survey construction across studies. Measures vary widely across the body of cyberbullying literature. To move closer to the goal of

advancing an improved measure of cyberbullying, a review of these measures is warranted. In the next section, current measures of cyberbullying will be compared and contrasted for the goal of recommending a practical and precise measure.

Measures of Cyberbullying

In total, 34 studies published between 2002 and 2009 quantitatively measured cyberbullying perpetration and victimization (see Table 1 for a complete list). These are in addition to three studies published in 2010-2011 which aimed to address measurement issues (Akbulut, Sahin, & Eristi, 2010; Cetin, Yaman, & Peker; 2011; Tynes, Rose, & Williams, 2010). All of these studies have used self-report single-item or unidimensional multi-item scales to measure cyberbullying perpetration and victimization. Perpetration and victimization were both measured in nearly every study; the exceptions are Dempsey et al. (2009), Jujoven and Gross (2008), and Spitzberg and Hoobler (2002), who all focused solely on victims. For clarity and brevity herein, the term cyberbullying will be used as a global term referring to both perpetration and victimization. Although meta-analytic procedures are beyond the scope of this review, an integrative research review of the literature (Cooper & Hedges, 1994) is presented here to synthesize, compare, and contrast the self-report measurement tools employed to evaluate cyberbullying.

First, important measurement exemplars are described in terms of their potential contributions, including the Olweus Bully/Victim Questionnaire and the Electronic Bullying Questionnaire. These offer a context for how overarching

weaknesses in the cumulative body of cyberbullying measurement can be empirically examined. As will be argued later in this review, findings across the cyberbullying literature using an array of measurement tools warrant empirical examination of the timeframe in which participants are asked to recall their cyberbullying experiences and the use of the term cyberbullying in self-report measures. These discussions serve as an organizing framework later in this review.

The Olweus Bully/Victim Questionnaire (OBVQ). Cyberbullying measures have evolved from measures of traditional bullying. The most well cited of these is the OBVQ, which was developed by Olweus for his national Norwegian anti-bullying campaign in 1983 (see Olweus, 1991, 1993). Later, Olweus (1996) revised this questionnaire and it has remained the primary instrument to assess bullying internationally. The Revised OBVQ contains 36 items that assess aspects of bully/victim problems, some of which have follow-up items. Perhaps the most important characteristic of the OBVQ is that an explanation of bullying is included at the outset of the questionnaire. The definition intends to capture every element of bullying, as defined by Olweus and his collegues: (1) intention to harm the victim, (2) the repetitive nature of bullying, and (3) the imbalance of power between the victim and perpetrator(s). The OBVQ explains several more specific forms of bullying, too, and serves to differentiate between teasing and bullying. At the outset of the questionnaire, students are presented with:

> We say a student is being bullied when another student or several other students:
> - say mean and hurtful things or make fun of him or her or call him or her mean and hurtful names
> - completely ignore or exclude him or her from their group of friends or leave him or her out of things on purpose
> - hit, kick, push, shove around, or threaten him or her
> - tell lies or spread false rumors about him or her or send mean notes and try to make other students dislike him or her
> - and do other hurtful things like that.
>
> These things may take place frequently, and it is difficult for the student being bullied to defend himself or herself. It is also bullying when a student is teased repeatedly in a mean and hurtful way. But we don't call it bullying when the teasing is done in a friendly and playful way. Also, it is not bullying when two students of about the same strength or power argue or fight. (Olweus, 1996)

The OBVQ is the most widely used measure of bullying and its design has been the starting point for the development of most cyberbullying perpetration and victimization measures. Perhaps the most useful component of the OBVQ that can be applied to a practical and precise cyberbullying measure is the incorporation of a definition at the outset of the questionnaire. Some studies have attempted to adapt the OBVQ in this way, but fall short in the definition they offer by not adapting to changing uses of technology. For example, using a definition of traditional bullying like that above followed by an item asking if the events happened online, in cyberspace, or through technology does not capture the specific strategies perpetrators might employ or the range of victims' experiences.

Electronic Bullying Questionnaire (EBQ). Kowalski and Limber (2007) developed their 23-item EBQ by adapting the OBVQ. They first had participants complete the OBVQ in its entirety, including the traditional bullying definition.

Next, they administered the EBQ where they defined cyberbullying as, "bullying through e-mail, instant messaging, in a chat room, on a website, or through a text message sent to a cell phone" (p. 24). Others (e.g., Smith et al., 2006) have utilized a similar approach as the EBQ.

Although the format of the EBQ is beneficial because it encourages less ambiguity about the behavior in question through the use of a definition, the definition provided gives only a context and leaves out the full range of cyberbullying behaviors for participants to consider. This shortcoming adversely affects the ability to practically capture the prevalence of cyberbullying because the definition lacks important characteristics of cyberbullying. It assumes that the participant can relate all of the bullying definition to the realm of cyberbullying. The EBQ would be improved by offering a definition with as much clarity concerning cyberbullying as the clarity offered about bullying in the OBVQ. Doing so would bolster the ability for researchers to accurately assess prevalence of perpetration and victimization.

EBQ follow up items are parallel to those in the OBVQ, but instead use the term cyberbullying in each item. These serve to measure certain relevant factors about the electronic aggression, including frequency (e.g., "How often have you been bullied electronically in the past couple of months?", "How often have you electronically bullied someone in the past couple of months?"), the technology (e.g., "… through e-mail, instant messaging, in a chat room, on a website, or through a text message sent to your cell phone?"), the channel (e.g., "I was bullied through an e-mail message"), and the perpetrator (e.g., "Another

student at school?"). A five-point response format from the OBVQ was utilized for prevalence items (i.e., it hasn't happened in the past couple of months; only once or twice; two or three times a month; about once a week; several times a week). These follow up items are a good first start to precisely measuring cyberbullying, but fail to assess the range of behaviors a perpetrator might utilize or to which a victim might succumb. Also, the response categories provide vague time frames for an unspecified amount of time. Time frames might be better captured in questionnaire instructions to promote a more specific recollection of behaviors.

Moving forward. Researchers at Arizona State University designed a cyberbullying measure that addresses the immediate concerns about accurately measuring prevalence by modeling the form of the OBVQ (Olweus, 1996) and the EBQ (Kowalski & Limber, 2007) while overcoming its shortcomings. For example, where the EBQ fails to capture prevalence because it is not exhaustive and neglects important components of cyberbullying, a detailed explanation of the types of behaviors that one should and should not consider when answering the question is provided to the participant. A single-item dichotomous item is used to measure prevalence, plus a continuous contingency item for those who answered yes assessing the number of incidences.

The following definition is first given to participants in this measure of cyberbullying:

> Sometimes a person or group of people (that is, friends, classmates, family, or maybe people we don't even know) use cell phones or the Internet to repeatedly send or post messages in order to intentionally

> threaten or hurt people, make them feel bad, or to embarrass people in front of others in an unfriendly way.
>
> For example, a person might send several messages directly to someone using a cell phone or email. Or, a person might post photos or messages about someone in places other people can see like on a Website.

Next, cyberbullying perpetration is measured using the item, "During the current school year, did you ever use a cell phone or the Internet to send or post messages or images to hurt or embarrass someone else in an unfriendly way?" Students who answered affirmatively are also asked, "If yes, how many times did you do this during the current school year (or example, at different times, to different people, or for different reasons)?" Response categories for this contingency item ranged from 1 to 6 or more. Victimization measurement mirrored these procedures. This procedure has been used in adolescent populations (Roberto, Savage, Eden, Deiss, & Ramos-Salazar, 2011), teens (e.g., Roberto, Eden, Savage, Deiss, & Ramos, 2010) and college students (Savage & Deiss, 2010).

Although this measure has the strength of face validity and the means for a practical assessment of prevalence, components such as the time frame for recall and use of the term cyberbullying are missing and not addressed, respectively. Because this measure addresses the immediate shortcomings regarding content validity discussed previously, it should be utilized in examinations of other measurement concerns. Therefore, a discussion of other concerns is presented next.

Time-Frame for Cyberbullying Recall

The first study of cyberbullying within the discipline of communication was conducted by Spitzberg and Hoobler in 2002[1], at a time when stalking had recently become recognized as a significant public problem (US Attorney General, 1999). Their study aimed to examine a phenomena termed *cyberstalking*, argued to be a variant of traditional stalking and obsessive relational intrusion (i.e., the unwanted pursuit of intimacy through repeated invasion of privacy; Cupach & Spitzberg, 1998). Cyberstalking was defined as the use of the internet, email, or other electronic communication devices to stalk another person. Spitzberg and Hoobler developed their measure of cyber-obsessional pursuit, a multidimensional 24-item inventory of cyberstalking victimization. Using data reduction strategies, they identified the dimensions of hyper-intimacy, real life transfer, and threat. Fifty-nine percent of the college student participants in their main study indicated having been stalked in the past, and 31% of all participants reported having been the victim of at least one form of cyberstalking. The prompts used for items in their Cyber-obsessional pursuit measure did not specify a constrained time period, openly asking, "Has anyone ever [insert cyberstalking strategy]…" Although interesting descriptive data was garnered in the study, asking participants to report on their entire lifetime might encourage an overestimation of their experience.

Many other studies (see Table 1 for a complete list) have also relied on an unlimited time frame as the length of recall for cyberbullying. Beran and Li (2005) used single item measures for perpetration and victimization. Their results

indicated that 26% and 58% of middle school students reported being a perpetrator or victim at least once, respectively. A later study by the same authors (2007) reports exactly the same prevalence rates. Although there is no note in the 2007 study whether the data came from the same project, the similar descriptive statistics suggest this is the case. In 2008, Aricak et al. employed a 21 item multidimensional (i.e., engagement in, exposure to, and coping strategies) measure of cyberbullying with no time frame for recall; some items began with the wording "have you ever…" Results showed that 60% of their Turkish secondary school (i.e., high school) sample reported engaging in some type of cyberbullying perpetration whereas 36% reported some type of victimization. Another Turkish study (Dilmac, 2009) which assessed cyberbullying using single item measures found that 23% of undergraduate student participants reported perpetration and 55% reported victimization in their lifetime. Hinduja and Patchin (2008)'s single item measures of cyberbullying administered to a large group of adolescents garnered results indicating 17% and 35% had experienced perpetration and victimization, respectively, in their lifetime. Among these studies noted here, which range in their form of measurement, country of origin, and age group examined, one can see that prevalence rates are quite high when the time frame for recall of cyberbullying experiences is unlimited, ranging from 17-60% for perpetration and 35-55% for victimization.

On the contrary, other studies which place a constraint on the amount of time for participants to recall their cyberbullying experiences garner more conservative prevalence rates. Bauman (2009) reported that only 1.5% perpetrated

and 3% were victimized within her sample of 5-18 year old U.S. students who were instructed to recall cyberbullying experiences from their current school year. These low prevalence rates might also be a function of the rural and low socioeconomic status of her sample. Another study by Dehue et al. (2008) in which Swedish primary and secondary students (analogous to the elementary, junior, and high school system for U.S. institutions) recalled cyberbullying in the current semester indicated prevalence rates of 16% and 23% for perpetration and victimization, respectively. In 2009, Dempsey et al. (2009) investigated victimization and psychosocial adjustment of Florida youth aged 11-16 within the past 30 days and reported that 14% of adolescents reported recent victimization. And, even smaller rates were noted by Kowalski and Limber (2007), who found small prevalence rates for perpetration (4%) and victimization (11%) when they asked middle school students to report on cyberbullying during the past two months with their 23-item Electronic Bullying Questionnaire, modeled after the Olweus Bully/Victim Questionnaire (Olweus, 1993, 1996). An exception to this trend between restricted recall time and lower prevalence was conducted by Juvoven and Gross (2008), who measured adolescents' cyberbullying victimization in the past year using a single-item and found a startling 72% of participants experienced at least one incident in the last year. This high prevalence rate might be explained by their operational choice to avoid the term bullying, and instead used "mean things" in the items for traditional bullying and cyberbullying. Considered together, these studies begin to shed light on a potential negative relationship between recall time within items or scale instructions, such that the

more restricted the time frame (i.e., the smaller window) the lower the prevalence reported.

Implications for this trend suggest that an empirical examination of which time frame is most valuable to use in self-report measures. Common time frames used in cyberbullying measures include one month (e.g., Dempsey et al., 2009), the current semester/past 2-3 months (e.g., Wang, Iannotti, & Nansel, 2009), the year (e.g., Wolak et al., 2007), and forever (i.e., no time frame is specified; e.g., Hinduja & Patchin, 2008). Differences in the prevalence of perpetration and victimization, and the frequency of specific perpetration and victimization behaviors, should be compared among these time frames. Knowing how these differences emerge based on manipulations of time frame for recall would inform scholars' decision making about which is most appropriate to use in a practical and precise measure of cyberbullying. Other outcomes would be worthy of investigation too. For example, participants' reports of accuracy, honesty, and social desirability may differ based on manipulations of time frame for recall. Given the need to empirically examine these implications, the following research questions are advanced:

RQ_1: How do prevalence and frequency of cyberbullying perpetration and victimization differ as a function of the time-frame for recall of cyberbullying in self-report survey measure instructions?

RQ_2: How do participants' reports of accuracy and honesty differ as a function of the time-frame for recall of cyberbullying in self-report survey measure instructions?

RQ_3: Does the relationship between social desirability and cyberbullying frequency differ as a function of the time-frame for recall of cyberbullying in self-report survey measure instructions?

Use of the Term Cyberbullying

Another area of concern regarding adolescents' reports of cyberbullying perpetration and victimization regards the use of the term cyberbullying in self-report survey measures. Across cyberbullying studies, the practice of including or not including the term cyberbullying is quite inconsistent (see Table 1 for a complete list). Asking a young adult to label himself or herself as a cyberbully or as a victim of cyberbullying might provoke emotional reactions that could influence whether or not to endorse experiences associated with the label. Whether self-report measures include the word "cyberbully" in directions and subsequent items is important to attend to because this may influence responses, and thus compromise the validity of results.

The effect of including the term "cyberbullying" is debatable. On one hand, including the term in a measure might have no effect on estimates of prevalence and frequency. For example, providing a definition of cyberbullying behavior could provide consistency to the measurement of cyberbullying throughout a questionnaire and have no effect on estimates. In research on traditional bullying, scholars such as Solberg and Olweus (2003) argue that the anonymity that students are afforded when responding to questionnaires decreases their pressure to present themselves dishonestly. To that end, they propose

researchers should not be concerned about the effect of a definition or use of the term bullying in behavioral measures.

On the other hand, including the term may in fact decrease prevalence and frequency rates. That is, some youth may feel uncomfortable describing their behavior toward others as cyberbullying and this might prime them to respond dishonestly. For some time, traditional bullying scholars have argued that the presence of the term bullying would skew youth reports (Cornell & Brockenbrough, 2004; Greif & Furlong, 2006; Hamby & Finkelhor, 2000). Although no studies of cyberbullying have explicitly compared the effect of the absence or presence of the term cyberbullying, recent research on traditional bullying has begun to examine this issue. This hypothesis was examined empirically by Kert, Codding, Tryon, and Shiyko (2010). Kert and her colleagues used an experimental design to investigate whether the definition and use of the term bully would result in lower self-reports of bullying behavior. Their results indicated that respondents provided with a definition including the word bully and repeated exposure to the word bully in subsequent items reported significantly less bullying behavior than those who were not exposed to the word. Likewise, in a recent study documenting the development of the California Bullying Victimization Scale, researchers (Felix et al., 2011) argue that the use of term bully in measures of traditional bullying would adversely affect the precision of prevalence, such that they would be underestimated.

Applying these arguments about no effect and initial findings about a negative effect from traditional bullying research to the area of cyberbullying

suggests a need to examine these mixed perspectives about how the term cyberbullying might affect reports of perpetration and victimization. Further, how exposure to the term cyberbullying affects participants' reports of accuracy, honesty, and social desirability deserves investigation too. Thus, the following research questions are forwarded:

> RQ_4: How do prevalence and frequency of cyberbullying perpetration and victimization differ as a function of the use of the term "cyberbullying" in self-report survey measure instructions?
>
> RQ_5: How do participants' reports of accuracy and honesty differ as a function of the use of the term "cyberbullying" in self-report survey measure instructions?
>
> RQ_6: Does the relationship between social desirability and cyberbullying frequency differ as a function of the use of the term "cyberbullying" in self-report survey measure instructions?

Young Adult Perspectives

The operational problems discussed thus far in this review can be traced back to a lack of conceptual clarity within cyberbullying scholarship. For example, cyberbullying is defined differently by scholars of various disciplines and is not always properly distinguished from other related problematic behaviors. Further, it may be the case that youth have differing perspectives than researchers about what constitutes cyberbullying or how it is described. These shortcomings make it somewhat unsurprising that existing cyberbullying studies have produced inconsistent results. One avenue for moving forward is simply to

talk to young people about cyberbullying and how it can be measured. Soliciting insight from young adults is an important part of attenuating to methodological inconsistencies in cyberbullying research.

Only three studies have reported the results of qualitative examinations of cyberbullying phenomena (Agatston, Kowalski, & Limber, 2007; Smith et al., 2008; Vandebosch & Cleemput, 2008). Of these, only Agatston and her colleagues spoke to students in the United States through the use of focus groups. Their results demonstrated that middle school and high school students view cyberbullying as a problem, but one rarely discussed. Additionally, participants disclosed that they did not see the school district personnel as helpful resources even though they deal with the effects of cyberbullying at school. And, students suggested basic strategies for dealing with cyberbullying, but lacked efficacy in preventing future attacks or responding as a helpful bystander. These results illustrate important insight into how youth talk about, feel toward, and handle cyberbullying. More work is needed in this area to explore important operational considerations for cyberbullying measurement. Because young adult insight into how cyberbullying is measured has the potential to offer important feedback to scholars, the following research questions will be investigated:

RQ_7: How do young adults view the relationship between power and cyberbullying?

RQ_8: What are young adults' reactions to current measures of cyberbullying?

RQ_9: What recommendations do young adults have about the time frame for recall in reporting instances of cyberbullying?

RQ_{10}: What recommendations do young adults have for use of the term "cyberbullying" in self-report survey measure instructions?

RQ_{11}: What recommendations do young adults have about issues of accuracy, honesty, and social desirability in reporting instances of cyberbullying?

Toward a Precise Measure

The research questions that have been put forward in this paper thus far concern important methodological issues that should be addressed before a final measure of perpetration and victimization can be established. Decisions must be made about the most appropriate time frame for recall and about the use of the term cyberbullying in self-report survey instructions. Also, feedback from young adults must be considered regarding how to frame items in cyberbullying measures and how to best deal with issues of power, accuracy, honesty, and comfort in reporting perpetration behaviors and victimization experiences. After attending to these important initial steps, the final step is to construct a reliable and valid cyberbullying perpetration and victimization measure. This measure should accomplish two goals: (1) practically assess prevalence in line with the conceptual definition of cyberbullying; and, (2) precisely measure perpetration behaviors and victimization experiences.

Precisely measuring perpetration behaviors and victimization experiences might be done by employing a scale. Three studies have been published in the last

year that have put forward scales of cyberbullying victimization (Akbulut et al., 2010; Tynes et al., 2010), one of which includes a parallel scale of cyberbullying perpetration (Cetin et al., 2011). Akbulut and colleagues provide evidence using confirmatory factor analysis (CFA) for a unidiminsional scale of victimization, whereas Cetin and colleagues posit a multidimensional model of victimization and perpetration that include the factors cyber verbal bullying, hiding identity and cyber forgery. Both of these studies were conducted in Turkey and have not been replicated in the United States. Tynes and colleagues investigated American students and put forward a four factor model of victimization, including the factors of general victimization, sexual online victimization, individual online racial victimization, and vicarious online racial victimization. While these scales certainly have much to offer in terms of informing the creation of items to precisely measure a range of cyberbullying behaviors and victimization experiences, the major flaw concerns their practicality. How does one use a scale to determine whether someone is or is not a cyberbully? Answers could range from scoring larger than the mean of the scale, scoring higher than a median split, or perhaps one standard deviation above the mean. These answers are complicated by the response categories used across the scales, such as strongly agree-strongly disagree (e.g., Tynes et al, 2010) or never-often (e.g., Cetin et al., 2011). Best practices for response categories will be explored in the present research.

Studies of psychological and physical aggression provide some evidence for how to simultaneously accomplish the goals of practicality and precision in measurement. For instance, there is a large body of literature on the measurement

of physical and psychological violence. In research describing the development and adaptation of the Conflict Tactics Scale (CTS; Straus, 1979, 1990; Straus, Hamby, Boney-McCoy, & Sugarman, 1996), Straus argues the importance of conducting epidemiological survey research that includes a practical method of ascertaining the presence or absence of aggressive behavior as well as the degree of maltreatment. These ends echo the call for practicality and precision made here. The CTS was originally constructed to measure psychological and physical attacks between partners in dating, cohabitating, and marital relationships. It has since been applied to a range of relational dyads, such as parents maltreatment of children (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998). The CTS and its adaptations measure concrete acts and events, as opposed to attitudes about conflict or violence. Also, these measures assess the extent to which a perpetrator has carried out specific acts of physical and psychological aggression, regardless of whether the victim reports injury. To determine prevalence of violent behavior, Straus and colleagues (1998) recommend creating a prevalence variable and a chronicity variable. The prevalence variable is dichotomous, where presence is assigned if one or more of the acts in the scale occurred. The chronicity variable is the number of times the acts in the scale occurred, among those who engaged in at least one of the acts in the scale. This scoring method is applied to the final measure of cyberbullying derived in the present study.

Considered together, addressing the research questions in this study will inform the development of a final measure that dichotomously assesses perpetration and victimization for prevalence purposes, measures frequency of

perpetration during a specified time period, and evaluates relevant characteristics of cyberbullying victimization experiences. Items from recent scales published nationally (Tynes et al., 2010) and abroad (Akbulut et al., 2010; Cetin et al., 2011) can be used to develop a multi item behavioral index or scale. And, the construction of the final measure might best be modeled on widely utilized scales of similar deleterious acts that occur infrequently, such as the assessment of physical aggression using the CTS. Constructing the measure will be a process that is informed by multiple studies, but the culminating undertaking will be to evaluate the reliability and validity of the final measure. Toward that end, a review for how the final measure might be assessed in terms of reliability and validity are presented next. Note that inconsistency in reliability and validity terminology is avoided by utilizing Trochim's (2001) discussion of the theory of measurement.

Assessing reliability. Reliability refers to the ability of an instrument to consistently measure a construct, and must be demonstrated in order to make an argument for internal validity. As described by Trochim (2001), measurement reliability refers to the consistency and stability of a measure and is estimated based on the proportion of variability in the measure attributable to the true score. Said differently, a test, scale, or other measurement tool is considered reliable if it can get the same score repeatedly – assuming no change is expected. Reliability is estimated through four general classes of reliability estimates, including inter-rater or inter-observer reliability, test-retest reliability, parallel-forms reliability,

and internal consistency reliability. Of these, internal consistency and test-retest reliability will be used to assess the cyberbullying measure.

The internal consistency method is the most utilized form of reliability assessment. This provides a unique estimate of reliability for the given test administration; most often the internal consistency reliability estimate is computed and expressed as Cronbach's alpha. Alpha is a useful statistical tool because it is the mathematical average of all possible split-half estimates (Trochim, 2001). When there are items measured on an interval level in scales of perpetration and victimization in the final measure, alpha would certainly be computed, reported, and expected to be at or above .70. In addition, assuming the scales of perpetration and victimization would be designed as independent constructs, they would be expected to be unidimensional when evaluated with confirmatory factor analysis. However, these expectations are not posed as predictions here because some uncertainty exists about the psychometric properties of the final measure to be developed. Specifically, a measure of cyberbullying perpetration and victimization could emerge as a scale *or* as an index.

The terms 'index' and 'scale' are often incorrectly used interchangeably in research methods texts and articles focusing on measurement. For example, the most popular social science research methods textbook (Babbie, 2007) helps to discern between these two forms of measurement, but falls short in discussing advances in index construction. These two forms of measurement have important similarities that lead to their interchangeable use. Indexes and scales are both

continuous measures of variables. A measurement derived from an index or a scale provides an indication of one's score on a variable compared to other people's scores. And, an index or a scale is a composite measure of a variable based on data from multiple items. For example, more than one item on a questionnaire will make up an index or scale. Although indexes and scales share these characteristics, how scores are assigned in each distinguishes the two forms of measurement.

Scores in an index are accumulated based on the sum of individual items whereas scores in a scale are assigned to patterns of responses, keeping in mind that some items reflect a weak degree of the variable while others reflect something stronger (Babbie, 2007). An index is defined as "a type of composite measure that summarizes and rank-orders several specific observations and represents some general dimension" (p. 154) whereas a scale is "a type of composite measure composed of several items that have a logical or empirical structure among them" (p. 154). Although scales are generally thought of as superior to indexes because they account for the intensity that different items reflect the variable being measured, the term scale is often inappropriately used to refer to measures that are only indexes. Babbie put it best; "merely calling a measure a scale instead of an index doesn't make it better" (p. 156). However, he also suggests that a well-constructed index could be determined to be a scale. To that end, Babbie's text contends that all scales are indexes, but not all indexes are scales. This is somewhat problematic because of the lack of attention paid to the underlying structure of an index versus a scale. Advances in Structural Equation

Modeling (SEM) techniques have brought this point to the attention of social science scholars. To that end, SEM approaches will be used to examine the psychometric properties of the measure to determine the underlying dimensionality of the final measure and draw conclusions about internal consistency.

In another vein, test-retest reliability involves administering the measure twice, at two different points in time, to the same sample (Trochim, 2001). This kind of reliability is used to assess the consistency of a test across time and assumes that there will be no change in the construct being measured. Therefore, test-retest reliability is best used for constructs that are stable over time, but can be used for less stable items with shorter intervals between tests. As a general rule, the correlation between two measurement occasions will be higher when little time has passed between tests. That is, the shorter the time period, the higher the correlation between observations. To conduct test–retest reliability analysis, some students would respond to the measure at two points in time. The scores at time 1 and time 2 could be correlated to address the reliability of the measure over time; the higher the correlation the more stable the measurement.

Given these discussions of internal consistency and test-retest reliability assessments, the following predictions will be evaluated:

RQ_{12}: What are the psychometric properties of the perpetration and victimization measures (e.g., dimensionality and internal consistency)?

H_1: There will be a strong positive correlation between participants' self-reports of cyberbullying at the beginning and end of ten days. (Test-Retest Reliability)

Validity. Once the reliability of the final measure of perpetration and victimization is deemed reliable, an evaluation of the validity of the measure can be conducted. Trochim (2001) argues that there is inconsistency and variety in how validity is discussed in methodological literature. He describes all forms of internal validity in terms of construct validity, defined as "the degree to which inferences can legitimately be made from the operationalizations in your study to the theoretical constructs on which those operationalizations are based" (p. 64). Three aspects of validity evidence will be evaluated here: content validity, concurrent validity, and convergent validity.

Content validity is oftentimes referred to as face validity because it reflects how well a test or measure appears to measure a variable on its face (Trochim, 2001). This approach assesses the degree to which the items that make up a measure represent the universe of the phenomenon being measured. Content validity of an instrument is established by identifying the overall content of the phenomenon and then choosing a group of items which is representative of the content of the trait or property to be measured. This task can be quite taxing, and in more demanding procedures involves recruiting a panel of topical experts to identify the universe of content and judge the items to be utilized. In less involved procedures, a measure that is already developed is submitted to experts on the topic for their opinion. In the case of the final cyberbullying measure developed

here, it will be discussed among researchers familiar with the topic and submitted for feedback from young adults before being administered to students. These processes will ensure the final measure accurately incorporates the range of behaviors necessary for investigating cyberbullying.

Predictive validity refers to the extent to which a score on a scale or test predicts scores on some criterion measure, usually measured at a later point in time (Trochim, 2001). For example, a measure of intelligence should predict future outcomes such as grade point average. When it comes to cyberbullying, scores measuring ones endorsement with cyberbullying perpetration likely predict ones intention to perpetrate cyberbullying in the future. And, stronger victimization experiences likely predict stronger susceptibility toward being a victim of cyberbullying in the future. Bearing these expectations in mind, the predictive validity of the final measures of perpetration and victimization will be evaluated in relation to behavioral intention and susceptibility, respectively.

Last, convergent validity refers to the extent that the final measure evaluated here is moderately correlated with measures of other constructs in a theoretically expected direction. Traditional bullying literature, recent cyberbullying scale development studies, and research modeling predictors of cyberbullying provide some constructs that should be related to perpetration and victimization. A recent study documenting the development of a refined measure of traditional bullying victimization for adolescents (i.e., the California Bullying Victimization Scale) evaluated the convergent validity of bullying frequency with three psychological well-being variables, including students' life satisfaction,

school connectedness, and hope (Felix et al., 2011). In the domain of cyberbullying, Tynes et al. (2010) examined their scale of cyberbullying victimization (i.e., the Online Victimization Scale) among teens and established convergent validity by examining measures they report to have been associated with victimization in offline settings. They established convergent validity through positive correlations between victimization with anxiety and stress, and negative correlations between victimization with self-esteem and life satisfaction. Cetin et al. (2011) also examined a cyberbullying scale, investigating the convergent validity of victimization and perpetration with five dimensions of aggression: physical aggression, verbal aggression, anger, hostility and indirect aggression. Roberto et al. (2010) also found that verbal aggression was positively related to cyberbullying perpetration. These studies demonstrate that there are a host of relevant variables that victimization should be related to in the final measure, and some variables to examine perpetration in the final measure. How each construct is expected to be related to either perpetration or victimization is presented in Table 2. Therefore, a final set of hypotheses are advanced to evaluate the final measure of cyberbullying:

H_2: Frequency of cyberbullying perpetration will predict behavioral intention to cyberbully in the future (Predictive Validity)

H_3: Frequency of cyberbullying victimization will predict negative attitudes toward cyberbullying (Predictive Validity)

H_4: Frequency of cyberbullying perpetration will be moderately positively associated with verbal aggression and anger and moderately negatively associated with life satisfaction. (Convergent Validity)

H_5: Frequency of cyberbullying victimization will be moderately positively associated with stress and anxiety, and moderately negatively associated with self-esteem and school connectedness. (Convergent Validity).

Chapter 2

PILOT STUDY ONE

Two pilot studies were conducted to address the research questions regarding the measurement of cyberbullying. The first pilot study consisted of an experiment examining (1) time frame for recall in questionnaire instructions and (2) use of the term 'cyberbullying' in questionnaire instructions. This chapter describes the method, results, and implications of Pilot Study One, which was designed to evaluate RQ_1-RQ_6.

Method

Pilot Study One involved a post-test only control group experiment that addressed accuracy, honesty, and social desirability of participants' reports based on time-frame of recall and use of the term 'cyberbullying' in questionnaire directions. A 4 (time frame: 1 month, 1 semester, 1 year, unlimited) x 2 (cyberbullying term: absence, presence) experimental design was used to address the research questions. Although the research questions concerned main effects for time frame and term use, the design afforded for the research team to examine whether interaction effects were present.

Participants

Participants (N = 255) were recruited from undergraduate communication courses at a large Southwestern university. A slight majority of participants were men (54.1%). Forty percent were freshman, 27.1% were sophomores, 23.5% were juniors, 7.5% were seniors, and 2.0% reported being graduate students or preferred not to report their class level. Reported ages ranged from 18-25 years

old, with a mean age of 19.93 years old (*SD* = 1.81). A range of ethnic backgrounds were represented; participants reported being Caucasian/Non-Hispanic (66.3%), African-American or Black (4.7%), Asian-American or Asian (18.0%), Native Hawaiian or Pacific Islander (1.2%), or 'other' (15.7%). These percentages total more than 100% because participants were invited to select all that applied.

Nearly all participants reported access to a cell phone they do not have to share with anyone (98.8%) and a personal computer (97.3%). Most participants reported easy access to the Internet via a computer (96.9%) or a cell phone (87.8%). In addition, the vast majority of participants used one or more social networking site such as facebook.com (94.9%), twitter.com (47.1%), or myspace.com (27.8%). All participants had access to computers and Internet access through university computing services.

Procedures

All procedures in this study were approved by the institutional review board (see Appendix A). Data collection took place at the start of the Spring semester of 2012. Recruitment for the study was done by email from course instructors. Participation involved coming to an appointment at a campus computer lab and completing an online survey. An online scheduling program was used to manage appointments. The online survey was created using surveymonkey.com. Following email recruitment, participants came to a computer lab for their appointment to complete the online survey. At the lab,

participants were welcomed and informed consent was discussed (see Appendix B). Participants were then invited to begin the online survey.

This experiment examined how accuracy, honesty, and social desirability differ as a function of time frame for recall and use of term 'cyberbullying' in questionnaire instructions. Time frame for behavioral recall was manipulated to compare four durations: the last month, the current semester, the past year, and "ever" (see Appendix C for example). The absence or presence of the term cyberbullying was manipulated too, creating an experimental and a comparison group (see Appendix D for example). Thus, the 4 (time frame: 1 month, 1 semester, 1 year, unlimited) x 2 (cyberbullying term: absence, presence) experimental design included 8 conditions. Participants were randomly assigned to each condition. Random assignment was conducted by asking participants to report their birth month, the last digit of their phone number, and the last digit of their student identification number. The order of cyberbullying perpetration and victimization items was also randomized to account for potential order effects.

Cyberbullying prevalence and frequency. The directions that were manipulated were a part of the cyberbullying prevalence and frequency measure. This measure aims to assess the prevalence and frequency of perpetration and victimization. In its base form, the perpetration and victimization measure uses a single-item dichotomous item ("yes/no") to capture prevalence, plus a continuous contingency item for those who answered "yes" to measure the number of times these events have happened. In the current experiment, these items were manipulated with regard to time frame of recall (see Appendix C) and whether or

not the term cyberbullying was included (see Appendix D). Prevalence of cyberbullying is compared between conditions below. The mean and variation of the frequency of instances is also compared between conditions.

Outcome Measures

After being exposed to the experimental manipulation, participants responded to several outcome measures. These include measures of accuracy, honesty, and social desirability. Participants were also asked a series of open-ended questions about these outcomes.

Accuracy. A series of three semantic differential items were developed to measure accuracy in this study. These were modeled after items used to assess self-report questionnaire honesty in previous research on parental use of corporal punishment (Roberto, Carlyle, & Goodall, 2007) and high school students' cyberbullying (Roberto et al., 2010). The items were preceded with instructions explaining and asking participants the following: "Questions on this survey asked about the use of technology to repeatedly send or post messages in order to intentionally threaten or hurt people, make them feel bad, or to embarrass people in front of others in an unfriendly way. These questions ask about how correct, precise, and sure you feel about your reports of your online behavior." Participants responded to the following statement using ten-point semantic differential items: "In this study, my reports of my online behavior were: Correct—Incorrect, Precise—Imprecise, Definite—Doubtful". These items demonstrated excellent reliability ($\alpha = .96$).

Honesty. A series of six items were developed to measure honesty in this study. Participants responded to these items using five-point Likert-type response categories (1 = strongly disagree, 5 = strongly agree). An example item is, "In this study, my reports of my online behavior were [honest]". Other items included synonyms of honest in place of the brackets, including truthful, genuine, and real. And, two reverse coded items used antonyms, including dishonest and deceptive. The reliability estimate was acceptable ($\alpha = .79$) but by eliminating the reverse coded item 'deceptive' the reliability of the measure was improved ($\alpha = .89$). Therefore, the measure of honesty was computed without the use of the 'deceptive' item.

Social desirability. A social desirability subscale of the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978) was used for the present study. Whereas the RCMAS is a 37-item questionnaire that assesses symptoms of anxiety, its social desirability subscale is a 9-item "Lie Scale" that assesses the tendency to act in a socially desirable manner. Example items on the RCMAS Lie Scale include "I like everyone I know," and "I tell the truth every single time" (See Appendix E for complete measure). Past research has documented the reliability and validity of the RCMAS (Reynolds, 1981; Reynolds & Richmond, 1978; 1985) and the RCMAS Lie Scale (Dadds, Perin, & Yule, 1998; Hagborg, 1991; Reynolds & Paget, 1983). Lie Scale scores have been shown to be independent of respondents' scores on the anxiety subscales and total anxiety (Dadds, Perrin, & Yale, 1998). Thus, using the subscale alone was

appropriate in the present study. The measure demonstrated good reliability in the present study ($\alpha = .86$).

Open-ended responses. In addition to responding to quantitative outcome items, participants also responded to a series of open-ended questions at the end of the outcome measures. These questions asked how recall time and use of the term cyberbullying affected participants' honesty, accuracy, and social desirability. Although the question frame was adapted slightly depending on the participant's condition, the baseline open-ended questions are presented in Appendix F. Relevant themes and exemplar quotes derived from open-ended responses are presented in the implications to contextualize results. Participant identification numbers (i.e., ID #) are utilized rather than names to label quotes because of the anonymous nature of the survey data.

One question was quantitatively analyzed to determine how participants felt about the use the term cyberbullying and time frames for recall. "What is your opinion about remembering your behaviors and experiences of cyberbullying in the following time frames?" was posed to participants. Each of the time frames under investigation were presented after the question with three available response categories, coded using values of 1 (*too short*), 2 (*about right*), and 3 (*too long*).

Results

RQ_1 asked how prevalence and frequency of cyberbullying perpetration and victimization differed as a function of the time-frame for recall of cyberbullying in self-report survey measure instructions. First, a series of chi-

square tests evaluated differences in prevalence (yes or no) between the four time-frame conditions. A chi-square test revealed that perpetration prevalence (yes or no) did not significantly differ between the four time-frame conditions, χ^2 (3, N = 253) = 2.59, p = .46, however victimization prevalence (yes or no) did significantly differ between the four time-frame conditions, χ^2 (3, N = 254) = 14.36, p < .01. See Table 3 for a breakdown of perpetration and victimization prevalence by time frame.

Second, a series of Analyses of Variance (ANOVA) procedures evaluated the main effect for time-frame by examining differences in the frequency of cyberbullying instances (i.e., number of times) between each of the four time-frame conditions. Recall that perpetrators and victims reported their number of instances on a scale, whereas those who did not perpetrate or experience victimization reported zero instances. Prior to these analyses, interaction effects between time-frame for recall and use of the term cyberbullying were investigated using the whole sample and subsamples of perpetrators and victims. These analyses revealed no significant results, allowing for further inquiry into the main effect of time frame asked of in RQ1. Reports of cyberbullying perpetration frequency in the past month (M = .27, SD = .63), semester (M = .23, SD = .87), year (M = .41, SD = 1.17), and forever (M = .47, SD = 1.23) did not significantly differ in the number of instances they reported, F (3, 251) = .80, p = .49. Also, cyberbullying victimization frequency in the past month (M = 0.37, SD = 1.09), semester (M = .44, SD = 1.27), year (M = .46, SD = 1.24), and forever (M = .83,

SD = 1.31) did not significantly differ between time frame conditions, F (3, 251) = 1.79, p = .15.

Third, the response to the open ended question "What is your opinion about remembering your behaviors and experiences of cyberbullying in the following time frames?" was analyzed to determine participants' preferences for one time frame over others. Preferences were measured using a 3-point response category (1 = *too short*, 2 = *about right*, 3 = *too long*). Table 4 describes these findings by percentage and as a mean score. A within subjects ANOVA was used to compare the effect of time frame on preference in the one month (*M* = 1.52, *SD* = .59), one semester (*M* = 1.80, *SD* = .60), one year (*M* = 2.21, *SD* = .64), and forever (*M* = 2.64, *SD* = .52) conditions. All means significantly differed from one another, Wilks' Lambda = .34, F (3, 239) = 156.01, $p < .001$. Pairwise comparisons revealed that participants' preference for one month, one semester, one year, and forever all significantly differed from one another ($p < .001$). These results suggest that participants felt that one semester or year were closest to "about right" as a time frame for remembering behaviors and experiences of cyberbullying.

RQ_2 asked how participants' reports of accuracy and honesty differ as a function of the time-frame for recall of cyberbullying in self-report survey measure instructions. To address RQ_2, the main effect of time frame was investigated using a series of one-way ANOVA procedures. Prior to these analyses, interaction effects between time-frame for recall and use of the term

cyberbullying were investigated. No significant results emerged, allowing for further inquiry into the main effect of time frame asked of in RQ_2.

Recall that the measure of accuracy used a ten-point response category, with higher scores representing stronger accuracy. Participants ratings of accuracy in the past month (M = 9.15, SD = 1.68), semester (M = 9.36, SD = 1.05), year (M = 8.93, SD = 1.81), and forever (M = 8.46, SD = 2.24) significantly differed between time frame, F (3, 246) = 3.17, $p < .05$. A post hoc analysis of these means using the LSD procedure ($p < .05$) revealed that those who reported in the forever time frame reported significantly less accuracy than those in the semester ($p = .003$) or month ($p = .037$) time frames. No other significant differences emerged.

Recall that the measure of honesty used a five-point response category, with higher scores representing more honesty. Participants ratings of honesty in the past month (M = 4.59, SD = .75), semester (M = 4.55, SD = .86), year (M = 4.65, SD = .55), and forever (M = 4.48, SD = .93) did not significantly differed between time frame, F (3, 248) = .50, $p = .68$.

RQ_3 asked whether the relationship between social desirability and cyberbullying frequency differed as a function of the time-frame for recall of cyberbullying in self-report survey measure instructions. To address RQ_3, Pearson Product Moment Correlations between social desirability and perpetration frequency and victimization frequency were computed for each condition. See Table 5 for these correlations. Fisher r-to-z transformations were used to assess the significance of the difference between correlation coefficients between

conditions. No significant differences emerged between correlations. After analyzing the correlations by condition, the correlations were examined using the entire sample. The correlations between perpetration frequency with social desirability, r (251) = -.003, p = .96, and victimization frequency with social desirability, r (251) = -.084, p = .18, were not significant.

RQ_4 asked how prevalence and frequency of cyberbullying perpetration and victimization differ as a function of the use of the term 'cyberbullying' in self-report survey measure instructions. First, a chi-square test revealed that perpetration prevalence did not significantly differ between the absence (19.5% reported perpetration) and presence (12.3% reported perpetration) conditions, χ^2 (1, N = 253) = 2.47, p = .12. Another chi-square test revealed that victimization prevalence did not significantly differ between the absence (21.1% reported victimization) and presence (25.2% reported victimization) conditions, χ^2 (1, N = 254) = .58, p = .45.

Second, a series of ANOVA procedures evaluated the main effect for use of the term cyberbullying by examining differences in the frequency of cyberbullying instances (i.e., number of times) between those in the absence or presence condition. Recall that perpetrators and victims reported their number of instances on a scale, whereas those who did not perpetrate or experience victimization reported zero instances. Prior to these analyses, interaction effects between time-frame for recall and use of the term cyberbullying were investigated using the whole sample and subsamples of perpetrators and victims. These analyses revealed no significant results, allowing for further inquiry into the main

effect of time frame asked of in RQ_4. Cyberbullying perpetration frequency for those who were exposed to the term (M = .42, SD = 1.10) and those who were not exposed to the term (M = .28, SD = .94) did not significantly differ, F (1, 253) = 1.24, p = .27. Also, cyberbullying victimization frequency for those who were exposed to the term (M = .58, SD = 1.26) and those who were not exposed to the term (M = .49, SD = 1.23) did not significantly differ, F (1, 253) = .317, p = .57.

RQ_5 asked how participants' reports of accuracy and honesty differ as a function of the use of the term 'cyberbullying' in self-report survey measure instructions. To address RQ5, the main effect of cyberbullying term will be investigated using a series of one-way ANOVA procedures. Between group differences in accuracy and honesty were evaluated after ensuring that no significant interaction effects between time-frame for recall and use of the term cyberbullying were present.

Recall that the measure of accuracy used a ten-point response category, with higher scores representing stronger accuracy. Participants ratings of accuracy when exposed to the term (M = 8.98, SD = 1.84) and when not exposed to the term (M = 8.98, SD = 1.69) did not significantly differ, F (1, 248) = .00, p = .99. On the other hand, the measure of honesty used a five-point response category, with higher scores representing more honesty. Participants' ratings of honesty when exposed to the term (M = 4.56, SD = .80) and when not exposed to the term (M = 4.59, SD = .77) did not significantly differ, F (1, 250) = .08, p = .78.

RQ_6 asked whether the relationship between social desirability and cyberbullying frequency differ as a function of the use of the term 'cyberbullying'

in self-report survey measure instructions. To address RQ_6, Pearson Product Moment Correlations between social desirability and perpetration frequency and victimization frequency were computed for each condition. See Table 5 for these correlations. As discussed in the results of RQ_3, Fisher *r*-to-*z* transformations were used to assess the significance of the difference between correlation coefficients between conditions and no significant differences emerged between correlations.

Implications

The findings of pilot study one inform decisions for what time frame for recall should be used in cyberbullying survey measures and whether or not to use of the term "cyberbullying" in questionnaire instructions. Results for recall time frame suggest that either one semester or one year is the most appropriate reference period to use in cyberbullying survey measures. Further, results for use of the term "cyberbullying" tentatively suggest that the term could be utilized in questionnaire instructions. However, these implications should be explored further before final decisions are made regarding time frame for recall and the use of the term cyberbullying in a final measure of cyberbullying perpetration and victimization.

Time Frame

Four time frames for recall were examined, including one month, one semester, one year, and forever (e.g., "have you ever?") The findings for cyberbullying prevalence and frequency suggest that an unlimited time frame for recall was likely not the best choice for future measures. Although participants

reported no differences in prevalence of cyberbullying perpetration based on time frame in this pilot study, participants did report significantly larger victimization prevalence rates in the unlimited condition that any other time frame condition. This finding was not replicated when it came to the number of instances that participants reported. Those in different time frame conditions did not differ in their frequency (that is, the number of instances) of cyberbullying perpetration or victimization experiences. Still, larger victimization prevalence rates reported in the unlimited time frame might be interpreted such that an unlimited time frame leads to an erroneously inflated estimate of whether cyberbullying occurred or not.

Responses to an open-ended item asking participants how their answers were affected by not being given a particular time frame to reference their cyberbullying experiences suggested that an unlimited time frame led to confusion. To that end, participants reported that an unlimited time frame makes accurately remembering instances of cyberbullying more difficult. Participants in the unlimited condition commented that "It's just so hard to remember as far back [as] to when I started using the internet" (ID 43), "It was harder to determine an accurate number in [all] the years I have been online" (ID 33), and "[It was] too broad of a time frame to think about" (ID 38). These perspectives demonstrate that responses with an unlimited time frame may be imprecise because participants are unable to accurately recall their online experiences. Further quantitative findings suggested that one year or one semester were likely more

appropriate choices for time frame for behavioral recall of cyberbullying perpetration and victimization experiences.

Although there were no differences in honesty and no differences concerning social desirability for perpetration or victimization based on the time frame for recall, participants reported significantly higher accuracy ratings in the semester condition over the forever condition. This finding suggested limiting the time frame for recall to a period that participants could more reasonably remember their experiences. A semester was the immediate choice given participants' higher accuracy ratings, however participants reports about which time was too short, about right, and too long suggested that one year should be considered too. Participants reported both one semester and one year were closest to "about right" as a time frame for recalling their experiences. Interestingly, a follow up test not reported here showed that many who responded in the one year condition felt that one semester was about right, and many who responded in the one semester condition felt that one year was about right. This suggests that participants were comfortable with recalling their behavior in either time frame.

Open ended responses also suggested that individuals were comfortable recalling their behaviors during one semester or one year. Those in the one semester time frame demonstrated confidence in their ability to produce accurate results in their responses to an open ended item asking how their answers were affected by being asked to recall the past semester. Participants described their preference for one semester, saying "It is easier to recall more recent info" (ID 164) and "My answers were unaffected by the one-semester time frame" (ID

128). On the other hand, those in the one year condition were also confident in their time frame for recall, saying "It is easier to remember the last year more than years before" (ID 191), "My answers were more detailed and it gave me a wider and more accurate time frame to consider before submitting my final answers" (ID 192) and, "They were not affected but it did make it easier thinking about a small time frame" (ID 200). The last quote by ID 200 concerns a common perception by those in the one year condition: that one year was considered a short time frame for recall. This perception bolstered confidence in the utility of one year as a time frame for recall that participants could accurately and honestly recall experiences of cyberbullying.

Given the present quantitative and qualitative findings, the use of one semester or one year as a time frame for recall seemed plausible. Further research was necessary to determine which would be used in the final measure. To that end, focus group participants in pilot study two discussed this matter at length. The results and implications of these discussions will be presented in the next chapter.

Term Use

A lack of differences for all outcomes when it came to the use of the term "cyberbullying" in questionnaire instructions suggests that there may not be consequences to using the term. Results here showed that participants reported no differences in prevalence and frequency of cyberbullying perpetration or victimization based on use of the term. In addition, participants reported no difference in accuracy or honesty based on use of the term. And, no difference in

the relationship of social desirability with frequency of perpetration or victimization was found based on use of the term. These findings have an important implication: including the term cyberbullying might be helpful for participants' understanding of the behaviors under investigation while not detrimentally affecting their self-reports.

Open ended responses suggested it is important to be as explicit as possible and that term may not affect results. Participants' open ended responses implied they were somewhat aware of the scope of the study regardless of whether or not the term was used. For example, some in the condition who were not exposed to the term cyberbullying were able to discern the general intent of the study, saying in their open ended responses to, "Describe what cyberbullying entails" (ID 39) . Another respondent was able to use the provided definition to independently reach the conclusion that the study was about cyberbullying before being told: "the term cyberbullying was already in mind after reading the given behaviors" (ID 245). Although responses like these suggest that the definition of the term cyberbullying is understandable, participants' responses still called for greater specificity about cyberbullying behaviors to alleviate any confusion. Two respondents illustrate this point quite well, one says, "Give specific examples of what kind of internet posts you are referring to, not everyone terms their mean actions as 'cyberbullying'" (ID 157). Another participant seems to demand more detail in their request to "tell me specific examples of what cyberbullying looks like!" (ID 185).

Although the measure of cyberbullying perpetration and victimization used in the present study includes a description of the behaviors, participants' open-ended responses like these suggested a sense of ambiguity about the term. To that end, while the term was understood in essence, a description that was relatable and understandable by young adults remains unclear. Hence, the need for examining how young adults talk about cyberbullying was a necessary next step before making a final decision concerning whether to include the term cyberbullying in the final measure developed here.

Chapter 3

PILOT STUDY TWO

The purpose of the second pilot study was to conduct four focus groups with young adults to address how students react to, think about, and consider survey items that are commonly used to measure cyberbullying. Focus group methodology was employed to provide a better understanding of cyberbullying perpetration and victimization through the eyes of group members. The primary goal of conducting focus groups in the scope of this overall investigation is to clarify how the nuanced findings from Pilot Study One inform a final measure of cyberbullying before the final measure is evaluated in the main study. For example, focus group participants were asked about their reactions to the findings of Pilot Study One about recall time and use of the term cyberbullying. In addition, a central goal of the focus groups was to address participants' feedback concerning the directions for the final measure of cyberbullying perpetration and victimization. Accomplishing these goals was an important mediating step that informed the development of the final measure. Pilot Study Two aimed to address RQ_7-RQ_{11}.

Method

Participants

Participants (N = 23) were recruited from introductory communication courses at a large Southwestern university campus. First year students were recruited to participate in the study. Perspectives of those in their first year of college are included here in an effort to describe young adults perceptions and

feedback concerning cyberbullying. Additionally, perspectives of first year students are important to consider in lieu of their recent transition out of high school. Men made up a slight majority of focus group participants (56.5%). The average age of focus group participants was 20.45 years old (*SD* = 2.30). All participants reported access to their own cell phone (that is, a cell phone they do not have to share with anyone), a personal computer, and easy access to the Internet. In addition, the 91.3% of participants used one or more social networking site such as facebook.com (91.3%), twitter.com (47.1%), or myspace.com (30.4%).

Procedures

All procedures in this study were approved by the institutional review board (see Appendix G). First year students from selected undergraduate communication classes were eligible to participate in this study. Instructors from selected classes distributed recruitment messages on the researcher's behalf. Interested students were asked to sign-up using an online appointment system for one of four groups. Participants were offered $25 in cash as an incentive for participation in the project.

Procedures were conducted in line with recommendations for focus group methodology (Krueger & Casey, 2000) to foster a focused group and a focused discussion (Lederman, 2004). All focus groups were conducted in convenient and comfortable locations on campus. All focus groups were audio recorded. The focus groups lasted between 60 and 90 minutes and were moderated by the lead

researcher in the present study. A research assistant was present at each of the focus groups and took detailed notes concerning participant perspectives.

At the focus groups, participants were invited to provide informed consent to participate in the discussion (see Appendix H). Following the survey, a focus group guide (see Appendix I) was used by the moderator to facilitate the discussion. The survey and focus group guide are discussed next.

Instrumentation

Focus group protocol. A focus group guide was used to moderate the focus groups. This guide was prepared with language and questions appropriate for young adults. The focus group guide followed five major areas to address issues in cyberbullying measurement. First, consent procedures were handled, introductions were made, and the topic of cyberbullying was generally explored. Second, issues of power in instances of cyberbullying were addressed. Third, methodological issues (e.g., time frame for recall, use of the term "cyberbullying") were presented and feedback was requested while reviewing a current measure of cyberbullying perpetration and victimization. Fourth, areas for improvement for cyberbullying measures are discussed. Last, a closing and summary was conducted. See Appendix I for the complete focus group guide.

Results

In line with procedures for qualitative data analysis (Lindlof & Taylor, 2002), analysis of this data was done through an emic and etic lens. The emic lens was used to observe the meanings of perceptions that participants provided about cyberbullying in general. The etic lens was utilized to "see the scene through

categories derived from disciplinary knowledge and theory" (p. 81). Therefore, the process of analysis involved moves back and forth between participant perceptions and examining relevant literature on cyberbullying and measurement.

Detailed notes were taken during the focus groups by the moderator and a research assistant. Also, the moderator wrote a summary of each focus group. Open coding was used to analyze these data (Lindlof & Taylor, 2002). Open coding involved the researcher reading and re-reading research notes to determine preliminary themes. Open coding allows a researcher to be "free to consider the meanings of words, phrases, sentences, and larger expressive or dialogical units on an equal basis" (p. 219). Open coding offers important contributions, as it allows for an overarching analysis of the data to explore how participants label and talk about cyberbullying.

Themes of participant responses about cyberbullying measurement were generated as the results of Study II. Theoretical memos (Charmaz, 2005; Lindlof & Taylor, 2002) were used to create preliminary categories and explain what these mean in relation to the measurement of cyberbullying. These allowed for a final process of understanding the distinct themes present in the participants' perceptions. This iterative process of coming to understand the perceptions of young adults was used to address RQ_7-RQ_{11}.

Research Questions

Power. RQ_7 asked how young adults view the relationship between power and cyberbullying. This research question was posed due to the lack of conceptual clarity within cyberbullying scholarship about the role of power. Analysis of

participants' responses to the questions in the second section of the focus group guide revealed themes concerning power. Participants were initially asked what words come to mind when they hear the term power and to describe what power means to them. The words "control" and "strength" came up in every focus group conversation. Further, notions concerning how power is negotiated came up on several occasions. In the first focus group, participants came to a collective understanding that power is when someone "has or wants an upper hand." In the first, second, and third focus groups, power was described in terms of "confidence" and that someone who expresses this can create a sense of "superiority" in an interaction. Those with less or no power in an interaction were consistently described as being "vulnerable" and that feeling vulnerable is not something that people want to disclose. Overall, these discussions about how young adults conceptualize power suggested that young adults use binaries to understand power. That is, power is a resource that someone or some group has while another does not. How this understanding applied to cyberbullying was explored further.

When asked what might contribute to someone's power when using technology to communicate, two consistent themes emerged across all four focus groups. Discussions in each focus group centered around the theme of comparing offline power to online power. Popularity and intelligence, as bases of power noted in traditional bullying, were commonly compared between offline and online. For example, a participant in the second focus group explained, "popularity offline is determined by the number of people perceived in your

group, whereas your number of friends or followers online is just like popularity in person." Although participants in every focus group began their discussion about power online with a seeming interest in finding similarities to power offline, every group ended this portion of the discussion noting consistent contrasts between power online and offline. To that end, a second theme emerged concerning anonymity and power; this naturally emerged in conversations in every focus group. Participants discussed how one has the ability to be "illusive" and "unknown" while online. A participant in the fourth focus group characterized this idea in terms of power when he said, "if you can't see 'em or touch 'em, don't they have more power?" The "em" in his hypothetical question refers to a potential perpetrator of cyberbullying. These conversations about the effect of anonymity on the power of a perpetrator led to exploring whether a perpetrator needs to have more power in order to be considered a cyberbully.

Our interest in the ways that participants identified a cyberbully and what components needed to be present in a situation for participants to deem it cyberbullying centered around the role of power. Specifically, discussions aimed to determine whether participants believed that perpetrators of cyberbullying had or garnered power over their victims. To explore these areas of interest, participants were asked to respond to the questions: "Does a cyberbully always have more power than their victim?" and its follow up, "Could someone cyberbully if they had equal or less power?" Discussions addressing these questions were sometimes circuitous and revolved around the ways that cyberbullies have more power than their victims rather than whether this had to be

the case in order for the perpetrator to be deemed a cyberbully. For example, in focus groups one, two, and four, participants noted that cyberbullies might derive power from their online skills, such as knowledge about using websites, familiarity with tools and programs to act anonymously, and ability to effectively control privacy settings. Another topic that repeatedly came up in focus groups two, three, and four in response to these questions concerned the accessibility of power online. A participant in the fourth focus group succinctly summed up the thesis of these discussions when she said, "power via the Internet is accessible to all." Some interesting perspectives were introduced when talking about this topic, including the notion that cyberbullies garner power because of a "false confidence" online and because they "are tougher in text than real life." The pattern of participants' perspectives when discussing these issues illustrated their collective belief that the anonymity of communicating through technology affords a sense of comfort for some to say or do things they might not do in face to face situations. Further, participants focused on discussing a myriad of ways that perpetrators *had* more power rather than *whether* they had more power. Because of participants' support for the argument that cyberbullies have more power than their victims, the ways in which this power is garnered were explored further.

Participants were asked, "how might a cyberbully have power that an in person bully doesn't have?" Discussions in focus group two, three, and four revealed many ways which participants thought cyberbullies could secure power. Traits available to traditional bullies were reviewed with regard to their application online. "Intelligence" and "charisma" were descriptors of that came

up again and again in all of the groups. Perpetrators' ability to protect themselves from retaliation was explored in relation to the intelligence of the perpetrator. The smarter the perpetrator, the more power they could have over their victims. Focus group three and four participants centered their attention on how power is derived from the dominance one exudes when acting as a cyberbullying. A participant in focus group three asserted, "attacking someone implies a sense of dominance…it results in power over someone," and a participant in focus group four noted, "the aggressor gets the power when they initiate the conflict, it makes them a cyberbully." Ease of access, repetition, and permanence were noted as specific resources available to cyberbullies. Participants' conversations focused on the social nature of the Internet and how forms of mediated communication such as texting draw many people into interactions. Messages are often repeated, reposted, and easily shared for the intent of mass exposure. At times, these hurtful messages cannot easily be deleted. Perpetrators' power is also expanded by what a participant in focus group two best described as a "lack of repercussions." These components of online interaction had the potential to bolster cyberbullies power over their victims.

These results provide a multifaceted answer to RQ_7. In sum, themes that emerged from conversations reveal young adults' beliefs that a power differential exists in interactions they describe as cyberbullying. Power is developed through some ways similar to traditional bullying but also is garnered in ways specific to mediated interaction. Participants were aware of specific ways that a cyberbully could secure power over their victim. Due to these findings, it was important to

ask participants how to refer to power in survey measures and questionnaire instructions. Several recommendations were made for how to refer to power in survey research. Many recommendations were for specific words, focus group one participants suggested simply using "power" and "powerful," while focus group two participants added, "control," "influence," and "intimidate." Focus group two participants also noted that "intent" or "intention" needed to be a part of the and description or instructions – whether concerning power specifically, or cyberbullying in general. "Popularity," "number of friends," "anonymity," and "fear" were stressed by focus group three and four participants, whereas focus group four participants included recommendations for "superiority" and "manipulation" too. These recommendations were taken into consideration when rewording questionnaire instructions, rewording the dichotomous measure of cyberbullying used in Pilot Study One, and developing items in the Main Study.

Instructions. RQ_8 concerned the reactions of young adults to a self-report measure of cyberbullying. While the overall focus group protocol was designed to address young adults' reactions to measurement concerns, one section of the protocol involved going over a dichotomous measure of cyberbullying and exploring participants thoughts and reactions about how it could be improved. This section of the focus group guide serves to garner participants' reactions to a self-report measurement of cyberbullying. Questions in this section of the focus group guide were designed to address what could be confusing to the reader, time frames to recall instances of cyberbullying, use of the term cyberbullying in the measurement instructions, and items to measure the behavior.

Participants were given a measure of dichotomous measure of cyberbullying and initially asked for their reactions and recommendations. The first part of the measure provides a behavioral description to prompt the reader to think about instances of cyberbullying. The text read:

> Sometimes a person or group of people (that is, friends, classmates, family, or maybe people we don't even know) use cell phones or the Internet to repeatedly send or post messages in order to intentionally threaten or hurt people, make them feel bad, or to embarrass people in front of others in an unfriendly way.
>
> For example, a person might send several messages directly to someone using a cell phone or email. Or, a person might post photos or messages about someone in places other people can see like on a Website.

Participants said that two paragraphs were too long. A participant in focus group four said, "I glossed over it because it seemed like instructions," and someone in focus group two felt, "there is way too much in the first sentence." Focus group three participants commented that the first sentence was too vague. Most participants in every group noted that the outcomes such as "make them feel bad" needed to be expanded or specified to prompt readers to think of cyberbullying. Across the board, participants called for shorter sentences and the use of bullets or phases. Participants liked the use of the words "intentionally" and "unfriendly" as well as the parenthetical explanations. Some noted that this is how people their age write to one another in online messages; a participant in focus group three added, "lots of asides are helpful, we get it that way." They seemed surprised that cell phones were a part of the behavioral description and were happy that this was clarified with the instructions, yet commented that the term "Internet" needed examples. Examples were requested from each focus group. By

leading each focus group through the same discussion and exercise in fixing the errors they cited using their own suggestions, the first section of the behavioral description was rewritten as:

> Sometimes a person or group of people (that is, friends, classmates, or maybe people we don't even know) use cell phones or Internet sites (e.g., Social Networking Sites, YouTube, blogs) in negative ways. They can repeatedly send private messages or make public posts that intentionally threaten, hurt, or embarrass others in unfriendly ways.

After fixing the behavioral description, participants were asked two follow up questions: "When you read the definition and descriptions of the behaviors, did they describe what you think of as cyberbullying?" and "Is there any kind of cyberbullying experiences that these questions are not getting at – Are we glossing over anything?" Two overarching suggestions were made in response to these questions. First, a call for verbiage about power was made in every focus group, sometimes explicitly. For example, a participant in focus group two asked, "What about power? The context is too broad... Don't we want them to think of cyberbullying and not something mild?" Based on the discussions of power earlier in the focus group protocol, participants offered suggestions for including this in the behavioral description. These suggestions led to the addition of the following about power:

> They can use their popularity, strength, or intelligence to get the best of the person they are trying to hurt. Or, they might act anonymously to get the upper hand.

Second, participants were helpful in coming up with short examples of cyberbullying. They suggested not including outcomes of cyberbullying because these might not apply to many people. On the other hand, the process of

cyberbullying can be similar among those who have perpetrated or experienced victimization. After talking about instances of cyberbullying that participants heard about and experienced personally, a list of four general examples was generated. Including a list was an idea that the first focus group suggested, and creating the list was added to the protocol for the remaining focus groups. The final list incorporating all participants' ideas read:

> Some example situations are when a person:
> - sends several hurtful or threatening text messages to someone,
> - posts hurtful messages or photos about someone on their profile page,
> - posts embarrassing photos of someone on a website for other people to view and comment on,
> - makes up a fake email or social networking profile to harass another person.

Although these suggestions made the behavioral description longer, they incorporated important feedback from young adults about their definition and experience of cyberbullying.

Following the behavioral description, the measure includes four items. Two dichotomous items are intended to measure prevalence with a yes/no response category, one of these items measures perpetration and one measures victimization. Each dichotomous item is followed by an item designed to measure frequency. In general, participants liked the simplicity of these items but wanted to add the word "intentional" into the items. While discussing these items, participants were asked for feedback about an appropriate time frame for behavioral recall and the use of the term cyberbullying. Results derived from participants' responses to these questions helped to address the next two research questions.

Time frame. RQ_9 asked of the recommendations that young adults have about time frame for recall in reporting instances of cyberbullying and RQ_{10} concerned young adults' recommendations about the use of the term "cyberbullying" in self-report survey measures. These research question were asked about explicitly during and after reviewing the dichotomous measure of cyberbullying previously discussed. While reviewing the measure, participants were initially asked, "Do you think a school year is too long to remember? – What about a month, semester, or forever?" and this was followed up with, "What's the best time to frame to ask people to remember their cyberbullying experiences?" An interesting theme emerged from participants' responses in focus groups two, three, and four concerning how young adults compartmentalize and recall their memories of experiences. In essence, focus group participants repetitively suggested using a time frame attached to their schooling experience and schedule. That is, a semester and a year were the most appropriate choices because participants are readily able to recall what happened during a semester or year. Focus group two decidedly advocated that a year was appropriate because cyberbullying does not occur often enough to only ask about a semester time period. Advantages and disadvantages of utilizing a semester or a year were discussed in focus groups three and four. These discussions resulted in the recommendation to utilize one academic year because of the necessity for students to move each year and to recall their experiences based on their residence and year in school (e.g., "freshmen year in a dorm," "sophomore year in my first apartment"). All participants were asked to make a final recommendation and

write it on a sheet provided to them. The most frequently occurring choice was "one academic year." Thus, in response to RQ_9, one school year emerged as young adults recommendation concerning which time frame to use for behavioral recall of cyberbullying.

Term use. Recommendations regarding use of the term cyberbullying were investigated to address RQ_{10}. While reviewing the measure of cyberbullying, participants were asked, "What if we just used "cyberbullying" instead of describing the behaviors?" and the follow up question, "Would this make you change your answers?" Participants' were adamant that the term should not be used; this was a clear theme across all four focus groups. Participants every group described potential problems with using the term, generally related to their opinion that "bully" is a word with strong negative connotations. A participant in the focus group two asserted that "no adult wants to admit to being bullied...," and later added, "…so admitting to being a bully is unlikely." Agreement with this argument existed in all of the focus groups. A participant is focus group three provided a culminating argument, "it's simply unnecessary because it will decrease accuracy." Although this argument is logical, results from Pilot Study One demonstrated this was not the case. To that end, other themes present in young adults' feedback were considered in order to make a decision about the use of the term.

Additional arguments were made for not using the term "cyberbullying" in measures. One participant in the first focus group described her experience with hearing the word: "the term makes me think of extreme cases, like deaths and

suicides, it doesn't make me think of when my ex repeatedly texts me when I say to stop. It doesn't apply to me. I know what it is, but it's not what I think for me." Discussions in focus groups three and four included this sentiment too. Further, the association between the term and extreme cases was closely tied to disclosures from participants that the term cyberbullying is not used in their everyday vernacular. Participants in focus groups two, three, and four all reported that while they are familiar with the term cyberbullying, the word is "something used in the media" or "something from class." In every focus group the notion emerged that cyberbullying is understood, but that the term "cyberbullying" is saved for cases egregious enough to be reported in local and national news stories. Therefore, in response to RQ_{10}, young adults recommend not using the term "cyberbullying" in future measures.

Other recommendations. RQ_{11} concerned young adults' recommendations about improving the accuracy, honesty, and comfort of reporting instances of cyberbullying. Although most measurement concerns and recommendations regarding specific problems were addressed in response to earlier research questions, one additional recommendation was utilized. Participants were asked, "What could we do to make people comfortable with being accurate and honest in their surveys?" A consistent suggestion emerged in all four focus groups to find ways to bolster the importance of the topic when conducting studies. A participant in the first focus group specifically suggested procedures for conducting future survey research. She suggested that the research team review aloud the behavioral description before administering surveys and

then to display it in a place that survey respondents could easily see while completing their questionnaire. This recommendation was discussed and endorsed by the participants of focus groups two, three, and four. Thus, these procedures were integrated into the design of the Main Study.

Implications

The findings of Pilot Study Two were very helpful for addressing measurement concerns and improving future measures of cyberbullying perpetration and victimization. Focus group participants were able to share their perceptions about power, offer suggestions for how to better questionnaire instructions, and give recommendations concerning time frame for recall and use of the term "cyberbullying". Additionally, participants presented insight for designing the procedures of future research studies. Although the detailed process for arriving at these implications is described within the results section above, a summary of these implications concludes this chapter.

A major implication of Pilot Study Two findings concerns the role of power in instances of cyberbullying. Discussions with young adults suggested that power was a topic quite salient to them. The findings here suggest that an overlap exists between how young adults think about power in traditional bullying interaction and in episodes of cyberbullying. While the presence of power was not challenged, contrasts between the sources of power in these two domains emerged. Implications for these nuanced findings were twofold: something needed to be included in the questionnaire instructions about power, but the content for inclusion had to be tailored to online interaction by noting sources of

power that young adults recognized. Participants were able to assist with creating this verbiage for questionnaire instructions and these will be used in the subsequent Main Study. Future research will have to examine the impact of this addition and ways to improve how power is addressed in cyberbullying measurement.

Participants also provided data to clarify the implications of Pilot Study One and inform final decisions for what time frame for recall should be used in cyberbullying survey measures. Results for recall time frame suggest that one academic year is the most appropriate reference period to use in cyberbullying survey measures. The appropriateness of this decision was based on three general arguments. First, participants remember years in terms of their level in school – that is, freshmen, sophomore, junior, and senior year – and this is coupled with the reality that students often change residences each academic year. Second, participants might have a hard time distinguishing whether to consider an event cyberbullying if it happened across two semesters, whereas a cyberbullying incident is less likely to span two academic years. Third, the Main Study will be conducted at the end of the spring semester and this is an opportune time to ask about behaviors in the past academic year.

Although utilizing one year as a time frame for recall with young adults who are students is defensible based on this line of reasoning, it is important to consider tailoring this implication based on the population under investigation. For example, using an academic referent is likely not helpful for participants who are not students. Even in student populations, it is important for researchers who

are using an academic year referent time period to consider the time frames that participants' schools are in session. These time frames may change between counties, states, and public versus private institutions. When an academic year is not ideal as a referent time period, it seems that one calendar year remains the best alternative recommendation based on the findings of both pilot studies.

Further, results for use of the term cyberbullying suggest that the term should not be utilized in questionnaire instructions for two primary reasons. First, cyberbullying is a term associated with situations that end with extremely severe outcomes like suicide rather than more common negative uses of technology. Second, cyberbullying is not a term that young adults choose to use to describe their own experiences regardless of whether the experience actually is cyberbullying or not. Albeit these reasons alone imply that term should not be used, participants also felt strongly that the term cyberbullying would induce severe social desirability bias. While their perspective certainly makes intuitive sense, the findings of Pilot Study One simply do not substantiate this claim. A final implication of findings regarding use of the term cyberbullying was to include additional examples of cyberbullying rather than the term itself. Therefore, participants suggested and refined general examples of cyberbullying to use in subsequent questionnaire instructions.

These final decisions regarding time frame for recall and the use of the term cyberbullying inform the Main Study, which aims to develop a measure of cyberbullying perpetration and victimization. In addition to these points about time frame and term use, these findings led to other implications that improved

measurement instructions. Further, participants' suggestions for improving the procedure were adopted in the Main Study.

Chapter 4

MAIN STUDY METHOD

The Main Study was informed by the results of the two pilot studies and served as the culminating investigation to derive and evaluate a final measure of cyberbullying. The goal of this study was to construct a valid measure of cyberbullying perpetration and victimization that effectively captures prevalence and frequency. Two data collections were necessary, one to assess reliability and another for validity.

Participants

Reliability study. Participants were recruited from three undergraduate communication courses at a large Southwestern university at two time points. A subtotal of 71 participants responded to the questionnaire at Time 1, while 69 participants responded to the questionnaire at Time 2. A code was used to match questionnaires from Time 1 and Time 2, yielding 62 participants who completed the questionnaire at both time points. The descriptive statistics presented next were computed using this final sample of 62 participants who completed the survey at both points in time.

A slight majority of participants were men (53.2%). Participants ranged in their class level; 38.7% of were first year students, 21.0% were sophomores, and 40.3% were juniors. Reported ages ranged from 18-27 years old, with a mean age of 20.38 years old (SD = 1.71). A range of ethnic backgrounds were represented; participants reported being Caucasian/Non-Hispanic (54.8%), Hispanic or Latino (21.0%), African-American or Black (8.1%), Asian-American or Asian (12.9%),

Native American or American Indian (3.2%), Native Hawaiian or Pacific Islander (1.6%), or 'other' (6.5%). These percentages total more than 100% because participants were invited to select all that applied. All participants reported access to their own cell phone (that is, a cell phone they do not have to share with anyone) and used one or more social networking site such as facebook.com (95.2%), twitter.com (45.2%), or another site (25.8%). All participants had access to computers and Internet access through university computing services.

Validity study. Participants were recruited from undergraduate communication courses at a large Southwestern university. A question was included in the survey asking participants whether they completed the survey more than one time (Gosling, Vazire, Srivastava, & John, 2004). Students were not supposed to complete the survey more than once, but the confidentiality afforded to participants precluded turning away those who might try to earn extra credit in more than one course. To avoid violating the assumption of independence during data analysis, responses from participants who indicated yes (n = 56) or that they did not know (n = 5) whether they had already completed the survey were not included in analyses. The descriptive statistics presented next were computed using the final sample of 609 participants.

Women made up 52.7% of the sample. Students from all class levels were recruited to participate; 44.2% of were first year students, 18.6% were sophomores, 22.8% were juniors, 14.1% were seniors, and 0.3% reported 'other'. The majority of participants (94.4%) ranged in age from 18-24 years old, with a mean age of 19.76 years old (SD = 1.51). A smaller group of participants (5.6%)

reported being '25 or older' (n = 34). A range of ethnic backgrounds were represented, participants reported being Caucasian/Non-Hispanic (70.6%), Hispanic or Latino (15.6%), African-American or Black (6.4%), Asian-American or Asian (9.5%), Native American or American Indian (3.1%), Native Hawaiian or Pacific Islander (1.1%), or 'other' (5.1%). These percentages total more than 100% because 8.6% of participants selected more than one race or ethnicity. Nearly all participants in this study had access to their own cell phone (99.3%) and used one or more social networking site such as facebook.com (96.1%), twitter.com (51.6%), or another site (31.5%). Other popular sites that participants reported in an open-ended response were Foursquare, Google Plus, Tumblr, Instagram, Pintrest, Linkedin, MySpace, and YouTube. All participants had access to computers and Internet access through university computing services.

Procedures

Reliability study. All procedures for the reliability study were approved by the institutional review board (see Appendix J). Data collection took place at the end of the Spring 2012 semester. An instructor of three introductory communication classes offered extra credit to his students for participating in the study. Recruitment for the reliability study was done by email from the course instructor. Participation involved completing the same questionnaire at two time points. This procedure was used to evaluate the test-retest reliability of the perpetration and victimization measures developed in this study. Recall that test-retest reliability involves administering the measure twice, at two different points in time, to the same sample. It is used to assess the consistency of a test across

time and assumes that there will be little change in the construct being measured. In this study, the time points were approximately 10 days apart. At both time points, students were invited to respond to the questionnaire at the end of their class period. The instructor proctored the data collection at Time 1 and the researcher proctored the data collection at Time 2. Before participants were given the survey, informed consent was explained and a definition of cyberbullying was presented to the class. The definition was developed from the pilot studies in this investigation. It focuses on a description of the behaviors that constitute cyberbullying and uses examples of these behaviors. However, the definition does not attend to outcomes of the behavior, as these might significantly vary among individuals. While the definition of cyberbullying was presented, it was also made available to the class on a PowerPoint slide that was displayed during the course of data collection. That is, participants could look up at the slide while they completed the questionnaire. Additionally, the definition was a part of the instructions on the questionnaire itself.

Validity study. All procedures for the validity study were approved by the institutional review board (see Appendix K). Participation involved coming to an appointment at a campus computer lab and completing an online survey. An online scheduling program was used to manage appointments. The online survey was created using surveymonkey.com. Following email recruitment, participants came to a computer lab for their appointment to complete the online survey. At the lab, participants were welcomed and informed consent was discussed. Next, participants were told the definition of cyberbullying that was used in the

reliability study. The same procedure for displaying the definition of cyberbullying used in the reliability study was carried out in the validity study. To that end, participants could look up at a PowerPoint slide to see the definition while they completed the online survey.

Instrumentation

Survey construction. The primary measures within the survey served to assess the prevalence and frequency of cyberbullying perpetration and victimization. An iterative systematic process was used to develop items that fully captured the universe of possible perpetration and victimization experiences. The goal while creating these items was to surpass merely sampling facets of the cyberbullying perpetration and victimization constructs, but to develop a census of items spanning the cyberbullying perpetration and victimization nomological network (Cronbach & Meehl, 1955). Accomplishing this goal involved several steps.

Categories describing different components of cyberbullying perpetration and victimization were prepared before items could be developed. First, a list of channels where cyberbullying takes place was generated. An initial list included several channels: cell phones, email, social networking sites, and other online spaces. Reduction of this list resulted in three distinct channels: cell phone, email, and online. Second, it became clear during the process of determining channels that items in the measure needed to describe two distinct forms of cyberbullying messages. These included text based messages and media based messages. For example, one perpetrator might write several mean text messages using their cell

phone to their victim while another perpetrator might send embarrassing photos to their victim via text messaging. Both of these messages aim to cyberbully using the same channel, but differ in their construction. That is, one uses a text based message while the other uses a media based message. Text based messages consist of written wording while media based messages generally include photos and videos. Third, these discussions led to our need to address message dissemination. That is, are messages sent directly from one party to another or is a message made available for others to see. This distinction, termed private versus public, applies to each channel and form of message. While these three categories, channel (cell phone, email, online), form (text, media) and dissemination (private, public), served as a useful initial framework for creating items, types of cyberbullying needed to be accounted for before items could be generated.

A widely cited cyberbullying typology is described by Willard (2007), who classified how cyberbullying occurs. Willard describes eight types of cyberbullying. *Flaming* involves a "heated, short lived argument" (p. 5) between two parties sending angry messages. This type of cyberbullying can happen in public settings (e.g., chat rooms), but is generally considered an interaction between two people. Therefore, flaming was considered a private type of cyberbullying in all channels when items were generated. *Harassment* refers to the use of repeated offensive messages, generally between two parties that lasts longer than a flaming episode. Because of the overlap in flaming and harassment, these types were pooled for the purposes of item development. *Denigration* is the act of posting harmful, untrue or cruel statements online or spreading gossip,

rumors, and messages to other people. To that end, this type of cyberbullying clearly falls into the public form of dissemination for all channels. *Impersonation* refers to instances when an antagonist pretends to be someone else and sends material to others that reflects badly on that person. Impersonation items were not generated for the cell phone channel because impersonation applies less to text messaging. Rather, impersonation is more likely in online spaces where public messages can be disseminated to others by stealing or misusing another's account password. Also, we added to the notion of impersonation for the channel of email by capturing the possibility that one can create a fake email address to send messages to another person. *Outing and Trickery* are the acts of sending and posting private or embarrassing material about a person to others, using trickery to solicit information for the purpose of making it public, and forwarding messages to others to hurt someone. Indeed, these means for cyberbullying involve public dissemination and can happen in all channels. *Exclusion* refers to the act of denying or forcing someone out of an online group, blog, or chat. This type of cyberbullying only applies to online spaces and is inherently public. *Cyberstalking* refers to severe harassment and can include threats of harm and highly intimidating messages. Cyberstalking is more severe than flaming, harassment, and denigration in severity and "when a target begins to fear for his or her own safety," a line has possibly been crossed from other types of cyberbullying to cyberstalking (p. 10). Cyberstalking generally involves private threats and can occur in any channel. Although Willard also describes *cyberthreats* as another distinct type involving direct threats and distressing

material, this type was pooled with cyberstalking for the purpose of item development.

Perpetration and victimization items were developed using Willard's (2007) cyberbullying typology in conjunction with the categories of channel, form, dissemination. These items were revised based on available items from the three current validated scales of cyberbullying available (Akbulut et al., 2010; Cetin et al., 2011; Tynes et al., 2010). To that end, comparing the original list of items developed using the categories described to those from these scales revealed a need to expand the items for the online channel. For example, additional impersonation items were developed for the online channel and impersonation was combined with outing and trickery for the online media messages, as items for these two types overlapped considerably. The final items developed to measure perpetration and victimization are described in Tables 6, 7, and 8. Also, perpetration items are summarized in Appendix L and victimization items are summarized in Appendix M.

Following the cyberbullying perpetration and victimization developed here, additional measures were included in the survey instrument. These variables were measured to evaluate different forms of validity. A list of these variables are presented in Table 2 and described subsequently.

Measures related to perpetration. First, *verbal aggression* was measured using 10 aggressively worded items from the Verbal Aggressiveness Scale (Infante & Wigley, 1986; Levine et al., 2004). Sample items include, "When nothing seems to work in trying to influence others, I yell to get some movement

from them," and "When people behave in ways that are in poor taste, I insult them to shock them into proper behavior." Response categories ranged from "almost never true" to "almost always true" on a five-point scale. The scale achieved excellent reliability in the present study (α = .90).

Second, *anger* was measured using the Trait Anger subscale of the State-Trait Anger Expression Inventory (STAXI-2, Spielberger, 1999). The STAXI-2 is a 57-item, two-part self-report questionnaire that assesses the experience, expression, and control of anger. The full measure includes subscales for state anger, trait anger, anger-in, anger-out, and anger control. Although a composite Anger Expression Index (Spielberger, 1999) can be calculated from the combined subscales, only the Trait Anger subscale was used in the present study. Sample items include, "I have a fiery temper," and "I am a hotheaded person." Response categories ranged from "almost never true" to "almost always true" on a five-point scale. The scale achieved good reliability in the present study (α = .89).

Third, *life satisfaction* was measured with the Satisfaction with Life Scale (Diener, Emmons, Larsen & Griffin, 1985). This scale has 5 items designed to assess an individual's judgments about their overall satisfaction with life. Sample items include, "I am satisfied with life," and "In most ways my life is close to my ideal." Response categories ranged from "strongly disagree" to "strongly agree" on a five-point scale. The scale achieved good reliability in the present study (α = .84).

Measures related to victimization. First, *stress* was measured with the Perceived Stress Scale (PSS, Cohen, Kamarck, & Mermelstein, 1983; Cohen &

Williamson, 1988). The PSS is a 10-item measure of general distress designed to assess how unpredictable, uncontrollable, and overloaded participants find their lives. Respondents indicate the frequency with which they experience each item during the last month. A sample item is, "In the last month, how often have you been upset because of something that happened unexpectedly?" Response categories ranged from "never" to "very often" on a five-point scale. The scale achieved acceptable reliability in the present study ($\alpha = .71$).

Second, *anxiety* was measured using the Trait Anxiety subscale of the State-Trait Anxiety Inventory (STAI, Spielberger, 1983; 1989). In total, The STAI is a 40-item self-report questionnaire that assesses the current and long-term experience of anxiety. That is, 20 items measure state anxiety and 20 items measure trait anxiety. Bieling, Antony, and Swinson (1998) found good reliability and validity for the Trait Anxiety subscale. To shorten the measure in the present study, only 10 negatively worded items from the Trait Anxiety subscale were used. Sample items include, "I feel nervous and restless," and "I wish I could be as happy as others seem to be." Response categories ranged from "never" to "very often" on a five-point scale. The scale achieved good reliability in the present study ($\alpha = .86$).

Third, *school connectedness* was measured with the School Connectedness Scale (McNeely, 2005). This scale measures the bond between students and their school, and the quality of the relationship between students and their instructors. This scale was constructed in line with the procedures of Schroder, Carey, and Vanable (2010), by using items originally included in the

National Longitudinal Study of Adolescent Health (NLSAH). Although three versions of the SCS have been used in the NLSAH, the 5-item version used in present study was employed by Schroder et al. (2010), who found that the scale had good reliability ($\alpha = .81$ in their study). Sample items include, "I am happy to be at this school," and "I feel like I am a part of this school." Response categories ranged from "strongly disagree" to "strongly agree" on a five-point scale. The scale achieved good reliability in the present study ($\alpha = .80$).

Fourth, *global self-esteem* was measured with the 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1989). Items range from those that would only be endorsed by those with low self-esteem to those with high self-esteem. An example item is "I feel that I am a person of worth, at least on an equal plane with others". Response categories ranged from "strongly disagree" to "strongly agree" on a five-point scale. The scale achieved good reliability in the present study ($\alpha = .87$).

Measures predicted by perpetration and victimization. The intention and susceptibility items were guided by procedures outlined by Ajzen and Fishbein (1980), and similar items have successfully been used in numerous previous studies. For example, behavioral intention and susceptibility items used here were adapted from a recent study examining cyberbullying in Arizona middle schools (e.g., Roberto et al., 2011). *Behavioral intention* regarding cyberbullying perpetration was assessed using three items (e.g., "It is likely that I will use a cell phone or the Internet to hurt or embarrass someone in the future"). All behavioral intention items were assessed using five-point Likert items with

response categories ranging from “strongly disagree” to “strongly agree.” The intention scale achieved good reliability in the present study (α = .87).

Susceptibility to cyberbullying victimization (e.g., “It’s possible someone could use a cell phone or the Internet to hurt or embarrass me”) was measured using 3 items specifically adapted from Witte, Cameron, McKeon, and Berkowitz’s (1996) Risk Behavior Diagnostic Scale using five-point Likert items with response categories ranging from “strongly disagree” to “strongly agree.” The scale achieved good reliability in the present study (α = .85).

Chapter 5

MAIN STUDY RESULTS

The main study involved two data collections to examine the reliability and validity of the final cyberbullying perpetration and victimization measure. The reliability study required data collection at two points in time and the validity study was conducted using another data collection. Evidence for the reliability and validity of the final measure are presented in this chapter. First, descriptive statistics are presented in order to contextualize and explain analytic decisions that were made. Second, an analytic plan is presented based on the psychometric properties of the final measure. Third, reliability and validity are assessed by evaluating all hypotheses. Last, prevalence and frequency rates derived from the final measure are discussed.

Descriptive Statistics

Tables 9 and 10 offer descriptive statistics and describe the frequency of responses for each item for the complete sample. Recall that response categories for the final measure ranged from 0 to 6 or more instances within the last academic year. Item means ranged from .03-.79 for the perpetration items and from .06-.84 for the victimization items. Responses for the perpetration and victimization items showed that the distribution of every item is strongly positively skewed and leptokurtic due to a large number of participants who reported zero for a majority of items. Other summary statistics regarding prevalence for each item are presented, too, and will be discussed later in this chapter.

Data Analytic Approach

The terms "index" and "scale" are often used interchangeably because these forms of measurement share some overarching characteristics, but the measurement models underlying them are different and have implications for computing scores and assessing measurement quality. Most measurement guidelines focus solely on the sound construction of scales, whereby measured items composing a scale are thought to be reflective indicators of an underlying latent construct. In the case of a scale, items are empirically modeled as an *effect* of the latent variable (see Figure 1). An example of a popular and sound scale in communication is verbal aggression (Infante & Wigley, 1986), which scholars would argue is a construct that gives rise to observable characteristics. On the other hand, indexes are based on the use of formative indicators (Bollen & Lennox, 1991); these measured items contribute to the latent construct rather than being caused by the construct (see Figure 2). Socioeconomic status (SES; Hauser, 1973) is a construct appropriately measured as an index because it may be regarded as a function of education, occupational prestige, income, and neighborhood; accordingly, SES increases with more income even if education, occupational prestige, and neighborhood do not change. An increase in SES does not require a concurrent increase in all four indicators because "people have high SES because they are wealthy and/or well educated; they do not become wealthy or educated because they are of high SES" (Nunnally & Bernstein, 1994, p. 449). The distinction between reflective and formative indicators is particularly

important in the case of measuring cyberbullying perpetration and victimization because of the direction in causality.

Acknowledging that the measures of cyberbullying perpetration and victimization have some components of reflective and formative systems guides the data analysis here. Perpetration and victimization could be thought of as models with reflective indicators if the items to measure perpetration are caused by a latent construct. For example, one could argue that an underlying orientation toward aggression might cause one to behave as a perpetrator. Although this argument for a reflective model of perpetration is makes sense conceptually, the analogous argument for victimization is disputable because it is others' actions that makes one a victim rather than one's own underlying traits. This logic implies that these constructs may be best modeled formatively. These measures intend to capture the frequency of a behavior (in the case of perpetration) or experience (in the case of victimization) and measuring them in this way suggests using a formative measurement model due to the direction in causality between constructs and measured items. Using the structure of Nunnally and Bernstein's (1994) argument, people have more victimization experiences because others intentionally and repeatedly send or post hurtful messages to them; they do not receive these messages because they are victims. The direction of causality described in this argument is that the measured items cause the latent constructs. These distinctions imply that the measurement of perpetration and victimization has flavors of both a reflective and formative system.

To that end, the validity of the cyberbullying perpetration and victimization measures developed here were treated as indexes and eventually investigated using formative model approaches. Initially, this was not possible due to the simple fact that formative measurement models are statistically underidentified and can only be estimated within a larger model that includes effects emanating from the latent variable in question. On the other hand, reflective models with three indicators are statistically identified, and confirmatory factor analysis (CFA) can be used to estimate the fit and parameters of a model. Because of this, a compromise was made between approaches in an iterative process of analyzing a series of reflective models, followed by an investigation using formative modeling techniques. First, the sums of perpetration and victimization in each of the three channels (text, email, and online) were used as indicators in a series of reflective models to assess hypotheses concerning reliability. Second, following these procedures, predictive validity was assessed using formative models where the latent variables in question predicted hypothesized outcomes.

Two noteworthy considerations about how to model indicators were examined prior to data analysis. The option to use items as individual indicators was initially attempted to construct models. However, as noted earlier, scores for items were not normally distributed due to skew resulting from a high incidence of zero responses. Due to low incidence on many items, the decision was made to use sums computed using all of the items in each channel as indicators when constructing models. This is also consistent conceptually with the notion that

bullying victimization and perpetration are best regarded as indexes, which are generally summed. Second, the decision to include all items was considered throughout data analysis. No items were dropped during data analysis because of the strength in the index to capture the breadth, or full domain of content, of cyberbullying perpetration and victimization. Conceptual specification is more important in indexes than scales because items are not interchangeable. Rather, items contribute cumulatively to the construct. To that end, no items were dropped from analyses.

Initial Reflective Models and Reliability

Prior to analyses all descriptive statistics were obtained for all variables using SPSS 19.0 (SPSS, Inc: Chicago, IL). Analyses were conducted using MPlus software (Muthén & Muthén, 1998-2007). MLM estimation was used in all modeling analyses due to the departure from normality in these data. This estimator utilizes maximum likelihood parameter estimates with standard errors and a mean-adjusted chi-square test statistic that are robust to non-normality. The MLM chi-square test statistic is also referred to as the Satorra-Bentler chi-square. Model fit was evaluated using an omnibus χ^2 test, comparative fit index (CFI), standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA) and its 90% confidence interval.

Models 1-4. A series of four CFA models were investigated (see Figures 3-6) for the purpose of establishing the structure underlying the perpetration and victimization measures (see Table 11 for Fit Indexes). Model 1 is a one-factor CFA of perpetration by the sum of text (M = 2.40, SD = 4.59), email (M = .57, SD

= 2.73), and online (M = 1.83, SD = 4.79) perpetration behaviors. Model 2 is a one-factor CFA of victimization by the sum of text (M = 2.74, SD = 4.81) , email (M = .88, SD = 4.18), and online (M = 3.13, SD = 6.66) victimization experiences. Fit statistics for the one-factor perpetration model and the one-factor victimization model cannot be assessed because the models are just-identified with zero degrees of freedom. All parameters in Model 1 and Model 2 were significant, suggesting that each sum of perpetration behavior reflects an underlying perpetration construct (see Figure 3 for loadings) and that the sum of each victimization experience reflects an underlying victimization construct (see Figure 4 for loadings). Next, these models were combined into Model 3, a two-factor CFA of perpetration and victimization.

In Model 3, each factor was indicated by the sums of text, email, and online frequencies. Model 3 results suggested that the hypothesized model had moderate fit with these data [χ^2 (8) = 53.94, p < .01, RMSEA = .097 (90% CI: .074-.123), CFI = .71, TLI = .45, SRMR = .06] and all parameter estimates emerged as significant (See Figure 5 for loadings). However, modification indexes indicated that allowing for covariance among errors for the indicators of email in perpetration and email in victimization would decrease the chi square statistic. Theoretically, adding a covariance among these errors is reasonably defensible for two reasons. Foremost, common error variance likely exists in the same channel due to channel preference and use regardless of perpetration or victimization. Additionally, given the high correlation between perpetration and victimization, it is reasonable to assume that if someone is victimized in a channel

and chooses to retaliate, they will likely use the same channel. This path was added, and to be consistent across channels, paths for the text and online channels were added too. Therefore, Model 4 incorporates three additional correlations, one for each channel. Model 4 is a two-factor CFA of perpetration and victimization, each factor by text, email, and online frequencies including correlations among channels. Model 4 results demonstrated excellent fit (χ^2 (5) = 9.46, p = .09, RMSEA = .049 (90% CI: .0-.075), CFI = .97, TLI = .91, SRMR = .05), and all parameter estimates were significant with the exception of the correlation among errors for indicators of the online sum in perpetration and victimization (see Figure 6 for loadings). A Satorra-Bentler scaled chi-square difference test (Satorra, 2000) was computed by hand (see Muthén & Muthén, 2012) and demonstrated a significant decrease in chi-square ($\Delta\chi^2$ (7.52) = 39.42, p < .001) and thus indicated a significant improvement in fit from Model 3 to Model 4.

Psychometric properties. The development of Models 1 to 4 helps to address RQ_{12} which concerned the psychometric properties of the final measure. Results from these models give some indication of the structure and internal consistency of the perpetration and victimization constructs. First, the significant parameter estimates in each successive model suggest the appropriateness of using summed totals for text, email, and online perpetration behaviors and victimization experiences as indicators. Second, the successive model fit statistics reveal that perpetration and victimization are independent constructs with a strong correlation between them. The successive models also support a very tentative

argument concerning the strength of the internal consistency of the perpetration and victimization constructs.

Whether the perpetration and victimization constructs demonstrate internal consistency as unidimensional constructs is not completely clear. Support for unidimensionality is mixed in part because the models that support the internal consistency of perpetration and victimization were specified with reflective indicators rather than formative ones, as they would be underidentified. Arguments about the strengths of internal consistency become moot when one considers that formative modeling is necessary for these constructs because the indicators are not due to a common cause (i.e., the direction of causality goes from the indicators to their latent constructs). Further, although the direction of this causal relationship makes examining reliability coefficients unnecessary, they are still examined here. If these measures were argued to be scales, Cronbach's alpha for the perpetration and victimization dimensions would be expected to be above .70 for the final measure. Table 12 documents the reliability estimates of the perpetration and victimization indexes. Alphas for the overall dimensions were above .70 at both points in time. However, when alphas for the sub dimensions were analyzed independently, two failed at time 1 and two failed at time 2 to meet the .70 cutoff. These included the victimization text ($\alpha = .58$) and the victimization online ($\alpha = .52$) dimensions at time 1, as well as the perpetration text ($\alpha = .41$) and the victimization text ($\alpha = .63$) dimensions at time 2.

Test-retest reliability. H_1 predicted a strong positive correlation between participants' self-reports of cyberbullying at the beginning and end of two weeks.

Pearson or Spearman correlations are appropriate for self-reports of different time periods are compared and absolute agreement of the scores cannot be expected (Schroder et al., 2003). Therefore, Pearson Product Moment Correlations were used to evaluate the stability of the final measure over ten days as predicted in H_1. See Table 12 for correlations of the perpetration and victimization measure from one time point to the next. All correlations were moderate to strong, in a positive direction, and significant ($p < .01$). Perpetration correlations were strong and ranged from .87-.96 for the email, online, and overall sums from time 1 to time 2. The perpetration text dimension ($r = .40$) had a moderate correlation; this may be because this dimension had the largest change in mean and standard deviation from time 1 to time 2 and thus this correlation could be attenuated by outliers. Victimization correlations were strong and ranged from .73-.91 for the text, email, and overall sums from time 1 to time 2. The victimization online dimension ($r = .49$) had a moderate correlation; no evidence stands out to suggest why the test-retest correlation for this dimension is lower than the other victimization dimensions. Still, these results collectively indicate support for the test-retest reliability of the index and H_1.

Subsequent Formative Models and Validity

Diamantopoulos and Winklhofer (2001) suggested ways to approach external validation of an index which assesses the proposed indicators as a set. One way is to estimate a multiple indicator and multiple causes (MIMIC) model (see Figure 7). A MIMIC model provides a parsimonious means for assessing the predictive validity of items in an index because it allows for the formative

indicators (i.e., items in an index) to act as direct causes of the latent construct which is indicated by one or more measures. These measures are necessary for the model to be identified. Predictive validity is assessed through two means. First, acceptable overall model fit can be interpreted as supporting evidence for the set of indicators forming an index. Second, the estimates from the formative indicators to the construct (the γ's) can be interpreted as 'validity coefficients' (Bollen, 1989) – they assess unique contributions of formative indicators.

Another way to assess the predictive validity of an index is to estimate a model that is equivalent to the MIMIC model described above, but includes two constructs (Diamantopoulos & Winklhofer, 2001). Figure 8 illustrates this approach in which the latent variable captured by the index acts as a predictor of another latent variable. A particularly useful addition in this equivalent model is the direction and magnitude of the parameter estimate for the path from the formative index factor to the reflective factor (i.e., β_{21}). This estimate empirically represents the theoretical relationship between constructs and offers a third way to assess the predictive validity in addition to the two available when estimating a MIMIC model. Therefore, the two-construct model was used to assess the predictive validity here.

Predictive validity. H_2 predicted that the frequency of cyberbullying perpetration will predict behavioral intention to cyberbully in the future and H_3 predicted that frequency of cyberbullying victimization will predict susceptibility toward being cyberbullied. As described above, two-construct models were used to assess these hypotheses (see Table 13 for a comparison of fit indexes). MLM

estimation was used in all analyses due to the departure from normality in these data. Model fit was evaluated using the same statistics as the initial reflective models.

H_2 was examined by estimating a two-construct predictive model of perpetration and behavioral intention. Model 5 examined perpetration using three formative indicators which were the sums of text perpetration (M = 2.40, SD = 4.59), email perpetration (M = .57, SD = 2.74), and online perpetration (M = 1.83, SD = 4.79). This factor predicted a behavioral intention factor indicated by three reflective items. Estimation of Model 5 produced good fit [χ^2 (6) = 19.80, $p < .01$, RMSEA = .062 (90% CI: .033-.093), CFI = .97, TLI = .95, SRMR = .03], all standardized parameter estimates were in a positive direction, and all were significant with the exception of the sum of email perpetration (see Figure 9 for loadings). Model fit results suggest that overall the perpetration index demonstrates predictive validity of behavioral intention. Further, the path between perpetration and behavioral intention was significant and of a moderate to strong magnitude (β = .49). Although these results indicate the strength of the predictive validity of the measure overall, the validity coefficient (Bollen, 1989) for the sum of email perpetration turned out to be nonsignificant. As Diamantopoulos and Winklhofer (2001) explain, "if the values of these are zero in the population then arguably the indicators cannot be considered valid measures of the construct."

Dropping the sum of email perpetration to specify a nested model was considered due to the nonsignificant path, however, empirical evidence alone should not be used alone to eliminate indicators. Conceptual considerations are

always warranted to ensure that the indicators of an index comprise the entire construct. In this case, Model 5 is conceptually meaningful because it included the census of formative indicators under investigation and specifying a new model only including two formative indicators would compromise the nature of the construct being investigated. Therefore, Model 5 should be interpreted with regard to predictive validity and evaluating H_2. Overall, Model 5 fit findings support H_4, as they indicate strong predictive validity of the index, but validity coefficients suggest that there is not a need to measure the sum of email perpetration.

Next, H_3 was examined by estimating a two-construct predictive model of victimization and susceptibility. Model 6 examined victimization using three formative indicators which were the sums of text victimization (M = 2.73, SD = 4.81), email victimization (M = .88, SD = 4.18), and online victimization (M = 3.13, SD = 6.66). This factor predicted a susceptibility factor indicated by three reflective items. Estimation of Model 6 produced good fit [χ^2 (6) = 16.53, $p < .05$, RMSEA = .055 (90% CI: .024-.088), CFI = .97, TLI = .93, SRMR = .02] and all standardized parameter estimates emerged as significant. All paths were in a positive direction with the exception of email victimization (See Figure 9 for loadings). Model fit results suggest that overall the victimization index demonstrates predictive validity of cyberbullying susceptibility. Further, the path between victimization and susceptibility was significant and of a moderate magnitude (β = .24). And, unlike the perpetration model, all validity coefficients

(Bollen, 1989) were significant. Overall, findings for the fit of Model 6 support H_3, as they indicated strong predictive validity of the index.

Convergent validity. H_4 predicted that frequency of cyberbullying perpetration would be moderately positively associated with verbal aggression and anger and moderately negatively associated with life satisfaction. Also, H_5 predicted that frequency of cyberbullying victimization would be moderately positively associated with stress and anxiety, and moderately negatively associated with self-esteem, and school connectedness. Because the internal consistency, test-retest reliability, and predictive validity supported use of the index, correlations were examined between the index and existing measures described in Table 2 to address these hypotheses.

Results for convergent validity are presented in Table 14. Results were generated using the overall index sums, and sums for text, cell, and email, too. Results support the convergent validity of the overall indexes of perpetration (ranging in magnitude from -.09 to .25) and victimization (ranging in magnitude from -.08 to -.17 in magnitude). However, the small magnitude of the correlation coefficients for perpetration and victimization only provide modest support for H_4 and H_5 which predicted moderate values.

Cyberbullying Findings

Prevalence. Following the reliability and validity assessment, results from the index validation study were used to assess the prevalence and frequency of cyberbullying perpetration and victimization. As a reminder, all items were measured on a continuous scale ranging from 0 ("this has not happened in the last

academic year") to 6 ("this has happened 6 or more times in the last academic year").

First, all participants' responses were used to calculate the overall prevalence of cyberbullying. In line with the definition of cyberbullying, instructions for the final measure described that the behavior of interest occurs repeatedly and all items were intentionally worded using plural nouns (e.g., "I have sent/received mean text messages…"). To that end, prevalence could be determined based on a sum of 1 or more instances. Using this computation, 59.3% of participants in the validity study reported perpetrating cyberbullying and 67.2% of participants reported being a victim in the last academic year. Table 15 presents these prevalence rates in addition to examples of how rates are affected by increasing the sum necessary to compute perpetration and victimization (i.e., what score makes one count as a perpetrator and victim). A recommendation for this point is discussed in the next chapter.

Frequency. Scores in the validity study were summed for perpetration (M = 4.80, SD = 10.34, median = 1.00) and victimization (M = 6.74, SD = 13.64, median = 2.00). Tables 9 and 10 include prevalence and frequency statistics by item. First, the number of respondents who reported more than one instance is labeled 'total'. Total is not weighted by the number of instances; it is simply the number of participants who had the experience at all. Prevalence is computed by item as the quotient of the total number of persons who reported the experience at all by the sample size (N = 609). This is the percentage of sample who indicated

perpetrating or experiencing cyberbullying as described in the item and is labeled "Prev.".

Table 9 describes the frequencies and summary statistics for perpetration items. The five most prevalent perpetration behaviors reported by participants were sending mean text messages directly to another person (TextP1), sharing personal text messages with others to hurt the person who sent them (TextP3), sharing someone's personal pictures or video text messages that they did not want others to see (TextP7), sending mean messages directly to someone online (OnlineP8), and excluding others from online groups (OnlineP5). Most email perpetration behaviors, with the exception sending mean emails directly to another person, occurred at a low prevalence, by fewer than 5% of the sample. One text and three online behaviors were also done by fewer than 5% of the sample.

Table 10 describes the frequencies and summary statistics for victimization items. The five most prevalent victimization experiences reported by participants where when someone sent several mean text messages directly to the victim (TextV1), someone sent the victim mean messages online (OnlineV8), someone shared the victim's personal text messages with others to hurt the victim (TextV3), someone sent threatening text messages directly to the victim (TextV4), and someone sent hurtful text messages about the victim to lots of other people (TextV2). All email victimization experiences occurred at a low prevalence, by fewer than 10% of the sample. One text and four online behaviors were also experienced by fewer than 10% of the sample.

Chronicity. To establish a clear picture of how often cyberbullying occurs for those who perpetrated or experienced cyberbullying at all, a mean was computed to describe the average number of instances for those who reported more than one instance of perpetration and victimization. That is, this is a mean computed with a sample limited to those who reported perpetrating or being victimized. Others have referred to this calculation as chronicity (e.g., Strauss, 1996). Chronicity is useful to look among perpetrators and victims by re-computing the mean.

In the present study, perpetrators (n = 361) reported committing a mean of 8.10 (SD = 12.40, median = 4.00) cyberbullying acts in the last academic year, whereas victims (n = 409) reported a mean of 10.04 (SD = 15.63, median = 5.00) cyberbullying experiences in the last academic year. Whereas these statistics provide a snapshot of the overall chronicity, statistics are also included in Tables 9 and 10 to describe participants' responses by item, labeled "Chr.".

Chapter 6

DISCUSSION

The goals of this dissertation research were to address concerns regarding the measurement of cyberbullying and to develop a reliable and valid measure of cyberbullying perpetration and victimization. Two pilot studies were conducted to address initial concerns and a main study was carried out to develop and evaluate a final measure. Results from the series of studies employed here indicate that these goals were generally accomplished. The discussion presented in this chapter begins with a brief overview of the series of studies. Next, the reliability and validity of the final measure is examined and findings derived from the final measure are considered within the scope of cyberbullying research. The chapter concludes with a presentation of overall strengths, limitations, and future directions for this work.

Overview

Pilot studies. Despite the growing body of literature on cyberbullying, several measurement concerns were identified and addressed in two pilot studies. These concerns included (1) the most appropriate time frame for behavioral recall, (2) use of the term "cyberbullying" in questionnaire instructions, (3) whether to refer to power in instances of cyberbullying, and (3) best practices for designing self-report measures to reflect how young adults understand and communicate about cyberbullying. Mixed methodology was employed over two pilot studies to address these concerns and to determine how to best design a measure which participants could respond to accurately and honestly.

Pilot Study One consisted of an experimental examination of time frame for recall and use of the term "cyberbullying." Honesty, accuracy, and social desirability were outcomes compared between conditions to determine whether referring to one month, one semester, one year, or an unlimited time frame was most appropriate. Additionally, these outcomes were compared for the absence or presence of the term "cyberbullying" in questionnaire instructions. Pilot Study Two involved a qualitative examination of several measurement concerns through the use of focus groups held with young adults. The focus groups allowed for discussions about how young adults talk about, make sense, and think about instances of cyberbullying. Feedback was also solicited from young adults about time frame for recall, use of the term "cyberbullying," power in instances of cyberbullying, how to word items in self-report surveys, and general suggestions for methodology.

Results from both studies offered implications for the design of the main study. Findings from the first pilot study about recall time frame suggested that either one semester or one year was the most appropriate reference period to use in survey measures and use of the term "cyberbullying" in might be considered. Findings from the second pilot study clarified these results and led to final decisions for the design of the main study. That is, results from the focus groups suggested that one academic year as the most appropriate time frame for behavioral recall and to not use the term "cyberbullying" in questionnaire instructions. Participants also helped to collectively write and revise instructions for the final measure developed in the main study. These instructions included

references to power. Further, participants talked about the wording of items and ways to design the final study to bolster accuracy and honesty in reports of perpetration behaviors and victimization experiences. Please note that a more detailed discussion regarding the implications of each pilot study is available at the end of chapters two and three. These implications of both pilot studies which informed a main study to develop and assess a final measure of cyberbullying perpetration and victimization.

Main study. Results of both pilot studies offered implications for designing a final measure of cyberbullying. Advancing a measure that was both practical in its ability to capture prevalence and precise in its ability to measure frequency was of the utmost importance. To meet these goals, the main study began by developing items for a final measure. Items were developed to conceptually capture the census of behaviors that could be used to perpetrate or experience cyberbullying. Response categories were developed in a way that results could be used to derive prevalence and frequency for both perpetration and victimization. The main study not only involved designing the final measure, but also assessing its underlying psychometric properties for the purpose of assessing reliability and validity.

Reliability and Validity of the Final Measure

Reliability. Examination of the psychometric properties indicated that the final measure demonstrated acceptable reliability as an index rather than a scale. Recall that the properties of the final measure were discussed to have some qualities of a reflective system indicated by effect indicators (i.e., a scale) and

some qualities of a formative system including cause indicators (i.e., an index). Because of this, the psychometric properties of the measure were investigated using criteria relevant to both systems. These analyses suggested that the measurement structure underlying the measure was more consistent with formative system than a reflective system. This initial step was important because the process of establishing reliability for an index involves a shift in thinking concerning criteria and expectations for internal consistency and reliability.

Methodological literature about measurement construction generally focuses on scale development and lacks concrete recommendations for how to establish reliability when there is a lack of strong covariance among items or when items cause the construct rather than being the effect of a construct (Diamantopoulos & Winklhofer, 2001). Advances in Structural Equation Modeling (SEM) techniques have brought this point to the attention of scholars with the implication that these characteristics suggest the presence of a formative system and are best represented as an index.

Contrasts of reflective and formative indicators are offered by Bollen and Lennox (1991) in their seminal piece outlining five fundamental implications for wisdom on construct measurement. Three of these five implications warrant review here because they inform the argument that the final measure demonstrated reliability. First, internal consistency takes on a new perspective in indexes. In these formative models, correlations among causal indicators can be positive, negative, or zero and therefore the common practices of conducting factor analysis to find correlation patterns among items and using internal

consistency as a criterion for reliability simply do not apply. Second, because the correlations among items in a formative model are not explained by the model, no prediction can be made about the correlation structure among items. Although the fit of a reflective model would benefit from high correlations, low correlations in a formative model prevent multicollinearity problems when predicting an outcome. Third, how the construct is represented in a scale and an index differ due to their underlying structure. Scales are based on reflective models that include moderately correlated items that sample facets of a construct; thus, removing an effect indicator can be done (e.g., to reduce the number of items in a measure) without much consequence because "equally reliable indicators are essentially interchangeable" (p. 308). However, removing a causal indicator from a formative model is more problematic because the latent construct is composed from all indicators and omitting an indicator leaves out a part of the construct. To that end, a formative model should be made of a census of indicators, all of which should be included in a final measure. These three implications are important to consider in the assessment of the reliability of the final measure.

Initial reflective models were developed to assess the structure of the perpetration and victimization constructs and these results can be interpreted in terms of Bollen and Lennox's (1991) implications regarding internal consistency, correlation structure among items, and item reduction. Strong internal consistency was found when these data were modeled reflectively using sums of perpetration and victimization scores for each channel. Interpreting this is somewhat challenging because each of the sums constitutes an index score, but the models

were constructed reflectively with effect indicators rather than formatively with causal indicators. To a certain degree, Models 1-4 (see Figures 3-6) represent a hybrid of formative and reflective modeling because the indicators are summed subdimensions of an index but modeled in a conventional, reflective approach. This composition represents and acknowledges the conceptual ambiguity regarding perpetration and victimization being constructs that exhibit both reflective and formative characteristics. Regarding internal consistency, good model fit statistics in the successive reflective Models 1-4 suggest that perpetration and victimization are distinct, but strongly correlated constructs. To that end, these CFA models demonstrate internal consistency for the perpetration and victimization constructs albeit that internal consistency is not a necessary criterion in an index. This point becomes more salient when considering the correlational structure among the items. Low alpha statistics for some sub-dimensions are not unexpected because covariance among items is not an expectation in an index. Significant paths in each of the successive models indicate the appropriateness of using these summed totals for text, email, and online perpetration behaviors and victimization experiences. Given this and that the strength of an index is derived from including items that represent the entirety of a construct, removing items was unnecessary to improve the internal consistency of the measure.

Test-retest reliability was determined by assessing the correlation of scores across two points in time and an assumption of this evaluation is that there will be little change in the construct model itself. Results of the test-retest

procedure demonstrated the stability of the measure over 10 days. In fact, test-retest reliability correlation coefficients for the overall indexes of perpetration (r = .88) and victimization (r = .78) were strong. These results indicate that measuring perpetration and victimization with the index can garner consistent responses from participants. Considered cumulatively, the psychometric properties and the outcome of the test-retest procedure demonstrate acceptable reliability for the cyberbullying perpetration and victimization measures when evaluated as indexes.

Validity. Whereas reliability concerns the consistency of the measure, validity evaluates whether a measure truly measures the intended construct. Two forms of validity were empirically evaluated in the present study, predictive validity and convergent validity.

The predictive validity of the cyberbullying perpetration index was examined in H_2, which hypothesized a positive relationship between cyberbullying perpetration and behavioral intention to cyberbully in the future. A two-construct full structural model was specified to evaluate this relationship (see Figure 9). Two of three criteria, including model fit and the estimated path between the two constructs, strongly supported the overall predictive validity of the index regarding behavioral intention. However, the validity coefficient for email perpetration did not contribute to the measure in a significant manner. This finding suggests that measuring email perpetration may not be necessary because it does not contribute to the overall index due to a low prevalence or variance of email perpetration in the population.

Similar results were found regarding the predictive validity of the cyberbullying victimization index examined in H_3, which hypothesized a positive relationship between cyberbullying victimization and susceptibility to being cyberbullied in the future. A two-construct full structural model was specified to evaluate this relationship (see Figure 10). All of the criteria supported the predictive validity of the victimization index regarding susceptibility. However, the validity coefficient for email victimization was not in the direction expected based on the reflective models used to examine internal consistency discussed earlier. This negative relationship does not suggest that email victimization is not contributing to the measure. Rather, this negative path is a prime example of the implications discussed earlier regarding formative construct measurement offered by Bollen and Lennox (1991). That is, positive relationships should not always be expected among indicators in an index modeled formatively because of the departure in expectation for a covariance structure among items. Although this explanation is strongly grounded in measurement theory, future research will have to examine the practical implications of measuring email victimization. Coupled with the findings regarding email perpetration, there is certainly room for future work that attends to reducing or altering items regarding perpetration and victimization via email. This point will be returned to as a direction for future research. The findings regarding email perpetration and victimization do not usurp that overall the indexes demonstrated predictive validity as expected.

Further evidence of validity was assessed through means of establishing convergent validity. H_4 predicted that the frequency of cyberbullying perpetration

would be moderately positively associated with verbal aggression and anger and moderately negatively associated with life satisfaction. This hypothesis was partially supported because the correlations were in the direction predicted for verbal aggression (r = .25), anger (r = .19), and life satisfaction (r = -.09), but the magnitudes of the relationships were not as strong as expected. Moderate correlations were predicted because this is generally expected when establishing convergent validity. However, some studies have found correlations similar to those found using the index developed here. For example, Cetin et al. (2011) recently developed a three factor cyberbullying scale that included the factors of Cyberforgery, Cyber Verbal Bullying, and Hiding Identity. Their assessment of convergent validity between the average of these three forms of perpetration overall with verbal aggression (r = .24) and anger (r = .23) demonstrated correlations of a small magnitude as well. Further, the correlations between the subdimensions and these two outcomes were as small as .13 for verbal aggression and .13 for anger. The correlations found by Cetin et al. are similar to those found in the present study. This suggests that while the magnitude of the correlations found here are not ideal for convergent validity – they may be acceptable for establishing convergent validity when interpreted in the scope of cyberbullying research.

H_5 predicted that the frequency of cyberbullying victimization would be moderately positively associated with stress and anxiety, and moderately negatively associated with self-esteem, and school connectedness. This hypothesis was partially supported because the correlations were in the direction predicted

for stress (r = .13) and anxiety (r = .14), as well as self-esteem (r = -.17) and school connectedness (r = -.08), but the magnitudes of the relationships were not as strong as the moderate correlations expected. Studies of measures for somewhat similar constructs found correlations stronger in magnitude than those found using the index developed here; however some important differences between these constructs and cyberbullying victimization are noteworthy. For example, Tynes et al. (2010) developed a four-factor Online Victimization Scale that included the factors of General Online Victimization, Sexual Online Victimization, Individual Online Racial Discrimination, and Vicarious Online Racial Victimization. Their assessment of convergent validity using a sample of 14-19 year olds between the General Online Victimization factor, which most closely reflects cyberbullying, with stress (r = .30), anxiety (r = .41), and self-esteem (r = -.29) demonstrated correlations of moderate values. Also, Felix et al. (2011) developed a measure of traditional bullying deemed the California Bully Victim Scale and assessed its convergent validity with school connectedness (r = -.34) among 9-12 graders, finding a moderate correlation too. Although these studies found correlations of larger magnitudes between victimization and the outcomes noted, it is important to consider that these measures of online victimization and traditional bullying are quite different than the cyberbullying victimization index developed here and were investigated in samples quite different in age.

The findings regarding the convergent validity of the perpetration and victimization indexes are promising. Although the correlations found in the

present study were not as large as expected, the findings were all significant and in the pattern expected for establishing convergent validity. Furthermore, the correlations found here are not much different than those found in similar studies for perpetration. The correlations found for victimization were smaller than those of somewhat similar studies, but key differences regarding the constructs and samples of those studies used for comparison suggest that arguments based on this contrast should be made cautiously. While future work should examine how these correlations change in lieu of refinements to the indexes developed here, satisfactory convergent validity was established in the present study.

Given the acceptable reliability, generally good predictive validity, and satisfactory convergent validity of the indexes developed here, outcomes from the measure were analyzed. A discussion of these findings regarding prevalence, frequency, and chronicity is presented next.

Findings from the Final Measure

The measure developed here aimed to be practical and precise. Practically, the measure of cyberbullying should be able to discern between those who are and who are not perpetrators and victims. Measuring prevalence is necessary to gather meaningful epidemiological data that can be used to evaluate intervention programs at school and community levels. Prevalence data is incredibly useful for informing policy decisions and assessing target populations for preventative efforts such as health communication campaigns. Further, the measure of cyberbullying should also be precise in its ability to capture the behaviors of perpetrators and the experiences of victims. Capturing continuous data concerning

the nuanced behaviors of perpetrators and the experiences of victims are important for individual differences research. To determine whether these goals were met, a discussion of prevalence and frequency is necessary.

Prevalence. Prevalence was computed in the present study based on a sum of one or more instances. That is, prevalence was conceptualized as a 0-1 dichotomy, with a score of 1 assigned if one or more acts in the index occurred. Within epidemiological research, prevalence is generally determined in this way in because it is intended to represent a distinction between absence and presence. However, some cyberbullying studies report prevalence using the presence of 2 or 3 acts due to most conceptual definitions of cyberbullying indicating that the experience must be repeated. Increasing the cut-off for prevalence computation in this way decreases the prevalence rating. Computations of prevalence estimates with increased cut-offs are helpful to include in results because they illustrate how prevalence changes when considering who is experiencing the problem more often, but only reporting prevalence computed from an increased cut-off could lead to slippage in representing the absence and presence of the problem. For example, the effect of increasing the sum necessary for a person to be considered a perpetrator or victim is illustrated in Table 15. That is, the estimate for perpetration (which becomes 37.3%) and victimization (which becomes 48.6%) are reduced when three instances are required for calculating prevalence. Increased cut-offs were not necessary for computation here because all instructions and items used plural descriptions to refer to instances of cyberbullying.

Using scores equal or greater than 1 to compute prevalence, results of the present study indicated that in the last academic year 59.3% of participants in the reported perpetrating cyberbullying and 67.2% of participants reported being a victim. Studies which used measures of cyberbullying with characteristics similar to the index presented here found similarly high prevalence rates. Measures in these studies assessed cyberbullying over one year, did not include the term "cyberbullying," and included multiple items. Juvoven and Gross (2008) assessed prevalence among 12-17 year olds. Their estimation method entailed summing across five different forms of cyberbullying experiences and resulted in 72% who reported having experienced at least one incident of cyberbullying Their investigation did not measure perpetration. Roberto et al. (2011) assessed cyberbullying perpetration and victimization among students during their senior year of high school using a measure similar to Juvoven and Gross. Roberto et al. developed a measure evaluating cyberbullying across five different communication channels and found that 35% of participants perpetrated cyberbullying and 47% of participants were victims of cyberbullying in their senior year of high school. An interesting note within the context of the present study is that both of these measures are best described as indexes. Others who investigated cyberbullying more than five years ago using a one year referent period (Wolak et al., 2007; Ybarra, 2004; Ybarra et al., 2006) measured cyberbullying using very different operational choices (e.g., single item or shorter measures, including the term "cyberbullying,") and found much lower prevalence rates, ranging from 6.5-9%. Measuring cyberbullying with multiple items may

make participants recall a larger range of their experiences. To that end, measures which capture the range of behaviors and experiences might be best equipped to accurately evaluate the problem of cyberbullying.

Whereas it is interesting to compare and contrast the prevalence rate using the index developed here to other cyberbullying studies based on operational choices, two important points should be considered. Foremost, other studies of cyberbullying not reviewed in the previous paragraph (see Table 1 for a complete list) used measures that asked participants to report their cyberbullying behaviors and experiences for time frames other than one year. These findings are difficult to compare to the results in the present study because of the incongruence in time frame for recall. Another important point is that the samples recruited for most cyberbullying research vary widely, consisting mostly of middle school and high school students, while the sample recruited here is of young adults in college. At the time of submission, no published investigations in the U.S. specifically examined cyberbullying within a college student sample. To that end, the prevalence found in the present study may indicate a problem among college students previously left from scrutiny. These prevalence findings certainly suggest that cyberbullying deserves further inquiry in the college student population. Indeed, the prevalence of the problem may be growing in conjunction with increased access and use of communication technology.

Frequency and chronicity. Response categories ranging from zero ("this has not happened in the last academic year") to six ("this happened 6 or more times in the last year") were used in place of categories such never, sometimes,

often, and frequently for a few reasons. First, this avoids the potential for misunderstanding of the numerical referent words such as sometimes, often, and frequently. Second, using actual values is more precise than ranges of values. This is especially the case when it comes to an infrequently occurring event like cyberbullying. Third, numerical categories permit estimates of the mean, median, or total number of perpetration and victimization incidents. This continuous data can be used to garner frequency and chronicity estimates.

Whereas the prevalence variable is a 0–1 dichotomy, the frequency is the mean number of times the behavior or experience happened in the entire sample and the chronicity is the mean number of times the acts in the index occurred, among those who engaged in the behavior or experience at least once. Frequency and chronicity help to illustrate a precise description of the severity of the problem – whether for understanding perpetration or victimization in general or on an item-by-item basis. Results of the main study indicated somewhat large estimates of frequency and chronicity of perpetration and victimization overall. Perpetration was committed an average (i.e., a mean number) of 4.80 times among the entire sample; among only perpetrators, an average of 8.10 cyberbullying acts were reported. Victimization was experienced an average of 6.74 times among those in the entire sample, whereas the sub-sample of victims indicated an average of 10.04 incidents of being cyberbullied. Considering the prevalence presented above, this trend suggests that there are less perpetrators who commit more acts of cyberbullying. This may be particularly good news for those who develop health campaigns aimed at deterring perpetration because it

appears less people are causing more of the problem and targeting these individuals could significantly reduce the prevalence of the problem.

On an item by item basis, frequencies suggested that texting and online forms of perpetration and victimization were the most often occurring and email forms of perpetration and victimization were the least frequently occurring among the entire sample. The five most frequently occurring perpetration behaviors were sending mean text messages directly to another person, sharing personal text messages with others to hurt the person who sent them, sharing someone's personal pictures or video text messages that they did not want others to see, sending mean messages directly to someone online, and excluding others from online groups (see Table 10 for complete results). The five most frequently occurring victimization experiences were when someone sent several mean text messages directly to the victim, someone sent the victim mean messages online, someone shared the victim's personal text messages with others to hurt the victim, someone sent threatening text messages directly to the victim, and someone sent hurtful text messages about the victim to lots of other people. Chronicity data is quite nuanced by item because of the skewed results here. Future research should be conducted among known perpetrators and victims to reveal more meaningful item-by-item chronicity estimates. This direction for future research is one of several discussed later in this chapter.

Strengths and Limitations

This investigation possesses several strengths that enhance its contribution to the study of cyberbullying. First, there have been few studies on cyberbullying

by communication scholars. Most of the research on cyberbullying has been done within the fields of psychology, education, and criminal justice. Cyberbullying involves various types of messages, which harm, threaten, harass, and embarrass. These messages all represent communication derived from perpetrators and directed at victims with the intent of deleterious outcomes. Communication scholars are particularly well suited to help understand and respond to this important problem because of their focus on message construction and exchange.

Other overarching strengths of this research are based in the strong methodology employed. This research project to develop a measure of cyberbullying perpetration and victimization included three studies involving quantitative and qualitative forms of inquiry. Experimental design, survey research, and focus groups were all utilized to respond to a range of research questions and evaluate numerous hypotheses. Most noteworthy is that each of these studies built upon one another in a programmatic fashion for the purpose of reaching the end goal to develop a measure which demonstrated acceptable reliability and validity. Further, two of these studies included large sample sizes and strong statistical analyses.

The most advanced statistical approaches were undertaken in the final study. Although one might have assumed a clear distinction between scales and indexes, the culmination of these studies suggests otherwise. The analyses employed in the final study included innovative SEM approaches to analyze the psychometric properties of constructs which exhibit qualities of reflective and formative systems. The iterative model building process employed here to

evaluate the final measure may inform the procedures that future scholars use to analyze the properties of other measurement tools with similar qualities. Moreover, these analytic procedures offer an empirical example to scholars who aim to extend procedures for index construction and develop recommendations for examining index reliability and validity. These contributions are important ones within the scope of measurement theory and methodological literature.

The age range of the samples recruited in these studies is an aspect of the research that can be considered for its strengths as well as limitations. Recall that college students were recruited for participation in all three studies employed here. On one hand, this represents a strength because these studies are among the first in the U.S. to examine cyberbullying in young adult populations. Indeed, the prevalence rates found in pilot study one and the final study demonstrate that cyberbullying is a problem among young adults. To that end, this line of research on cyberbullying among young adults in college offers important contributions to the cyberbullying literature. Some scholars may disagree with this argument because cyberbullying is sometimes merely referred to as a juvenile phenomenon. However, adults are commonly involved in other forms of bullying, including at the workplace (e.g., Tracy et al., 2006), in college (e.g., Werner & Crick, 1999), and between intimate partners (e.g., Palazzolo, Roberto, & Babin, 2009). To that end, bullying in childhood and adolescence may carry over into adulthood, strongly suggesting the importance of studying cyberbullying among young adults and developing measures which apply to the experiences of these populations. On the other hand, a limitation here is that other age ranges were not represented.

Conclusions about the relationship between age and prevalence are tentative without the inclusion of multiple age groups, ranging from adolescents to adults, in the same study. Future work examining this relationship is warranted. This line of research could simultaneously involve an investigation of the psychometric properties, reliability, and validity of the index developed here within these samples of younger participants.

Other limitations also impact this research. For example, the structure of research participants is somewhat unbalanced in regard to ethnicity. A majority of the respondents in all of the three studies conducted here identified themselves as Caucasian or White. Garnering samples with skewed representation of certain ethnicities could adversely affect the external validity of the results. Although this limitation certainly affects most research conducted on college campuses, there is still a need to recruit highly diverse and representative samples in cyberbullying research. In conjunction with the previous limitation discussed, future research should aim to replicate and further this research in larger, more representative, samples that range in age.

Another limitation specific to pilot study one and the main study was the use of self-report survey items to measure outcomes. Exposure to a matrix of items that ask about numerous behaviors, perceptions, and cognitions may lessen a respondent's interest in answering and lead to response bias or measurement error. For example, once participants entered the online survey in pilot study one, their time constraints, potential lack of interest, and perception of the incentive may have affected how they responded to the survey items. Future work might

mitigate this concern by working to develop procedures like those employed in the final study which bolstered the importance of the topic and aimed to capture participants' interest. Further, other methodologies, such as behavioral observation or peer nomination might be used to elaborate the study of cyberbullying measurement.

The most salient limitation in the present study is the practicality of the measure developed and assessed in the main study. The measure includes 31 items to measure perpetration and 31 items to measure victimization. Although the strength of this measure is that these items collectively capture the complete range of behaviors one could enact as a perpetrator or experience as a victim, a limitation is that there are simply a large number of items. Put succinctly, the measure is quite long. Item reduction is complicated due to the underlying formative index structure; because of this, common practices to shorten the measure through factor analysis cannot readily be applied. It would be a shortcoming on others' parts to merely use a random number of the items or to reduce the number of items without empirical support for doing so. To that end, future research with new samples is necessary to examine questions and strategies for item reduction.

Future Directions

The limitations presented above underscore the need for future research that aims to fill shortcomings of the present work and extend inquiry into cyberbullying measurement. Collectively, several suggestions for future research have been brought forward. Foremost, participants of diverse backgrounds

ranging in age from middle school to college should be recruited in subsequent cyberbullying investigations. In doing so, the relationship between age and prevalence can be more fully examined in conjunction with assessments of the psychometric properties, reliability, and validity index developed here within those samples. Projects of this scope might involve formative work to develop procedures like those employed in the main study which aim to bolster the importance of the topic, capture participants' interest, and present the topic to youth in relatable and understandable terms. Further, other methodologies, such as behavioral observation or peer nomination might be used to triangulate prevalence estimates and validate self-report cyberbullying measures. Future research that considers these recommendations is necessary to examine strategies for item reduction among new samples.

Although a growing body of literature examines both cyberbullying perpetration and victimization in a variety of age groups (i.e., different grade levels), few scholars have collected data from a large age range in one study. Doing so may be particularly helpful to evaluate Williams and Guerra's (2007) argument that the relationship between age and victimization may be curvilinear. In their study, 4.5% of fifth graders, 12.9% of eighth graders, and 9.9% of high school students reported being victims of cyberbullying. Scholars who examine linear age effects in samples with limited age ranges may find significant relationships, but future research involving a sample with a large age range can be evaluated for quadratic relationships between age and frequency of perpetration and victimization. Further, questions about what age cyberbullying ends, or

becomes a relevant problem again, can be investigated too. These directions for future research will help to minimize the cyberbullying measurement concerns which prompted the present research by employing the index developed here. Findings from future research in this area will help to clarify how resources aimed at cyberbullying research and prevention efforts should be focused with regard to grade level and age.

Future work must also be directed at reducing the number of items in the final measure developed here. Because less research examines index development compared to scale development, recommendations for index item reduction are not readily available in the methodological literature. However, some underlying recommendations for next steps can be garnered from what is known about scale construction and validation. A next study would involve closely examining responses to the items developed here, predicting which items might be dropped, and evaluating how these decisions affect outcomes derived from the measure. Underlying patterns in participants' responses should be explored to determine any unnecessary items. For example, can any items be removed without consequence to the prevalence rate garnered from the measure? Results from the examination of predictive validity in the main study suggest that email perpetration and victimization should be considered for removal. This suggestion is corroborated by the findings of pilot study two, in which focus group participants noted their limited use of email for personal communication. Predictions about these patterns that suggest item removal must be evaluated using new samples and confirmatory factor analytic methods like those employed

here which account for the underlying formative structure of the index. This line of research provides an opportunity to examine the need to measure email perpetration and victimization. Further, examining this need among varied groups is particularly important because of potential interaction effects between age and mode of cyberbullying. For example, young adults may employ and experience cyberbullying often while online using social networking, blogs, and websites whereas adolescents may do so more often using their cell phones and adults might cyberbully via email. Carrying out studies examining the measure here which attends to these nuanced considerations is perhaps the most important next step given the overarching goal of the present study to develop a practical measure of cyberbullying perpetration and victimization.

In addition to endeavors that aim to strengthen the practicality of the measure by reducing the number of items, other work can be aimed at bolstering the precision of the measure through methodological triangulation. Outcomes such as prevalence, frequency, and chronicity can be compared when derived from the measure and from other strategies such diary methods and peer attribution. First, diary strategies involve asking participants to track their personal experiences on a daily or weekly basis and can be employed for several months (for a review, see DeLongis, Hemphill, & Lehman, 1990). Participants' experiences can be tracked, quantified, and compared to experiences as measured with a cross sectional self-report derived from the index developed here at the end of the time period. Diary strategies have been used in traditional bullying research

(e.g., Sandstrom & Cillessen, 2003) and might be applied to cyberbullying investigations through the use of online diary tools.

Second, peer attribution strategies have also been used in the measurement of traditional bullying and involve peer nominations and peer ratings. Peer nomination involves asking participants to identify a fixed or optional number of classmates who fit each of several behavioral descriptions (e.g., picked on by others, bullies other students). In their review of nomination strategies, Cornell, Sheras, and Cole (2006) describe the typical methodology of these studies. Fixed quantities of nominees are often requested in school research; instructions usually ask students to report three other students who are of the same gender. The analysis of the nominations received from peers for a given descriptive item or scale are then summed and often standardized within classrooms, in an effort to eliminate between-classroom variation. Prevalence estimates are derived from these aggregate scores using a cutoff point decided upon by the researchers on the distribution of scores, such as 1 or .75 standard deviations from the mean. Students who exceed this cutoff point are considered bullies or victims, and those whose scores are below the chosen cutoff or in the mid-range are classified as non-bullies or non-victims. Closely related to peer nominations are peer ratings, which involve a group such as a class assessing their classmates on some rating scale describing how often they bully or are victims. Additionally, teacher nominations and ratings can be employed in similar fashions to peer nominations and ratings.

Employing strategies such as diary methods and peer attribution might serve as important steps to better understand the prevalence, frequency, and chronicity cyberbullying. Although the validity of these alternative forms of measurement is beyond the scope of this discussion and these methods are not without criticism, findings from diary and nomination strategies could be used for methodological triangulation. These directions for future research offer opportunities to continue to examine the validity of the final measure developed and assessed here. The importance of continuing to investigate the validity of the measure is not only underscored by the conventional need for sound measurement, but also because the ways in which individuals use and misuse technology will continue to change.

Conclusion

The need for a practical and precise measure of cyberbullying perpetration and victimization assessment prompted this research. This research included a series of studies that led to the development and assessment of a measure of cyberbullying perpetration and victimization. In the process of developing this measure, several limitations of previous methodological choices were addressed. Implications about time frame for behavioral recall and best practices for use of the term cyberbullying in questionnaire and survey directions were reached using an experimental examination. Focus groups helped to clarify these findings and determine recommendations. Additionally, issues of power were clarified and recommendations for research design to bolster accuracy and honesty were investigated among young adults. In sum, these studied helped to develop a

measure which captures the full range of behaviors and experiences congruent with the conceptual definition of cyberbullying. The final measure was assessed and determined to exhibit the psychometric properties of a reliable and valid index. Indeed, these studies will lend to the advancement of both basic and applied cyberbullying scholarship by acting as a catalyst for future research that refines the index developed here and continues to address this unfortunate phenomenon.

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Table 1

Term, Definition, and Recall Time in Cyberbullying Operationalization

Authors	Year	Presence of Cyberbullying Term [a]	Presence of Definition in Measure	Behavioral Recall Time [b]
Aricak et al.	2008	No	No	Ever
Bauman	2009	No	No	School Year (Year)
Beran & Li	2005	Yes[1]	Yes	Ever
Beran & Li	2007	Yes[1]	Yes	Ever
Dehue et al.	2008	Yes	Yes	Semester
Dempsey et al.	2009	No[2]	No	Month
Dilmac	2009	Yes	Yes	Ever
Hinduja & Patchin	2008	Yes	Yes	Ever
Hinduja & Patchin	2009	Yes	Yes	Ever
Juvonen & Gross	2008	No	No	Year
Katzer et al.	2009	Yes	Yes	Ever
Kowalski & Limber	2007	Yes	Yes	"past couple months" (Sem.)
Li	2006	Yes	No	Ever
Li	2007	Yes	No	Ever
Li	2008	Yes	No	Ever
Mesch	2009	No	No	Ever
Patchin & Hinduja	2006	Yes	Yes	Ever
Raskauskas & Stolz	2007	Yes	Yes	School Year (Year)

Riebel et al.	2009	Yes	No	Past 2 months (Month)
Slonje & Smith	2008	Yes	Yes	Past 2-3 months (Semester)
Smith et al.	2006	Yes	Yes	Past couple months (Semester)
Smith et al.	2008	Yes	Yes	(Semester)
Spitzberg & Hoobler	2002	Yes[3]	No	Ever
Steffgen & Konig	2009	Yes	Yes	School Year
Topcu et al.	2008	No	No	Ever
Vandebosch & VanCleemput	2007	Yes/No	No	3 months (Semester)
Varjas, Henrich, & Meyers	2009	No	No	Ever
Wang, Iannotti, & Nansel	2009	Yes	Yes	Past couple months (Semester)
Williams & Guerra	2007	No[4]	No	"Since school year began" - Spring (Sem)
Wolak, Mitchell, & Finkelhor	2007	No[5]	No	Year
Ybarra	2004	Yes[6]	No	Year
Ybarra & Mitchell	2004	Yes[6]	No	Ever (perp)/Year (vic)
Ybarra et al.	2006	Yes[7]	No	Year

Note. [a] uses another term in place of cyberbullying, superscript number in the CB Term column depicts the term that was used or not used ([1] cyberharassment; [2] cyber victimization; [3] cyber stalking; [4] internet bullying; [5] online harassment; [6] online aggression; [7] internet harassment). [b] Time in parentheses is closest approximation to the time frames investigated in the present study.

Table 2

Criteria for Assessing Reliability and Validity

Criteria	Perpetration	Victimization
Test-Retest Reliability	Correlations from T1 to T2	Correlations from T1 to T2
Internal Consistency	Coefficient alpha CFA	Coefficient alpha CFA
Content Validity	Committee, Focus Groups	Committee, Focus Groups
Predictive Validity	Behavioral intention	Attitudes
Convergent Validity	(+) Verbal Aggression (+) Anger (-) Life Satisfaction	(+) Stress (+) Anxiety (-) School Connectedness (-) Self Esteem

Table 3

Cyberbullying Prevalence by Time Frame (Percentage Reporting Yes) for RQ_1

	Month	Semester	Year	Forever	Total
Perpetration [a]	19.6	10.0	17.6	17.2	15.8
Victimization [b]	15.7	15.7	20.6	40.0 [c]	23.2

Note. [a] Perpetration did not significantly differ between time frame, χ^2 (3) = 2.59, p = .46.
[b] Victimization significantly differed between time frames, χ^2 (3) = 14.36, $p < .01$.
[c] Follow up chi square tests revealed that the 'Forever' time frame significantly differed from every other victimization category, but no other groups significantly differed.

Table 4

Time Frame Preference (Percentage Reporting Selection) for RQ1

Selection	Month	Semester	Year	Forever
1 = Too Short	52.7	29.6	11.9	2.1
2 = About right	42.4	60.5	54.9	31.4
3 = Too long	4.9	9.9	33.2	66.5
	Mean = 1.52	Mean = 1.80	Mean = 2.21	Mean = 2.64

Note. All means significantly differ from one another, Wilks' Lambda = .34, F (3, 239) = 156.01, $p < .001$.

Table 5

Correlations of Perpetration and Victimization Frequency with Social Desirability by Condition

	Time Frame				Term	
	Month	Semester	Year	Forever	Absence	Presence
Perp Freq.	-.11	.13	-.02	-.10	-.08	.09
Vic Freq.	-.02	-.13	-.09	-.18	-.09	-.07

Note. No correlations were significant.

Table 6

Perpetration/Victimization Items for Cell Phone Channel

Form	Type	Dissemination	
		Private	Public
Written	Flaming & Harassment	I sent mean text messages directly to another person./Someone sent several mean text messages directly to me.	-
	Denigration	-	I sent hurtful text messages about someone to lots of other people./Someone sent hurtful text messages about me to lots of other people.
	Impersonation	-	-
	Outing & Trickery	-	I shared personal text messages with others to hurt the person who sent them to me./Someone shared personal text messages I sent them with others to hurt me.
	Exclusion	-	-
	Cyberstalking	I sent threatening text messages directly to another person./Someone sent threatening text messages directly to me.	-
Media	Flaming & Harassment	I texted mean pictures or videos to another person./ Someone texted mean pictures or videos to me.	-
	Denigration	-	I texted embarrassing pictures or videos about someone to lots of other people./Someone texted embarrassing pictures or videos of me to lots of other people.
	Impersonation	-	-
	Outing & Trickery	-	I shared personal picture or video text messages someone sent me that they didn't want others to see./ Someone shared personal pictures or videos I texted them that I didn't want others to see.
	Exclusion	-	-
	Cyberstalking	I texted pictures or videos directly to another person to make them feel threatened/Someone texted threatening pictures or videos directly to me.	-

Table 7

Perpetration/Victimization Items for Email Channel

Form	Type	Dissemination	
		Private	Public
Written	Flaming & Harassment	I sent mean emails directly to another person./ Someone sent mean emails directly to me.	-
	Denigration	-	I sent hurtful emails about someone to lots of other people./Someone sent hurtful emails about me to lots of other people.
	Impersonation	I've made a fake email account to send hurtful emails to another person./Someone sent me hurtful emails from an address I thought was fake.	-
	Outing & Trickery	-	I shared personal emails with others to hurt the person who sent them to me./Someone shared personal emails I sent them with others to hurt me.
	Exclusion	-	-
	Cyberstalking	I sent threatening emails directly to another person./Someone sent threatening emails directly to me.	-
Media	Flaming & Harassment	I emailed mean pictures or videos directly to another person./Someone emailed mean/offensive pictures or videos to me.	
	Denigration		I emailed embarrassing pictures or videos about someone to several other people./Someone emailed embarrassing pictures of videos of me to lots of other people.
	Impersonation	-	-
	Outing & Trickery	-	I forwarded emails with personal pictures or videos someone sent me that they didn't want others to see./Someone forwarded personal pictures or videos I emailed them that I didn't want others to see.
	Exclusion	-	-
	Cyberstalking	I emailed threatening pictures or videos directly to another person./Someone emailed threatening pictures or videos directly to me.	-

Table 8

Perpetration/Victimization Items for Online Channel

Form	Type	Dissemination	
		Private	Public
Written	Flaming & Harassment	I sent mean messages directly to someone online./Someone sent me mean messages online.	-
	Denigration		I posted hurtful messages about somebody else online for people to see. Someone posted hurtful messages about me online for people to see.
	Impersonation		I pretended to be someone else online to make them look bad. I pretended to be someone else online to interfere with their friendships. I hid my identity online to threaten someone./Someone pretended to be me online to make me look bad. Someone pretended to be me online to interfere with my friendships. Someone hid their identity to threaten me online.
	Outing & Trickery		I posted private messages someone sent me online that they didn't want others to see. I posted someone's personal information online without their consent./Someone posted my private messages online that I didn't want others to see. Someone posted personal information about me online without my consent.
	Exclusion		I excluded others from online groups (i.e., games, blogs, etc) to hurt them./ Someone excluded me from online groups (games, blogs, etc) to hurt me.
	Cyberstalking	I sent threatening messages directly to another person online./ Someone sent threatening messages directly to me online	-

Media	Flaming & Harassment	I sent mean pictures or videos directly to another person online./Someone sent me mean photos or videos online.	
	Denigration		I posted embarrassing photos or videos of someone else online for others to see./Someone posted my photos or videos online to embarrass me.
	Impersonation, with Outing & Trickery (combined for online media)		I posted pictures or videos of someone online that they didn't want other people to see. I used someone's webcam images without their consent to hurt them./Someone posted my personal photos or videos online that I didn't want others to see. Someone posted my personal photos or videos online without my consent.
	Exclusion	-	-
	Cyberstalking	I sent threatening photos or videos directly to another person online./Someone sent threatening photos or videos directly to me online.	-

Note. Some types of dissemination suggested multiple forms of perpetration behaviors/victimization experiences, leading to the development of multiple items.

Table 9

Cyberbullying Perpetration Descriptive Statistics and Prevalence in Main Study (N = 609)

Perpetration Item	Descriptive [a]		Frequency Reported [b]							Summary		
	M	*SD*	0	1	2	3	4	5	6+	Total [c]	Prev. [d]	Chr. [e]
TextP1: I sent mean text messages directly to another person.	.79	1.44	389	107	44	30	11	3	23	218	0.36	2.21
TextP2: I sent hurtful text messages about someone to lots of other people.	.31	.95	518	43	15	16	7	1	6	88	0.14	2.16
TextP3: I shared personal text messages with others to hurt the person who sent them to me.	.32	.87	504	55	23	16	5	0	4	103	0.17	1.87
TextP4: I sent threatening text messages directly to another person.	.21	.73	532	43	17	8	0	1	4	73	0.12	1.78
TextP5: I texted mean pictures or videos to another person.	.17	.76	561	27	5	4	4	0	6	46	0.08	2.20
TextP6: I texted embarrassing pictures or videos about someone to lots of other people.	.21	.72	538	39	13	11	1	1	3	68	0.11	1.84
TextP7: I shared personal picture or video text messages someone sent me that they didn't want others to see.	.32	.92	506	58	19	13	5	0	7	102	0.17	1.93
TextP8: I texted picture or video text messages directly to another person to make them feel threatened.	.07	.44	585	12	5	4	1	0	1	23	0.04	1.91
EmailP1: I sent mean emails directly to another person.	.12	.59	570	23	8	3	2	0	3	39	0.06	1.90

EmailP2: I sent hurtful emails about someone to lots of other people.	.05	.38	592	9	2	4	0	0	1	16	0.03	1.94
EmailP3: I've made a fake email account to send hurtful emails to another person.	.04	.31	595	7	2	3	1	0	0	13	0.02	1.85
EmailP4: I shared personal emails with others to hurt the person who sent them to me.	.06	.36	584	16	3	4	1	0	0	24	0.04	1.58
EmailP5: I sent threatening emails directly to another person.	.07	.45	587	12	2	2	4	1	0	21	0.03	2.05
EmailP6: I emailed mean pictures or videos directly to another person	.04	.36	596	4	5	2	0	0	1	12	0.02	2.17
EmailP7: I emailed embarrassing pictures or videos about someone to several other people.	.07	.39	582	18	4	3	0	0	1	26	0.04	1.58
EmailP8: I forwarded emails with personal pictures or videos someone sent me that they didn't want others to see.	.07	.41	584	15	5	3	1	1	0	25	0.04	1.72
EmailP9: I emailed threatening pictures or videos directly to another person.	.05	.36	595	6	1	5	0	1	0	13	0.02	2.15
OnlineP1: I pretended to be someone else online to interfere with their friendships.	.09	.41	576	21	6	5	1	0	0	33	0.05	1.58
OnlineP2: I hid my identity online to threaten someone.	.06	.39	587	15	2	2	1	0	1	21	0.03	1.67
OnlineP3: I posted private messages someone sent me online that they didn't want others to see.	.09	.45	574	23	6	3	1	0	1	34	0.06	1.59
OnlineP4: I posted someone's personal information online without their consent.	.10	.48	564	36	4	1	1	0	2	44	0.07	1.43
OnlineP5: I excluded others from online groups (i.e., games, blogs, etc) to hurt them.	.30	.87	510	58	18	12	4	0	6	98	0.16	1.86

OnlineP6: I sent threatening messages directly to another person online.	.16	.63	555	28	16	3	2	0	3	52	0.09	1.83
OnlineP7: I sent mean pictures or videos directly to another person online.	.09	.51	581	14	8	3	1	0	2	28	0.05	1.96
OnlineP8: I sent mean messages directly to someone online.	.30	.87	509	55	22	13	2	3	4	99	0.16	1.87
OnlineP9: I posted hurtful messages about somebody else online for people to see.	.12	.55	569	25	8	2	2	2	1	40	0.07	1.78
OnlineP10: I pretended to be someone else online to make them look bad.	.09	.42	573	22	7	5	1	0	0	35	0.06	1.57
OnlineP11: I posted embarrassing photos or videos of someone else online for others to see.	.24	.83	536	39	14	8	4	3	4	72	0.12	2.03
OnlineP12: I posted pictures or videos of someone online that they didn't want other people to see.	.11	.49	567	25	11	3	2	1	0	42	0.07	1.64
OnlineP13: I used someone's webcam images without their consent to hurt them.	.05	.35	590	10	6	1	2	0	0	19	0.03	1.74
OnlineP14: I sent threatening photos or videos directly to another person online.	.03	.28	597	6	2	2	1	0	0	11	0.02	1.82

Note. [a] The mean and standard deviation are descriptive statistics computed using all responses from the complete sample.[b] Response categories represent frequency (that is, number of instances) reported in the last year. [c] Total is the number of respondents who reported more than one event and does not account for the number of instances. [d] Prev. stands for prevalence and is the percentage of sample who indicated perpetrating cyberbullying as described in the item. [e] Chr. stands for average and is the mean number of instances for those who reported more than one instance.

Table 10

Cyberbullying Victimization Descriptive Statistics and Prevalence in Main Study (N = 609)

Victimization Item	Descriptive [a]		Frequency Reported [b]							Prevalence		
	M	*SD*	0	1	2	3	4	5	6+	Total [c]	Prev.[d]	Chr.[e]
TextV1: Someone sent several mean text messages directly to me.	.84	1.49	389	100	39	43	10	3	25	220	0.36	2.33
TextV2: Someone sent hurtful text messages about me to lots of other people.	.36	1.04	505	60	15	12	5	1	11	104	0.17	2.09
TextV3: Someone shared personal text messages I sent them with others to hurt me.	.36	.92	489	72	21	14	6	0	6	119	0.20	1.82
TextV4: Someone sent threatening text messages directly to me.	.38	.99	487	67	27	15	3	0	9	121	0.20	1.92
TextV5: Someone texted mean pictures or videos to me.	.19	.75	548	39	6	8	3	0	5	61	0.10	1.92
TextV6: Someone texted embarrassing pictures or videos of me to lots of other people.	.23	.74	526	51	15	7	5	0	3	81	0.13	1.73
TextV7: Someone shared personal pictures or videos I texted them that I didn't want others to see.	.27	.79	513	58	19	11	5	0	3	96	0.16	1.74
TextV8: Someone texted threatening pictures or videos directly to me.	.11	.55	575	19	6	5	2	0	2	34	0.06	1.94
Email V1: Someone sent mean emails directly to me.	.18	.79	561	28	6	5	1	0	8	48	0.08	2.23
Email V2: Someone sent hurtful emails about me to lots of other people.	.09	.55	587	9	7	2	0	1	3	22	0.04	2.36

Email V3: Someone sent me hurtful emails from an address I thought was fake.	.09	.57	591	6	2	3	4	1	2	18	0.03	2.89
Email V4: Someone shared personal emails I sent them with others to hurt me.	.08	.51	585	13	4	3	2	0	2	24	0.04	2.08
Email V5: Someone sent threatening emails directly to me.	.11	.59	579	16	4	5	2	0	3	30	0.05	2.17
Email V6: Someone emailed mean/offensive pictures or videos to me.	.11	.54	576	16	10	3	2	0	2	33	0.05	1.97
Email V7: Someone emailed embarrassing pictures of videos of me to lots of other people.	.09	.52	585	12	5	3	1	1	2	24	0.04	2.17
Email V8: Someone forwarded personal pictures or videos I emailed them that I didn't want others to see.	.09	.53	584	13	6	1	2	1	2	25	0.04	2.12
Email V9: Someone emailed threatening pictures or videos directly to me.	.06	.48	594	5	4	2	1	2	1	15	0.02	2.60
Online V1: Someone pretended to be me online to interfere with my friendships.	.24	.84	534	42	18	4	3	2	6	75	0.12	1.97
Online V2: Someone hid their identity to threaten me online.	.13	.55	558	38	6	2	1	1	2	50	0.08	1.54
Online V3: Someone posted my private messages online that I didn't want others to see.	.11	.52	571	18	12	4	2	0	1	37	0.06	1.84
Online V4: Someone posted personal information about me online without my consent.	.28	.83	515	56	22	4	6	2	4	94	0.15	1.81
Online V5: Someone excluded me from online groups (games, blogs, etc) to hurt me.	.26	.75	514	62	19	4	7	1	2	95	0.16	1.65
Online V6: Someone sent threatening messages directly to me online.	.26	.79	514	65	13	8	4	1	4	95	0.16	1.68

Online V7: Someone sent me mean photos or videos online.	.15	.67	567	20	9	7	2	1	3	42	0.07	2.14
Online V8: Someone sent me mean messages online.	.50	1.12	459	71	46	15	5	2	11	150	0.25	2.03
Online V9: Someone posted hurtful messages about me online for people to see.	.21	.77	545	28	23	5	1	1	5	63	0.10	2.03
Online V10: Someone pretended to be me online to make me look bad.	.21	.72	540	37	20	5	3	1	3	69	0.11	1.84
Online V11: Someone posted my photos or videos online to embarrass me.	.22	.82	540	41	11	7	3	1	6	69	0.11	1.99
Online V12: Someone posted my personal photos or videos online that I didn't want others to see.	.19	.74	553	26	13	11	1	2	3	56	0.09	2.09
Online V13: Someone posted my personal photos or videos online without my consent.	.29	.95	530	35	16	14	3	2	8	78	0.13	2.29
Online V14: Someone sent threatening photos or videos directly to me online.	.07	.44	588	9	5	2	3	1	0	20	0.03	2.10

Note. [a] The mean and standard deviation are descriptive statistics computed using all responses from the complete sample.[b] Response categories represent frequency (that is, number of instances) reported in the last year. [c] Total is the number of respondents who reported more than one event and does not account for the number of instances. [d] Prev. stands for prevalence and is the percentage of sample who indicated experiencing cyberbullying victimization as described in the item. [e] Chr. stands for chronicity and is the mean number of instances for those who reported more than one instance.

Table 11

Fit Indices for Initial Reflective Models (N = 609) using MLM Estimation

Fit Statistic	Model 1: Perp [a]	Model 2: Vic [a]	Model 3: Two factor, perpetration and victimization	Model 4: Two factor, with correlated errors for channel
χ^2	0 (0), $p < .001$	0 (0), $p < .001$	53.94 (8), $p < .01$	9.46 (5), $p = .09$
RMSEA	0	0	.097	.049
90% CI			.074-.123	0-.075
CFI	1.0	1.0	.71	.97
TLI	1.0	1.0	.45	.91
SRMR	0	0	.064	.049

Note. [a] The fit statistics for the perpetration model and the victimization model cannot be assessed because the model is just-identified with zero degrees of freedom.

Table 12

Alpha and Test-Retest Reliability (N = 62) [a]

Index [b]	Alpha		Time 1 Sums		Time 2 Sums		T1-T2 *r* [c]
	T1	T2	*M*	*SD*	*M*	*SD*	
Perpetration	.94	.86	5.82	14.48	2.73	5.75	.88
Text	.77	.41	3.47	5.65	1.24	2.04	.40
Email	.92	.95	0.97	4.57	0.60	3.00	.96
Online	.93	.80	1.39	5.33	0.89	2.37	.87
Victimization	.77	.77	3.79	6.08	3.39	6.95	.78
Text	.58	.63	1.73	2.81	1.39	2.50	.73
Email	.83	.89	0.65	2.67	0.60	3.01	.91
Online	.52	.75	1.42	2.65	1.40	2.85	.49

Note. [a] Includes only participants who responded at both time points. [b] Sums were used in all analyses reported here. [c] All correlations are significant, $p < .01$.

Table 13

Fit Indices for Two-Construct Predictive Models (N = 609) with MLM Estimation

Fit Statistic	Model 5: Perpetration model with all formative indicators	Model 6: Victimization model with all formative indicators
χ^2	19.80 (6), $p < .01$	16.53 (6), $p < .05$
RMSEA	.062	.055
90% CI	.033-.093	.024-.088
CFI	.97	.97
TLI	.95	.93
SRMR	.027	.022

Table 14

Convergent Validity Using Pearson Product Moment Correlations (N = 609)

Index	Verbal Agg.	Anger	Life Sat.	Stress	Anxiety	School Conn.	Self Esteem
Perpetration	.25**	.19**	-.09*	-	-	-	-
Text	.30**	.24**	-.06	-	-	-	-
Email	.11**	.04	-.06	-	-	-	-
Online	.18**	.15**	-.10**	-	-	-	-
Victimization	-	-	-	.13**	.14**	-.08*	-.17**
Text	-	-	-	.15**	.15**	-.08*	-.18**
Email	-	-	-	.05	.08*	-.09*	-.14**
Online	-	-	-	.12**	.12**	-.05	-.14**

Note. All correlations are in the direction predicted. * $p < .05$, ** $p < .01$.

Table 15

Cyberbullying Prevalence in Main Study

	Reliability Study (N = 62) [a]		Validity Study (N = 609)
	Time 1	Time 2	
Perpetration (1 + instance)	62.9 %	46.8 %	59.3 %
2 +	51.6 %	37.1 %	47.3 %
3 +	43.5 %	29.0 %	37.3 %
Victimization (1 + instance)	58.1 %	50.0 %	67.2 %
2 +	45.2 %	35.5 %	58.0 %
3 +	37.1 %	29.0 %	48.6 %

Note. [a] Includes only participants who responded at both time points. [b] Percentage of participants reporting greater than the sum of 1, 2, or 3 instances.

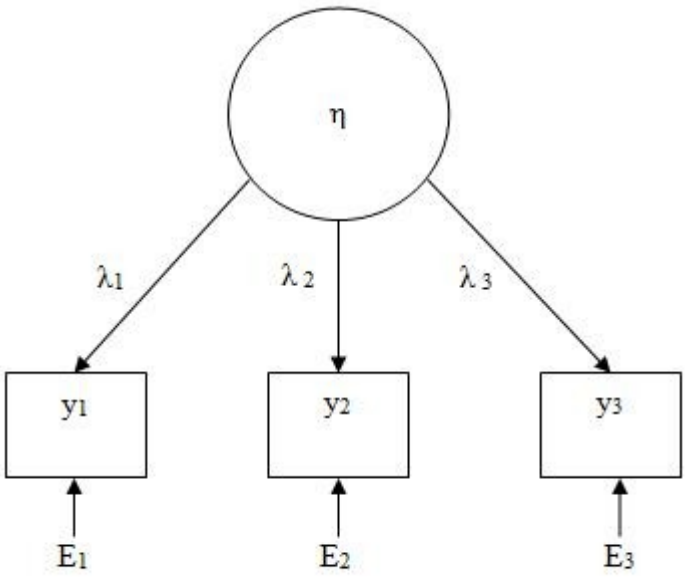

Figure 1. Reflective indicator model with effect indicators.

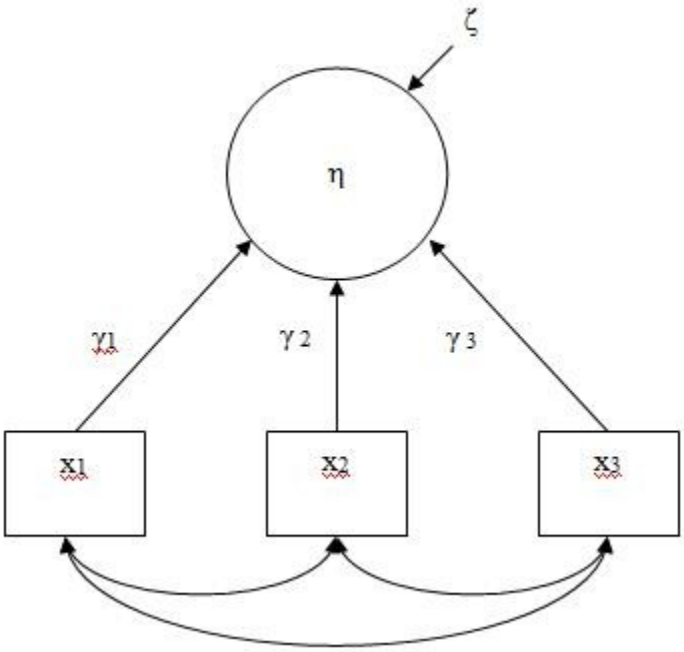

Figure 2. Formative indicator model with causal indicators.

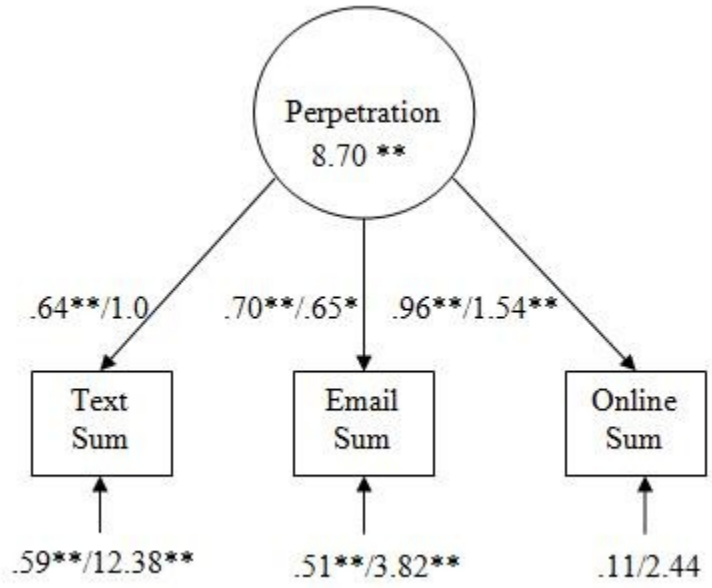

Figure 3. Model 1: CFA of 1 factor perpetration model, standardized/unstandardized loadings, ** $p < .001$.

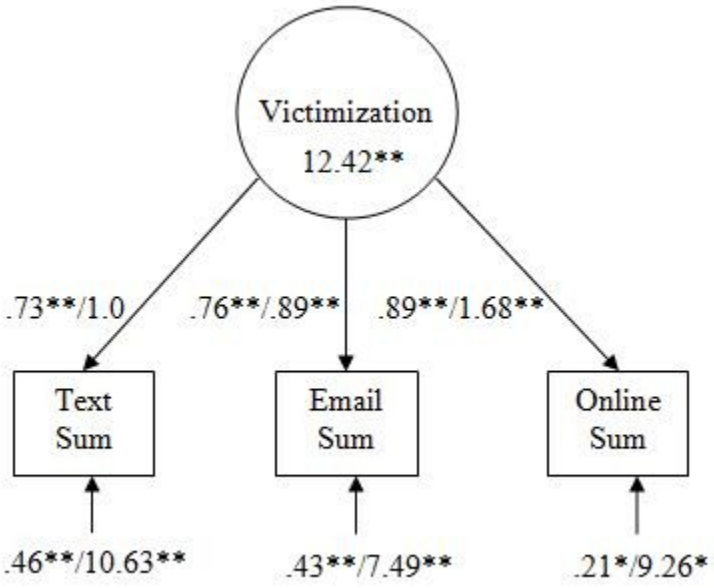

Figure 4. Model 2: CFA of 1 factor victimization model, standardized/unstandardized loadings, ** $p < .001$.

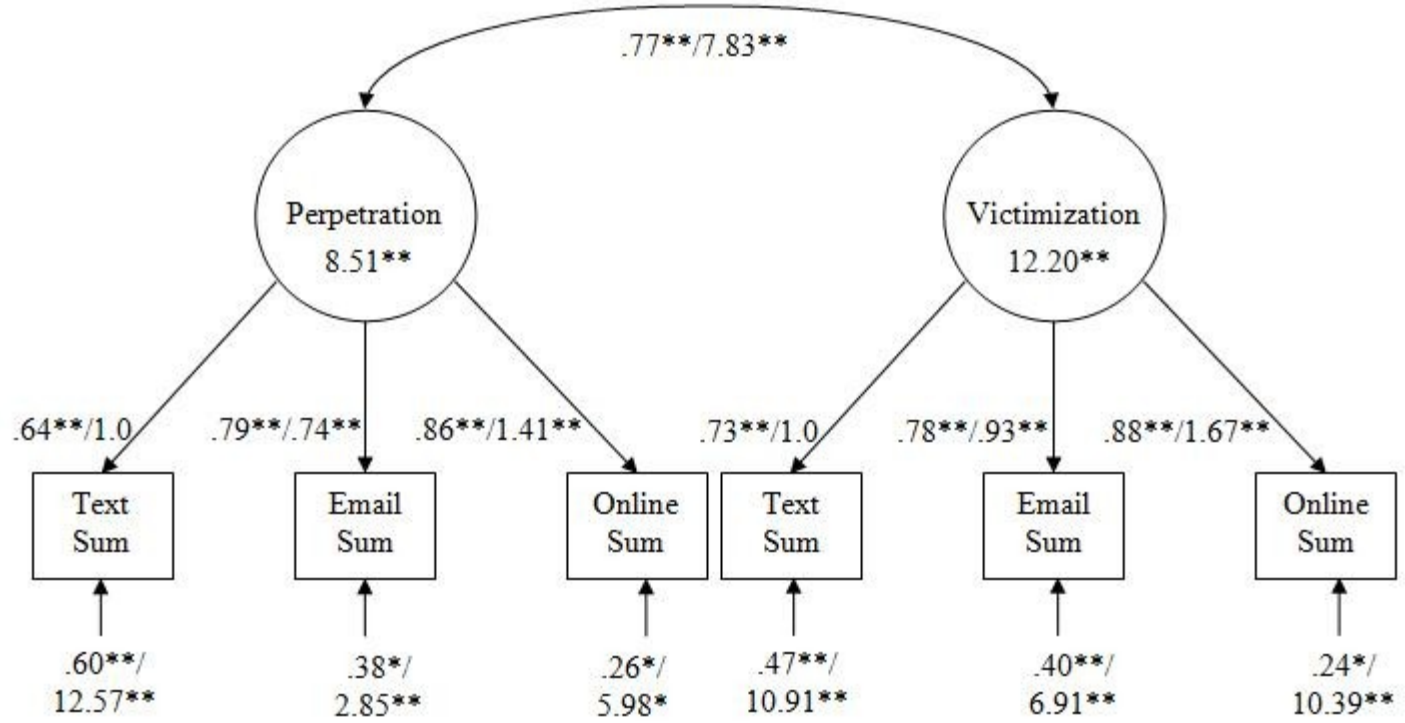

Figure 5. Model 3: CFA of two factor model, standardized/unstandardized loadings, ** $p < .001$, *$p < .05$.

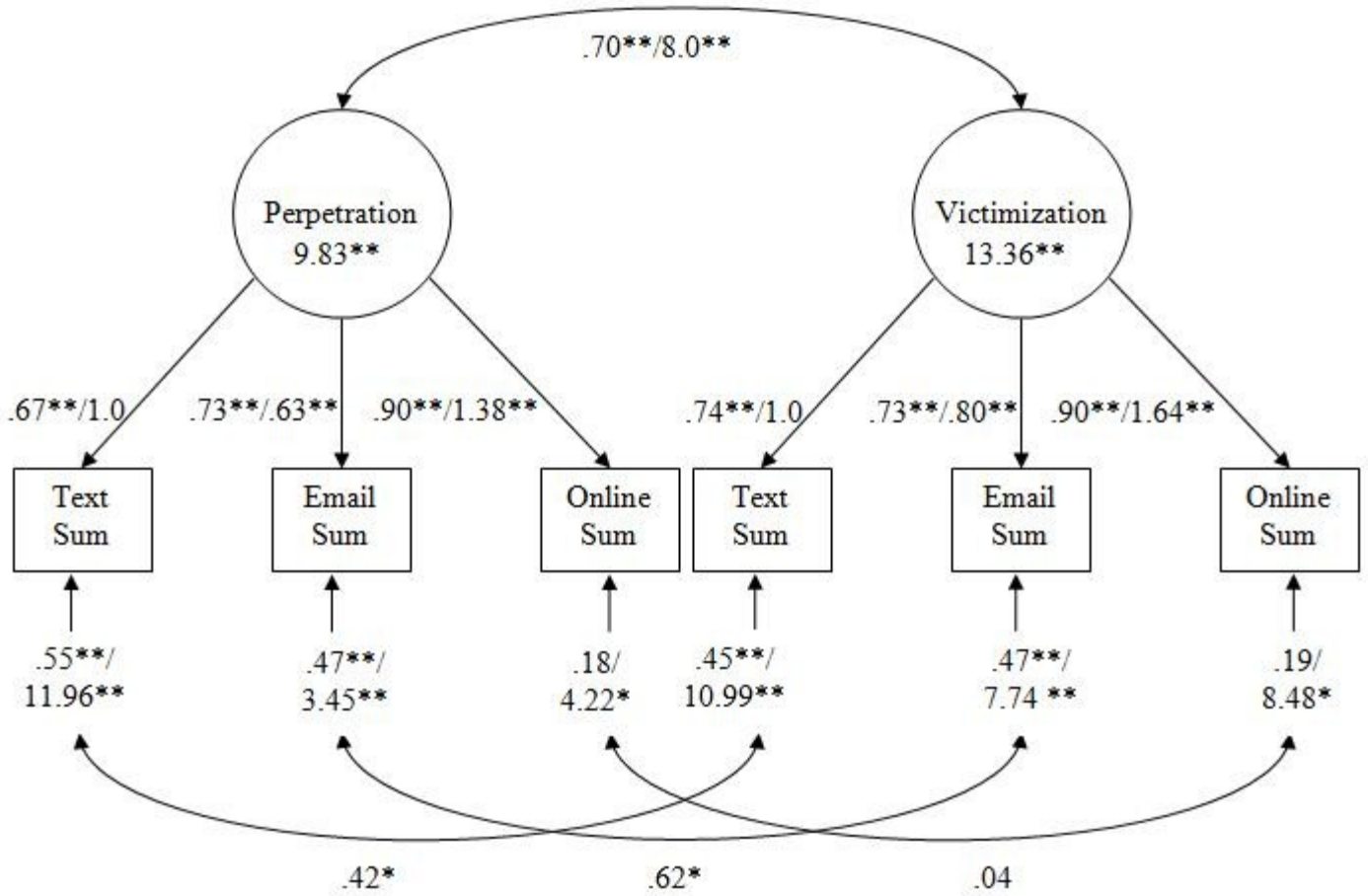

Figure 6. Model 4: CFA of two factor model with correlated channels, standardized/unstandardized loadings, ** $p < .001$, * $p < .05$.

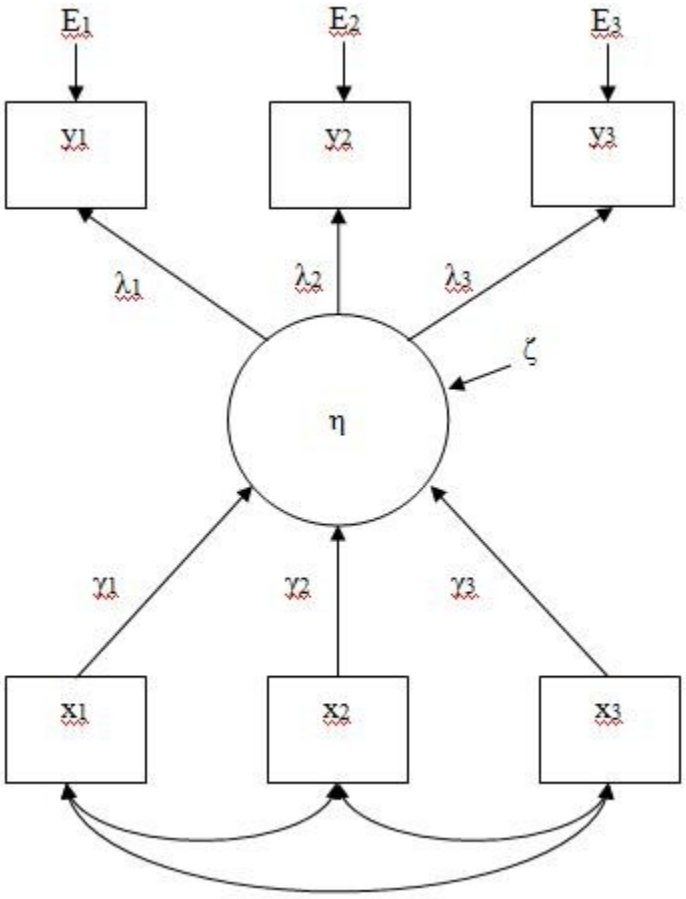

Figure 7. MIMIC Model.

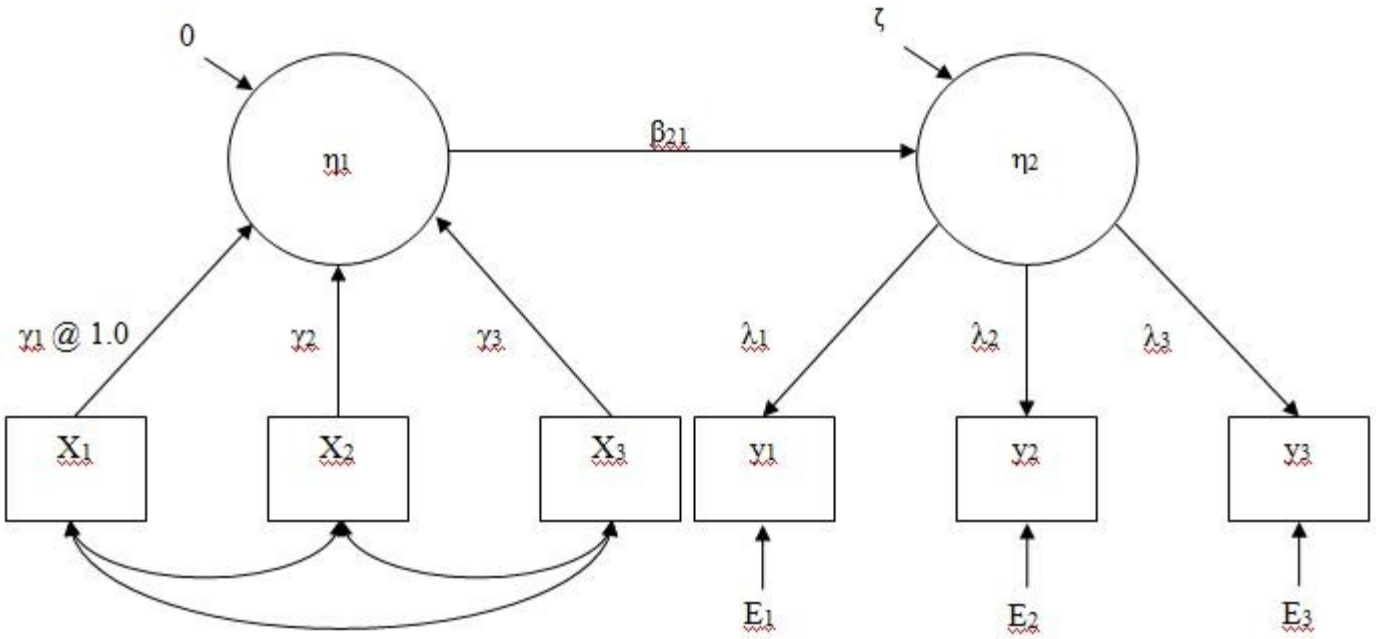

Figure 8. Two-construct model with formative and reflective indicators, equivalent to the MIMIC model in Figure 7.

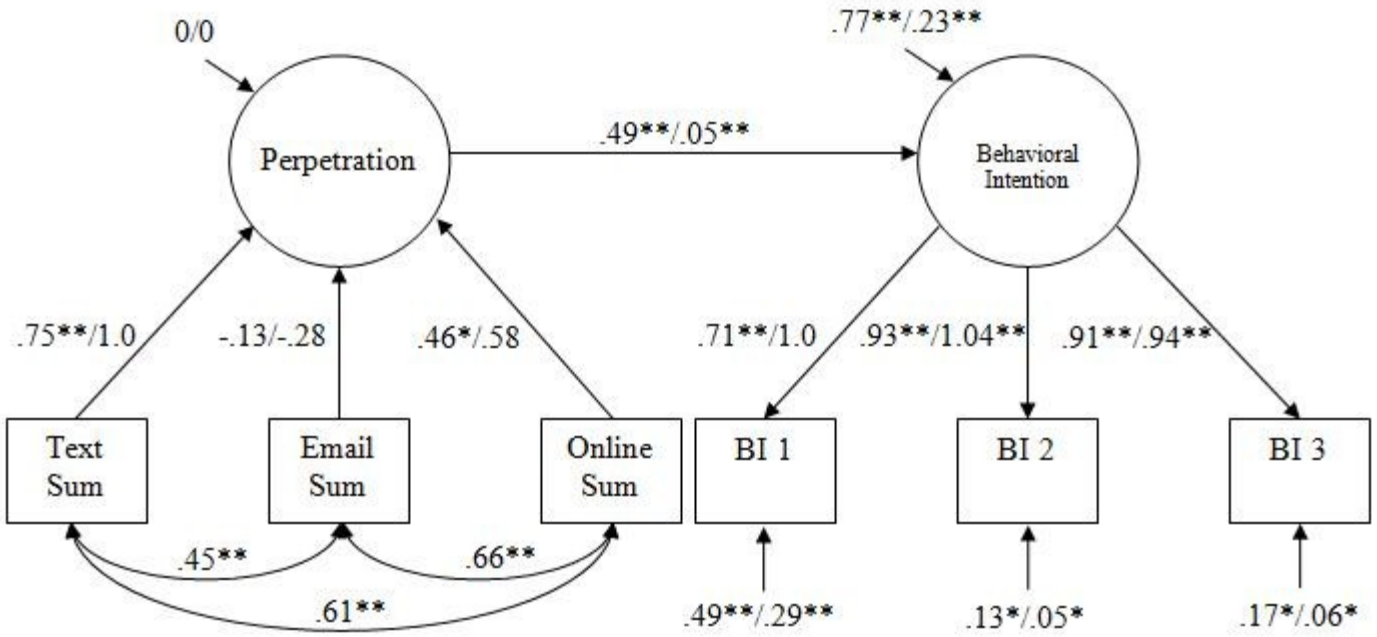

Figure 9. Model 6: Two-construct model of perpetration predicting behavioral intention with standardized/unstandardized loadings, ** $p < .001$, * $p < .05$.

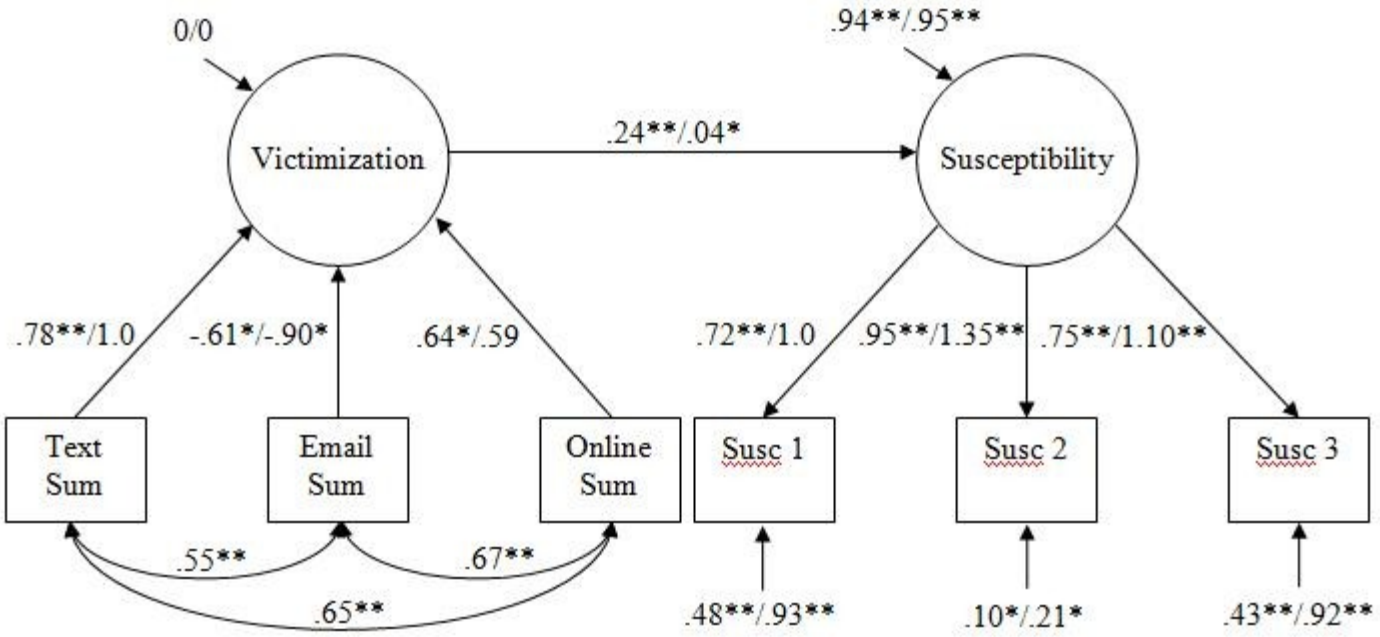

Figure 10. Model 7: Two-construct model of victimization predicting susceptibility with standardized/unstandardized loadings, ** $p < .001$, * $p < .05$.

APPENDIX A

PILOT STUDY ONE HUMAN SUBJECTS APPROVAL

ASU ARIZONA STATE UNIVERSITY
Knowledge Enterprise Development

Office of Research Integrity and Assurance

To:	Anthony Roberto
From:	Mark Roosa, Chair Soc Beh IRB
Date:	01/09/2012
Committee Action:	**Exemption Granted**
IRB Action Date:	01/09/2012
IRB Protocol #:	1201007256
Study Title:	Developing a Measure of Cyberbullying Perpetration and Victimization

Experiment with The above-referenced protocol is considered exempt after review by the Institutional Review Board pursuant to Federal regulations, 45 CFR Part 46.101(b)(2) .

This part of the federal regulations requires that the information be recorded by investigators in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. It is necessary that the information obtained not be such that if disclosed outside the research, it could reasonably place the subjects at risk of criminal or civil liability, or be damaging to the subjects' financial standing, employability, or reputation.

You should retain a copy of this letter for your records.

APPENDIX B

PILOT STUDY ONE INFORMED CONSENT

Dear Participant:

My name is Matthew Savage, and I am a doctoral student in the Hugh Down's School of Human Communication at Arizona State University working on my dissertation research under the direction of Dr. Anthony Roberto. I am conducting a study to assess how people use computers and technology to communicate with one another.

We are inviting your participation in filling out an online survey, which will take approximately 30 minutes. You must be 18 or older to participate in the study. Your participation in this study is entirely voluntary. You may skip questions if you wish. You may also choose not to participate or to withdraw from the study at any time without penalty.

You will receive extra credit from your instructor for participating in this study. If you decide you do not want to participate, you can still receive extra credit by participating in another study or doing an alternative assignment. Further, you will get the opportunity and satisfaction of advancing social scientific theory, research, and practice. You will also have the opportunity to contact the principal investigator at the conclusion of the study for a copy of the results.

There are no foreseeable risks or discomforts to your participation. However, if you choose to participate in this study, please keep in mind that you may stop at any time if you do become uncomfortable.

Data collected in the survey is completely anonymous, meaning that there is no way to connect your name to your responses. After completing the online survey, a link will take you to a different website where you will enter your name for extra credit purposes. The website that collects your name is not connected to the answers you provided on the survey. The results of this study may be used in reports, presentations, or publications, but your name will not be used.

If you have questions about participating in this study, you are welcome to email Matthew Savage: mwsavage@asu.edu. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788.

Clicking on the link to begin the survey will be considered your consent to participate.

Sincerely,
Matthew Savage, M.A. and Anthony Roberto, Ph.D.

APPENDIX C

PILOT STUDY ONE EXPERIMENTAL MEASURE ILLUSTRATING TIME FRAME MANIPULATION

Sometimes a person or group of people (that is, friends, classmates, family, or maybe people we don't even know) use cell phones or the Internet to repeatedly send or post messages in order to intentionally threaten or hurt people, make them feel bad, or to embarrass people in front of others in an unfriendly way.

For example, a person might send several messages directly to someone using a cell phone or email. Or, a person might post photos or messages about someone in places other people can see like on a Website.

During the [TIME FRAME*], did anyone ever use a cell phone or the Internet to send or post messages or images to hurt or embarrass you in an unfriendly way?

□ Yes □ No

If "yes", how many different times did someone do this to you during the [TIME FRAME*] (for example, at different times, by different people, or for different reasons)?

□ 1 □ 2 □ 3 □ 4 □ 5 □ 6 or more

During the [TIME FRAME*], did you ever use a cell phone or the Internet to send or post messages or images to hurt or embarrass someone else in an unfriendly way?

□ Yes □ No

If "yes", how many different times did you do this during the [TIME FRAME*] (for example, at different times, to different people, or for different reasons)?

□ 1 □ 2 □ 3 □ 4 □ 5 □ 6 or more

* Time frame based on condition: month, semester, past year, forever ("ever"/no time frame).

APPENDIX D

PILOT STUDY ONE EXPERIMENTAL MEASURE ILLUSTRATING TERM MANIPULATION

Term Absence:

Sometimes a person or group of people (that is, friends, classmates, family, or maybe people we don't even know) use cell phones or the Internet to repeatedly send or post messages in order to intentionally threaten or hurt people, make them feel bad, or to embarrass people in front of others in an unfriendly way.

For example, a person might send several messages directly to someone using a cell phone or email. Or, a person might post photos or messages about someone in places other people can see like on a Website.

During the current school year, did anyone ever use a cell phone or the Internet to send or post messages or images to hurt or embarrass you in an unfriendly way?

□ Yes □ No

If "yes", how many different times did someone do this to you during the current school year (for example, at different times, by different people, or for different reasons)?

□ 1 □ 2 □ 3 □ 4 □ 5 □ 6 or more

During the current school year, did you ever use a cell phone or the Internet to send or post messages or images to hurt or embarrass someone else in an unfriendly way?

□ Yes □ No

If "yes", how many different times did you do this during the current school year (for example, at different times, to different people, or for different reasons)?

□ 1 □ 2 □ 3 □ 4 □ 5 □ 6 or more

Term Presence:

Cyberbullying is when a person or group of people (that is, friends, classmates, family, or maybe people we don't even know) use cell phones or the Internet to repeatedly send or post messages in order to intentionally threaten or hurt people, make them feel bad, or to embarrass people in front of others in an unfriendly way.

For example, a **cyberbully** might send several messages directly to someone using a cell phone or email. Or, a **cyberbully** might post photos or messages about someone in places other people can see like on a Website.

During the past year, did anyone ever **cyberbully** you by using a cell phone or the Internet to send or post messages or images to hurt or embarrass you in an unfriendly way?

□ Yes □ No

If "yes", how many different times did someone **cyberbully** you in the last year (for example, at different times, by different people, or for different reasons)?

□ 1 □ 2 □ 3 □ 4 □ 5 □ 6 or more

During the last year, did you ever **cyberbully** someone using a cell phone or the Internet to send or post messages or images to hurt or embarrass them else in an unfriendly way?

□ Yes □ No

If "yes", how many different times did you **cyberbully** others in the last year (for example, at different times, to different people, or for different reasons)?

□ 1 □ 2 □ 3 □ 4 □ 5 □ 6 or more

APPENDIX E

PILOT STUDY ONE RCMAS LIE SCALE – A SOCIAL DESIRABILITY MEASURE

1. I like everyone I know
2. I am always kind
3. I always have good manners
4. I am always good
5. I am always nice to everyone
6. I tell the truth every single time
7. I never get angry
8. I never say things I shouldn’t
9. I never lie

APPENDIX F

PILOT STUDY ONE OPEN-ENDED QUESTIONS

Open-Ended Questions about Cyberbullying Term

In this study, we described a behavior known as cyberbullying. Cyberbullying is when person or group of people (that is, friends, classmates, family, or maybe people we don't know) use cell phones or the Internet to repeatedly send or post messages in order to intentionally threaten or hurt people, make them feel bad, or to embarrass people in front of others in an unfriendly way. In the survey, we did/did not [depending on condition] use the term cyberbully to describe this set of behaviors. We have some questions about how this may have affected your responses:

1. If we would have used the term cyberbullying, would this have changed your response to the questions we asked earlier about this behavior? [yes or no]
2. [If yes], why?
3. [if not], why not?
4. Does including the term cyberbullying make it easier or harder be accurate about reporting this behavior?
5. If there is anything else we could have done to help you give us more accurate information about instances of cyberbullying?
6. Does including the term cyberbullying make it easier or harder to provide honest answers about this behavior?
7. If there is anything else we could have done to help you give us more honest information about instances of cyberbullying?

Open-Ended Questions about Time Frame

In this study, we asked you to think about your cyberbullying behavior during _____ [depends on condition]. We have some questions about how using this time frame might affect your responses:

1. When we used the reference period of _____, were you able to include and exclude the cyberbullying behaviors described in the questions?
2. If we were to ask about a shorter time frame, how would your answers have changed?
3. If we were to ask about a longer time frame, how would your answers have changed?
4. What do you think is the best time frame to ask people to recall their behaviors with technology?
5. What is your opinion about remembering your behaviors and experiences of cyberbullying in the following time frames?
   1 month (too short, about right, too long)
   1 semester (too short, about right, too long)
   1 year (too short, about right, too long)

Forever (too short, about right, too long)

APPENDIX G

PILOT STUDY TWO HUMAN SUBJECTS APPROVAL

ASU Knowledge Enterprise Development

Office of Research Integrity and Assurance

To:	Anthony Roberto
From:	Mark Roosa, Chair Soc Beh IRB
Date:	03/26/2012
Committee Action:	**Exemption Granted**
IRB Action Date:	03/26/2012
IRB Protocol #:	1203007550
Study Title:	Developing a Measure of Cyberbullying Perpetration and Victimization (STUDY 2 – Focus Groups)

The above-referenced protocol is considered exempt after review by the Institutional Review Board pursuant to Federal regulations, 45 CFR Part 46.101(b)(2) .

This part of the federal regulations requires that the information be recorded by investigators in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. It is necessary that the information obtained not be such that if disclosed outside the research, it could reasonably place the subjects at risk of criminal or civil liability, or be damaging to the subjects' financial standing, employability, or reputation.

You should retain a copy of this letter for your records.

APPENDIX H

PILOT STUDY TWO INFORMED CONSENT

Dear Participant:

My name is Matthew Savage, and I am a doctoral student in the Hugh Down's School of Human Communication at Arizona State University working on my dissertation research under the direction of Dr. Anthony Roberto. I am conducting a focus group study to assess how people use computers and technology to communicate with one another.

We are inviting your participation in a focus group, which will take approximately 60-90 minutes. You will be asked questions about your experiences and general opinions regarding electronic aggression. During the focus group, you will also complete a short survey about your use of technology. You must be 18 or older to participate in the study. Your participation in this study is entirely voluntary. You have the right not to answer any question if you wish. You may also choose not to participate or to withdraw from the study at any time without penalty.

There are some benefits to your participation. You will receive a $25 gift card for participating in this study. Further, you will get the opportunity and satisfaction of advancing social scientific theory, research, and practice. You will also have the opportunity to contact the principal investigator at the conclusion of the study for a copy of the results.

There are no foreseeable risks to your participation. However, if you feel discomfort or choose to participate in this study for any reason, please keep in mind that you may stop at anytime if you do become uncomfortable.

We would like to audio record this focus group. You will not be recorded unless you give permission. If you give permission to be taped, you have the right to ask for the recording to be stopped. Every effort will be made to maintain the privacy of your data. To protect your confidentiality, you will be given the opportunity to choose a pseudonym that will be used to identify your responses after discussion concludes, and no information will be keep with your real name. The results of this study may be used in reports, presentations, or publications, but your name will not be used. All electronic files, observation notes and interview transcripts, and audio files will be kept in physically secured locations by using password protected files and locked offices.

If you have questions about participating in this study, you should ask one of the researchers at this point in time. If you have any questions for the researchers following this study, please feel free to contact Matthew Savage. The easiest way to contact him is via e-mail at: mwsavage@asu.edu.

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788.

Sincerely,
Matthew Savage, M.A. and Anthony Roberto, Ph.D.

By signing below you are agreeing to participate in the study:

Signature: _____

Date: _____

By signing below you are agreeing to be audio taped in the study.

Signature: _____

Date: _____

APPENDIX I

PILOT STUDY TWO FOCUS GROUP GUIDE

FOCUS GROUP GUIDE

(1) Informed consent letter: Read student consent form to students. Ask if there are any questions. Invite students who would not like to participate to leave. Those who will participate must sign the letter.

(2) Introduction: "Today we are here to talk about your thoughts and feelings about issues related to communicating with technology. The only ground-rule to remember is that there is no right or wrong answer. Your honest opinions are important. I ask that you speak one at a time and keep in mind that everything you say is completely confidential."

(3) Survey: Have students complete demographic survey before we get started.

(4) Pseudonyms: Invite people to use a pseudonym if they wish.

I. Exploring Cyberbullying

"The first issue to discuss is what you think about how people use the internet and other technology. Let's begin by going around the table. Will you tell me your name and how you use a cell phone and computer? For example, what do you use it for?"

(SUMMARIZE AND TRANSITION)

"One thing I am really interested in is how people use technology in potentially negative ways. For example, sometimes an individual or group deliberately and repeatedly misuses communication technology to threaten or harm others. What are your initial reaction – is it something you've seen before – how have you seen people use technology in a negative way?"

(IF CYBERBULLYING IS NOT MENTIONED, PROBE FOR IT. IF IT IS MENTIONED, GUIDE THE DISCUSSION TO EXPLORE MEMORIES ABOUT CYBERBULLYING AS MUCH AS POSSIBLE – USE FOLLOW UP QUESTIONS)

a. "Is cyberbullying something you talk about with your friends or people you know?"
b. "When you talk about, do you use other words or terms to describe the same thing?"
c. "At what age/when do you think cyberbullying starts to happen… how often do you think it happens in middle school, high school, college?
d. "How often do you think it happens to students at ASU?"
e. "Is cyberbullying something you worry about?"

f. "Is there anything else you'd like to add about how cyberbullying impacts you?"

(SUMMARIZE AND TRANSITION)

"One thing researchers like me want to do to help those who are affected by cyberbullying is to be able to ask about it in a survey. I would very much appreciate your insight into some aspects of cyberbullying so that I can write better questions about it in future surveys. Your insight would be very helpful."

II. Power

"The first specific issue that I'd like to talk to you about is power. Power is an important part of what researchers consider in the definition of in-person bullying. For example, mean things people might do to each other in person is only called 'bullying' when the bully has more power than the victim. Face to face, power can come from strength, popularity, or intelligence. But, I am wondering whether this has to be the case when someone is a cyberbully. I want to know what you think about this."

a. "When I say power, what comes to mind? In other words, what does power mean to you?"
b. "What might contribute to someone's power when using technology to communicate?"
c. "Does a cyberbully always have more power than their victim?" Follow up: "Could someone cyberbully if they had equal or less power?"
d. "How might a cyberbully have power that an in person bully doesn't have?"
e. "How might a victim feel powerless?"
f. "Does power matter in terms of cyberbullying? What about strength, popularity, or intelligence – do these matter when people are using technology to communicate?"
g. "If I referred to power in survey questions, how should I define power?"

(SUMMARIZE AND TRANSITION)

III. Addressing Measurement Issues

"I've brought a survey with me today and wanted to get your ideas about some of the questions. I am interested in using a version of this survey to get quality responses from participants in future research. Specifically, I would like to get accurate data that people are comfortable reporting. I think that you might be able to help me accomplish these goals by seeing the actual questions I've been asking

people in different studies. Read through these for a few minutes and then we'll talk about your reactions."

Give students a copy of the behavioral measure within the survey:

Sometimes a person or group of people (that is, friends, classmates, family, or maybe people we don't even know) use cell phones or the Internet to repeatedly send or post messages in order to intentionally threaten or hurt people, make them feel bad, or to embarrass people in front of others in an unfriendly way.

For example, a person might send several messages directly to someone using a cell phone or email. Or, a person might post photos or messages about someone in places other people can see like on a Website.

During the current school year, did anyone ever use a cell phone or the Internet to send or post messages or images to hurt or embarrass you in an unfriendly way?

❑ Yes ❑ No

If "yes", how many different times did someone do this to you during the current school year (for example, at different times, by different people, or for different reasons)?

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 ❑ 6 or more

During the current school year, did you ever use a cell phone or the Internet to send or post messages or images to hurt or embarrass someone else in an unfriendly way?

❑ Yes ❑ No

If "yes", how many different times did you do this during the current school year (for example, at different times, to different people, or for different reasons)?

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 ❑ 6 or more

a. "What comes to mind when you read through these questions?"
b. "What could be confusing when people read this?"
c. "When you read the definition and descriptions of the behaviors, did they describe what you think of as cyberbullying?"
d. "Is there any kind of cyberbullying experiences that these questions are

not getting at – Are we glossing over anything?"

e. "Do you think this 'school year' is too long to be able to remember? – What about a month, semester, or forever?"
f. "What if we just said cyberbullying instead of describing the behaviors?" Follow up: "Would this make you change any of your answers?"
g. "Would you tell the truth if you responded to these questions in a survey?"

(SUMMARIZE AND TRANSITION)

IV. Improving Measurement Issues

"Now that you've seen an example of how researchers ask questions about cyberbullying, I am wondering what you think could be done to make these kinds of surveys better. Will you help me figure out a few issues?"

a. "What could we do to make it easier for people to be honest about their cyberbullying experiences?"
b. "What could we do to make it easier for people to be accurate about their cyberbullying experiences?"
c. "What the best time frame to ask people to remember their cyberbullying?"

(SUMMARIZE AND TRANSITION)

V. Closing

"Before we go, will you write on the paper in front of you answers to a few questions?

(SUMMARIZE AND TRANSITION)

The paper will have 4 questions with space to write responses. These include:

- What do you want me to keep in mind about asking people questions about cyberbullying in a survey?"
- If you think of anything that needs to be in the definition of cyberbullying that we haven't included, can you tell me about it?
- Are there new ways that people are cyberbullying each other that I should know about?
- Were there any words that I used today that were hard to understand?

(**WRAP UP, SUMMARIZE, THANK PARTICIPANTS**)

APPENDIX J

MAIN STUDY HUMAN SUBJECTS APPROVAL FOR RELIABILITY STUDY

ASU Knowledge Enterprise Development

Office of Research Integrity and Assurance

To:	Anthony Roberto
From:	Mark Roosa, Chair Soc Beh IRB
Date:	04/18/2012
Committee Action:	**Exemption Granted**
IRB Action Date:	04/18/2012
IRB Protocol #:	1204007742
Study Title:	Developing a Measure of Cyberbullying Perpetration and Victimization (STUDY 3 – Examination of reliability)

The above-referenced protocol is considered exempt after review by the Institutional Review Board pursuant to Federal regulations, 45 CFR Part 46.101(b)(2) .

This part of the federal regulations requires that the information be recorded by investigators in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. It is necessary that the information obtained not be such that if disclosed outside the research, it could reasonably place the subjects at risk of criminal or civil liability, or be damaging to the subjects' financial standing, employability, or reputation.

You should retain a copy of this letter for your records.

APPENDIX K

MAIN STUDY HUMAN SUBJECTS APPROVAL FOR VALIDITY STUDY

ASU Knowledge Enterprise Development

Office of Research Integrity and Assurance

To:	Anthony Roberto
From:	Mark Roosa, Chair Soc Beh IRB
Date:	04/13/2012
Committee Action:	**Exemption Granted**
IRB Action Date:	04/13/2012
IRB Protocol #:	1204007717
Study Title:	Developing a Measure of Cyberbullying Perpetration and Victimization (STUDY 3 – Examination of validity)

The above-referenced protocol is considered exempt after review by the Institutional Review Board pursuant to Federal regulations, 45 CFR Part 46.101(b)(2) .

This part of the federal regulations requires that the information be recorded by investigators in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. It is necessary that the information obtained not be such that if disclosed outside the research, it could reasonably place the subjects at risk of criminal or civil liability, or be damaging to the subjects' financial standing, employability, or reputation.

You should retain a copy of this letter for your records.

APPENDIX L

ITEMS DEVELOPED IN THE MAIN STUDY TO MEASURE CYBERBULLYING PERPETRATION

Text

TextP1: I sent mean text messages directly to another person.
TextP2: I sent hurtful text messages about someone to lots of other people.
TextP3: I shared personal text messages with others to hurt the person who sent them to me.
TextP4: I sent threatening text messages directly to another person.
TextP5: I texted mean pictures or videos to another person.
TextP6: I texted embarrassing pictures or videos about someone to lots of other people.
TextP7: I shared personal picture or video text messages someone sent me that they didn't want others to see.
TextP8: I texted pictures or videos directly to another person to make them feel threatened.

Email

EmailP1: I sent mean emails directly to another person.
EmailP2: I sent hurtful emails about someone to lots of other people.
EmailP3: I've made a fake email account to send hurtful emails to another person.
EmailP4: I shared personal emails with others to hurt the person who sent them to me.
EmailP5: I sent threatening emails directly to another person.
EmailP6: I emailed mean pictures or videos directly to another person
EmailP7: I emailed embarrassing pictures or videos about someone to several other people.
EmailP8: I forwarded emails with personal pictures or videos someone sent me that they didn't want others to see.
EmailP9: I emailed threatening pictures or videos directly to another person.

Online:

OnlineP1: I pretended to be someone else online to interfere with their friendships.
OnlineP2: I hid my identity online to threaten someone.
OnlineP3: I posted private messages someone sent me online that they didn't want others to see.
OnlineP4: I posted someone's personal information online without their consent.
OnlineP5: I excluded others from online groups (i.e., games, blogs, etc) to hurt them.
OnlineP6: I sent threatening messages directly to another person online.
OnlineP7: I sent mean pictures or videos directly to another person online.
OnlineP8: I sent mean messages directly to someone online.
OnlineP9: I posted hurtful messages about somebody else online for people to see.
OnlineP10: I pretended to be someone else online to make them look bad.
OnlineP11: I posted embarrassing photos or videos of someone else online for others to see.
OnlineP12: I posted pictures or videos of someone online that they didn't want other people to see.
OnlineP13: I used someone's webcam images without their consent to hurt them.
OnlineP14: I sent threatening photos or videos directly to another person online.

APPENDIX M

ITEMS DEVELOPED IN THE MAIN STUDY TO MEASURE CYBERBULLYING VICTIMIZATION

Text
TextV1: Someone sent several mean text messages directly to me.
TextV2: Someone sent hurtful text messages about me to lots of other people.
TextV3: Someone shared personal text messages I sent them with others to hurt me.
TextV4: Someone sent threatening text messages directly to me.
TextV5: Someone texted mean pictures or videos to me.
TextV6: Someone texted embarrassing pictures or videos of me to lots of other people.
TextV7: Someone shared personal pictures or videos I texted them that I didn't want others to see.
TextV8: Someone texted threatening pictures or videos directly to me.

Email
Email V1: Someone sent mean emails directly to me.
Email V2: Someone sent hurtful emails about me to lots of other people.
Email V3: Someone sent me hurtful emails from an address I thought was fake.
Email V4: Someone shared personal emails I sent them with others to hurt me.
Email V5: Someone sent threatening emails directly to me.
Email V6: Someone emailed mean/offensive pictures or videos to me.
Email V7: Someone emailed embarrassing pictures of videos of me to lots of other people.
Email V8: Someone forwarded personal pictures or videos I emailed them that I didn't want others to see.
Email V9: Someone emailed threatening pictures or videos directly to me.

Online:
Online V1: Someone pretended to be me online to interfere with my friendships.
Online V2: Someone hid their identity to threaten me online.
Online V3: Someone posted my private messages online that I didn't want others to see.
Online V4: Someone posted personal information about me online without my consent.
Online V5: Someone excluded me from online groups (games, blogs, etc) to hurt me.
Online V6: Someone sent threatening messages directly to me online.
Online V7: Someone sent me mean photos or videos online.
Online V8: Someone sent me mean messages online.
Online V9: Someone posted hurtful messages about me online for people to see.
Online V10: Someone pretended to be me online to make me look bad.
Online V11: Someone posted my photos or videos online to embarrass me.
Online V12: Someone posted my personal photos or videos online that I didn't want others to see.
Online V13: Someone posted my personal photos or videos online without my consent.
Online V14: Someone sent threatening photos or videos directly to me online.