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UNDERSTANDING GENDER DIFFERENCES IN TRADITIONAL AND
CYBERBULLYING: AN EVALUATION OF CONSTRUCT VALIDITY OF THE 2013
SCHOOL CRIME SUPPLEMENT TO THE NATIONAL CRIME VICTIMIZATION SURVEY

by

ANTHONY C. BETANCOURT

A dissertation submitted to the Graduate Faculty in Educational Psychology in partial fulfillment
of the requirements for the degree of Doctor of Philosophy, The City University of New York

2020

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This manuscript has been read and accepted for the Graduate Faculty in Educational Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

Date

Bruce D. Homer
Chair of Examining Committee

Date

Bruce D. Homer
Executive Officer

Supervisory Committee:

David Rindskopf

Alpana Bhattacharya

Jhan Doughty Berry

Patrick C. Kyllonen

THE CITY UNIVERSITY OF NEW YORK

ABSTRACT

Few measures assess cyberbullying and traditional bullying simultaneously while also reporting standards of reliability and validity. As a result, it remains unclear whether cyberbullying should be considered a separate type of bullying. This dissertation advances the literature by examining data from the 2013 *School Crime Supplement* to the *National Crime Victimization Survey* (NCVS-SCS) to provide psychometric information about the factor structure of the 2013 NCVS-SCS traditional and cyberbullying scales. Furthermore, the dissertation uses that information to evaluate if cyberbullying emerges as a unique factor. Finally, measurement invariance will determine if bullying holds the same meaning for boys and girls (e.g. are group comparisons valid).

Acceptable alpha coefficients were found for both scales. To evaluate the internal structure of the 2013 NCVS-SCS bullying scales, a two factor Exploratory Factor Analysis (EFA) was conducted. The EFA produced a good fitting model where cyberbullying items loaded onto one factor and traditional bullying items loaded on a second factor. Confirmatory factor analysis (CFA) further evaluated the factor structure by testing a model with two correlated latent factors (traditional and cyberbullying). The two factor CFA demonstrated acceptable levels of fit ($\chi^2 = 372.83$; $df = 91$; $p < .01$; $RMSEA = .025$; $CFI = .98$; $TFI = .97$) and all items significantly loaded on their respective latent factor ($p < .01$). The two latent factors were strongly correlated ($r = .79$; $p < .05$). The model was determined to be invariant with respect to gender, as configural, metric, scalar, and full invariance was supported.

The results from this dissertation add to the limited number of studies reporting the psychometric properties of bullying measures capable of simultaneously measuring traditional and cyberbullying. The NCVS-SCS remains one of the few publicly available, nationally

representative, measures of bullying behaviors. The CFA findings illustrate evidence of construct validity for the 2013 NCVS-SCS bullying scales, whose items are used to make the composites that provide national estimates of bullying. Meanwhile, the EFA results from this dissertation are in line with findings by Betancourt (2016) and Randa et al. (2015), providing further evidence that cyberbullying is a unique form of bullying and that it would be misguided for researchers to consider cyberbullying as a context or location for in-person forms of bullying. Limitations and future directions of this research are discussed, as bullying remains a problem for students and schools in the 21st century.

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Completing this dissertation is proof certain things cannot be measured or taken for granted. Never underestimate the heart of a champion!

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Chapter I: Introduction

Bullying can be a tremendously damaging behavior, regardless of age, gender, or ethnicity. There is reason to be concerned for those who perpetrate bullying and those who are victims. Instigators of bullying are at risk for a variety of long-term problems with antisocial behaviors, while victimized children are at risk for anxiety, depression, and academic failure (Craig & Pepler, 2007; Vaillancourt et al., 2010). Bullying behaviors are evident as early as preschool, although they peak during the middle school years (Vaillancourt et al., 2010). Likewise, bullying can occur in a variety of social settings, including classrooms, school playgrounds, cafeterias, on school buses, and online through digital technologies.

In order to reduce damages associated with bullying, intervention programs have been developed to encourage acceptable behaviors and promote positive norms. However, the myriad of situations in which bullying can occur and the many people involved make it unlikely any one approach will be effective in all situations. Even with fifty years of research, most bullying interventions do not reduce the number of people bullied; many research studies suffer from poor methodology and thus lack validity. Consequentially, these shortcomings obscure our understanding of bullying and what can be done to alleviate the harms associated with victimization.

History of Bullying Research

Bullying behavior was first characterized as part of the experience of children in an 1897 article entitled “Teasing and Bullying” published by educator Frederic L. Burk who provided horrifying examples of victimization among children (Allanson, Lester, & Notar, 2015). The examples involved the themes of power, pain, persistence, and premeditation. Power was

involved because all of the examples were of an older tormenter and a younger victim. Both physical and psychological pain were clearly experienced by the victims. Persistence was evident because the bullies continued the behavior until their victims cried or ran away. Finally, premeditation was involved because the tormentors always had a plan and intentional targets. This would later form the basis of the modern definition of bullying (Burk, 1897).

However, it was not until the 1970s and 1980s that peer-reviewed bullying research began in earnest (Allanson et al., 2015). In particular, Dan Olweus, a research professor of psychology in Norway, brought awareness to the issue and motivated other professionals to conduct their own research. He and others emphasized the link between bullying and traits of low self-esteem, increased anxiety, and below average academic ability. This led to more detailed investigations of aggressive school children but for many years, bullying was considered an accepted part of growing up. Even today, bullying is believed to be the norm: a form of initiation. Often, it is dismissed as a rite of passage or a way to build character (Kochenderfer-Ladd & Pelletier, 2008).

That changed in 1982 when three adolescent boys from Norway committed suicide due to being bullied by their peers. After the tragedy, the Norwegian Ministry of Education asked Olweus to participate in a nationwide campaign to prevent bullying in schools (Allanson et al., 2015; Kevles, 1986). The prevention program issued a series of videotapes and instructional booklets to help teachers, school staff, and parents to identify and address problem behaviors. In each classroom, the students create a list of rules that each must abide by, a social contract. Teachers were instructed to praise students who help shy and victimized classmates, condemn (or punishing) students who break the agreed upon rules (Kevles, 1986). To this day, this remains the pedagogical core of Olweus' bullying prevention interventions (Olweus, 1994;

Olweus & Limber, 2002) and others (Ttofi & Farrington, 2011). In the United States, bullying research became a national imperative following the Columbine, Colorado high school shooting in 1999. News reports at the time focused on how the shooters brought weapons into their school to kill students and teachers in retaliation for years of bullying. Meanwhile over the last twenty years, the Internet, chat rooms, instant messaging, social media, and other forms of digital electronic communication have provided new avenues for bullying.

National Efforts to Address Bullying

Being safe in relationships is a fundamental human right and, therefore, all youth have the right to be safe: free from bullying. To prevent long-term negative outcomes that could arise from being the victims of bullying, societies need to support children's healthy development and protect their welfare. This obligation has been acknowledged by the United Nations (UN). The UN Convention on the Rights of the Child (UNCRC) speaks to the rights of children who are on the receiving end of bullying and harassment (United Nations, 1989). Article 19 of the Convention states:

Parties shall take all appropriate legislative, administrative, social and educational measures to protect the child from all forms of physical or mental violence, injury or abuse, neglect or negligent treatment, maltreatment or exploitation, including sexual abuse, while in the care of parent(s), legal guardian(s) or any other person who has the care of the child (United Nations, 1989).

The UN General Assembly adopted the UNCRC and opened it for signature on November 20, 1989. It came into force on September 2, 1990, after it was ratified by the required number of nations. Though surprisingly, the two UN countries yet to ratify it are Somalia and the United States. The United States has yet to ratify the UNCRC due to potential conflicts with the U.S. Constitution and because of opposition by political and religious conservatives. The administration of President George W. Bush explicitly stated its opposition to the treaty:

The Convention on the Rights of the Child may be a positive tool for promoting child welfare for those countries that have adopted it. But we believe the text goes too far when it asserts entitlements based on economic, social and cultural rights...The human rights-based approach...poses significant problems as used in this text (Anderson, 2001).

Despite continued resistance to signing the UNCRC, it would be unfair to assume addressing bullying is not a focal point for politicians. In 2011, during first-ever White House Conference on Bullying Prevention, President Barack Obama said:

So consider these statistics. A third of middle school and high school students have reported being bullied during the school year. Almost 3 million students have said they were pushed, shoved, tripped, even spit on. And bullying has been shown to lead to absences and poor performance in the classroom (Lee, 2011).

The 2011 White House conference is considered a watershed moment for the field as it was the first time a sitting President had hosted such an event, reflective of the growing consensus that bullying is a destructive problem. Currently, the Trump administration has not issued policy directives to address school bullying. The issue of cyberbullying has been a focus of first lady Melania Trump's "Be Best" campaign focusing on children's well-being, online activity, and the opioid crisis (Fink, 2019). Despite such efforts, bullying remains a societal problem because our current laws and policies are often inadequate and too ambiguous to apply fairly.

Purpose of Dissertation

Despite a rich literature base, few studies assess cyberbullying and traditional bullying simultaneously while also meeting standards of reliability and validity. To address this concern, a secondary data analysis by Betancourt (2016) reported the construct validity and reliability of a developed measure of victimization in a sample of 399 9th grade students. Consistent with prior research and theory, an Exploratory Factor Analysis (EFA) showed that the structure of bullying victimization comprised distinct constructs with cyberbullying and traditional bullying forming separate factors. To build on the Betancourt (2016) study, this dissertation examined data from

the 2013 *School Crime Supplement* to the *National Crime Victimization Survey* (NCVS-SCS) to explore the construct validity of its traditional and cyberbullying scales. Confirmatory factor analysis (CFA) evaluated the construct validity of the NCVS-SCS bullying scales; seeing if traditional and cyberbullying items comprise separate yet interrelated latent factors. CFA was also used to determine if the structure of victimization is invariant across gender and if the NCVS-SCS bullying scales measure the construct of bullying equally for boys and girls. Results from this dissertation advance the work by Betancourt (2016) by adding to the limited number of studies reporting the psychometric properties of bullying measures capable of simultaneously measuring traditional bullying and cyberbullying. Finally, findings regarding measurement invariance aid educators and professionals develop more effective interventions by clarifying whether the construct of bullying operates in the same manner for each gender, and if such comparisons are indeed valid.

Chapter II: Literature Review and Research Hypotheses

The purpose of this chapter is to provide context and summarize fifty years of bullying research. A Google Scholar query on the keyword “bullying” will yield hundreds of peer-reviewed articles and dozens of book chapters since the year 2016; with more studies published every month. This includes research reports from institutions such as the American Educational Research Association (e.g., American Educational Research Association, 2013), American Psychological Association (i.e., American Psychological Association, 2014), Centers for Disease Control (i.e., Gadden, Vivolo-Kantor, Hamburger, & Lumpkin, 2014), and the National Academy of Sciences (i.e., National Academies of Sciences, Engineering, & Medicine, 2016). These institutional reports were founded on the results of meta-analyses and meta-reviews covering the important topics this literature review summarizes.

Despite the established literature base, a concern among researchers is that our understanding of bullying has been clouded by two validity weaknesses in studies. First, studies frequently use a single-item (e.g. *were you bullied: yes/no*) to measure bullying. There are several circumstances in which it is appropriate to use a single item measurement approach (e.g., *have you been expelled from school: yes/no*). However, it is a fundamental psychometric principle that multiple items are needed to truly capture complex social phenomena. Single-item measures are less reliable, notorious for being susceptible to measurement error (Goodwin, 2005; Nunnally, 1967). Although sources of random error (e.g., acquiescence, extreme responding, and social desirability) are always present, single-item measures are at greater risk for this problem. On the other hand, with a multi-item approach (e.g., a checklist of behaviors) researchers can sum items together to create scales. On average, scales are more reliable than any single item

because the percentage of measurement error decreases as the number of items increases (Goodwin, 2005; Marsh et al., 2011; Nunnally, 1967).

In addition to the psychometric concerns with single-item measurement of bullying, empirical research shows that the single-item approach underreports the nature of bullying. As part of a meta-analysis study by Kowalski, Giumetti, and Schroeder (2014), single-item and multiple-item bullying measures were compared. Their meta-analysis included 137 datasets, providing 736 independent effect sizes to compare. The Kowalski et al. (2014) meta-analysis found that, on average, prevalence rates are lower when bullying is measured with a single-item. Furthermore, studies that use a single-item to measure bullying find weaker (albeit significant) relationships with outcomes (e.g., anxiety, depression, and life satisfaction).

These results have been corroborated by a recent meta-analysis by Gini, Card, and Pozzoli (2018) comparing the association bullying has with negative outcomes when measured with a single-item or multiple-item approach. Their literature search produced 356 records. Of these studies, 19 met the inclusion criteria with the final dataset containing 90,877 participants (54.4% girls), aged 11–19. The participants were from eight different countries: Australia, Canada, France, Italy, the Netherlands, Spain, Switzerland, and the United States. Only half of the studies reported information about the ethnic composition of the sample, but there was large variability with the proportion of participants from ethnic minorities. All the studies were cross-sectional in nature and utilized self-report scales to measure both traditional and cyber forms of victimization. The analyses revealed that the correlations of both traditional and cyber victimization with internalizing problems (e.g., anxiety and low self-esteem) were significantly larger in studies that used multiple-item measures than studies that used a single-item methodology.

In addition to the problem of single-item methodology, researchers often fail to report psychometric properties of measurement instruments, despite using them to draw statistical conclusions and meaning between variables in their study. When measures lack validity and do not accurately reflect the theoretical nature of the construct it is measuring, the conclusions drawn will be masked with uncertainty (Cronbach & Meehl, 1955; Goodwin, 2005; Messick, 1994). The Centers for Disease Control (CDC) highlighted this shortcoming in their 2011 report evaluating the quality of available bullying measures. The report accentuated how measures often do not report evidence of validity, and thus cannot be trusted (Hamburger, Basile, & Vivolo, 2011). The authors of the CDC report acknowledged that this limited the number of measures they were able to evaluate in their report.

This shortcoming was substantiated by a crucial meta-analysis conducted by Berne, Frisé, Schultze-Krumbholz, Scheithauer, Naruskov, Luik, Katzer, Erentaite, and Zukauskiene (2013) in a systematic review of the current instruments designed to assess cyberbullying. The authors focused on evaluating the structural and psychometric properties of cyberbullying instruments. Their review identified 636 studies, with 61 studies fulfilling the selection criteria, resulting in 44 instruments included in the meta-analysis. Unfortunately, only 18 of the 44 measures evaluated provided information about the internal reliability (internal consistency), and only 12 tested the internal structure of the measure with factor analysis (either exploratory or confirmatory).

These findings were corroborated in another meta-analysis by Vessey, Strout, Difazio, and Walker (2014). The search strategy identified 447 studies for review; after an initial review process 51 studies were considered, with 31 satisfying all of the inclusion criteria for the meta-analysis. Three of 31 studies (10%) did not report reliability (e.g., internal consistency)

information. In addition, studies rarely reported Cronbach's alpha that were lower than the desirable level (e.g. $\alpha > .70$). In terms of construct validity, the factor structure was empirically tested (either with exploratory factor analysis, principal components analysis, or confirmatory factor analysis) in 20 of the 31 studies evaluated (65%). Vessey et al. (2014) concluded that while construct validity is implicit in bullying studies, "there is currently no sufficient evidence to validate the factor structure of a number of existing scales" (p. 832).

The failure of measures to use multiple items or report the psychometric properties of the research measures hurts our understanding of bullying and limits the gains made over four decades of research. Awareness of these two limitations is a prerequisite for properly evaluating the current state of bullying research. This is not to say all prior research on bullying was bad, or studies with methodological shortcomings are useless. This dissertation addresses both of these shortcomings through a secondary data analysis of the *School Crime Supplement to the National Crime Victimization Survey*. The literature review provides justification for the study while giving an overview of the nature of bullying, the harms associated with it, and what has been done to address this problem in schools. The chapter concludes with a discussion of how current laws make it difficult for victims to seek justice, but easy for schools who fail to address bullying—avoid taking responsibility.

How to Define Bullying

The most common definition of bullying is characterized by what is called the Double I-R definition (Intentional acts, with an Imbalance of power, that are Repeated over time) (Newman-Carlson & Horne, 2004; Olweus & Limber, 2002). The first element of the definition is clear, bullying only refers to acts that are intentionally committed and not actions that are accidental. The second component of the Double I-R definition is the imbalance of power within

the bullying dyad. Bullying is a form of aggressive behavior imposed from a position of power; those who bully always have more power (e.g., physical size, social popularity, etc.) than the individuals they victimize (Craig & Pepler, 2007).

This power imbalance is typically considered a defining feature of bullying, which distinguishes this particular form of aggression from other forms, and is typically repeated in multiple bullying incidents involving the same individuals over time. Bullying and violence are subcategories of aggressive behavior that overlap. There are situations in which violence is used in the context of bullying—however, not all forms of bullying involve violent behavior (e.g., spreading rumors, saying mean things).

The final criterion of the Double I-R definition is that the negative acts in question are repeated regularly. Bullying is not isolated events but rather about aggressive behaviors repeatedly directed toward one or more victims (Neilson, Matthiesen, & Einarsen, 2008). While bullying involves both a “bully” and “victim”, this dissertation is focused on the victimization side of the equation and the term bullying is used to refer to such behaviors.

Types of Bullying

Although bullying behavior endures through generations, the milieu is changing. Traditionally, bullying has occurred at school—the physical setting in which most of childhood is centered and the primary source for peer group formation—or really anywhere that children played or congregated. In recent years, however, the physical setting is not the only place bullying is occurring. Technology allows for a new type of digital electronic aggression, cyberbullying, which takes place through chat rooms, instant messaging, social media, and other forms of digital electronic communication. Both will be discussed in greater detail.

The literature distinguishes four interrelated types of bullying: (a) physical, (b) verbal, (c) relational, and (d) cyberbullying (Bauman & Del Rio, 2006; Betancourt, 2016; Menesini & Nocentini, 2009; Thomas, Connor, & Scott, 2014). Physical bullying occurs when one or more individuals attack a peer physically (e.g., the schoolyard bully who hits, kicks, pushes, shoves, and/or throws things at his or her targets). Physical bullying is the most observable of all the bullying forms and garners the most attention, particularly given heightened concerns about violence in the media (Wang, Iannotti, & Nansel, 2009). Verbal bullying involves insults, taunts, teasing, name-calling, or threats of physical violence (Dooley, Pyszalski, & Cross, 2009; Olweus & Limber, 2002). Although viewed as qualitatively different, physical and verbal harassment frequently co-occur. This has led many researchers to define physical and verbal bullying as direct forms of bullying, since they consist of direct and overt displays of aggression (Betancourt, 2016; Espelage & Swearer, 2003; Thomas et al., 2014).

In relational bullying, the goal is not to harm the victim with punches or insults, but rather damage the victim's relationships with other peers through purposeful manipulation of their social networks (Bauman & Del Rio, 2006; Crick & Grotpeter, 1996). Relational bullying includes social exclusion, spreading rumors, or withholding friendship. Recently, the proliferation of electronic communication technologies has allowed bullying to move beyond the traditional, school-based forms. Electronic bullying (or cyberbullying) includes bullying through e-mail, instant messaging, in a chat room, on a website, or through digital messages or images sent to a cellular phone (Gradinger, Strohmeier, & Spiel, 2009; Menesini & Nocentini, 2009; Thomas et al., 2014; Wang, Nansel & Iannotti, 2010).

Many scholars have concluded cyberbullying is a modality for engaging in verbal and social bullying, instead of a qualitatively different type of bullying (Gadden et al., 2014). In other

words, bullying occurring by means of technology should be considered a context or location (e.g., a classroom, hallway, or playground) where verbal and relational bullying occurs. However, if policymakers, researchers, and school officials conceptualize cyberbullying in this way, the obvious differences between real life and digital interactions are ignored for the sake of parsimony.

Therefore, this dissertation takes the position that cyberbullying has three unique characteristics that make it different from experiencing traditional bullying. First, while traditional bullying in school is harmful, the bully can be identified and avoided. However, with cyberbullying, the victim is often easily identified, but the bully can be anonymous. This anonymity, which would be impossible to create with traditional bullying, causes additional stress for the victim and makes it more difficult for schools to punish the bully responsible. Dooley et al. (2009) stated that:

“More importantly, cybervictims reported that not knowing the identity of the bully increased feelings of frustration and powerlessness. Consistent with this, Fauman (2008) suggested that the ability to remain anonymous may minimize the necessity for those who bully to be more powerful than victims. Given that most victims are cyberbullied by either another student at school or a stranger (Kowalski & Limber, 2007) the anonymity afforded to perpetrators is an important issue” (p. 184).

Secondly, most who use traditional ways of bullying, terrorize their victim on (or near) school grounds. This means that there is limited amount of time and locations in which bullies have direct access to their victims. With the 24/7 and global nature of the Internet, these limitations no longer apply. Victims can experience torment day and night, regardless if school is open or the physical proximity of bully and victim (Gradinger et al., 2009).

Third, is the issue of providing evidence of bullying to school officials. In 1999, the U.S. Supreme Court ruled schools cannot be held legally responsible for abuse they were not aware was occurring (Cornell & Limber, 2015; Holben & Zirkel, 2015). Therefore, for many victims, proof is required in order for their accusations of bullying to be taken seriously by the school. In a study by Slonje and Smith (2008), 360 adolescents were asked open-ended questions about their experiences being a victim of cyberbullying. Many victims told researchers, that being victimized through digital methods could be saved and later shown to an adult (e.g., parent, teachers, school psychologist, etc.). Unlike traditional forms of bullying, victims of cyberbullying have the ability to objectively document the episodes of bullying. Therefore, adults have all the proof they need in order to proceed with appropriate actions to address bullying. Likewise, Slonje and Smith (2008) found victims were reluctant to report incidences of bullying if they did not have proof to show the school. The literature on students reporting incidences of bullying to teachers, and how teachers respond to different forms of bullying will be discussed later in this chapter.

Measurement Issues in Bullying Research

Meta-analyses and reviews of the published bullying research consistently shows studies too often fail to evaluate validity or report basic psychometric properties, while relying on single-item methodologies (Berne et al., 2013; Hamburger et al., 2011; Vessey et al., 2014). In addition to these shortcomings, researchers continue to struggle with the following methodological issues: not measuring traditional and cyberbullying forms simultaneously, deciding whether to include a definition of bullying, and how to report scores.

Measuring Traditional Bullying Alongside Cyberbullying. A simple question to ask when investigating bullying is how does traditional school-based bullying compare to

cyberbullying. Unfortunately, too many published studies do not measure traditional and cyberbullying together (Berne et al., 2013; Gradinger et al., 2009; Thomas et al., 2014; Vessey et al., 2014). This is due, in part, to the recent explosion in the availability of technology in comparison to traditional bullying which has been around since schools have been in existence. Researchers studying traditional bullying focused on highlighting the importance of measuring direct and relational bullying relationship with negative outcomes. As a result, cyberbullying formed its own subfield (Allanson et al., 2015; Thomas et al., 2014).

Due to this lack of convergence, it is unclear whether people respond to questions about cyberbullying in the same way they do for traditional bullying, or if cyberbullying can be measured using the same types of items used for traditional bullying (Law, Shapka, Hymel, Olson & Waterhouse, 2012; Thomas et al., 2014). In recent years, researchers have used multiple-item measures to simultaneously measure cyber and traditional forms of bullying. Of the bullying measures that do evaluate how traditional forms of bullying interact with digital forms of bullying, exploratory factor analysis (EFA) is the common method used. With an EFA approach, the goal is to determine the underlying structure of a set of interrelated variables without imposing any preconceived structure on the outcome (Berne et al., 2013; Law et al., 2012). Law et al. used the EFA approach to evaluate differences in traditional bullying and cyberbullying in a sample of 8697 Canadian youth (ages 14–18). Although the survey used in the Law et al. study asked participants about bully *and* victim experience, the EFA found that traditional victimization items significantly loaded onto one factor and cybervictimization items loaded onto a separate factor (all item loadings > .76).

Similarly, the EFA approach was also used in a study by Betancourt (2016) reporting on the construct validity and reliability of a multi-item measure of victimization in a sample of 399

9th grade students. Consistent with prior research and theory (i.e., Law et al., 2012; Menesini & Nocentini, 2009), a series of EFAs showed that the developed structure of bullying victimization comprised three distinct constructs (cyber, relational, and direct victimization). In addition, the Cronbach alpha for each of these factors was acceptable (.74, .81, and .86 respectively). The three factors revealed during the analysis relate to the forms of victimization most common within schools.

In terms of construct validity, the multi-item approach yielded a factor structure consistent with the theoretical nature of bullying. The measure was able to isolate electronic victimization as a separate factor from face-to face relational. In addition, this measure was also able to separate direct bullying from relational and electronic bullying. Unfortunately, the measure was not able to distinguish verbal and physical bullying as two separate factors even though *“being made fun of”* is clearly different from *“being punched”*.

These results, though potentially useful, illustrate the shortcomings of using EFA. Sometimes the researcher has an informed theory for how items correspond to unobserved, latent factors. In this case, confirmatory factor analysis (CFA) is a statistical technique that can be used to verify such a factor structure. Unlike EFA, the goal of CFA is to test the relationship between observed variables and their underlying latent constructs. First, the researcher uses knowledge of theory, empirical research, or both, to propose a theoretical model of the relationship between items and their latent factors. Afterwards, the model is tested statistically with a preference for indices that are sample-size independent such as the root-mean-square error of approximation (RMSEA), the comparative fit index (CFI), and Tucker-Lewis index (TLI). The CFI and TLI vary along a 0-to-1 continuum; values greater than .90 and .95 reflect acceptable and excellent fit to the data. With respect to the RMSEA, many researchers use cut off scores of 0.01, 0.05, 0.07,

0.10 to indicate excellent, good, mediocre, and poor fit (Berne et al., 2013; Vessey et al., 2014). Several recent reviews of the literature conclude that while EFA is a useful technique, the ability of a CFA to utilize prior knowledge and test it empirically makes it the superior method to examine the validity of (bullying) measures (Berne et al., 2013; Thomas et al., 2014; Vessey et al., 2014).

Several studies have used CFA to see if cyberbullying is a unique latent construct from relational and direct bullying. For example, Dempsey, Sulkowski, Dempsey and Storch (2011) conducted a CFA on the *Revised Peer Experiences Questionnaire* (RPEQ). Participants came from a rural Southeastern county in the USA and included 1,672 adolescents from four middle schools (grades 6–8). The RPEQ is a self-report measure of involvement in traditional victimization (i.e., direct and relational forms), containing four items that address direct bullying and five addressing relational bullying. In the Dempsey et al. (2011) study, Cronbach alpha coefficients for the two scales were acceptable (.79 and .81 respectively). Four items were added to the RPEQ to address cyberbullying; this scale also demonstrated acceptable reliability (Cronbach alpha = .85). The CFA of the RPEQ produced a good fitting model (RMSEA = .05; CFI = .99; TLI = .99. Correlation coefficients ranged from $r = .45$ to $.49$, indicating moderate correlations among the three latent variables, but cyberbullying is a unique construct from traditional forms of bullying.

Similar findings were found by Hunt, Peters and Rapee (2012) who were aiming to validate the *Personal Experiences Checklist* (PECK) in a sample of 647 Australian school children between the ages of 8 and 15 years old ($M = 12.38$; $SD = 1.69$), from nine schools (66% secondary school level). CFA analyses by Hunt et al. yielded an acceptable fitting model of four factors: relational/verbal bullying; cyberbullying; physical bullying; cultural bullying. The

RMSEA .071 was acceptable, although the CFI of .88 was slightly below the recommended criterion (i.e., CFI > .90). However, in this study the latent factors were strongly correlated ($r_s = .70$ to $.83$). All PECK scales showed acceptable to excellent internal consistency (Cronbach alpha ranged from $.78$ to $.91$).

Furthermore, Marsh, Nagengast, Morin and Parada (2011) tested if the nature of victimization can best be conceptualized by a theoretical model of separate, but interrelated constructs, while exploring the construct validity of the *Adolescent Peer Relations Instrument* in an Australian sample of 4,082 students (average age = 13.8; SD = 1.4). Results from the Marsh et al. CFA, were in line with other studies showing that traditional forms of bullying are unique, yet related constructs. The CFA model in which physical, verbal, and relational victimization formed 3 intercorrelated constructs demonstrated good fit to the data (RMSEA = .029; CFI = .94; TLI = .94).

Very few studies use both EFA and CFA to examine both traditional and cyberbullying (e.g., Law et al., 2012). Sumter, Valkenburg, Baumgartner, Peter and van der Hof (2015) addressed this need by validating a self-report measure of bullying victimization. The measure contained multiple items of traditional victimization (both direct and relational) and online victimization. The authors named this scale the *Multidimensional Offline and Online Peer Victimization Scale* (MOOPV). Participants included 1124 students between 9 and 18 years of age ($M = 13.3$; $SD = 1.9$), from three primary and three secondary schools in The Netherlands. Four factors were found through EFA: Factor 1: Direct offline peer victimization (e.g., hit kicked, called names; $\alpha = .90$); Factor 2: Indirect offline (e.g., Excluded me, Did not let me participate; $\alpha = .88$); Factor 3: Direct online peer victimization (e.g., Nasty messages, Called names, Insulted; $\alpha = .88$); Factor 4: Indirect online peer victimization (e.g., Did not let me

participate, Did not let me join a conversation; $\alpha = .82$). This EFA structure was used as the basis of a four factor CFA model that resulted in marginal fit: $\chi^2 = 1238.35, p < .01$ (df = 170); RMSEA = .10; CFI = .85. The four-factor model improved significantly when errors were correlated: $\chi^2 = 613.02, p < .01$ (df = 153); RMSEA = .06; CFI = .94.

These summarized studies demonstrate the importance of measuring bullying with multiple items, measuring traditional and cyberbullying concurrently, and reporting not just reliability estimates but empirically testing the internal structure of measures. Past meta-reviews (e.g., Berne et al., 2013; Hamburger et al., 2011; Thomas et al., 2014; Vessey et al., 2014) have shown that many researchers do not report the psychometric properties of measures. The results from such studies demonstrate that relational bullying is a unique construct from direct forms of bullying. Additionally, studies that have used CFA and multiple items to examine both traditional and cyberbullying suggest that cyberbullying should be considered a separate form of bullying, rather than a locational context of behavior (Gadden et al., 2014).

Inclusion of a Bullying Definition. The impact of providing a definition on prevalence rates of bullying has received recent research attention. For example, Kert, Coddling, Tryon and Shiyko (2010) examined this issue in a sample of 114 middle school students (ages 10-15; M = 11.8; SD = 1.6). In their study, an experimental group completed bullying surveys that provided an explicit definition of bullying while a control group completed bullying surveys that did not provide a definition. It was found that self-reported bullying was significantly lower for participants who were provided a definition.

These results were corroborated in a study by Ybarra, Boyd, Korchmaros and Oppenheim (2012) in which 1,200 students drawn from a national online sample (N = 30,000) were randomly assigned to complete one of four versions of a survey to better understand if including a definition and operationalization of bullying affects prevalence rates. The first version included the Double I-R definition and the word “bully”; the second version included just the definition; the third version included just the word “bully”; and the final version contained neither the definition nor the word “bully”. Collectively, their findings indicated that prevalence rates of bullying victimization were highest when neither the definition nor the word “bully” were included in the measure of bullying. The authors concluded that, “The definition may be a useful tool for researchers, but these results suggest that it does not yield a more rigorous measure of bullying victimization” (p. 57).

Using Subscores in Bullying Research. In test measurement, results are either reported with subscores (e.g., an achievement test with subscores for math, reading, and writing) or as a total score. Subscores are commonly used in the bullying research and are of great interest to teachers, school administrators, and policy makers. However, psychometricians interested in the appropriate use of test scores express caution in using subscores (Haberman, 2005; Haberman et al., 2009).

For example, Sinharay, Haberman, and Puhan (2007) suggest that researchers should use subscores only when several conditions are met. The researchers warn that subscores should not be used if they are not reliable or if evidence of validity is lacking. When the psychometric properties of subscores are unsatisfactory, using total scores (which tend to have higher reliability) is preferred. Even when reliable, subscores may not yield any additional information.

In cases where subscores provide no unique insight, a total, overall score of a construct would be appropriate (Haberman, 2005; Monaghan, 2006; Sinharay et al., 2007).

Therefore, subscales must be empirically evaluated in order to be useful, ideally through factor analysis (either exploratory or confirmatory). Unfortunately, bullying researchers create subscores without empirically testing the validity of the scales created. In a meta-analysis by Berne et al., (2013) the authors find that while over half of the studies (i.e., 56.8%) used or created subscales, just 40.9 % of the studies evaluated the internal reliability of their subscales, with only 27.3% empirically testing the construct validity of the scales through factor analysis. The need for quality measurement of bullying, is an ongoing need in the literature and has been acknowledged by respected institutions such as the Center for Disease Control (CDC) (Hamburger et al., 2011), AERA (American Educational Research Association, 2013), APA (American Psychological Association, 2014), and the National Academy of Sciences (Flannery et al., 2016).

Individual Differences in Bullying

A popular topic of study in the bullying literature is group differences of prevalence. Historically, researchers have focused on gender differences, generally finding boys are more likely to experience physical types of bullying whereas girls experience higher rates of relational bullying (Craig & Pepler, 2007; Crick & Grotpeter, 1996; Thomas et al., 2014; Wang et al., 2009, 2010). Although gender differences in bullying have been studied extensively, other group differences that have been examined include age and socioeconomic status.

Gender Differences. Research consistently shows gender differences in the involvement in bullying. However, the degree of this difference is up for debate. Earlier research by Archer (2004) found that while boys, on average, experience more physical victimization, there was

only a marginal difference in terms of verbal bullying (with boys experiencing more) and no significant differences with respect to relational bullying. Meanwhile, others have found large differences in boys experiencing more direct bullying but only marginal differences for relational victimization (Card, Stucky, & Little, 2008). As for gender differences in cyberbullying, the 2013 *School Crime Supplement* to the *National Crime Victimization Survey* (the last iteration that used multiple items to assess bullying forms), girls experienced a higher prevalence of cybervictimization (U.S. Department of Justice, Bureau of Justice Statistics, 2013). These findings have been echoed by a report by the National Academy of Sciences:

Research has suggested that there are gender differences in the frequency with which children and youth are involved in bullying. The NCVS-SCS, Youth Risk Behavior Surveillance System, and National Survey of Children's Exposure to Violence found that rates for self-reports of being bullied range from 19.5 to 22.8% for boys and from 12.8 to 23.7% for girls (Centers for Disease Control and Prevention, 2014; Finkelhor et al., 2015; U.S. Department of Education, 2015). All three of these national surveys found that girls were more likely to report being bullied than were boys (National Academies of Sciences, Engineering, & Medicine, 2016; pp. 44 – 45).

Age Differences. Research has consistently shown that traditional bullying tends to increase from elementary to middle school, peaking in sixth grade (Thomas et al., 2014). According to the NCVS-SCS, 27.8% of sixth graders reported being bullied at school in 2013. That number decreases to 23.0% of ninth graders, with only 14.1% of twelfth graders reporting they had been bullied at school (U.S. Department of Justice, Bureau of Justice Statistics, 2013). With respect to cybervictimization, reports from the NCVS-SCS indicate that victimization through electronic/digital means peak later in adolescence than does traditional forms of bullying

(National Academies of Sciences, Engineering, & Medicine, 2016; Thomas et al., 2014; Wang et al., 2009, 2010). These findings from the 2013 NCVS-SCS are in line with the Cook et al. (2010) meta-analysis findings that bullying behaviors (both for victim and perpetrator) peak in early adolescence, before decreasing slightly after age fifteen. However, this study did not compare traditional and cyberbullying behaviors.

Race/Ethnicity and Socioeconomic Status. Overall, few studies have explored the relationship ethnicity and race has with bullying. Most researchers focus on comparing the prevalence of bullying by race. According to the National Academy of Sciences:

Data from the NCVS-SCS indicate that the percentage of students who reported being bullied at school in 2013 was highest for white students (23.7%) and lowest for Asian students (9.2%), with rates of 20.3% and 19.2% for black students and Hispanic students respectively (U.S. Department of Education, 2015). Data from the national Youth Risk Behavior Survey (YRBS) were highest for white students (21.8%), next highest for Hispanic students (17.8%), and lowest for black students (12.7%) (Centers for Disease Control and Prevention, 2014). The YRBS data did not include any other ethnicities/races. (National Academies of Sciences, Engineering, & Medicine, 2016; p. 46).

Meanwhile, with respect to socioeconomic status (SES), SES has a mixed relationship with bullying:

...neither economic deprivation (Wilson et al., 2012), family income (Garner & Hinton, 2010), nor general socioeconomic status (Magklara et al., 2012) predicted greater risk of being targeted by bullying behavior. Other studies found that insufficient parental income

(Lemstra et al., 2012) and low social class (Pereira et al., 2004) predicted increased rates of being the target in bullying incidents. These conflicting results may be due in part to different measures and conceptualizations of socioeconomic status. In addition, other environmental or social–ecological factors that are often not included in evaluative models may account for the differences in these findings (National Academies of Sciences, Engineering, & Medicine, 2016; p. 53).

Characteristics Associated with Being a Bully or Victim

Some studies have shown that bullies often are physically larger than their peers, especially in the early grades (Thomas et al., 2014). Bullies have been reported to be aggressive, impulsive, hostile, domineering, antisocial, and uncooperative toward peers and to exhibit little anxiety or insecurity (Espelage & Swearer, 2003; Veenstra et al., 2005). Evidence suggests that bullies come from homes in which parents prefer physical discipline and are sometimes hostile and rejecting towards their children. Also, parents of bullies tend to have poor problem-solving skills, possess permissive attitudes toward aggressive childhood behavior, and even teach their children to strike back at the least provocation (Polanin, Espelage, & Pigott, 2012).

Similarly, there has been consistency in descriptive studies of victims of bullying, who tend to be physically smaller or weaker in some other way than the perpetrators. Research on victimization suggests students who are identified as victims also exhibit poor psychosocial functioning and thus tend to be more withdrawn, depressed, anxious, cautious, quiet, and insecure than their non-victimized peers (Olweus & Limber, 2002; Polanin et al., 2012). The most frequently cited motivation for victimization is that the victims “did not fit in” or were seen as “the nerd” (Polanin et al., 2012; Flannery et al., 2016; Veenstra et al., 2005).

Other research suggests that bullies and victims are not mutually exclusive categories with about half of the bullies reporting being victims as well (Espelage & Swearer, 2003; Law et al., 2012). Recently, researchers have begun to investigate the characteristics of these bully/victims. The evidence suggests that bully/victims come from homes in which parents are less involved with their children and are sometimes hostile and rejecting (Thomas et al., 2014; Veenstra et al., 2005; Wang et al., 2009). Compared to bullies and victims, bully/victims are among the most disliked members of a classroom. Furthermore, bully/victims function more poorly than bullies or victims, demonstrate higher levels of both aggression and depression, and scoring lower on measures of academic competence, self-control, self-esteem, social acceptance, and pro-social behavior (Nansel et al., 2001, 2004; National Academies of Sciences, Engineering, & Medicine, 2016).

Additionally, findings from longitudinal studies suggest that victimization is a stable, year to year experience. For example, in a year-long study of high school students in Lithuania (N = 1,667), aged 15 to 19 (M = 17.29, SD = 0.95), Erentaite, Bergman, and Zukauskienė (2012) found that there is a significant level of overlap between traditional and cybervictimization, and victims who experienced high levels of verbal and relational bullying, showed a higher risk of cybervictimization the following year. In particular, 35% of traditional victims reported cybervictimization a year later. Comparatively, only 22% of students who did not experience traditional bullying experienced cybervictimization the following year.

How Harmful Is Bullying?

Studies have consistently shown victimization to be related to damaging outcomes such as post-traumatic-stress-disorder, substance abuse, lower life-satisfaction, physical aggression,

and lower academic achievement (Flannery et al., 2016; National Academies of Sciences, Engineering, & Medicine, 2016).

Comparing the Harm of Traditional and Cyberbullying. While it has been known for a while that bullying (either victim or bully) is associated with a host of negative outcomes, it has only been recently that investigators have explored whether traditional forms of bullying or cyberbullying is most associated with these negative outcomes. At its core, school is a social experience. Therefore, it should not be surprising that the research has consistently found relational bullying predictive of many detrimental life outcomes (e.g., depression, anxiety, low self-control (e.g., Espelage & Swearer, 2003; Thomas et al., 2014; Walker, 2010). The manipulation of social networks and the spreading of rumors (true or untrue) would be traumatic to *any* individual, but especially so in the formative years of school. Alarming, teachers consistently see relational bullying as the *least* harmful form of bullying, and have difficulties deciding whether or not to intervene when faced with instances of it (Bauman & Del Rio, 2006). After all, sound travels and bruises show; how does the teacher know if the student chose not to join that group of peers or was rejected by them?

Meanwhile, other studies have shown that cyberbullying is predictive of anxiety, lower academic achievement, and self-control in victims (e.g., Gradinger et al., 2009; Kowalski et al., 2014; Thomas et al., 2014; Wang et al., 2010). First, cyberbullying is the only form victims cannot escape by changing their setting from school to home. Second, due to the anonymity of the Internet, victims find they suffer more torment from bullies that behave much more harshly than if their identity(s) were to be known (Dempsey et al., 2011). Third, electronic messages can be disseminated to a larger audience and to more victims, meaning that potential embarrassment or harm can be much more damaging to the victim. Finally, digital technology gives students the

ability to be online without much adult supervision, meaning that by the time parents or school officials intervene, it is often too late. Given the recent advent of electronic bullying, there is less research on comparing electronic bullying to traditional types of bullying (i.e., relational and direct; Menesini & Nocentini, 2009; Menesini, Nocentini, & Calussi, 2011; Thomas et al., 2014).

While there are several theoretical reasons as to why cyberbullying is worse than traditional forms, the empirical research has found mixed results. In one of the first studies to address this question, Ybarra, Diener-West and Leaf (2007) found that cyber-victims were more likely to also report multiple detentions, suspensions, more likely to bring a weapon to school. However, Jackson and Cohen (2012) found that traditional and cyberbullying are both predictive of negative outcomes, in a sample of 192 children. Unlike other studies, the results from structural equation modeling did not find a significant correlation between traditional and cyberbullying. However, both traditional and cyberbullying were significantly predictive of feeling greater loneliness, less peer optimism, and fewer friendships.

Meanwhile, Bradshaw, Waasdorp, and Johnson (2014) found significant overlap in the different forms of bullying victimization. In a study of 24,620 students from 52 Maryland high schools (average age = 15.98, SD = 1.32), the relationship between socio-emotional outcomes and relational, verbal, physical, and electronic form of victimization were compared. Overall, Bradshaw et al. did not find one form more severe than another. However, Bradshaw et al. concluded that victims of multiple forms of victimization were the most likely to experience negative outcomes such as: anxiety, depression, and violent outbursts.

Psychological Outcomes. The psychosocial consequences of being bullied are significant with victims having increased rates of suicidal ideation and loneliness (Aalsma, 2008). Although students who are victims often seem isolated, shy, and uninvolved or

uninterested in associating with others, on the inside there is torment. Studies have found victimization to be correlated with internalizing problems, such as depression, anxiety, and low self-esteem (Bradshaw et al., 2014; Hawker & Boulton, 2000). Victims of bullying commonly report experiencing low self-esteem, as well as other problems related to stress, such as headaches, stomachaches, and not sleeping well (Horne et al., 2007; National Academies of Sciences, Engineering, & Medicine, 2016; Thomas et al., 2014).

Behavioral Outcomes. Students who were victimized as children or adolescents have increased rates of violence-related behaviors compared to those not involved in bullying (Aalsma, 2008). Victims report more behavioral misconduct, aggression, delinquency, and substance use, and acceptance of misconduct than students uninvolved in bullying, albeit not to the same degree as bullies. Instead, students who are victims tend to have more interpersonal difficulties and poorer social skills than other students. In most cases, victims do survive, but carry their emotional scars for a lifetime. Perhaps more alarming is the fact that victims are more likely than perpetrators to bring weapons to school for the purpose of revenge (Flannery et al., 2016; Thomas et al., 2014).

Academic Outcomes. Research has documented that students who are generally less accepted by their peers are at risk for academic failure. Studies show that victimization leads to school disengagement and avoidance (Wienke Totura, Green, Karver, & Gesten, 2008). School avoidance generally has a negative association with students' motivation in school and students identified as the bully and/or victim are typically disengaged from schoolwork (Flannery et al., 2016; Thomas et al., 2014; Wienke Totura et al., 2008).

Social Outcomes. Perhaps the highest costs of being involved in bullying arise from the destructive relationship dynamics that are at the foundation for healthy development and impair

many social capacities essential for healthy social engagement (Craig & Pepler, 2007). First, students who are victimized tend to withdraw from peer interactions. They are at increased risk of becoming socially anxious and increasingly hesitant to engage in social activities, even refusing to attend school as they develop a fear of the bullying situation and often report feeling unsafe. Second, victimized children tend to have few friends, usually because once peers become aware that a child is being victimized, they hesitate to intervene for fear of being victimized themselves. In addition to distancing themselves from the victimized child, they may even join in the bullying to become more accepted by those in power (Bradshaw et al., 2014; Kowalski et al., 2014; National Academies of Sciences, Engineering, & Medicine, 2016).

Perhaps worse of all, victimized students are unlikely to report incidence of bullying to teachers or even parents (Flannery et al., 2016; National Academies of Sciences, Engineering, & Medicine, 2016; Thomas et al., 2014). Using data from the 2013 Swedish Health Behavior in School-aged Children survey (HBSC) Bjereld, Daneback, and Petzold (2017) compared the relationship victimized and nonbullied children had with parents and teachers. The HBSC is a World Health Organization sponsored study based on a cross sectional questionnaire survey of students aged 11, 13 and 15 (N = 6971). Both occasional and frequent victims of bullying reported having low confidence in teachers and having family members who did not listen to their problems. Victims of frequent bullying were significantly more likely to say they found it difficult to talk to their parents about poor relationships with family members not listening to them.

Addressing Bullying in Schools

Given the past findings from longitudinal research (e.g., Erentaite et al., 2012) showing bullying to be a fairly stable (negative) experience, the need to address and reduce bullying

cannot be understated. In bullying prevention programs, it is assumed that when teachers witness acts of bullying (or become aware of bullying) they will intervene on the victim's behalf.

Unfortunately, compared to other areas, quality research studying how teachers respond to bullying is lacking. Further complicating matters, children are less likely to report instances of relational bullying to adults.

Teacher Responses to Bullying. When teachers dismiss or ignore bullying in school, victims believe teachers consider bullying to be an acceptable or at least tolerated behavior. Therefore, victims learn they cannot count on their teachers for protection (Bauman & Del Rio, 2006). Despite the best intentions, the literature on bullying consistently shows school personnel do not respond effectively to incidents of bullying. Furthermore, most teachers only recognize physical bullying as needing intervention, and under estimate the damaging effects of relational bullying.

One of the first studies to compare how teachers respond to various forms of bullying (i.e., physical, verbal, and relational bullying) was Bauman and Del Rio (2006). Preservice teachers (N = 82), from the Southwestern part of the USA, responded to six vignettes containing situations of children perpetrating and experiencing bullying (2 vignettes per form). After each vignette, participants were asked about the seriousness of the bullying, degree of empathy for the victim, and the likelihood of intervening to address the problem. Teachers were also asked open-ended questions as to how they would have responded to the perpetrator and the victim.

After reading vignettes of bullying, preservice teachers found physical bullying the most serious form, followed by verbal, and saw relational bullying as the least serious form. Participants in the Bauman and Del Rio (2006) study also had the least empathy for the victims of relational bullying and were least likely to intervene in relational. All findings were significant

($p < .05$). Finally, preservice teachers suggested the least severe actions (e.g., ignore the incident; meet with both students) for both perpetrators and victims of relational bullying compared to the proposed actions they would have taken (e.g., discuss bullying with entire class, report to higher authority/inform parents) with other forms of bullying.

Recently in a study by Yoon, Sulkowski, and Bauman (2016), 236 teachers viewed streaming video vignettes depicting physical, verbal, and relational bullying and reported how they would respond to bullies and victims. Consistent with findings from Bauman and Del Rio (2006), teachers in this study were more likely to discipline bullies engaging in physical bullying compared to relational or verbal forms. Furthermore, Yoon et al. (2016) found that teachers were more likely to teach prosocial skills to victims of physical bullying than victims of relational or verbal bullying.

Meanwhile, other researchers have identified factors that influence teacher responsiveness to bullying. One of the influencing factors is the belief that bullying is a “normal” part of school social development. In a study by Kochenderfer-Ladd and Pelletier (2008) evaluated views and beliefs about bullying in a sample of 34 second and fourth grade teachers, from the Southwest, USA. Results suggest that raising teacher awareness to the harms of bullying starts with challenging normative beliefs about bullying. Teachers who believe bullying is a normative behavior were found to be less likely to encourage victims to stand up for themselves, report the bullying to school officials, or involve parents.

In addition to holding normative beliefs about bullying, empathy can increase the likelihood of teacher intervention. Nordgren, Banas, and MacDonald (2011) tested the hypothesis that people generally underestimate the severity of social pain (e.g., bullying), until they have experienced similar pain themselves. As part of a five-part study, 67 Dutch middle

school teachers were randomly assigned to an inclusion, exclusion, or control condition. The teachers were asked to evaluate a scenario involving relational bullying at school, estimate the severity of bullying, and determine the appropriate treatment for victims and punishment for bullies. The results revealed that when teachers actively experienced an example of social pain, it amplified how they estimated the severity of relational bullying. This empathy, led teachers to recommend more comprehensive treatments for victimized students and adequate punishments for bullies.

Similar to empathy (i.e., Nordgren et al., 2011), Kahn, Jones, and Wieland (2012) found that teacher coping strategies influences their responses to bullying. A sample of 97 preservice teachers, from the Midwest, USA took a self-report measure of coping styles and then responded to eight vignettes showing direct or relational forms of bullying occurring among boys or girls (cyberbullying was not examined). Similar to past findings (e.g., Bauman & Del Rio, 2006; Yoon et al., 2016), direct bullying was viewed as a more serious issue by preservice teachers than relational bullying. Also, participants felt it was more important to address direct bullying. Furthermore, participants who used adaptive coping strategies were more likely to believe that teacher intervention was necessary for both direct and relational bullying.

Furthermore, individual factors of teachers (i.e., competence, job satisfaction, and self-efficacy) were found to be predictive of teacher responses to bullying in a sample of 120 teachers ($M = 48.21$; $SD = 9.22$) enrolled in a bullying prevention program in Italy (De Luca, Nocentini, & Menesini, 2019). In this study, De Luca et al. (2019) found a significant positive effect for teacher competence and intervention ($\beta = .33$, $p < .01$). However, neither job satisfaction nor self-efficacy was significantly predictive of intervening in bullying.

Fortunately, several studies have found that teacher intervention does reduce bullying rates in schools and may buffer the negative outcomes of bullying. For example, researchers have shown that when teachers are perceived to be effective in addressing bullying, bullying occurs less frequently. In a study of 2,776 students (from 31 schools and 144 classrooms across mainland Finland), Veenstra, Lindenberg, Huitsing, Sainio, and Salmivalli (2014) examined teacher responses to bullying and student perceptions of their efficacy. Their findings show incidences were lowest in classes where teachers were seen as successful in addressing bullying with minimal amounts of effort. Over time, persistent teacher effort was related to a reduction in bullying. Meanwhile, classrooms with teachers who needed to exert greater effort to stop bullying had higher incidences of bullying.

The findings from Veenstra et al. (2014) are in line with Espelage, Polanin, and Low (2014) who compared teacher perception of the school environment (N = 1,447) and student reports of the prevalence of bullying (N = 3,616). Students in 36 middle schools across the Midwest, USA completed survey measures of bullying, aggression, victimization, and willingness to intervene in bullying situations. Teachers and staff completed a school environment survey. Not surprisingly, results found when teachers perceive aggression is a school-wide problem, students report increased incidences of bullying and are less willing to intervene. On the other hand, when teachers were more committed to preventing bullying, there was less bullying. Hierarchical analyses showed school commitment to bullying prevention was associated with less bullying and student reports of willingness to intervene was largely explained by student-level demographic characteristics, most significantly gender.

In addition to reducing the prevalence rates in schools, there is recent research indicating teacher intervention may act as a buffer against the harmful correlates of bullying. In a secondary

data analysis of the 2013 *School Crime Supplement* to the *National Crime Victimization Survey*, Baek, Andreescu, and Rolfe (2017) examined if teacher support, moderates the relationship between victimization and fear of school. Results suggest that having supportive teachers was related to being less afraid of being victimized, but found that having supportive teachers was not related to students experiencing higher levels of bullying. Consistent with past research (e.g., Flannery et al., 2016; Thomas et al., 2014), victimization was positively related to fear of victimization. However, this relationship was negatively moderated by having supportive teachers available. This suggests that victimization is bad, but those who reported having supportive teachers available, were less likely to experience fear of victimization. However, this moderation effect but was only significant for males ($\beta = -.07, p < .01$).

Bullying Prevention Programs in Schools. Regardless of efforts by teachers to address bullying, the greatest promise to reduce bullying in school remains prevention programs. Luckily, the research on bullying prevention has increased considerably over the past decades, due to the awareness of bullying as a public health problem. Despite growing interest and demand for bullying prevention programs, few studies employ randomized controlled trials (RCT) methodologies to determine the efficacy or effectiveness of programs (Bradshaw, 2015; Flannery et al., 2016). The need for quality bullying prevention, informed by evidence-based research, has been acknowledged by the American Psychological Association (American Psychological Association, 2014). In their *Guidelines for Prevention in Psychology*, the APA make several suggestions for providing a framework of best practices in bullying prevention. These suggestions include, choosing programs that are not only ethical, but are evaluated with rigorous research. Furthermore, the APA guidelines encourage programs to be theory and evidence-based, but also culturally conscious to the specific context or region where it is being

applied. These programs should not only reduce risks to bullying, but should be designed to promote an individual's strengths and abilities.

As a whole, bullying prevention programs are comprised of three levels: universal prevention, selective prevention, indicated prevention. These levels of treatment are administered on a response to intervention (RTI) basis. The RTI process begins with high-quality *universal prevention programs*, aimed at reducing risks of bullying and strengthening social-emotional skills for all youth within a school or defined community (Bradshaw, 2015; National Academies of Sciences, Engineering, & Medicine, 2016; Ttofi & Farrington, 2011). Universal programs are often based on the Olweus prevention program model (Olweus, 1994; Olweus & Limber, 2002), where everyone participates in the intervention regardless of risk for bullying. In these universal programs, social-emotional lessons are used in the classroom and behavioral expectations are taught by teachers and counselors. In addition, teachers and counselors model strategies for students to respond to bullying appropriately. Students also receive instruction on how to report bullying and hold classroom meetings (with students and teachers as equal stakeholders; Olweus, 1994; Olweus & Limber, 2002) to discuss emotionally relevant issues experienced in school. To address cyberbullying, these universal programs often include guidelines for appropriate and safe use of digital media.

With RTI, students who are at greater risk of involvement in bullying (either as perpetrator or victim) are provided with interventions at increasing levels of intensity (Bradshaw, 2015; Ttofi & Farrington, 2011). After universal programs, *selective preventive interventions* are directed either to youth who are at risk for engaging in bullying. These programs include more intensive social-emotional skills training, coping skills, or de-escalation. At the top of the RTI pyramid, *indicated preventive interventions* are individually tailored educational development

plans (Ttofi & Farrington, 2011). These programs are designed for students who are already displaying bullying behavior or who have a history of being bullied and are showing early signs of behavioral, academic, or mental health consequences. Indicated interventions incorporate more intensive emotional support services, counseling, and behavioral coaching for those who are experiencing bullying (Bradshaw, 2015; Olweus & Limber, 2002; Ttofi & Farrington, 2011).

Effectiveness of Prevention Programs. Collectively, the research is mixed on the effectiveness of bullying programs. Programs such as the Olweus Bullying Prevention Program (OBPP), discussed earlier, show promising results. Recently, Olweus, Limber, and Breivik (2019) conducted a longitudinal evaluation of the OBPP effectiveness at reducing verbal, physical, relational, and cyberbullying prevalence rates at school. A large sample of 30,000 students (grades 3–11), from 95 schools in central and western Pennsylvania participated in a three-year longitudinal study. Olweus et al. found significant program effects for reducing all forms of bullying, at all grade levels, with stronger effect sizes found for schools that instituted the OBPP for longer time periods. Although the program was effective in reducing all forms of bullying, the OBPP had weaker effect sizes for cyberbullying (both bully and victim).

Despite the success of the Olweus prevention programs and the desire for the success of bullying preventions in aggregate, recent reviews of bullying prevention approaches have produced mixed findings. One of the first studies to do a meta-analysis of the bullying prevention research was Merrell, Gueldner, Ross, and Isava (2008) and is considered foundational in the bullying research (Bradshaw, 2015). The meta-analysis included 16 studies published from 1980 until 2004. The overall sample included 15,386 students (grades K–12) from Europe and the United States. The strongest effect sizes were found for student social competence, knowledge of bullying prevention, and self-esteem. On the other hand, efforts to reduce the frequency of

bullying were largely ineffective. Although, Merrell et al. noted that studies based in Europe with homogeneous populations produced larger effect sizes.

Another influential meta-analysis of bullying prevention research was conducted by Ttofi and Farrington (2011). The study evaluated the collective efficacy of 89 bullying studies, covering 44 prevention programs. Four types of research design were evaluated: a) randomized experiments, b) intervention-control comparisons with before-and-after measures of bullying, c) other intervention control comparisons, and d) age-cohort designs. Overall, the results show that bullying prevention programs are effective. Of the 53 different programs evaluated, bullying decreased by 20–23% and victimization decreased by 17–20%. Furthermore, Ttofi and Farrington (2011) found that large-scale evaluation studies produced weaker findings, compared to smaller studies where the prevention program can be administered with greater researcher influence. Additionally, smaller effect sizes were found for prevention programs evaluated through studies with more rigorous methodologies.

Other researchers, such as Evans, Fraser, and Cotter (2014) have reported similar findings in recent years. Their meta-analysis evaluated 32 studies that examined 24 bullying interventions. Of the prevention programs designed to reduce perpetration, 50% reported significant effects. Meanwhile, 67% of programs designed to reduce victimization reported significant effects. Evans et al. also found that prevention programs based in samples outside the United States (e.g., European countries) were more effective in reducing bullying. In addition, their review of the literature found that the majority of bullying studies lack the validity evidence to be considered useful.

Bullying and United States Law

Two events started the awareness of school bullying as a societal emergency needing legislative action in the United States. The first was the tragic Columbine High School shooting in 1999. This brought the subject of bullying into the public awareness like no event prior. The second event was an important legal ruling established by the United States Supreme Court in *Davis v. Monroe County Board of Education* that schools could be held responsible for failing to stop student-to-student sexual harassment (Cornell & Limber, 2015; Flannery et al., 2016; Holben & Zirkel, 2014; National Academies of Sciences, Engineering, & Medicine, 2016). Since 1999, all fifty states have passed anti-bullying legislation and the *Davis v. Monroe County Board of Education* (1999) decision has been the basis for many current national lawsuits regarding victims of bullying (Cornell & Limber, 2015; Holben & Zirkel, 2014).

In the United States, primary and secondary education is the responsibility of local governments, and there is no federal guarantee of public education (Holben & Zirkel, 2014; National Academies of Sciences, Engineering, & Medicine, 2016). Because the right to an education is not explicitly stated in the Constitution, the federal government does not have the authority to directly regulate education. However, the federal government maintains an active role in education through its spending power and by setting educational standards. Federal educational standards are typically expressed through legally nonbinding “Dear Colleague” letters from the U.S. Department of Education’s Office for Civil Rights to school authorities (Flannery et al., 2016).

Bullying and the U.S. Supreme Court. With *Davis v. Monroe County Board of Education* (1999), the Supreme Court ruled that school authorities could be held liable under Title IX for damages in a case involving student-on-student harassment (Cornell & Limber,

2015; Holben & Zirkel, 2014; National Academies of Sciences, Engineering, & Medicine, 2016). This case was the result of a fifth-grade girl who was repeatedly sexually harassed (i.e., sexually suggestive statements, gestures, and inappropriate touching) by a male classmate. During the months of harassment, the victim was distressed; her grades fell, culminating in her writing a suicide note. Frustrated by the lack of responsiveness by the school, the parents contacted the police. The police pressed charges of sexual battery to which the boy pled guilty. While making no direct references to bullying, *Davis v. Monroe* (1999) became a breakthrough case regarding bullying.

The family sued the school on the basis of the “no person shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance” provided by Title IX of the Education Amendments of 1972. Regrettably, the lower courts sided with the school officials, but the case eventually reached the U.S. Supreme Court. The Supreme Court’s 5–4 decision, in favor of the plaintiffs, was a monumental shift in the legal obligations of schools for student behavior. For the first time, the Supreme Court recognized that sexual harassment of one student by another student could constitute a discriminatory act under Title IX. This decision opened the door for more cases arguing that schools should take action to stop harassment (Cornell & Limber, 2015; Holben & Zirkel, 2014).

In its decision, the Supreme Court identified four conditions that must be met in order for a school to be held liable (Holben & Zirkel, 2014). First, the student must be victimized because of membership in a protected category. Students who are not in a protected category, or whose harassment is not based on their membership in that protected category, are not included. For example, if a student from a racial minority group is teased for being overweight, the student

would not be included in the scope of civil rights violations because obesity is not a protected category and the teasing was not directed at his or her minority status. A second condition is that the harassment at school must be severe. Ordinary teasing, name-calling, and rough play among students are not sufficient unless the behavior is so severe that it denies its victims the equal access to education that Title IX is designed to protect. The court recognized that mildly aggressive behavior is commonplace among students and did not require that schools be held to the same standards expected for adults in the workplace. Third, the court decided that school authorities must be aware of the harassment, and are not liable for harassment that they did not know about. Fourth, schools are liable only if they are “deliberately indifferent” to the harassment. Schools are not required to prevent or stop harassment, but only to make a reasonable effort to intervene when they become aware of it. Under the scope of this decision, schools do not have to be successful in their efforts and there is no standard of practice specified for schools and no specific requirement that they maintain a school environment that is reasonably free from harassment (Cornell & Limber, 2015; Holben & Zirkel, 2014; National Academies of Sciences, Engineering, & Medicine, 2016).

Civil Rights and Bullying. Commonly, the term harassment is used interchangeably with bullying (Cornell & Limber, 2015). Unlike bullying, harassment has an established legal history in civil rights law and policy. As a result, a majority of the legal cases and laws against “bullying” are based on civil rights violations (Cornell & Limber, 2015; Holben & Zirkel, 2014). On the other hand, civil rights is the area of law that gives people the right to be free from certain types of discrimination and harassment, and gives people the right to equal and fair treatment in society. Civil rights law also creates protected classes of people. It gives people in these classes the protection of the law when others try to discriminate against them based on the class

characteristic (Holben & Zirkel, 2014; National Academies of Sciences, Engineering, & Medicine, 2016).

In the United States, the Civil Rights Act of 1964 includes Title VI, prohibiting discrimination based on race, color, or national origin. Additionally, Title IX outlaws discrimination on the basis of sex. Furthermore, both Section 504 of the Rehabilitation Act of 1973 and Title II of the Americans with Disabilities Act of 2004 prohibit discrimination based on disability. Together, these laws protect students in the United States from discriminatory actions that deprive them of their right to free appropriate public education. These laws have been interpreted to mean that employees of public schools (e.g., teachers, administrators, councilors, etc.), receiving federal funds, cannot discriminate against their students. Despite these needed protections, there is still disagreement about whether such laws apply to student-on-student harassment, or bullying (Cornell & Limber, 2015; National Academies of Sciences, Engineering, & Medicine, 2016).

At the federal level, the Obama administration was the first presidential administration to issue policy directives to the U.S. Department of Education's Office for Civil Rights that certain forms of bullying must be addressed as civil rights violations (Cornell & Limber, 2015). Meanwhile, the Trump administration has not issued policy directives or executive actions to address school bullying, but the issue of cyberbullying has been a focus of first lady Melania Trump's "Be Best" public awareness campaign that focuses on children's well-being (Fink, 2019).

Despite these efforts, bullying remains a societal problem because our current laws and policies are often inadequate and too ambiguous to apply fairly. This unfairness was best highlighted in a meta-review by Holben and Zirkel (2014). The authors evaluated a total of 166

federal and state court legal decisions that involved victims being bullied at school. Most cases were based on violations of the Fourteenth Amendment to the U.S. Constitution (due process and equal protection) claims and of Title IX (sexual discrimination) in schools. Unfortunately, for victims and their parents, their meta-review found that the significant majority of judicial rulings favored the defendants (schools) over the plaintiffs (victims and parents). This finding, while disappointing for parents is consistent with court cases involving schools. Often, courts give public schools (e.g., teachers, school administrators, and support staff) the authority and latitude to implement disciplinary policies, as they see fit. Furthermore, schools with weaker defenses are more likely to reach a settlement, than fight the case in a criminal or civil trial (Cornell & Limber, 2015; Holben & Zirkel, 2014).

Summary and Conclusions

In summary, the moral urgency to stop bullying is based on the plight of a victim who is overpowered and subjected to repeated humiliation, and there is evidence that victims of bullying experience more serious adjustment problems than victims of other forms of peer aggression (Ybarra et al., 2012). Through national and international assessments, we know that bullying remains a prevalent problem (Flannery et al., 2016; Thomas et al., 2014). Although research has traditionally focused on in-school examples of bullying, advances in technology created an additional form of bullying available 24/7 to tormentors and tormented alike. Furthermore, we also know experiencing bullying is predictive of a variety of negative outcomes, including being more likely to bring weapons to school, have increased levels of fear and avoidance of school, and lower academic achievement (Espelage et al., 2014; Thomas et al., 2014).

Because of these harms, a plethora of prevention programs have been developed to reduce bullying. However, the efficacy of these programs is subject to debate among researchers

(e.g., Evans et al., 2014; Merrell et al., 2008; Ttofi & Farrington, 2011). This is perhaps most reflected in the finding that many teachers struggle to know how and when to intervene in situations of bullying (Yoon et al., 2016). This has led to students underreporting the bullying they experience, with many fearing that notifying teachers will make matters worse.

Additionally, definitions of traditional bullying and cyberbullying currently pose a dilemma for policymakers and researchers alike. Laws addressing bullying are often based on a definition that is not readily applied and understood (Cornell & Limber, 2015). Currently, schools have the difficult task of determining which federal and state antidiscrimination laws apply to a student who is being bullied, and that the school's obligations may depend on the student's gender, race, religion, national origin, and disability status (Cornell & Limber, 2015; Flannery et al., 2016).

Purpose of Dissertation Study

Unfortunately, there is an insufficient number of studies simultaneously measuring traditional with cyberbullying, and authors rarely report psychometric properties of the scales used. While this need was addressed by Betancourt (2016), the dissertation expands on the earlier study in several ways. The Betancourt (2016) study was based on a sample of exclusively ninth-grade students. Many studies have shown that as students get older, incidents of physical bullying decline, while relational bullying becomes more frequent (National Academies of Sciences, Engineering, & Medicine, 2016; U.S. Department of Justice, Bureau of Justice Statistics, 2013). Furthermore, the Betancourt (2016) study exclusively focused on Exploratory Factor Analysis (EFA). The goal of EFA is to determine the underlying structure of a set of interrelated variables without imposing any preconceived structure on the outcome (Marsh et al., 2011; Thomas et al., 2014; Randa, Nobles, & Reynolds, 2015; Vessey et al., 2014). Finally, the sample used in this study was localized within one high school in central New Jersey. As such,

the external validity is undermined since the sample may not represent the population of bullied students in the United States. Therefore, an additional study with a large national sample is needed to test whether the structure of bullying found in Betancourt (2016) can be replicated nationally.

National estimates of bullying are often based on data from the *School Crime Supplement* of the *National Crime Victimization Survey* (NCVS-SCS). The NCVS-SCS is co-designed by National Center for Education Statistics and Bureau of Justice Statistics. The NCVS-SCS is a national, ongoing, cross-sectional survey of approximately 6,500 students ages 12 through 18 in U.S. public and private elementary, middle, and high schools. The NCVS-SCS contains traditional and cyberbullying scales used to provide a national picture of bullying (e.g., DeVoe, Fleury, & Bauer, 2010; Mayer, 2010; Randa et al., 2015; Robers, Zhang, & Truman, 2012). Unfortunately, little is known about the psychometric properties of the NCVS-SCS bullying scales or if making group-based comparisons (i.e., gender differences) is indeed a valid practice (Bryne, 2008; Marsh et al., 2011; Schmitt & Kuljanin, 2008; Shaw et al., 2013).

The only previous evaluation of the validity of NCVS-SCS bullying scales, by Randa et al. (2015), relied exclusively on EFA approaches. Using the 2009 NCVS-SCS bullying scales, the researchers found that cyberbullying was a separate factor from traditional forms of bullying. However, in the Randa et al. direct and relational bullying did not form unique factors. Instead, all but a few items formed on to a single factor which was named “traditional bullying”. Reviews of the bullying and psychometric literature both find that EFA is a useful technique and a necessary first step in establishing construct validity (Berne et al., 2013; Goodwin, 2005; Law et al., 2012; Thomas et al., 2014).

Research Hypotheses. This dissertation takes the next step in validating the NCVS-SCS by evaluating the factor structure of the 2013 NCVS-SCS bullying scales using EFA and CFA techniques. Finally, gender differences were examined as the CFA was tested for measurement invariance. Four hypotheses were used to evaluate the factor structure of the 2013 NCVS-SCS bullying scales by establishing an acceptable measurement model of victimization that aligns with conceptual nature of bullying discussed.

Hypothesis 1: Traditional and cyberbullying subscales will demonstrate acceptable levels of reliability (i.e., reliability coefficients $> .70$).

Hypothesis 2: EFA with two factors extracted will yield a model in which traditional items (relational and direct bullying) and cyberbullying items load significantly onto independent factors (i.e., factor loading $> .30$).

Hypothesis 3: CFA with a two-factor model (traditional and cyberbullying) will demonstrate acceptable fit.

Hypothesis 4: Tests of invariance will establish that both the two-factor model is fully invariant across gender.

Chapter III: Methodology and Data Analysis Plan

Data for the dissertation originate from the 2013 *School Crime Supplement* to the *National Crime Victimization Survey* (NCVS–SCS). Sponsored in part by the National Center for Education Statistics, the NCVS-SCS has been collected with regularity since 1995 (every two years beginning 2003). This supplement collects interview data from NCVS household members age 12–18 who had attended a qualifying school in the past six months (typically between January and June), and asks them to reference the current school year (U.S. Department of Justice, Bureau of Justice Statistics, 2013). The data from the 2013 NCVS-SCS are archived by the University of Michigan’s Inter-University Consortium for Political and Social Research (ICPSR). The ICPSR is funded, in part, by the United States Department of Justice, Bureau of Justice Statistics.

Variables Used in Study

The 2013 NCVS-SCS included 15 different items that address bullying behaviors. Eight items are designed to measure school-based bullying. The remaining seven items measure cyberbullying. Each item is dichotomous in nature, students reporting yes or no answers. The individual bullying items were introduced to the participant through the following statement: “Now I have some questions about what students do that could occur anywhere and that make you feel bad or are hurtful to you. You may include events you told me about already. During this school year, has another student....”

Measuring Traditional Bullying. Traditional bullying is addressed through eight items including: “...has another student...” (1) “Made fun of you, called you names, or insulted you?”; (2) “Spread rumors about you?”; (3) “Threatened you with harm?”; (4) “Pushed you, shoved you, tripped you, or spit on you?”; (5) “Tried to make you do things you did not want to do, for

example, give them money or other things?"; (6) "Excluded you from activities on purpose?"; (7) "Destroyed your property on purpose?"; and (8) "Have you been in a fight this year?"

Measuring Cyberbullying. The seven cyberbullying items included in the survey were: "...has another student..." (1) "Posted hurtful information about you on the Internet, for example, on a social networking site like MySpace or Facebook?"; (2) "Threatened or insulted you through email?"; (3) "Threatened or insulted you through instant messaging?"; (4) "Threatened or insulted you through text messaging?"; (5) "Threatened or insulted you through online gaming, for example, while playing a game, through Second Life, or through XBOX [Live]"; (6) "Purposefully excluded you from an online community, for example, a buddy list or friends list?"; and (7) "Purposefully shared your private information, photos, or videos on the internet or mobile phones in a hurtful way?"

Preparing the NCVS-SCS Dataset

Of the 9,552 participants included in the NCVS-SCS dataset, 5,008 (52.4%) were administered both the NCVS and SCS interview. The remaining 4,544 (47.6%) only completed the NCVS interview and were excluded from analysis. Responses to all NCVS-SCS variables include either a (1) "valid value(s)", (2) "explicit don't know"; (3) "blind don't know"; (4) "blind refusals"; (5) "residue"; (6) "out of universe/off path". A detailed explanation of response categories to the NCVS-SCS is provided.

Valid values - These are the provided responses presented on the questionnaire for a given question.

Explicit don't know - On some questions a "don't know" response is presented as a valid response to a survey question and will appear in the data file as a valid value.

Blind don't know - Most questions accept a blind don't know response. The response is considered 'blind' because it is not displayed as a provided response for a specific

question, but is recorded as a separate category of non-response if offered by the respondent (e.g., respondent says “I don’t know the answer”).

Refused - Any question that is asked on any survey has the potential to be refused. To account for this, every question accepts a blind refusal response. The response is 'blind' because it is not displayed as an available response for a specific question.

Residue - Residue values indicate that a response is either missing or invalid for the question that should be answered.

Out of scope/universe - Out of scope or out of universe values indicate that a response is not anticipated for a question. This is most likely due to the logical skip patterns that exist in the survey administration.

Addressing Missing Data. The bullying items were recoded using a 0-1 scheme where yes equals one. Any responses of “don’t know”, “residue”, or “refused” were recoded as missing (999).

Confidentiality and Concern for Human Subjects

Responses to both the NCVS and SCS are confidential by law by the BJS under title 42, United States Code, sections 3735 and 3789g, and by the Census Bureau under title 13, United States Code, section 9. Interviewers are instructed to conduct interviews in privacy unless respondents specifically agree to permit others to be present. Most interviews for the NCVS and SCS were conducted by telephone, and most questions required "yes" or "no" answers, thereby affording respondents a further measure of privacy. By law, identifiable information about respondents may not be disclosed or released to others for any purpose. Only Census employees sworn to preserve confidentiality may see the completed questionnaires.

Exemption from CUNY Intuitional Review Board (IRB). A determination was made by the Graduate Center Human Research Protection Program (HRPP) that the dissertation does not involve “human subjects” and does not require HRPP or IRB review. This conclusion was based on the fact that the data to be analyzed is public rather than private, and that the identity of

participants (by law) cannot be ascertained from the data set. Therefore, the project does not use "identifiable private information," but rather consists solely of secondary data analysis, which does not require review.

Data Analysis Plan

To account for the stratified multistage cluster sampling design of the NCVS-SCS: the variable "V2117 – PSEUDOSTRATUM CODE" was included to adjust for the stratified sampling design, the variable "V2118 – SECUCODE: HALF SAMPLE CODE" was used to indicate primary sampling units, and the variable "VS0142 – SCS Person Weight" was included as the post-stratification weight.

All descriptive statistics, reliability coefficients, and data imputations were calculated using IBM SPSS Statistics v.23 (IBM Corporation, 2015). All Exploratory Factor Analyses (EFA) were performed using Generalized Least Squares extraction with Direct Oblimin rotation to account the correlational nature of bullying (i.e., there is a relationship between being a victim of traditional and cyber forms of bullying). This dissertation used the factor loading of .30 or above to indicate items which loaded saliently onto a factor. All Confirmatory Factor Analyses (CFA) were performed using Mplus v.8 with Weighted Least Squares with Means and Variances adjusted (WLSMV) Estimation, to account for categorical data (Muthén & Muthén, 2015). This dissertation used the root-mean-square error of approximation (RMSEA) cut off scores of 0.01, 0.05, 0.07, and 0.10 to indicate excellent, good, mediocre, and poor fit. Furthermore, the dissertation used comparative fit index (CFI) and Tucker-Lewis index (TLI) values of greater than .90 and .95 reflect acceptable and excellent fit to the data.

Construct validity was examined by (1) testing the factor structure of victimization with EFA and CFA techniques, (2) testing the invariance of the factor structure across demographic groups, and (3) calculating the reliability of the latent bullying factors.

Factor Structure of Victimization. To evaluate the structure of the 2013 NCVS-SCS bullying scales, an EFA with two factors extracted was tested. Next, a CFA model where traditional and cyberbullying items comprise two unique but correlated latent factors was tested.

Measurement Invariance. To evaluate measurement invariance (M.I.) across demographic groups, the following set of analyses were conducted: configural invariance, metric invariance, scalar invariance, and full invariance (e.g., Bryne, 2008; Marsh et al., 2011; Schmitt & Kuljanin, 2008; Shaw et al., 2013). Configural invariance fits the CFA model separately for each group without any equality constraints and is a prerequisite for any further M.I. analyses (Vandenberg & Lance, 2000). Metric invariance tests a model in which the factor loadings are equal across groups but the intercepts are allowed to differ between groups. This determines if difference scores on the item can be meaningfully compared across groups. Scalar invariance tests a model in which the loadings and intercepts are constrained to be equal. This demonstrates that the meaning of the construct (i.e., the latent loadings), and the levels of the underlying items (i.e., intercepts) are equal across groups. Finally, full invariance tests a model in which the residual variances are fixed to be equal across groups. This determines that the explained variance for every item is the same across groups.

Reliability of Bullying Factors. Reliability of the traditional and cyberbullying scales was calculated using Cronbach alpha. The purpose of Cronbach alpha coefficients is to demonstrate the internal consistency of a collection of variables used to represent a construct.

Chapter IV: Results

Descriptive Statistics

Descriptive statistics (e.g., mean, standard deviation, and variance) for all 2013 NCVS-SCS bullying items are reported in Tables 1. Similar to past studies using the *School Crime Supplement* (e.g., Randa et al., 2015), all bullying items had relatively low variability.

Hypothesis 1: Reliabilities of the 2013 NCVS-SCS Bullying Scales

Hypothesis 1 was supported. Acceptable alpha coefficients were found for both the traditional and cyberbullying scales ($\alpha = .74$ and $.69$ respectively). For comparison, the alpha coefficient for a total bullying scale (i.e., combining traditional and cyberbullying items into a composite scale) was higher ($\alpha = .78$) than either of the subscales.

Hypothesis 2: Results of Exploratory Factor Analysis (EFA)

Hypothesis 2 was supported. Results of the EFA are shown in Table 2. Traditional bullying items saliently loaded onto one factor and cyberbullying items loaded onto a second factor (see Table 2). However, three items: “Tried to make you do things you didn’t want”, “Threatened or insulted with online gaming”, and “Excluded from online communications” did not significantly load on either factor. The correlation between F1 and F2 was $r = .46$. The chi-square goodness of fit test was significant ($\chi^2 = 1211.30$; $df = 76$; $p < .01$).

Hypothesis 3: Results of Confirmatory Factor Analysis (CFA)

Hypothesis 3 was supported as the two-factor CFA demonstrated acceptable levels of fit ($\chi^2 = 372.83$; $df = 91$; $p < .01$; RMSEA = $.025$; CFI = $.98$; TFI = $.97$). As can be seen in Figure

1, all items loaded significantly onto their latent factor ($p < .01$). The correlation between the traditional and cyberbullying latent factors was $r = .79$ ($p < .05$).

Hypothesis 4: Results of Measurement Invariance

The measurement invariance findings are shown in Tables 3 and 4. First separate CFAs were estimated for females and males. For both groups, the fit was acceptable ($\chi^2 = 211.36$; $df = 91$; $p < .01$; RMSEA = .023; CFI = .98; TFI = .98; $\chi^2 = 152.03$; $df = 91$; $p < .01$; RMSEA = .016; CFI = .99; TFI = .99 respectively). After this preliminary step, configural, metric, scalar, and full invariance models were estimated (see Table 3). In each invariance model, both the CFI and TFI were above .97. Furthermore, in each invariance model, the RMSEA never rose above .025. These fit indices suggest that the two-factor model is fully invariant and group comparisons are valid. On the other hand, chi-square difference tests (see Table 4) show that at each step of invariance, the model fit was significantly worse ($p < .05$). However, the chi-square statistic is directly influenced by sample size. In other words, trivial differences may become statistically significant in a large sample (Schermele-Engel, Moosbrugger, & Muller, 2003). With this in mind, Hypothesis 4 was supported, as the fit indices for configural, metric, scalar, and full invariance never approached unacceptable levels, despite findings from the chi-square difference tests.

Table 1. Descriptive Statistics of Bullying Items

	<i>Mean (SD)</i>	<i>Variance</i>
Have you been in one or more fights	.04 (.19)	.04
Made fun of you	.14 (.35)	.12
Experience rumors	.13 (.34)	.12
Threatened with harm	.04 (.20)	.04
Pushed you or tripped you	.06 (.24)	.06
Tried to make you do things you did not want	.02 (.15)	.02
Excluded you from activities	.05 (.21)	.04
Destroyed property	.02 (.12)	.02
Posted hurtful information on the internet	.03 (.17)	.03
Purposely shared your private information/photos	.01 (.10)	.01
Threatened you through email	.01 (.10)	.01
Threatened you through instant messaging	.02 (.14)	.02
Threatened with text message	.03 (.18)	.03
Threatened or insulted with online gaming	.02 (.12)	.02
Excluded from online communications	.01 (.10)	.01

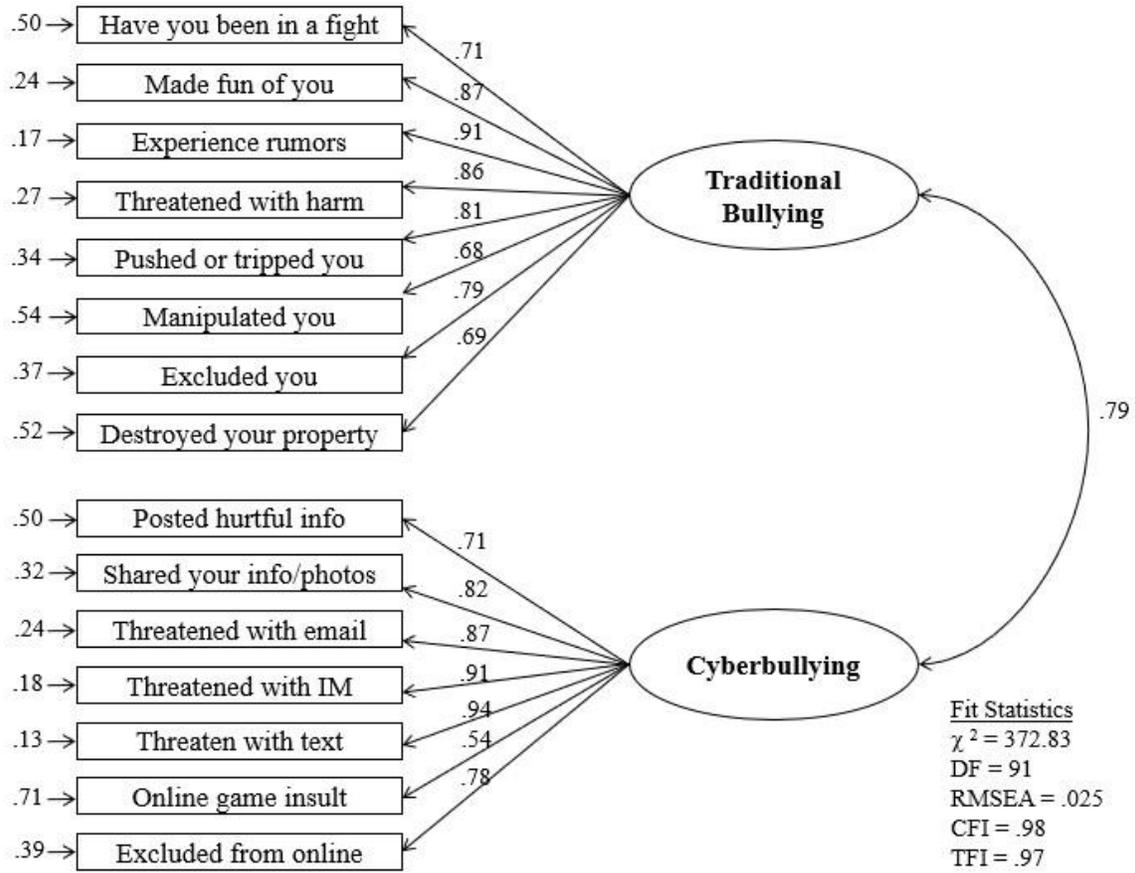
Note: N = 5,008.

Table 2. Factor Loadings from Two-factor EFA

	(F1)	(F2)
Have you been in one or more fights	.37	.09
Made fun of you	.68	-.03
Experience rumors	.56	-.20
Threatened with harm	.54	-.09
Pushed you or tripped you	.67	.07
Tried to make you do things you did not want	.29	-.09
Excluded you from activities	.45	-.12
Destroyed property	.36	.02
Posted hurtful information on the internet	.04	-.56
Purposely shared your private information/photos	.03	-.39
Threatened you through email	-.09	-.58
Threatened you through instant messaging	-.07	-.74
Threatened with text message	.04	-.68
Threatened or insulted with online gaming	.09	-.14
Excluded from online communications	.09	-.28

Note. EFA was run on 15 items using Generalized Least Squares extraction and Direct Oblimin rotation. Salient loadings (> .30) are shown in bold text. Correlation between F1 and F2 was $r = .46$. $N = 5,008$.

Figure 1. Two-factor CFA Structural Model



Note. Model was estimated using Weighted Least Squares with Means and Variances adjusted. All factor loadings and residual variances were significant ($p < .01$). N = 5,008.

Table 3. Two-factor CFA of 2013 NCVS-SCS Bullying Scales

Model	Chi-square	RMSEA	CFI	TLI
Baseline	372.83 (91)	.025	.98	.97
Females	211.36 (91)	.023	.98	.98
Males	152.03 (91)	.016	.99	.99
Configural Invariance	287.04 (178)	.016	.99	.99
Metric Invariance	300.04 (191)	.015	.99	.99
Scalar Invariance	448.98 (204)	.022	.98	.98
Full Invariance	343.49 (189)	.018	.99	.99

Note. All models were estimated using Weighted Least Squares with Means and Variances adjusted. Degrees of freedom in parentheses. Invariance was tested using gender as the grouping variable. All Chi-square values were significant ($p < .01$). N = 5,008.

Table 4. Two-factor Model Chi-square Difference Tests Comparing Invariance Steps

Model	Chi-square	P-value
Configural vs Metric Invariance	23.63 (13)	.05
Metric vs Scalar Invariance	259.75 (13)	.01
Scalar vs Full Invariance	124.57 (15)	.01

Note. All models were estimated using Weighted Least Squares with Means and Variances adjusted. Degrees of freedom in parentheses. Invariance was tested using gender as the grouping variable. N = 5,008.

Chapter V: Discussion

Despite a rich literature base, few measures assess cyberbullying and traditional bullying simultaneously while also reporting standards of reliability and validity. As a result, it remains unclear whether cyberbullying should be considered a separate type of bullying. Furthermore, these studies have rarely tested measurement invariance across groups (e.g., gender, age, and grade level) making it difficult to interpret demographic differences in the prevalence rates of bullying. This lack of knowledge clouds the ability of educators to develop effective programs and resources to address bullying in schools.

Prior work has shown bullying victimization contains distinct constructs with cyberbullying emerging as a distinct construct from traditional types of bullying (e.g., physical, verbal, and relational bullying). This dissertation advanced those findings by examining data from the 2013 *School Crime Supplement* to the *National Crime Victimization Survey* (NCVS-SCS) to provide psychometric information about the factor structure of the 2013 NCVS-SCS traditional and cyberbullying subscales. Furthermore, the dissertation used that information to evaluate if cyberbullying emerged as a unique factor. Finally, measurement invariance determined if group comparisons are valid.

Acceptable alpha coefficients were found for both scales ($\alpha = .74$ and $.68$ respectively). Additionally, an EFA with two factors extracted yielded a model in which cyberbullying items loaded onto one factor and traditional bullying items loaded on a second factor. Confirmatory factor analysis (CFA) further evaluated this factor structure and demonstrated acceptable levels of fit ($\chi^2 = 372.83$; $df = 91$; $p < .01$; $RMSEA = .025$; $CFI = .98$; $TFI = .97$). In this model, all of the items significantly loaded on their respective latent factor ($p < .01$) and the correlation between latent variables ($r = .79$) was significant ($p < .01$). Finally, to determine if comparisons

of bullying rates across gender are valid, the CFA model was tested for configural, metric, scalar, and full invariance. Fit indices from the full invariance model suggest that there are no gender differences in how individuals interpret the 2013 NCVS-SCS bullying items ($\chi^2 = 343.49$; $df = 189$; $p < .01$; RMSEA = .018; CFI = .99; TLI = .99).

The results from this dissertation add to the limited number of studies reporting the psychometric properties of bullying measures capable of simultaneously measuring traditional and cyberbullying. The NCVS-SCS remains one of the few publicly available, nationally representative, measures of bullying behaviors. The CFA findings illustrate evidence of construct validity for the 2013 NCVS-SCS bullying scales, whose items are used to make the composites that provide national estimates of bullying. Meanwhile, the EFA results from this dissertation are in line with findings by Betancourt (2016) and Randa et al. (2015), providing further evidence that cyberbullying is a unique form of bullying and that it would be misguided for researchers to consider cyberbullying as a context or location for in-person forms of bullying. Finally, the findings regarding measurement invariance can aid educators and professionals develop more effective interventions by demonstrating that the construct of bullying may operate in the same manner for different demographic groups. This chapter begins with a full summary of the results for each hypothesis tested. The implications of these findings are evaluated along with the limitations and future directions of this study.

Summary of Descriptive Statistics

Before doing any analyses, it is considered good practice to first look at the descriptive statistics of the variables used in the study. The descriptive statistics show that the 2013 NCVS-SCS bullying items are not normally distributed. Overall, the items had low amounts of variances with only two items (i.e., “Made fun of you” and “Experienced rumors”) had variances above

.10. These findings are similar to Randa et al. (2015) who looked at the 2009 NCVS-SCS, the first year the measure collected information about traditional and cyberbullying using the same items that would appear in the 2013 NCVS-SCS. In their analyses, Randa et al. reported that all of the items had low levels of variance and that the only items with variances above .10 were “Made fun of you” and “Experienced rumors” (item variance .15 and .14 respectively).

Hypothesis 1: Traditional and Cyberbullying Subscales Will Demonstrate Acceptable Levels of Reliability

Ultimately, the first hypothesis was supported as the cyberbullying and traditional bullying scales demonstrated acceptable levels of reliability ($\alpha = .69$ and $.74$ respectively). The reliability findings for traditional and cyberbullying were consistent with the Randa et al. (2015) study that found alpha reliabilities of ($\alpha = .75$ and $.63$ respectively) in the 2009 NCVS-SCS bullying scales. Although higher reliabilities ($\alpha > .80$) are preferred, enough information was gleaned from the two reliabilities to suggest that cyberbullying may be a unique construct from traditional forms of bullying.

Hypothesis 2: EFA With Two Factors Extracted Will Yield a Model in Which Traditional Items and Cyberbullying Items Load Significantly onto Independent Factors

Hypothesis 2 was supported as an EFA with two factors extracted resulted in a model in which traditional and cyberbullying items loaded significantly ($> .30$) onto independent factors. All but three items: “Tried to make you do things you didn’t want”, “Threatened or insulted with online gaming”, and “Excluded from online communications” did not significantly load on either factor. These findings are similar to the Randa et al. (2015) study. Specifically, the item “Threatened or insulted with online gaming” failed to significantly load onto a factor in both the dissertation and Randa et al. (2015) study.

Furthermore, there were no cross-loading items. Although, the item “Experience rumors” loaded significantly onto the traditional bullying factor (.56) but also had a high loading onto the cyberbullying factor (-.20). This finding might be indicative of the fact that bullying is comprised of separate but correlated factors (Betancourt, 2016; Thomas et al., 2014). In this case it is possible that those who experience rumors might also have had those same rumors spread online. Perhaps the rumors originate online, as the anonymity and 24/7 nature of the Internet makes it easier to be victimized.

Regardless, this finding is important because it provides further evidence that cyberbullying is a unique form of bullying. If cyberbullying were a location, or context, of bullying more items would have cross-loaded onto the second factor. The EFA analyses from this dissertation are consistent with past studies (e.g., Betancourt, 2016; Law et al., 2012; Randa et al., 2015), showing that cyberbullying items tend to cluster onto a separate factor. Furthermore, the correlation between the two factors suggests that while the relationship is significant, it is not to the degree that would suggest that the two factors are measuring the same construct ($r = .46$).

Hypothesis 3: CFA of a Two-factor Measurement Model Will Demonstrate Acceptable Fit

Prior to this dissertation, no study had performed a Confirmatory Factor Analysis (CFA) on the NCVS-SCS bullying items for the three years (2009, 2011, and 2013) in which both traditional and cyberbullying items were included. Results from CFA are an important component of construct validity as it determines if the test is capable of measuring constructs consistent with its theoretical nature. The results from the CFA support Hypothesis 3 as the two-factor model demonstrated acceptable levels of fit. ($\chi^2 = 372.83$; $df = 91$; $p < .01$; RMSEA = .025; CFI = .98; TFI = .97). In this model, direct and relational bullying items were combined

into an over-arching factor labeled “traditional bullying”. Meanwhile, cyberbullying items were loaded onto a second factor. All items loaded significantly to their respective latent factors ($p < .01$; See Figure 1).

However, a high correlation between the traditional and cyberbullying latent factors was found ($r = .79$; $p < .05$). This finding can be attributed to the established correlation between traditional and cyberbullying established in previous studies (Dempsey et al., 2011; Law et al., 2012; Marsh et al., 2011; Thomas et al., 2014); combined with the lack of variance contained in the bullying items. Given the strong correlation between the two latent factors, supplemental EFA and CFA analyses (see Appendix) evaluated single factor model. Although the single factor model demonstrates acceptable fit, the two-factor model had better fit. Furthermore, the two-factor model is consistent with the multidimensional nature of bullying found in prior research (i.e., Dempsey et al., 2011; Law et al., 2012; Thomas et al., 2014).

Hypothesis 4: Tests of Invariance Will Establish That the Two-factor Model is Fully Invariant Across Gender

While males are more likely to experience physical bullying, our understanding of bullying group differences (e.g., males vs. females) is weakened by the realization that bullying studies typically fail to test whether the factor structure of bullying is equal for different groups (Card et al., 2008; Marsh et al., 2011; Thomas et al., 2014; Vessey et al., 2014). This is measurement invariance (M.I.), and is a prerequisite for making valid comparisons across groups (e.g., gender, ethnicity, and age; Bryne, 2008; Schmitt & Kuljanin, 2008; Shaw et al., 2013). Testing for invariance is rarely considered in bullying research even though assumptions of invariance are implicit in most studies (Marsh et al., 2011; Vessey et al., 2014). The impact of M.I. on the internal validity of published results cannot be understated. Unless this evidence is present, mean differences and other comparisons may be invalid because the underlying factor

structure is qualitatively different and does not hold the same meaning for each group (Byrne, 2008; Everson, Millsap, & Rodriguez, 1991; Marsh et al., 2011; Millsap, 2007).

Testing for invariance is becoming more commonplace in the bullying literature, and was a primary focus of the dissertation. This study is the first to use CFA to look at the invariance of the NCVS-SCS bullying scales with respect to gender. The two-factor model was tested for configural, metric, scalar, and full invariance. Fit indices (reported in Table 3) provide evidence that all forms of invariance were supported. However, the chi-square difference tests (see Table 4) tell a different story. Chi-square difference tests are used to provide a comparison of model fit. In this dissertation, the chi-square difference tests show that at each step of invariance, the change in model fit was significant ($p < .05$). Unfortunately, the chi-square statistic is influenced by sample size (Schermelleh-Engel et al., 2003), and thus, the significant differences in fit may be attributed to the dataset containing over 5,000 participants. Therefore, Hypothesis 4 was supported. In short, the invariance results indicate that differences in item scores can be meaningfully compared across both groups.

Unfortunately, the interpretations of MI results from this study are clouded because the bullying items had little variability. This low variance can mask true gender differences in how individuals interpret the 2013 NCVS-SCS bullying items, increasing the likelihood of a Type II error. Consequently, comparing group differences (e.g., males vs. females) in bullying may not be valid practice, despite configural, metric, scalar, and full invariance being achieved for the 2013 NCVS-SCS bullying scales. Given these caveats, researchers using the 2013 NCVS-SCS bullying scales should understand that the gender of the victim could influence how one interprets the experience of bullying.

Implications of Dissertation Findings

There is concern among researchers that the lack of consistent, quality measurement hampers the ability of researchers, educators, and professionals to identify students at risk and to fully evaluate the effect of anti-bullying legislation, policies, and educational programs (Dooley et al., 2009; Law et al., 2012; Thomas et al., 2014). This dissertation is the first study to use both EFA and CFA approaches to evaluate the construct validity of the nationally representative, publicly available 2013 NCVS-SCS bullying scales. Knowledge of a measure's reliability and validity will assist users in choosing an instrument with the psychometric characteristics most closely aligned with their measurement purpose. With more researchers and clinicians working together to address the emotional, academic, and financial costs associated with bullying, it is imperative to employ the best measurement strategies available (Berne et al., 2013; Vessey et al., 2014).

Therefore, the key implication from this dissertation is knowledge that the traditional and cyberbullying scales from the 2013 NCVS-SCS have strong evidence of construct validity (American Educational Research Association, 2005; Berne et al., 2013; Dempsey et al., 2011; Vessey et al., 2014). The findings from CFA demonstrate that the 2013 bullying scales work well as a two-factor scale (i.e., traditional and cyberbullying). This gives researchers, educators, and policy makers conviction that when they cite statistics from the 2013 NCVS-SCS bullying scales they are citing statistics from a measure that (a) includes multiple items of school-based and online-digital forms of bullying; (b) has an internal structure reflective of the theoretical nature of bullying found in the literature; and (c) the items are interpreted the same way for boys and girls.

With that said, the results also indicate that merging items into total subscores is appropriate. Haberman and others (e.g., Haberman et al., 2009; Sinharay et al., 2007) conclude subscores have the most value when (1) they have high levels of reliability and (2) the correlation between subscores and total score are moderate. This dissertation shows that the subscales of the NCVS-SCS bullying scales are not more reliable than a total score. Additionally, the correlation between the cyberbullying subscale and total score was $r = .71$ ($p < .01$) while the correlation between the traditional bullying subscale and total score was even higher ($r = .94$; $p < .01$). As such, researchers using the 2013 NCVS-SCS bullying scales to explore the relationship between victimization and outcomes may consider using a total score rather than traditional bullying and cyberbullying subscores. Supplemental EFA and CFA analyses (see Appendix) indicate that a single factor model demonstrates acceptable fit. However, the two-factor model not only has better fit but is consistent with the multidimensional nature of bullying that can occur both in person and with digital technologies.

Furthermore, the findings from the dissertation expand on previous studies by Law et al. (2012) and Sumter et al. (2015) who have used both EFA and CFA to explore the differences between traditional and cyberbullying. Their findings indicate cyberbullying is significantly correlated with traditional forms of bullying, but should be considered a unique form of bullying. The dissertation corroborates these findings. Furthermore, the dissertation provides further evidence that researchers and institutions (e.g., the CDC and AERA) should not consider cyberbullying as a location or context of bullying. If cyberbullying was a context of traditional bullying, we would expect to see cyberbullying items cross-load with traditional forms in EFA studies. Instead, the EFA findings from the dissertation and other studies (e.g., Betancourt, 2016;

Grading et al., 2009; Law et al., 2012; Randa et al., 2015), consistently find that cyberbullying forms its own unique factor, separate from traditional forms of bullying.

With respect to addressing bullying in schools, the findings from both the EFA and CFA help school psychologists develop better prevention programs by showing cyberbullying is a unique form of bullying and should not be dismissed as a context or location. Additionally, the measurement invariance findings suggest that boys and girls do not interpret traditional and cyberbullying differently. Therefore, the findings from this dissertation illustrate traditional and cyberbullying need to be a dual focus of any prevention program and schools must focus on addressing online and in person forms of victimization for both boys and girls.

Future Research

The dissertation makes an important contribution to the literature by establishing the factor structure of a bullying measure used in a publicly available, national study. The findings from this dissertation have implications for future iterations of the NCVS-SCS because it shows the utility of using multiple items to assess the construct of cyberbullying. After 2013, subsequent bullying scales of the NCVS-SCS took the approach that cyberbullying is a location of bullying (see Gadden et al., 2014 for rationale). Unfortunately, this has resulted in NCES and BJS to measure bullying using a single item “Did any bullying take place online” since the 2015 version of the NCVS-SCS. The theoretical and psychometric limitations of using single items to measure complex behaviors such as bullying have been discussed several times throughout the dissertation. Given these limitations, it must be assumed that research using NCVS-SCS bullying scales released since 2015 underestimate the harmful relationship cyberbullying has with known correlates of bullying (e.g., fear of school, lower academic achievement, anxiety, and low self-esteem).

As such, the results of the dissertation show the utility of using multiple items to measure an important education problem. Because the 2009, 2011, and 2013 scales utilize a multiple item approach, future educators and researchers can incorporate structural equation modeling (SEM) techniques to investigate the combined effect direct, relational, and cyberbullying have on other NCVS-SCS variables such as academic achievement, school avoidance, or future academic plans. In addition, researchers could use the NCVS-SCS bullying scales to evaluate measurement invariance in other key demographic groups from the data set (i.e., age or ethnicity).

Furthermore, SEM can be used to investigate the role of mediating variables (e.g., teacher support; parental involvement; and teacher intervention) in the relationship between bullying and outcomes. In statistics, mediation refers to a regression model that explains the mechanism that underlies the relationship between an independent variable and a dependent variable (Goodwin, 2005; Preacher, Rucker, & Hayes, 2007). This is done by including a third variable, known as a mediator variable, into the regression equation. In comparison to a direct causal relationship between independent variable and dependent variable, mediation proposes that the independent variable of interest influences the mediator variable, which then influences the dependent variable. For example, people with higher incomes tend to have longer life expectancies. However, this effect is explained by the mediating influence of having access to better health care. Bullying researchers rarely examine the mediating variables that may influence the relationship bullying has with negative outcomes (Baek et al., 2017; Thomas et al., 2014). The hope is that students who are bullied, but notify a teacher about the bullying, experience lower levels of misery than those who experienced the bullying but did not notify teachers about it. Fortunately, the NCVS-SCS contains many potential mediating variables that can be included in a path analysis or SEM.

Despite the shortcomings of the 2015–Present Day bullying scales, the NCVS-SCS remains a quality resource of secondary data available to all bullying researchers. In addition to all of the possibilities that secondary research studies can provide, primary research on bullying can address the contextual (i.e., confounding) factors that influence the relationship between bullying and outcomes. Given the extensive research showing the negative effects of bullying (e.g., depression, anxiety, academic failure, and behavioral problems), bullying can be considered to be a form of emotional stress. Meta-reviews of the available literature (Flannery et al., 2016; Thomas et al., 2014) show that those who are victims of this form of emotional stress had the greatest difficulty with their ability to manage their emotions. Managing emotions is one of the key components of emotional intelligence (Zeidner, Roberts, & Matthews, 2008).

In the last few years, several researchers have begun to find associations between emotional intelligence (EI) and bullying. For example, Mavroveli and Sanchez-Ruiz (2011) explored the relationship between EI and the likelihood of being a bully in a sample of 565 children between the ages of 7 and 12 ($M = 9.12$ years, $SD = 1.27$ years) in England public schools. They found that those with higher scores of EI were less likely to be perpetrators of bullying and more likely to demonstrate prosocial behaviors. Similar findings have been found for EI and victimization by Kokkinos and Kipritsi (2012). In their study of 6th grade students in Greece ($N = 206$), Kokkinos and Kipritsi found that victimization was negatively correlated with EI. These findings indicate that those who have difficulty managing their emotions are more likely to be involved in bullying. Unfortunately, it is still unknown how EI is uniquely related to traditional and digital forms of bullying (for both bully and victim).

Limitations

One of the most significant limitations of this study was the cross-sectional nature of the research design, which prevents making firm conclusions regarding causal inferences. Another limitation was the NCVS-SCS only examines the role of being a victim of bullying. The SCS does not focus on those who are the aggressors of bullying, thus, the results only tell one side of the story. In addition, the 2013 NCVS-SCS does not provide an explicit definition of bullying. The only reference to the double-IR definition (i.e., intentional acts, with an imbalance of power, repeated over time) is that the directions state:

Now I have some questions about what students do that could occur anywhere and that make you feel bad or are hurtful to you. You may include events you told me about already. During this school year, has another student....”

While this can be viewed as a limitation, previous research from Kert et al. (2010) and Ybarra et al. (2012) have shown that bullying rates are significantly lower when a definition of bullying is provided.

Continued development of the NCVS-SCS bullying scale is needed in order to create a measure that cleanly and reliably extracts meaningful factors examining physical, verbal, electronic, and relational bullying. It is believed that adding more items to the measure is needed to provide a balanced number of questions covering each of the four constructs, which should then allow for four factors to be extracted. Furthermore, the dichotomous nature of the NCVS-SCS bullying items (i.e., yes/no) automatically reduces the variability in the data and may explain the high inter-item correlation. This lack of variability clouds the interpretations that can be made using this data, especially concerning evaluating measurement invariance.

Using secondary data from the National Crime Victimization Survey (NCVS–SCS) comes with certain limitations. First, NCVS-SCS data is only collected for household members between ages 12 and 18. As discussed prior, cyberbullying is less likely to occur among very young children, and thus these victims are systematically excluded from the NCVS sample. In addition, to be eligible to answer the NCVS-SCS questions, the respondent must attend school at some point during current academic year. While appearing minor, this criterion excludes students who home-school or who dropped out of school. To the extent these individuals are more likely to experience cyberbullying; the number of victims may be undercounted.

Furthermore, the rapid advancement of technology may discourage researchers from using the 2013 NCVS-SCS because of a perception that the items are outdated and do not reflect cyberbullying as it occurs in 2020. Yes, it is true that in seven years, digital technologies have become more sophisticated and thus some of the 2013 NCVS-SCS items may not be applicable to children being cyberbullied today. However, the technology available in 2013 is fairly comparable to what is available in 2020. For example, in 2013 the current generation of video game consoles (e.g., Sony PlayStation 4; Microsoft Xbox 1) was released, nearly all smartphones came a with high definition quality camera, and applications like “Vine” and “Twitter” allowed people to instantly share videos and content. In short, while the names of the applications that facilitate cyberbullying have changed since 2013, the availability of technology to children has not. Therefore, despite improvements in technology, researchers can still use the 2013 NCVS-SCS to examine cyberbullying in 2020.

Finally, the NCVS-SCS asks if victim reported incidences of traditional or cyberbullying, but it is limited to reporting to “a teacher or some other adult at school”. Currently, no information is collected about if students report bullying to other resources outside of school

(e.g., police or law enforcement; social services; and parental involvement). Although this last shortcoming does not negatively impact the dissertation results, it limits the ability of future researchers who use this dataset to understand the human cost of bullying and how students respond to experiencing this damaging behavior.

Conclusions

This study contributes to our understanding by providing a thorough evaluation of the psychometric properties of the 2013 *School Crime Supplement* to the *National Crime Victimization Survey* bullying scales used to provide a nationally representative estimate of traditional and cyberbullying prevalence. There is concern among researchers that the lack of consistent, quality measurement hampers the ability of researchers, educators, and professionals to identify students at risk and to fully evaluate the effect of anti-bullying legislation, policies, and educational programs. Knowledge of a measure's reliability and validity will assist users in choosing an instrument with the psychometric characteristics most closely aligned with their measurement purpose.

Furthermore, this is the first study of the 2013 NCVS-SCS bullying scales to examine the reliability of its latent factors, use both EFA and CFA techniques to assess construct validity, and evaluate measurement invariance for gender. Based on these results, this dissertation sets the stage for additional analysis of the NCVS-SCS by showing the utility of using CFA to test the theoretical nature of bullying and its effect on outcomes. Using this approach, future analyses can incorporate SEM, or path analysis techniques to investigate the combined effect of direct, relational, and cyberbullying on other variables such as academic achievement, school avoidance, or future academic plans. Furthermore, researchers could use the NCVS-SCS

bullying scales to evaluate measurement invariance in other key demographic groups from the data set (i.e., age or ethnicity).

In sum, valid measurement of bullying is a necessary first step in a comprehensive anti-bullying effort. The results from Betancourt (2016) support the idea that victimization is multidimensional, and that electronic victimization is qualitatively and psychometrically different from direct and relational victimization. Findings from the dissertation are consistent with recent research (i.e., Dempsey et al., 2011; Law et al., 2012; Randa et al., 2015; Thomas et al., 2014) that has found cyber victimization to be a separate construct from school-based victimization. However, in this dissertation, physical and verbal items combined to form one factor.

This dissertation builds off the previous research by establishing the factor structure of measure used in an on-going large-scale national bullying study. Both the Betancourt (2016) study and dissertation represent modest, yet important, steps in improving measurement and theory. Regardless of the possibilities from these studies, continued research with sound methodology is still needed so that we can better understand this construct and help teachers, school professionals, and educational psychologists to better serve the students who need it: the students who *still* experience bullying.

Appendix

Rationale for Supplemental Analyses

Given the high correlation between the traditional and cyberbullying latent factors ($r = .79$; $p < .05$) from the two-factor confirmatory factor analysis (CFA) model, a one-factor model was examined. In this model, the traditional and cyberbullying items are collapsed onto a single factor. This one-factor approach demonstrated stronger reliability ($\alpha = .78$) than either of the subscales. Therefore, it was expected that the one-factor model would have improved fit indices (i.e., RMSEA, CFI, and TLI) over the two-factor model. Furthermore, it was expected that the one-factor model would be invariant with respect to gender.

Exploratory Factor Analysis Findings

Results of the one-factor exploratory factor analysis (EFA) are shown in Table A-1. The majority of the items loaded saliently ($> .30$) onto the factor. However, the items: “Have you been in one or more fights” and “Threatened or insulted with online gaming” did not load onto this solitary factor. The chi-square goodness of fit for the one-factor model was significant ($\chi^2 = 2202.48$; $df = 90$; $p < .01$). However, results from the chi-square goodness of fit suggest that the two-factor model is the better fitting model ($\chi^2 = 1211.30$; $df = 76$; $p < .01$).

Confirmatory Factor Analysis Findings

The one-factor CFA model demonstrated acceptable levels of fit ($\chi^2 = 550.14$; $df = 91$; $p < .01$; RMSEA = .032; CFI = .96; TFI = .96). As can be seen in Figure A-1, all items loaded significantly onto their latent factor ($p < .01$). Compared to the two-factor model, this single factor model demonstrated worse fit.

Measurement Invariance Findings

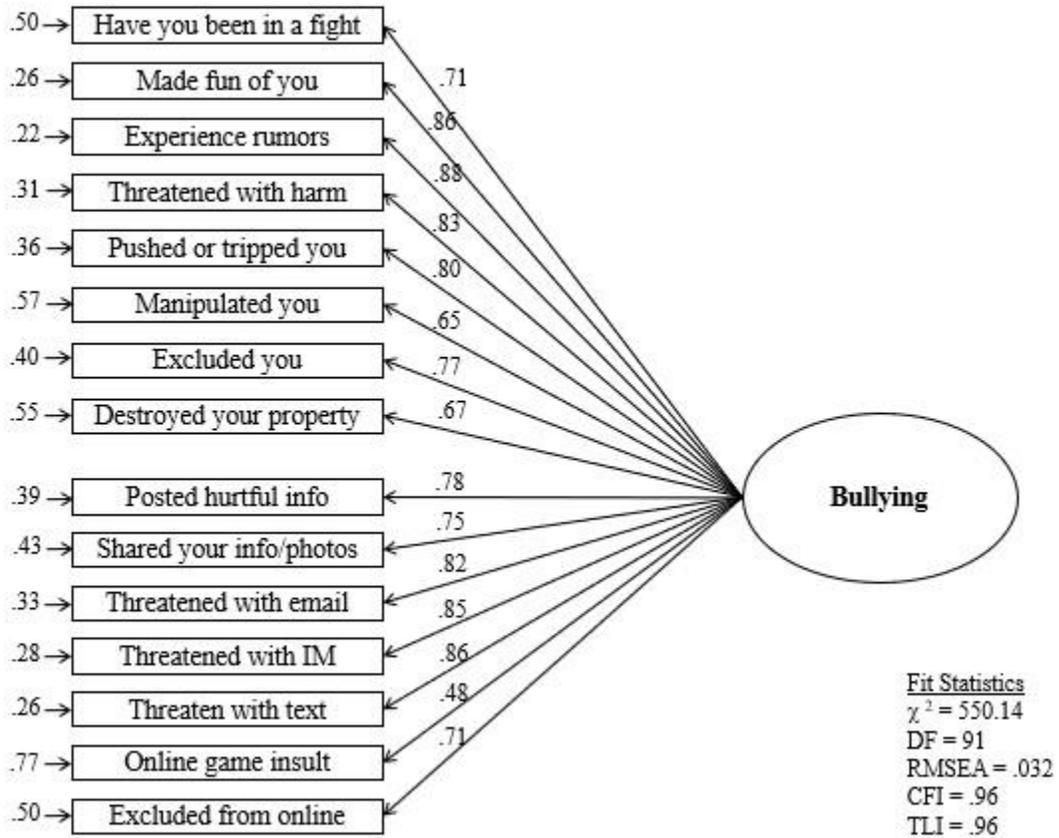
The measurement invariance findings for the one-factor model are shown in Tables A-2 and A-3. Separate CFAs were estimated for females and males. For both groups, the fit was acceptable ($\chi^2 = 259.70$; $df = 91$; $p < .01$; RMSEA = .028; CFI = .98; TFI = .97; $\chi^2 = 238.45$; $df = 91$; $p < .01$; RMSEA = .025; CFI = .97; TFI = .96 respectively). After this preliminary step, configural, metric, scalar, and full invariance models were estimated (see Table A-2). In each invariance model, both the CFI and TFI were above .97. Furthermore, in each invariance model, the RMSEA never rose above .03. These fit indices suggest that the one-factor model is fully invariant and group comparisons using this model are valid. Similar to the two-factor model, chi-square difference tests (see Table A-3) show that at each step of invariance, the model fit was significantly worse ($p < .05$). However, the fit indices (i.e., RMSEA, CFI, and TLI) for each invariance step were worse for the one-factor model.

Table A-1. Factor Loadings from One-factor EFA

	(F1)
Have you been in one or more fights	.24
Made fun of you	.62
Experience rumors	.66
Threatened with harm	.54
Pushed you or tripped you	.52
Tried to make you do things you did not want	.33
Excluded you from activities	.49
Destroyed property	.30
Posted hurtful information on the internet	.51
Purposely shared your private information/photos	.36
Threatened you through email	.41
Threatened you through instant messaging	.56
Threatened with text message	.60
Threatened or insulted with online gaming	.19
Excluded from online communications	.32

Note. EFA was run on 15 items using Generalized Least Squares extraction and Direct Oblimin rotation. Salient loadings (> .30) are shown in bold text. N = 5,008.

Figure A-1. One-factor CFA Structural Model



Note. Model was estimated using Weighted Least Squares with Means and Variances adjusted. All factor loadings and residual variances were significant ($p < .01$). N = 5,008.

Table A-2. One-factor CFA of 2013 NCVS-SCS Bullying Scales

Model	Chi-square	RMSEA	CFI	TLI
Baseline	550.14 (91)	.032	.96	.96
Females	259.70 (91)	.028	.98	.97
Males	238.45 (91)	.025	.97	.96
Configural Invariance	477.34 (180)	.026	.97	.97
Metric Invariance	476.46 (194)	.024	.98	.97
Scalar Invariance	656.35 (208)	.029	.96	.96
Full Invariance	627.87 (193)	.030	.96	.96

Note. All models were estimated using Weighted Least Squares with Means and Variances adjusted. Degrees of freedom in parentheses. Invariance was tested using gender as the grouping variable. All Chi-square values were significant ($p < .01$). $N = 5,008$.

Table A-3. One-factor Model Chi-square Difference Tests Comparing Invariance Steps

Model	Chi-square	P-value
Configural vs Metric Invariance	39.95 (14)	.01
Metric vs Scalar Invariance	311.45 (14)	.01
Scalar vs Full Invariance	63.45 (15)	.01

Note. All models were estimated using Weighted Least Squares with Means and Variances adjusted. Degrees of freedom in parentheses. Invariance was tested using gender as the grouping variable. N = 5,008.

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