ABSTRACT

Title of Document:	CYBERBULLYING: AN EXAMINATION OF VICTIMIZATION, PARENT-CHILD COMMUNICATION, COLLECTIVE EFFICACY AND SAFE BEHAVIORS ONLINE AMONG YOUNG ADOLESCENTS
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Each year, approximately 10%-40% of adolescents are the victims of cruel online behaviors such as posting embarrassing photos or videos, purposeful exclusion, harassment, even threats of violence, often referred to as cyberbullying. Cyberbully victimization (CBV) during adolescence, a critical time for physical, mental and emotional development, might lead to adverse short and long-term health impacts and teach the adolescent to mistrust others while suggesting that it is appropriate for peers to intentionally harm each other. Numerous studies have reported the negative health impacts associated with CBV including both internalizing problems (i.e. depression, anxiety, loneliness, and low self-esteem) as well as externalizing problems (i.e. self-harm and drug use). CBV has also been linked to suicide. The current study examined suspected protective factors of CBV from a social ecological model including: demographic and Internet behaviors (individual characteristics), parent-child

communication about Internet use (Interpersonal or relationships) and collective efficacy (school community). Data were obtained from a convenience sample of 1,249 young adolescents through a web-based survey administered in multiple public-school classrooms. An important feature of this study was a comparison of a multi-item scale of repeated cyberbully behaviors suggesting that 37% of adolescents were CBV with females (38%) and 8th graders (43%) at greatest risk, compared to a binary item that suggested that only 12% of adolescents were victims (females:13% and 8th graders:15% at greatest risk). Several statistically significant correlates of CBV were identified in this study including safe behaviors online and number of hours on the Internet, quality parent-child communication, and school collective efficacy. For our sample, safe behaviors online partially mediated the association between quality parent-child communication and CBV. Research is needed to understand the mechanism by which parent-child communication might protect against CBV. Suggestions for future prevention and intervention strategies for this complex public health challenge are discussed.

CYBERBULLYING:
AN EXAMINATION OF VICTIMIZATION,
PARENT-CHILD COMMUNICATION, COLLECTIVE EFFICACY AND
SAFE BEHAVIORS ONLINE AMONG YOUNG ADOLESCENTS

By

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Dissertation submitted to the faculty of the Graduate School of the
University of Maryland, College Park in partial fulfillment
of the requirements for the
Doctor of Philosophy
2018

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Dedication

This dissertation is dedicated to my family, whose love and support has sustained me throughout this doctoral program. To Maggie, my brave and resilient daughter, who was threatened online in 2015. This act forever changed the way I view the dangers and opportunities that face young adolescents in today's digital environment. To Declan, whose critical thinking and adolescent perspective gave my research meaning. To Maurice, whose love and support during these four years are proof that you can do anything with the right partner! Thank you for granting me the time I needed to pursue my dream!

Acknowledgements

This document represents that culmination of years of doctoral work. This effort was not completed in a vacuum and would not have been possible without the support and mentorship of several faculty at the UMD, School of Public Health. First and foremost, I wish to thank Dr. Robert S. Gold, my dissertation Chair, advisor, teacher, mentor and friend. Thank you for your endless hours of patience and support! You have taught me so much… thank you!

I would like to acknowledge my tireless dissertation committee members: Drs. Amelia Arria, Kerry Green and Donna Howard. I asked you to serve on my committee due to my tremendous respect for you as mentors, researchers, and leaders in the field. Thank you for your support on this doctoral journey. A special thank you to Dr. Xin He for serving as more than my Dean's representative, your time and expertise has been invaluable! I would also like to take this opportunity to thank Dr. Brad Boekeloo for taking a chance on me as a 'non-conventional' student. By offering me a chance to support your research at the PRC, you enabled me to become a full-time student. This has made all the difference!

Any study concerning cyberbullying must include the adolescent perspective. Thank you to the over 1200 wonderful middle school students who volunteered to take my survey and their parents who chose to support the research process. Thank you to all the principals, assistant principals and teachers who believed in me and my interest in being a part of the solution. I look forward to sharing what I have learned with each of you.

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Chapter 1: *Introduction*

1.1 Statement of the problem

Cyberbullying has been defined as bullying behaviors using technology, including similar tactics as other bullying behaviors as well as unique approaches such as viral repetition or widespread sharing of messages (National Institute of Justice, 2016). Research at the national level estimates that the prevalence ranges from 10% to 40%, based on the specificity of the definition of cyberbullying and type of measurement used by the study (Hamm et al., 2015). In the state of Maryland, the 2014 Maryland Youth Risk Behavior Survey (YRBS) suggests that those at greatest risk for cyberbullying are young adolescents in middle school (grades 6, 7, & 8) with an estimated 19.7% of students reporting victimization (Maryland Department of Health and Mental Hygiene, 2014). The health impacts of cyberbully victimization (CBV) might include both internalizing problems (e.g. depression, anxiety and low self-esteem) as well as externalizing problems (e.g. substance use and self-harm) (Fisher, Gardella, & Teurbe-Tolon, 2016). Cyberbully victimization has also been linked to adolescent suicide (Hinduja & Patchin, 2010; Van Geel, Vedder, & Tanilon, 2014).

Early adolescence is a particularly sensitive period for cognitive and social skills development and a time when youth begin to develop autonomy from parental figures, and form strong peer relationships (Sasson & Mesch, 2017). Therefore, CBV during this critical period might have particularly serious consequences. With the growth of adolescent smartphone ownership and almost

constant access to the Internet, many parents of adolescents find it difficult to balance protecting their child from negative interactions online with the desire to give them access to the positive aspects of technology and online social interactions and the need to respect their child's privacy (M. Anderson, Singh, & Page, 2016).

Although previous studies have examined the association between different forms of parental mediation and cyberbully victimization (Navarro, Serna, Martínez, & Ruiz-Oliva, 2013; Sasson & Mesch, 2017; Wright, 2016); few have examined the mechanism by which parental mediation might protect the child from peer aggression online. Moreover, studies have found collective efficacy to have a statistically significant, inverse relationship with traditional bully victimization in the school setting, though the relationship of collective efficacy and CBV has not been well studied. The current study addressed both of these gaps in the literature. Specifically, this study examined the association between parent-child communication (both quality and frequency) and CBV with safe behaviors online as the mediator for this association, and this study examined the association between collective efficacy and CBV.

1.2 Brief Justification

Prevention of CBV is a complex public health challenge that involves both internal and external protective factors (Baldry, Farrington, & Sorrentino, 2015; Fanti, Demetriou, & Hawa, 2012). This theory-informed study adds to the existing research on protective factors to prevent and stop cyberbullying by considering the mechanism by which parent-child communication is associated with lower

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levels of CBV and by introducing a new construct for preventing CBV, school collective efficacy. This cross-sectional study involved a convenience sample of middle school students who study in public schools in Montgomery County, Maryland. The study recognized previous research suggesting the association between parent-child communication about Internet use and lower CBV and therefore sought to assess both the strength of this association among young adolescents and the degree to which this relationship is mediated by the adolescent's engagement in safe behaviors online. A unique advancement of the present study is the inclusion of "collective efficacy"; a construct that includes both social cohesion and trust among peers and teachers, as well as informal social control or the perception that peers will help each other in a time of online victimization. Previously, the relationship between collective efficacy and CBV had not been explored in the peer-reviewed literature. The correlates examined in this study are dynamic; namely, they are modifiable protective factors and might be the focus of future longitudinal research, and ultimately be considered perhaps as targets for interventions to stop or prevent CBV.

1.3 Specific Aims

1. Examine demographic characteristics of cyberbully victimization among young adolescents and compare cyberbully victimization using both a single item and a multi-item scale;

2. Examine the association between the adolescent perspective of parent-child communication (frequency and quality) and cyberbully victimization;

3. Test whether adolescent engagement in safe behaviors online is the mechanism by which parent-child communication is related to cyberbully victimization;

4. Examine the association between collective efficacy (social cohesion/trust and informal social control) and cyberbully victimization;

5. Examine the collective model (i.e. the collective association between parent-child communication, collective efficacy, and safe behaviors online with cyberbully victimization).

1.4 Conceptual Model

Figure 1.1 CBV: Individual, Relationship & Community Factors
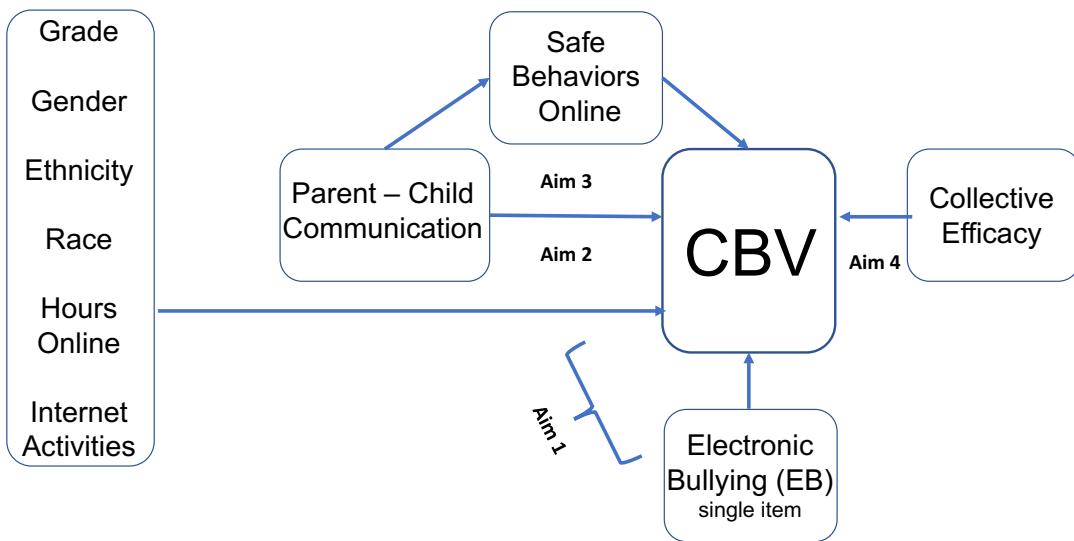
1.5 Research Questions and Hypotheses

The specific aims for this study drive the following four specific research questions and their associated hypotheses. Study data and statistical analyses associated with each research question are found in the chapters, figures and tables listed below.

RQ_1: What are the demographic characteristics and online social behaviors of cyberbully victimization among young adolescents and is there a difference in prevalence using a single item and a multi-item scale?

- **Chapter 3:** Study 1 I Prefer Not to Say: An Exploration of Gender Identity, Internet Behaviors and Cyberbully Victimization Among Middle School Students (including tables and figures)
- **Table 5.2** CBV: Mean and Standard Deviation by Grade and by Gender
- **Figure 5.1** Scree Plot for CBV Scale
- **Figure 5.2** CBV Mean Scores by Gender and Grade
- **Figure 5.3** Number of Hours, on Average, on the Internet, by Grade
- **Appendix III** Descriptive Data by Survey Item

RQ_2: Are young adolescents with frequent, quality communication with their parents about Internet use less likely to become victims of cyberbullying?

H_{A1}: Adolescents who experience frequent, good quality parent-child communication about Internet use experience less cyberbully victimization than adolescents who report less frequent, less quality parent-child communication

- **Chapter 4:** Study 2 Quality over Quantity: Parent-Child Communication,

Safe Behaviors Online and Cyberbully Victimization (including tables and figures)

- **Table 6.1** Bivariate and Pearson's Partial Correlations
- **Table 6.2** The Independent Model

RQ$_3$: Is the relationship between parent-child communication and cyberbully victimization mediated by the adolescent's intention to engage in safe behaviors online?

H$_{A2}$: Adolescent engagement in safe behaviors online is the mechanism by which parent-child communication protects against cyberbully victimization.

- **Chapter 4:** Study 2 Quality over Quantity: Parent-Child Communication, Safe Behaviors Online and Cyberbully Victimization (including tables and figures)

RQ$_4$: Are adolescents with perceived school collective efficacy less often victims of cyberbullying than adolescents without collective efficacy?

H$_{A3}$: Adolescents who perceive school collective efficacy experience less cyberbully victimization than adolescents who perceive low levels of collective efficacy.

- **Chapter 5:** Study 3 This is a Pretty Close-Knit School: Collective Efficacy and Cyberbully Victimization Among Middle School Students (including tables and figures)
- **Table 6.1** Bivariate and Pearson's Partial Correlations
- **Table 6.2** The Independent Model

1.6 Summary

A convenience sample of public school students in a wealthy, suburban county completed an online survey concerning Internet use, perceived quality and frequency of communication with parents about Internet use, perceived collective efficacy among peers and teachers and cyberbully victimization using a single item and multi-item scale. A total of 1,249 students completed the survey, 83% of participants completed all 45 items on the survey (N=1,054). Participants included adolescents in 6th (25%), 7th (39%) and 8th (36%) grades with slightly more females (52%) and diversity in ethnicity (23% Hispanic) and race (33% White, 15% Black/African American, 12% Asian, 21% other and 17% multiple races).

This study investigated the association between prevalence using a single and a multi-item scale for cyberbully victimization (CBV) and considered the demographic characteristics of adolescent victims of cyberbullying. This study also examined the association between cyberbully victimization and individual, relationship and school-level or community variables. Finally, this study sought to better understand the association between parent-child communication and lower cyberbully victimization by examining the possible mediating role of adolescent safe behaviors online.

1.7 Definition of Variables and Terms

Collective Efficacy: The shared belief of the collective power of people to produce a desired result (Bandura, 2000). For this study, the term includes two components: social cohesion (trust) and informal social control.

Cyberbully Victimization: The act of peer aggression that involves bullying behaviors online or using technology, which can include verbal or relational bullying or threats of physical harm. Cyberbullying includes similar tactics as other bullying behaviors as well as unique approaches such as viral repetition or widespread sharing of messages (National Institute of Justice, 2016).

Informal Social Control: This variable (a component of collective efficacy) involved the idea that peers assume responsibility for protecting the common good rather than leaving it to more formal control agents such as teachers and parents, to maintain social order – perception of one's peers willingness to intervene (Williams & Guerra, 2011).

Parent: A father, mother, or guardian of a middle school student.

Parent-Child Communication about Internet use: A form of parental mediation whereby the parent talks to their child about Internet related topics such as strategies to stay safe and encouragement to report problems. The construct included the adolescent's perspective of frequency and quality of communication separately.

Safe Behaviors Online: Activities that might protect the adolescent from cyberbully victimization and Internet related risk. Behaviors include: disclosure of personal information, videos or photos to strangers, posting personal information, videos or photos through social networking, spending excessive amounts of time online, and not telling a parent or trusted adult about online aggression.

Social Cohesion and Trust: This variable (a component of collective efficacy) involved social relationships including shared trust and support extended among

peers with the recognition that collective action to achieve group interests is mutually beneficial (Williams & Guerra, 2011).

Young Adolescent: A middle school student enrolled in a public school in Montgomery County, Maryland.

I Prefer Not to Say (PNTS): A middle school student that chose not to self-identify as a male or a female. These adolescents might self-identify as LGBTQ, gender non-conforming or might have chosen to this option for another reason.

Chapter 2: *Literature Review*

2.1 Introduction

The transition from childhood to adulthood involves significant changes in physical, cognitive, social, and emotional development (Poole & Peyton, 2013). Although a person is still considered by the National Institutes of Health (NIH) to be a "child" until 21 years old, the needs and capabilities of older children or adolescents differ significantly from the needs of pre-school or school-age children (Poole & Peyton, 2013). Adolescence is a time when the brain undergoes substantial developments that effect emotional skills as well as physical and mental abilities, younger adolescents (ages 10-14 years) are often forgotten from research that focuses on either children or older youth (Unicef, 2015).

In addition to growth in physical and mental abilities, adolescence is a time of transition from dependence on parents to limited independence and greater reliance on peers. During this period, parents and caregivers are faced with the challenge of trying to protect the adolescent through setting appropriate boundaries, while also allowing some autonomy and demonstrating respect for their child's privacy (Erickson et al., 2015). During this time of critical youth development, some researchers have suggested that the individual adolescent needs to develop a sense of initiative or a "capacity for agency" motivated from within and directed toward a common, often challenging goal (Larson, 2000). It is for this reason, many parents, educators and health professionals encourage adolescents to play team sports, join clubs and connect with their community

(Larson, 2000).

In recent years, the Internet has become one of the most popular means for adolescents to communicate with peers, play games and connect with their community (Lenhart, 2015). The rising popularity of the Internet, and almost constant introduction of new applications, has led to an increase in cyberbully victimization (J. W. Patchin & Hinduja, 2015). The health impacts of cyberbully victimization (CBV) might include anxiety, low self-esteem, depression and even self-harm and suicide (Fisher et al., 2016). As cyberbullying often involves an extension of in-school peer aggression, but occurs primarily outside of school, it is often difficult for parents, teachers and school administrators to decide how best to respond to this threat to the health and well-being of adolescents. In addition to an exploration of the definition of cyberbullying and its suggested public health significance, this chapter explores current research on: risk and protective factors, interventions, theories applied to cyberbully victimization, and qualitative research that explores cyberbullying from the perspectives of the adolescent, the parent and the teacher.

2.2 Adolescent Internet Use

A typical adolescent owns a smartphone (76%) and uses their phone to access the Internet daily (92%) to check Facebook (72%) or exchange texts with a friend (90%) (M. Anderson, 2016; Lenhart, 2015). In fact, this adolescent might send and receive 30 text messages in one day alone (Lenhart, 2015). In addition to using technology to stay in touch with friends, more than half of adolescents (57%) have made a new friend online (Lenhart, Smith, Anderson, Duggan, &

Perrin, 2015). The percentage of adolescents who own a smartphone has continued to rise over the last few years with 75% in 2015 up from 37% in 2013 and 23% in 2011 (Madden, Lenhart, Duggan, Cortesi, & Gasser, 2013). While communication and information technology is available to consumers of all ages, studies have shown that young people lead in embracing the use of technology (Clark, 2009). This has led to the terms 'digital native' or people born at a time when digital technologies are a way of life and 'digital immigrants' or people who were alive before digital technologies and who have had to learn these new technologies and replace old ways of getting information and communicating (Lareki, Martínez de Morentin, Altuna, & Amenabar, 2017).

Although most adolescents use smartphones to access the Internet, there are some significant differences in Internet use by race, ethnicity, gender and socioeconomic status. A 2015 national study by the Pew Research Center reported African American and Hispanic adolescents as more frequent users of the Internet with 34% of African American and 32% of Hispanic youth reporting to be online 'almost constantly" (compared to only 19% of White adolescents). In addition, more African American adolescents have smartphones (85%) versus White or Hispanic adolescents; both at about 71% (Lenhart, 2015).

There appear to be gender differences as well with girls more likely than boys to use social media applications (apps) that focus on sharing visuals, such as Snapchat and Pinterest, while boys are more likely to play video games and use Facebook (Lenhart, 2015). Boys are also more likely than girls to make friends online (61% versus 52%) though more than half of adolescents in this age

group (57%) report to have made a new friend online (Lenhart et al., 2015).

Although 88% percent of boys and girls text their friends, there are many other

ways in which adolescents communicate with their friends including instant

messaging (79%), social media (72%), email (64%), video chat (59%), video

games (52%) and messaging apps (42%) (Lenhart et al., 2015). In addition to

using online communication technologies to stay in touch with friends, these

platforms are also places where adolescents might end a relationship or 'un-

friend' a peer; a reported 63% of girls who use social media or cell phones have

un-friended or un-followed an ex-friend compared to 53% of boys (Lenhart et al.,

2015). Peer relationships online do not only consist of 'friending' and 'un-

friending' but too often include cruel activities such as posting embarrassing

photos or videos, harassment, even threatening behaviors, often referred to as

cyberbullying.

Studies suggest that frequent use of communication and information

technology and sharing personal information, among other risk factors discussed

in subsequent sections, can lead to unhealthy communication patterns and

cyberbully victimization (Lwin, Li, & Ang, 2012; Youn, 2005). One study suggests

that many teenagers might not perceive information disclosure online with the

same level of perceived risk as adults, but instead teenagers might perceive high

levels of benefit from information disclosure (Lareki et al., 2017). Not all types of

cyberbullying involve sharing personal information. There are many types of

cyberbullying including, but not limited to: happy slapping (aggressive or

degrading videos taken by a bystander and forwarded to others), flaming (an

online fight through instant messaging, chat rooms), denigration (placing mean messages online to make fun of someone through email, instant messages, etc.), outing (sharing secrets or personal information about someone), trickery (tricking someone to reveal personal information) and exclusion (intentionally leaving someone out of a group or online platform) (Hutson, 2016).

2.3 Defining the Problem

The development of appropriate policies and successful interventions to prevent, stop or even reduce cyberbully victimization requires a uniform definition of the problem. At this time, researchers, policy makers, parents, teachers and school staff and students often disagree on critical characteristics that describe this harmful behavior - making the behavior difficult to measure, compare and prevent (Deschamps & McNutt, 2016). Researchers and public health advocates even disagree on what term to use to when referring to the behaviors labeling it: online bullying, electronic bullying, Internet bullying, online social cruelty, cyber aggression, cyber-bullying and the term that will be used throughout this study, cyberbullying (Kowalski & Limber, 2007; Lucas-Molina, Pérez-Albéniz, & Giménez-Dasí, 2016). In addition, there is no word for 'bullying' in many languages making cross cultural comparisons difficult (Navarro & C. Serna, 2015).

While some argue that cyberbullying is simply a form of bullying, others consider cyberbullying a unique form of peer aggression (Olweus, 2012; Smith, del Barrio, & Tokunaga, 2013; P. K. Smith, 2012). Recognizing the need for a uniform definition for bullying and cyberbullying, the Centers for Disease Control

and Prevention (CDC) organized a panel of experts to create the following definition for the behavior both online and offline: "any unwanted aggressive behavior(s) by another youth or group of youths who are not siblings or current dating partners that involves an observed or perceived power imbalance and is repeated multiple times or is highly likely to be repeated. Bullying might inflict harm or distress on the targeted youth including physical, psychological, social, or educational harm" (Centers for Disease Control and Prevention, 2014a). For this CDC report, bullying that occurs using technology is labeled 'electronic bullying' and is viewed as simply a type of bullying within a specific context or location, similar to bullying that happens in school. Many argue that this definition does not take into account some of the unique aspects of cyberbullying such as the fact that cyberbullying has no geographic boundaries expanding beyond the school into a child's bedroom causing harm any day, at any time. In addition, cyberbullying often reaches a much larger audience in a shorter period of time than in-person bullying and, unlike traditional bullying, perpetrators can remain anonymous (Callaghan, Kelly, & Molcho, 2014).

A 2016 concept analysis, based on 25 English-language articles, examined articles on cyberbullying to develop a definition based on consensus. After reviewing these articles, the authors suggested characteristics of a cyberbully that were similar to the definition created by the CDC including: 1) electronic form of contact; 2) willful or aggressive and intentional; 3) repetitive (in number of events and/or sharing of event publically); and 4) harmful (Hutson, 2016). This list omits one characteristic found in a number of other studies,

including a 2015 systematic review of systematic reviews and meta-analysis; namely, the existence of a power imbalance (Zych, Ortega-Ruiz, & Del Rey, 2015). In 2015, Patchin and Hinduja addressed the issue of imbalance of power within the context of cyberbullying by explaining that power might be perceived or actual and might manifest itself differently online than it would in-person such as through possession and distribution of information, a picture or a video, designed to inflict harm to which the victim might feel powerless (J. W. Patchin & Hinduja, 2015). The inclusion of a power imbalance might be important as one study suggests that being cyberbullied by a peer who is perceived to be very popular might be more distressing to the victim than aggression from one who is not as popular (Pieschl, Porsch, Kahl, & Klockenbusch, 2013).

Recently, a study funded by the National Institute of Justice (NIJ) with data collected from stakeholders including students, parents and professionals who work with youth, suggested an evidence-based definition of cyberbullying: "Bullying behaviors which take place online or using technology, which can include verbal or relational bullying or threats of physical harm. Cyberbullying includes similar tactics as other bullying behaviors as well as unique approaches such as viral repetition or widespread sharing of messages"(National Institute of Justice, 2016). The NIJ supported definition suggests that although cyberbullying might share similar elements to traditional bullying, this online behavior includes unique, potentially harmful characteristics that might require different or modified interventions to prevent or stop. This definition, developed through this work with students and parents, was applied to the current study with middle school

students in Montgomery County, Maryland.

Many researchers agree that there is overlap between traditional bullying and cyberbullying and studies have found that traditional bullying is often an antecedent and/or risk factor for cyberbullying (Hutson, 2016; Kowalski & Limber, 2013; Pieschl et al., 2013; Slonje & Smith, 2008; Waasdorp & Bradshaw, 2015). A 2015 study conducted by Waasdorp and Bradshaw, including Maryland adolescents, found that 23% of students had been bullied in some form with 26% reporting to be cyberbully victims. Of those who were cyberbullied, 50% had also experienced other forms of bullying including verbal, relational and physical. The 2015 study suggested that the impact of cyberbullying on the adolescent might be worse than if the child was bullied on the school grounds with victims of cyberbullying being more likely to report externalizing and internalizing symptoms (Waasdorp & Bradshaw, 2015).

Despite the agreement among some researchers that traditional bullying and cyberbullying overlap, there is still significant disagreement on how best to measure cyberbully behaviors. While some researchers provide a definition followed by a yes/no response about whether they have been cyberbullied: considered a single item approach (Waasdorp & Bradshaw, 2015), other researchers find that this approach might result in an inaccurate or under-estimation of prevalence; these researchers prefer a multi-item scale that outlines different types of behaviors that fall into the category of cyberbullying (Antoniadou, Kokkinos, & Markos, 2016; Berne et al., 2013; Patchin & Hinduja., 2015; Yanagida et al., 2016). In addition, some scales ask students to report

cyberbullying behaviors that have happened in the last year, in the last 30 days or over their lifetime. The differences in time frame make comparisons among studies difficult.

2.4 Measuring the Construct of Cyberbully Victimization

A systematic review of cyberbullying assessment instruments reported that from the 44 different instruments included in the analysis, almost half did not use the elements of cyberbullying shared earlier including: electronic basis, intentional, repetitive and harmful (Berne et al., 2013). The Berne et al 2013 study chose not to include any research that involved a single-item to assess cyberbullying as the authors felt these studies were often less reliable than studies using a multi-item scale (Berne et al., 2013). In addition, this systematic review reported that less than half of the peer-reviewed articles using existing cyberbullying instruments included reports of reliability and validity testing (Berne et al., 2013).

Researchers in the Netherlands responded to Berne's concern for validated, reliable scales and in 2015, Sumter and colleagues developed and tested a multi-dimensional 'offline' and 'online' peer victimization scale and tested this scale on adolescents ages 9-18 years. One of the unique aspects of this scale was that it was designed to be relevant to the ever-changing digital media platforms used by adolescents (Sumter, Valkenburg, Baumgartner, Peter, & Van der Hof, 2015). The scale included four subscales: online peer victimization, online peer perpetration, offline peer victimization, and offline peer perpetration (five items each scale, 20 items total). All four subscales suggested an estimated

Cronbach's alpha above 0.80 for internal reliability (Sumter et al., 2015). In addition, this study involved an assessment of the validity of the scale by investigating whether the four subscales were inversely associated with psychosocial well-being (i.e. loneliness, social self-esteem and life satisfaction) reporting a statistically significant inverse relationship for each of the four subscales (Sumter et al., 2015). Examples of items in this scale include: "How often have the following things happened to you in the past six months on the Internet?" "Another young person sent me nasty messages" "A person called me names on the Internet" (Sumter et al., 2015).

During this same timeframe, researchers at the University of British Columbia, Canada, began working on a scale to measure cyberbullying involving items similar to those of Sumter 2015 but with a focus on online behaviors and not on digital platform (Shapka & Maghsoudi, 2017). After pilot testing with 13 and 14 year olds using talk aloud protocols, this scale was provided electronically to 6th and 7th grade adolescents in Canada and the cyberbully victimization portion of the scale was estimated to have a high level of internal reliability (Cronbach's alpha = .91). In addition to testing for internal reliability, this study examined convergent validity of the cyberbully victimization scale by exploring the relationship between the new scale and existing scales for anxiety, depression and school connectedness. As expected, the study reported statistically significant partial correlations between the new scale for victimization and depression, anxiety and inversely for school connectedness (Shapka & Maghsoudi, 2017). The current study received support from Shapka and

colleagues to use this cyber-aggression victimization scale to collect data on young adolescents in Montgomery County, Maryland.

The scale developed by Shapka and colleagues does not include a timeframe but focuses on frequency and type of cyberbully behavior. Consideration of the time element is an important aspect of cyberbully victimization as research suggests that cyberbullying prevalence might peak in middle school. For this study, comparing school collective efficacy and cyberbully victimization while in middle school was an important distinction. To ensure the study collects cyberbully victimization data on middle school only, the scale developed by Shapka was modified to provide context for the student in the middle school for which they attend asking the student to report on events that occurred while the student attended their current middle school. This modification allowed this study to accurately compare cyberbully victimization data with school collective efficacy data (a key variable in this study).

The current study focused on a behavior and frequency-based set of 7-items to capture cyberbully victimization. In order to inform future studies on cyberbully victimization, this study compared the results for this 7-item scale with the single item used in the Youth Behavior Risk Survey (YRBS), a national survey of risky behaviors among middle and high school students (Kann L1, 2015). The YRBS uses the term 'electronic bullying' and lists several social media platforms in its question. Although this single item uses the timeframe of 'ever', the item was modified to focus only on victimization while the adolescent has been a student in this middle school. This allowed the current study to more

accurately compare a multi-item with a single item scale for cyberbully victimization.

In order to inform future interventions to stop or prevent cyberbullying, it is important to understand the relationship between the victim and the perpetrator. Therefore, the current study modified items from the study by Waasdorp and Bradshaw (2015) requesting students to describe the person who sent the harmful message (Waasdorp & Bradshaw, 2015). Students were asked if the perpetrator was someone from their school, someone not from their school, both someone from their school and not from their school or a relative. In addition, participants were provided an option to report that they don't know who the perpetrator was or they don't want to say.

2.5 Cyberbully Victimization Prevalence among Middle School Students

The ever-increasing use of technology, and ownership of smart phones among adolescents, might be considered both a blessing and a curse. On the one hand, access to technology provides adolescents the ability to contact people all over the world and communicate with family and peers many times a day (increasing their sense of connectedness) while facilitating access to information on a vast array of topics (E. L. Anderson, Steen, & Stavropoulos, 2017). Unfortunately, constant use of communication technologies and the Internet has also been associated with higher risk of cyberbully victimization (Hutson, 2016). Although the lack of a standard definition of cyberbullying makes accurate prevalence data for different age groups difficult to confirm, some research suggests that cyberbullying behaviors peak in middle school, grades 6-

8 (Wang, Iannotti, & Luk, 2012). A systematic review suggests that although cyberbullying research among US middle and high school students is "robust in quantity" it is inconsistent in quality and a consistent definition is needed (Selkie, Fales, & Moreno, 2016). Recognizing the difficulty in calculating precise prevalence in the United States, this review estimates of the prevalence rate of cyberbully victimization to range from about 3% to 72% (Selkie et al., 2016). However, many research suggests a prevalence of between 10% and 40%, with a median rate of cyberbully victimization of about one in every four adolescents (Hamm et al., 2015; Hinduja & Patchin, 2012)

From a national perspective, the National Crime Victimization Survey includes a School Crime Supplement (SCS) on school crime and victimization (Zhang, Musu-Gillette, & Oudekerk, 2016). The most recent report does not include a specific reference to cyberbullying, but asks adolescents (grades 6-12) if they have been bullied at school with bullying behaviors described as: someone making fun of them, calling them names, insulting them, spreading rumors about them, threatening them with harm, pushing, shoving, tripping or spitting on them, trying to make them do something they did not want to do, excluding them from activities on purpose, destroying their property on purpose. A response of 'yes' to any of these questions resulted in placing the student in the 'bullied category'. Once in the 'bullied' category, the student is asked where the bullying behavior occurred with response options including: in a classroom at school, hallway or stairwell at school, bathroom or locker room at school, somewhere else inside the school building, outside on school grounds, on a

school bus, in a cafeteria or lunchroom at school, and online or by text (Zhang et al., 2016). In this report, a higher percentage of female students than of male students reported being victims of bullying online (15.9% vs. 6.1%) and White students accounted for more of the students bullied online (13% vs. 11% for Hispanic students). It might be important to note that for this report, the data for African American and Asian students were not listed due to a significant chance for statistical error (Zhang et al., 2016).

Another national survey published during a similar timeframe, the Youth Risk Behavior Survey (YRBS), reported the overall rate of electronic bullying to be 15.5% (Kann L. McManus T, 2016). This survey included the CDC definition of bullying but used the term 'electronic bullying' and requested report of exposure over the lifetime (Survey Question: Have you ever been electronically bullied? Count being bullied through texting, Instagram, Facebook, or other social media. A. Yes B. No). For the YRBS, prevalence rates vary significantly by state (Kann, 2016). For example, average electronic bullying rates in Maine were reporting as high as 39% for females and 20% for males while students in Mississippi reported electronic victimization among 21% of females and 17% of their males (Centers for Disease Control and Prevention, 2015b) Many states, such as Florida, Texas, and Louisiana either do not collect prevalence rates for electronic bullying in middle school or do not make these data available for national comparison.

In 2014, the YRBS was administered to a representative sample of Maryland schools reaching a total of 27,401 students in 175 public middle

schools. Students were asked, "During the past 12 months, have you ever been electronically bullied? (Count being bullied through e-mail, chat rooms, instant messaging, websites, or texting.)" Through this single item, the percentage of middle school students electronically bullied was estimated at **19.7%,** higher than the overall rate of electronic bullying among high school students in Maryland (15.5%) and higher than the national average (15.5%) (Centers for Disease Control and Prevention, 2015b). Similar to the national data, results suggest that females in the state of Maryland may be at greater risk for cyberbullying than males (26.3% vs. 13.3%) and White students may be at greatest risk (32.4% for White females and 16.4% for White males) (Centers for Disease Control and Prevention, 2015b). An examination of 2015 YRBS data for counties within Maryland suggest the rate of electronic bullying may vary from as low as 13.8% in Baltimore City to as high as 29.1% in Carroll County. In Montgomery County, Maryland prevalence data available from YRBS data suggests that females who are 12-13 years old (8th grade) may be at greatest risk for being cyberbullied.

2.6 Health Significance of Adolescent Cyberbully Victimization

As an individual matures, peer relationships become increasingly important (Calvete, Orue, & Gámez-Guadix, 2016). Cyberbully victimization during this critical time of development might lead to adverse negative, short and long term, health impacts and might also negatively affect the victim's belief system leading the victim to not only believe themselves to be inadequate, but might teach the young person to mistrust others while suggesting that it is appropriate for peers to intentionally harm each other (Calvete et al., 2016).

Numerous studies have reported the negative health impacts associated with cyberbully victimization including both internalizing and externalizing problems (Fisher et al., 2016). Concerning internalizing problems, the literature suggests several adverse outcomes related to cyberbullying victimization including: depression, anxiety, anger, stress, social anxiety, loneliness, low self-esteem, and suicide (Bonanno & Hymel, 2013; Fahy et al., 2016; Fisher et al., 2016; Nixon, 2014). Results from a recent cross sectional study of US adolescents ages 10-17 years suggest that the likelihood of distress on a victim of cyberbullying might be positively related to the number of characteristics involved in the incident including: the involvement of multiple perpetrators, inclusion of offline and in person contact, a power imbalance, repetition (Mitchell, Ybarra, Jones, & Espelage, 2016). Overall, there appears to be a consistent, statistically significant, relationship between cyberbullying and depressive symptoms with other internalizing problems noted in the literature, but with less consistent results (Hamm et al., 2015).

Although less research has focused on externalizing risk factors associated with cyberbully victimization, the limited available research suggest an association between cyberbully victimization and greater adolescent smoking, alcohol use and binge drinking when controlling for traditional forms of peer victimization (Chan & La Greca, 2016). Additional externalizing problems associated with cyberbullying include: aggression, social problems, self-harm (such as cutting) delinquent behaviors such as fighting and vandalism, prescription drug misuse and over the counter drug misuse (Elgar et al., 2014;

Fisher et al., 2016). Although the current literature review focuses only on the

impact of cyberbullying on adolescent victims, there are negative health impacts

on perpetrators of cyberbullying, adolescents who report both perpetration and

victimization and older individuals (especially young adults in college) affected by

cyberbullying (Doane, Kelley, & Pearson, 2015; Fahy et al., 2016).

2.7 A Theoretical Approach to Cyberbullying

Although research on cyberbullying prevention and intervention has

included some theory application, the choice of theory has often depended upon

the background on the researcher, the goal of the study (prevention or

intervention) and the priority population of the study (i.e. the perpetrator, victim,

bystander). The diversity of theories to address the challenge of cyberbullying

help to confirm that this is a multidisciplinary issue. For example, some research

has focused on the criminal aspect of cyberbullying with the application of the

Routine Activities Theory (Cohen & Felson, 1979; McHugh & Howard, 2017;

Navarro & Jasinski, 2012) while other studies have considered the problem

through a psychological, educational, communication or public health perspective

including the following theories and models: Social Cognitive Theory (Bussey,

Fitzpatrick, & Raman, 2015), Social Ecological model (Cross et al., 2015), Stage

Environmental Fit Theory, Theory of Reasoned Action (Doane et al., 2015),

General Strain Theory (Paez, 2016) and Protection Motivation Theory (Doane,

Boothe, Pearson, & Kelley, 2016). This study approached cyberbullying

victimization from a Social Ecological Model similar to the framework suggested

by the Centers for Disease Control and Prevention (CDC) for the prevention of

violence (Centers for Disease Control and Prevention, 2014b).

Social Ecological Model

Cyberbully victimization effects the developing individual but is influenced by social factors and as such, interventions to prevent or stop cyberbullying should consider the context within which the adolescent is developing, i.e. interventions should consider multiple levels of influence as well as the identification of characteristics that make an adolescent more or less susceptible to victimization (Baldry et al., 2015; Bandura, 2000). Current research suggests that a comprehensive, multidisciplinary approach is needed to combat cyberbullying among adolescents including educational media campaigns, school-based programs, parental mediation and supervision, legislative action, screening and evidence-based interventions by health care providers (Roberto, Eden, Deiss, Savage, & Ramos-Salazar, 2017). This study focused on three of the four factors suggested by the CDC's social ecological model for prevention of violence which includes prevention at the following levels: individual, relationship, community and societal (Centers for Disease Control and Prevention, 2014b).

Figure 2.1 The Social Ecological Model: CDC Framework for Prevention
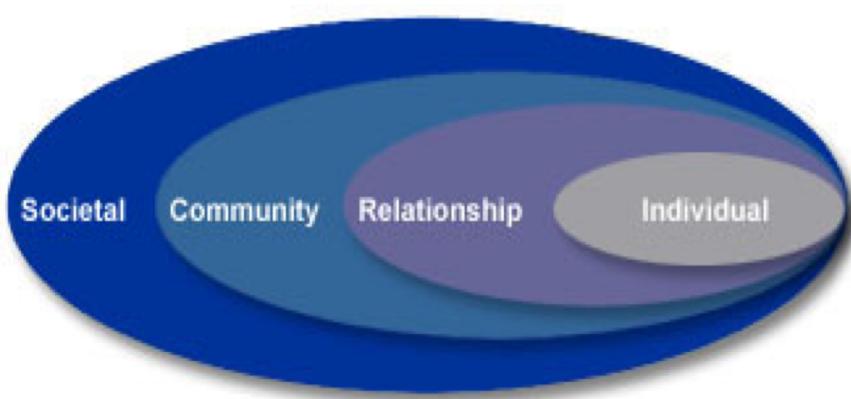
Source: The social ecological model: A framework for prevention, Centers for Disease Control and Prevention, https://www.cdc.gov/violenceprevention/overview/social-ecologicalmodel.html

This study examined protective factors within the individual, relationship, and community. At the very center of the model, this study examined demographic and intrapersonal behavioral characteristics that might increase risk for victimization. The next level included close interpersonal relationships (i.e. parent-child communication) while the outermost layer for this study included the school community. The protective factors included in this chapter and study are not exhaustive. In fact, within each layer addressed in this study, there are many additional variables not considered (e.g. whether the adolescent had been a victim in the past, individual differences such as learning disabilities or pre-existing anxiety, the number and strength of the adolescent's social network, etc.). Additional layers of the social ecological model might also have been considered including an examination of the role of policy and level of enforcement of existing rules against cyberbullying at the school, county, state and national level. However, even narrowing the study down to three domains

within the CDC model included many options for possible variables and study

constructs. The choice of variables was driven by results of a qualitative study of

parents in Maryland (McHugh & Howard, 2017).

Routine Activities Theory (RAT)

The variables included in this study, were chosen based on the results of

a 2016 qualitative study applying the Routine Activities Theory (RAT) to

cyberbullying children with intellectual disabilities within the current study's target

community, Montgomery County, Maryland (McHugh & Howard, 2017).

According to the RAT, three components are required for a crime to occur: 1) the

presence of a suitable target; 2) a lack of capable guardians; and 3) the presence

of a likely offender (Cohen & Felson, 1979). Through in-depth interviews, 10

parents reported critical elements to protecting their child from cyberbullying. In

this study, parents suggested that all youth are vulnerable to victimization and

stressed the importance of youth engagement in safe behaviors online (Individual

factors that protect the individual from becoming a target).

Figure 2.2 Routine Activities Theory (RAT)
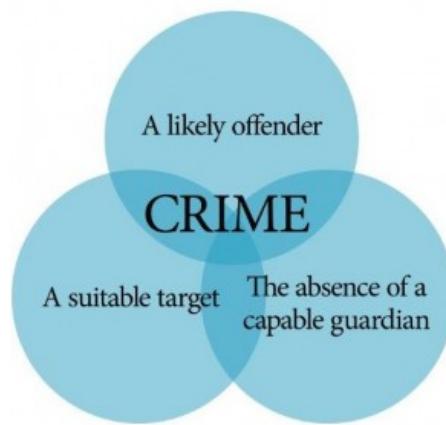
Source: Criminal Justice Research. Routine Activities Theory at recovered from:
http://criminal-justice.iresearchnet.com/criminology/theories/routine-activities-
theory

Parents also suggested that although their role as guardian is critical to effectively protecting their child, they recognized that they cannot always monitor their child's behavior online and that parent-child communication may not be enough. Parents reported that they relied on their child's teachers and classmates to be active bystanders, to notify them if their child was being cyberbullied (Relationship with capable guardian and community protection against cyberbullying). In addition to choosing variables based on this qualitative work in the priority community, with the exception of demographic characteristics, variables for this study were chosen as they are dynamic or able to be modified with time or with a targeted intervention.

Collective Efficacy (Social Cognitive Theory)

Results of the 2016 study of parents in Montgomery County suggested that parents rely on their child's peers to form a cohesive community that looks out for one another in times of conflict. Although constructs from Social Cognitive Theory, SCT (Bandura, 1986) have previously been applied to cyberbullying research, most research has focused on SCT constructs such as self-efficacy and moral disengagement (Bussey et al., 2015). This study examined a construct that has not been thoroughly studied with cyberbullying; collective efficacy (Goddard, 2001). Collective efficacy is a construct that originates in psychology literature and the work of Albert Bandura (Bandura, 1982). However, some argue that the largest impact of collective efficacy on social science has been on applying the construct to neighborhoods and communities (Hipp & Wo, 2015). In 1997, collective efficacy was applied to neighborhood dynamics to better

understand the association between collective disadvantage, residential instability and violence. In this study, collective efficacy was operationalized using two measures, one set of items that represented "social cohesion and trust" and the other represented "informal social control" or the likelihood that neighbors could be counted on to intervene in various ways (Sampson, Raudenbush, & Earls, 1997). The results of this study suggest that collective disadvantage and immigrant concentration were negatively associated with collective efficacy and that older residents were associated with higher levels of collective efficacy (Sampson et al., 1997).

In 2000, Bandura clarified collective efficacy as related to, but different from, self-efficacy in that collective efficacy is not merely the product of individual knowledge, skills or the sum of the efficacy beliefs of individual members, but includes "interactive, coordinative and synergistic dynamics of their transactions" making collective efficacy "an emergent group-level property" (Bandura, 2000). The current study included the construct of collective efficacy in the examination of community-level risk and protective factors for cyberbully victimization.

2.8 Risk and Protective Factors for Cyberbully Victimization

Individual Factors

Research suggests that gender might be risk factor for cyberbully victimization with female adolescents reported to be at greater risk for cyberbully victimization in middle school than males. In addition, Although many studies report females with higher rates of victimization with males reporting higher rates of perpetration, some studies suggest that this might depend on the age of the

adolescent female, however finding a 'cut off' age has proven difficult (Zych et al., 2015). Age, regardless of sex, might be a risk factor with middle school students and perhaps early high school students at greatest risk for cyberbully victimization (Kowalski & Limber, 2007; Lucas-Molina et al., 2016). Age has also been suggested as a moderating factor when testing interventions to prevent cyberbully victimization with younger ages responding more positively to interventions (Williford et al., 2013). Finally, age and gender might also serve as moderators for the adolescent's perception of their self-efficacy to know what to do if they become cyberbully victims and their intentions regarding online risky behaviors (Lwin et al., 2012).

Several individual traits, not included in this study, but associated with higher levels of cyberbully victimization, are loneliness and previous victimization (Brewer & Kerslake, 2015; Bussey et al., 2015). One trait that has been fairly consistently associated with cyberbully victimization, and in some studies also cyberbully perpetration, is low self-esteem (Baldry et al., 2015; Brewer & Kerslake, 2015; Modecki, Barber, & Vernon, 2013; J. W. Patchin & Hinduja, 2010). Self-esteem has been defined as ''a favorable or unfavorable attitude towards the self'' and might be especially important during the adolescent years (Brewer & Kerslake, 2015; Modecki et al., 2013; J. W. Patchin & Hinduja, 2010; Rosenberg, 1965). One of the greatest challenges with the study of self-esteem (and other characteristics such as loneliness and anxiety) with cyberbully victimization is causality and temporality or the determination of whether self-esteem was low before the adolescent was cyberbullied or if the cyberbully

victimization led to a drop in the adolescent's level of self-esteem (Parker &

Benson, 2004). The risk factor of loneliness was previously mentioned but, as

with other risk factors, being loneliness might simple lead to behaviors that

increase an adolescent's risk for victimization. For example, loneliness might

lead some adolescents to spend several hours online using social media

platforms and social apps to try to connect with other youth, perhaps making

connections that they are unable to make in person. This might also be a factor

in explaining the mechanism by which frequency of Internet use has been

associated with a greater risk of victimization (Hinduja & Patchin, 2008).

The number of hours an adolescent spends online has increased over the

last few years, this growth may have been assisted by the number of adolescents

who now own a cell phone and personal computer (Lenhart, 2015). Several

studies on cyberbullying have considered hours online as a risk factor in

understanding victimization (Appel, Holtz, Stiglbauer, & Batinic, 2012; Brewer &

Kerslake, 2015). In addition to frequent Internet use, the types of social online

activities might also impact exposure to cyberbullying (Festl & Quandt, 2016).

The current study considered both of these risk factors and their association with

cyberbully victimization among young adolescents.

Another individual risk factor regarding technology use has been

suggested; risky or safe behaviors online (Baldry et al., 2015). Research

suggests that parts of the brain of adolescents; namely the prefrontal cortex, may

not be fully developmented until early adulthood (Dahl, 2004). This delay in brain

development might increase the likelihood that adolescent engage in risk taking

behavior, both online and offline. Engaging in risky behaviors online may include

disclosure of personal information to strangers, sharing personal information,

photos or videos on social networking sites without thought to privacy setting or

experiencing online aggression and not telling an adult. Research suggests that

adolescents who are likely to engage in high risk behaviors while online are

prone to online predators (Lwin, Stanaland, & Miyazaki, 2008). In 2012, Lwin and

colleagues examined adolescent protective behaviors online as the criterion

variable with a series of predictor variables including perceived suseptibility,

perceived severity, self-efficacy and response efficacy - all predictor variables

were estimated to have statistical significance to behavioral intention except

perceived suseptibility (Lwin et al., 2012). In addition, this study suggests that

young adolescents males (11-12 years) seemed to be more motivated to engage

in protective measures than older female adolescents (Lwin et al., 2012).

However, to avoid the limitations of using intention as a proxy for behavior,

this study requests data on young adolescent online behaviors, not intentions to

behave in a specific way. Data regarding actual online behaviors may provide a

better understanding of the types and frequency of risky online behavior with less

potential for error than data on intention. In addition, although studies suggest

that safe online behaviors such as using nicknames, might lead to less negative

health outcomes, scarce research have captured data on prevalence of

risky/safe behaviors online among young adolescents. One recent study

collected data on adolescent risky online behaviors but focused on an older

population of adolescents, those 13-18 years (Festl & Quandt, 2016). The scale

used to measure online protection behavior by Lwin et al in 2012 was modified and used in the current study to examine whether adolescent behavior acts as a mediator or mechanism by which parent-child communication leads to protection from CBV.

Relationship Factors

The next layer in the social ecological model applied to this study includes close relationships, such as those within the family. Research suggests that parental mediation might be a significant protective factor against cyberbully victimization (Mesch, 2009; Monks, Mahdavi, & Rix, 2016; Navarro et al., 2013). When referring to cyberbullying, parental mediation has be defined as the activities carried out by parents to protect their child from exposure to online dangers or aggression (Navarro et al., 2013). Although studies have found that parents recognize that supervising their child's online activities might stop or prevent cyberbullying (Monks, Robinson, & Worlidge, 2012) and most parents report that they attempt to regulate their child's Internet use (DeHue, Bolman, & Völlink, 2008), there is little agreement on the most effective monitoring strategy. While some parents engage in activities to restrict or control their child's Internet activities, other parents engage in what has been called evaluative activities or activities that include communication between an adult and the young person to develop Internet rules together (Mesch, 2009). In a qualitative study by Monks et al (2016), parents described various types of strategies to supervise their child, including linking adult Facebook accounts to a young person's account, setting up restrictions to limit online activities, parental review of a child's browser

history, and insistence that an adult be physically present when child is online (McHugh & Howard, 2017; Monks et al., 2012). Moreover, some research suggest that effective mediation strategies include effective parent-child communication about risks and awareness of the potential dangers online, this includes encouraging youth not to share private information online and not to visit certain web sites or online applications (Appel et al., 2012; Davis & Koepke, 2014; Mesch, 2009). However, the mechanism by which parent-child communication leads to protection from cyberbully victimization is not well understood.

A 2016 Pew Research Center report on digital monitoring suggests that although 56% of parents report to monitor their child's behavior at school, at home, and in their social lives, only 36% of parents reported to monitor their child's online behavior toward others (M. Anderson, 2016). Research suggests that as few as 10% of those victimized tell an adult about their experience (Juvonen & Gross, 2008). The reason youth choose not to tell an adult has not been widely studied but one qualitative study suggests a number of possible reasons such as: they are not sure how the adult will react; they fear the possible repercussions of the cyberbully; or they believe the adult does not possess enough knowledge of current technology to be able to help them (Navarro et al., 2013). This same study considered parental mediation from the child's perspective with results that suggest that the child does not believe restrictive monitoring strategies work as they feel the young person can deceive the parent and is able to manipulate technology to avoid any filters or blocks to Internet use

(Navarro & C. Serna, 2015).

Numerous studies have considered parental mediation as a critical component for prevention of cyberbullying and these studies have operationalized this concept in many ways (Carman et al., 2013; Davis & Koepke, 2014; Erickson et al., 2015). Few studies, however, have operationalized parent-child communication including both quality and quantity (frequency) from the perspective of the young adolescent. One study, reported that good communication about Internet use between a parent and young adolescent might be a promising tool for parents to prevent their child from engaging in risking online behaviors (R. J. J. M. Van Den Eijnden, R. Spijkerman, A. A. Vermulst, T. J. Van Rooij, & R. C. M. E. Engels, 2010). The two subscales used in the Van Den Eijnden et al study involving youth ages 11-15 years in the Netherlands, have been included in the current study.

Community Factors

The last layer of the social ecological model included in the current study is the adolescent's community, i.e. the adolescent's perceived trust and cohesion with classmates and teachers as well as informal social control. As adolescence is a time for children to begin to separate themselves from their parents, the adolescent's school community might have a significant role in the safety of the adolescent online (Erickson et al., 2015). The current study operationalizes collective efficacy in similar way as previous studies, using two subscales: social cohesion and trust with informal social control.

In recent years, the construct of collective efficacy has been applied to a

limited number of studies on adolescent, in-school bullying including a study of

Greek adolescents (M. Sapouna, 2010), and two studies involving adolescents in

the US (Smith, Osgood, Caldwell, Hynes, & Perkins, 2013; Williams & Guerra,

2011). Collective efficacy was loosely defined in these studies as a perceived

sense of connectedness and willingness to intervene among youth (Smith,

Osgood, et al., 2013). In all three of these studies, researchers found that

collective efficacy was negatively related to bullying and that adolescent

perception of the willingness of the group or class to intervene was found to be

related to less problem behaviors (M. Sapouna, 2010; Smith, Osgood, et al.,

2013; Williams & Guerra, 2011). This concept of willingness to intervene, or

intrinsic motivation to work together, has been suggested by researchers to be

an important component of positive youth development (Larson, 2000). Only one

of the studies mentioned above included a question related to online or

cyberbully victimization, with specific results of this question not made available

through the publication (Williams & Guerra, 2011). For the current study, scale

items developed by Williams and Guerra (2011) for US adolescents in 5th, 8th and

11th grade will be included (Williams & Guerra, 2011). The first seven items of

the scale measure cohesion and trust with the next four items measuring informal

social control among students. These four items measuring social control will be

modified to be more specific to cyberbullying. At this time, there appears to be a

gap in the literature regarding the examination of adolescent perceived collective

efficacy for cyberbullying. While a limited number of studies have studied

association between collective efficacy and in-school bullying, there appears to

be little reported on the impact of collective efficacy on cyberbully victimization

(M. Sapouna, 2010; Williams & Guerra, 2011).

2.9 Interventions to Prevent and Stop Cyberbullying

Programs and interventions to address bullying often fall into one of two

categories, those designed to prevent, often in the form of an intervention for the

whole school (primary prevention or universal approach) and those designed to

intervene once an aggressive behavior has occurred, often focused on the

perpetrator, the victim, the bystander, the teacher or the parent (secondary

prevention or targeted approach) (Cantone et al., 2015; Nocentini, Zambuto, &

Menesini, 2015). A systematic review of randomized control trials (RCT)

examining interventions on bullying (and cyberbullying) reported that; most

interventions do not report long term positive effects, most RCTs are focused on

a whole school or universal approach, and most did not include cyberbullying

(Cantone et al., 2015). A 2015 scientific review of cyberbully prevention and

intervention studies (without the requirement of a RCT criterion) reported that

many studies lack scientific merit offering very little evidence-based standards

from which to base an anti-cyberbully intervention (Della Cioppa, O'Neil, & Craig,

2015). After reviewing 12 formally evaluated cyberbullying programs

implemented before 2014, this review found that less than half of the programs

involved random assignment, included multiple types of informants, or

incorporated follow-up after an immediate post-test.

However, there was one cyberbully intervention associated with lower self-

reported cyberbully victimizations at post-test compared to a control group cited

in both systematic review as being efficacious: the KiVa anti-bullying program (Williford et al., 2013). The KiVa program involves two primary components: a universal or primary prevention classroom based curriculum (and computers games) to raise awareness, increase empathy for victims and promote self-efficacy among bystanders to support victims and a second component that includes more indicated or secondary prevention approach that include adult intervention on incidents of cyberbullying and peer support for the victim (Williford et al., 2013). Results from this study suggest that KiVa might yield a statistically significant decrease in cyberbully victimization (p<.01, odds ratio of 1.29) – with the effect moderated by gender and age with girls and 11-year old students reporting the greatest reduction in victimization (Williford et al., 2013).

The KiVa intervention includes the use of computer games and a virtual environment to educate young people. Recently, a number of interventions have been proposed to either prevent or intervene in cyberbullying events using computer based interventions such as virtual reality, serious games, emerging mobile devices (Nocentini et al., 2015). A systematic review compiled 32 papers, covering 13 interventions, published in scientific journals and found that 50% of the interventions were designed to prevent bullying (in general) and eight included a cyberbully component with an additional intervention on safe internet practices (Nocentini et al., 2015). In this list, seven interventions involved 'serious games' with only four of the 13 including evidence of effectiveness (FearNot! (serious game), SMART Talk (serious game), NoTrap! (online activities) And KiVa (serious game) with two of these programs offering both face-to-face and

online activities (KiVa and NoTrap!) but did not include an evaluation to distinguish the value of each component (Bosworth, Espelage, & DuBay, 1998; Menesini, Nocentini, & Palladino, 2012; Paiva et al., 2004; Williford et al., 2013).

2.10 Principal Perspectives on Cyberbullying

In addition to the quantitative approach to examining risk and protective factors for cyberbully victimization, studies have also collected qualitative data on cyberbullying from the perspective of the student, the parent and the teacher (Cunningham et al., 2016; Jackson, Cassidy, & Brown, 2009; Monks et al., 2012; Navarro & Serna, 2015; Seo, Tunningley, Warner, & Buening, 2016). Several studies targeting middle school-aged students suggest that while some students (often females) are concerned about the consequences or severity of cyberbullying (including feeling scared, depressed or suicidal) others felt that adolescents are often mean to each other online and that this is normal and a form of 'venting' or something to do out of boredom(Agatston, Kowalski, & Limber, 2007; Jackson et al., 2009; Lareki et al., 2017; Navarro & Serna, 2015). One study of adolescents reported teachers or adults in the school environment did not discuss cyberbullying although most believed that cyberbullying was related to earlier incidence that may have happened at school (Agatston et al., 2007). The concept of 'revenge' cyberbullying was also raised suggesting that an adolescent might not consider an event cyberbully if an adolescent is simply responding to a bully or retaliating for something that happened in school or previously online (Jackson et al., 2009).

Regarding solutions to cyberbullying, one qualitative study found that

students supported anonymous phone lines to inform adults of cyberbullying, programs that teach students about cyberbullying and its effects on the mental health of adolescents, and efforts to foster a positive attitude increasing self-esteem among adolescents (Jackson et al., 2009). Some students suggested that an effective solution should involve activities other than reporting to an adult due to the fear of retribution from the cyberbullying (perhaps an escalation in aggression) or the fear of being labeled a 'rat' (Jackson et al., 2009; Navarro & Serna, 2015). However, students did suggest that in order for an adolescent to feel comfortable talking to his or her parent, there would need to be a 'climate of trust' and good parent-child communication. They suggested that younger adolescents might be more likely to tell a parent but that older adolescents will either try to handle it themselves or tell a sibling as they felt that siblings were more technologically savvy and easier to talk to (Navarro & Serna, 2015).

A recent qualitative study that included the adult perspective suggested that access, not age, was the critical factor when considering susceptibility to cyberbully victimization and that young people who lack understanding of the dangers present on the Internet are vulnerable (Monks et al., 2016). This report also suggests that adults perceive that cyberbullying becomes more severe as the child ages and that peer pressure and external factors impact the child's use of electronic media (Monks et al., 2016). Although adults reported that supervision at home could reduce or stop cyberbullying, adults recognized the challenge of balancing control with concerns about invading the child's privacy as well as the gap in technology capability that exists between many children and

their parents and teachers (Monks et al., 2016). When considering solutions from a teacher's perspective, one study reported that teachers believe greater administrative, teacher and parent support is needed to make any intervention work and a lack of scientific evidence supporting interventions makes sustaining prevention efforts difficult (Cunningham et al., 2016).

Chapter 3: Study 1: *I Prefer Not to Say: Gender Identity, Internet Behaviors and Cyberbully Victimization*

Abstract

Constant access to online communication technologies enables young adolescents to connect with friends and access the Internet; however, these platforms also enable young adolescents to engage in cyberbullying. This study addressed three research questions: 1) What is the association between a multi-item and single item measurement for cyberbully victimization (CBV)? 2) How does CBV among young adolescents vary by gender? 3) How do safe behaviors online (SBO) relate to CBV? This study addresses an important gap in cyberbully research through the collection of CBV data from young, perhaps gender non-conforming, adolescents. Current research on gender minorities target older adolescents. In addition, this study provides examples of data lost when using a single item strategy. Data were collected from a diverse sample of public-school students using an online survey administered during school hours (N=1,249). Through the multi-item scale, 37% of students reported repeated CBV compared to 12% when using the single item scale (p<.001). CBV prevalence among students who preferred not to say their gender (PNTS) and among females were highest with CBV scores for females statistically significantly higher than males with both the single item and multi-item scale (multi-item, p=.013, single, p=.015). The association between SBO and CBV was small but significant (p<.001). Results of this study suggests that it is critical for future surveys to include an option for gender non-conforming young adolescent students as these students seem to be at greatest risk of repeated victimization as well as a multi-item

instrument to estimate CBV. Implications and recommendations for future studies are included.

Introduction

A typical adolescent owns a smartphone (76%) and uses this phone to access the Internet daily (92%), to check Facebook (72%), or exchange texts with a friend (90%) (M. Anderson, 2016; Lenhart, 2015). According to the Pew Research Center, adolescents often send and receive more than 30 text messages in one day alone (Lenhart, 2015). However, constant access to online communication technologies also allows adolescents to use these platforms to end a relationship, 'un-friend' a peer or engage in cruel activities such as posting embarrassing photos or videos, harassment, even threatening behaviors, often referred to as cyberbullying. Although the quantity of research on cyberbullying among US middle school students has grown in recent years, differences in how cyberbullying is measured make it difficult to calculate prevalence (Selkie et al., 2016). Researchers have estimated the prevalence rate of cyberbullying among adolescents to range from 10%-40% (R. M. Kowalski, Giumetti, Schroeder, & Lattanner, 2014; Patchin & Hinduja., 2006; Selkie et al., 2016).

Cyberbully victimization (CBV) during adolescence, a critical time for development, might lead to adverse short and long term health impacts and might teach the young person to mistrust others while suggesting that it is appropriate for peers to intentionally harm each other (Calvete et al., 2016). Numerous studies have reported the negative health impacts associated with CBV, including both internalizing problems (depression, anxiety, anger, stress,

loneliness, low self-esteem, and suicidal ideation), as well as externalizing

problems (self-harm, drug use and abuse) (Bonanno & Hymel, 2013; Fahy et al.,

2016; Fisher et al., 2016; Nixon, 2014).

Gender and Adolescent Development

Adolescents is a time of unique developmental growth including dramatic

physical changes, the formation of new types of relationships, and an exploration

of sexuality and gender identity (Perry & Pauletti, 2011). Gender identity includes

the adolescent's perception of self in relation to gender categories and is

believed to reflect a complex interaction between biologic, environmental, and

cultural factors (Olson-Kennedy et al., 2016; Perry & Pauletti, 2011). By

adolescence, research suggests that most (but not all) young people have

chosen their perceived gender category with the onset of puberty in gender non-

conforming youth often accompanied by distress (Olson-Kennedy et al., 2016).

Although there does not appear to be consensus regarding the prevalence rates

for gender non-conforming adolescents, a recent review of research on high

school adolescents suggests a prevalence rate of between 1.3% and 5% (Olson-

Kennedy et al., 2016).

Gender minority is a term used broadly in reference to individuals who

may be transgender or gender non-conforming; i.e. individuals who do not self-

identify as transgender but who also do not identify to cultural norms for their

birth gender (Collier, 2013). Gender minority youth are often at greater risk for

stress, low self-esteem, anxiety and depression (Priess, Lindberg, & Hyde,

2009). In addition, reports of adolescents ages 13-21 suggest gender non-

conforming students are at greater risk for peer victimization (Kosciw, Greytak, Giga, Villenas, & Danischewski, 2016). According to the 2015 National School Climate Survey of high school and college aged adolescents, 48.6% of school aged youth who do not conform to traditional gender or sexual categories (i.e. lesbian, gay, bi-sexual, transgender or questioning, LGBTQ) have ever been electronically harassed by classmates, with 15% reporting 'often' or 'frequent" harassment (Kosciw et al., 2016). Scarce research has focused on cyberbully victimization among gender nonconforming younger adolescents. When examining only males and females, research is mixed with some studies suggesting females are at greater risk (Baldry et al., 2015; Kann, 2016; Zhang et al., 2016) while others report similar prevalence rates for males and female (Tokunaga, 2010). These differences in prevalence for gender might be due to differences in the age of the adolescent and the measurement strategy applied.

Adolescent Behaviors and Online Activity

In addition to gender, adolescent engagement in risky online behaviors might also increase risk of CBV (Festl & Quandt, 2016). Risky behaviors online might include: disclosure of personal information to strangers, sharing photos or videos on social media (Baldry et al., 2015), and not sharing with adult when cyberbullied (Baldry et al., 2015). It is estimated that as few as 10% of cyberbully victims tell an adult (Roberto et al., 2017). A few reasons for remaining silent include fear that the parent might restrict use of technologies, might not be able to do anything to stop it, and might not understand or believe the adolescent (Collier, Van Beusekom, Bos, & Sandfort, 2013). A greater understanding of the

association between safe online behaviors (SBO) and CBV would provide
guidance to educators and parents on strategies to prevent cyberbully
victimization.

Cyberbully Victimization Scales

There is much variety in how cyberbullying is measured, with many
studies relying on a single item that does not capture the full extent of
cyberbullying as this behavior is multifaceted. Kosciw and colleagues (2016)
estimated the prevalence of CBV among LGBTQ adolescents to be just under
50% but these estimates are based on a single item requesting frequency of
cyberbully victimization (referred to as 'electronic harassment') with any
harassment determined to be cyberbullying (Kosciw et al., 2016). Specifically, the
question asked how often they were harassed or threatened by students at their
school via electronic mediums. A second national study, conducted during
approximately the same time (the 2015 YRBS), also included a single item
asking if the participant had ever been electronically bullied. The prevalence rate
for electronic bullying among LGBTQ students (i.e., those who responded 'yes')
was estimated at 28% (Centers for Disease Control and Prevention, 2015a).
Differences in measurement are likely to account for at least a portion of the
difference in prevalence rates, though neither are likely an accurate portrayal of
the environment since they each relied on a single item.

A systematic review of 44 cyberbullying assessment instruments found
that almost half did not include components often included in the definition of
cyberbullying: use of an electronic form of contact; willful or aggressive and

intentional; repetitive (in number of events and/or sharing of event publically); and harmful (Berne et al., 2013). The Berne review did not include any research that involved a single-item to assess cyberbullying as the authors agreed with other researchers who felt a study involving a single item for CBV was less reliable than studies using a multi-item scale (Berne et al., 2013; Gradinger, Strohmeier, & Spiel, 2010). In addition, this systematic review reported that less than half of the peer-reviewed articles included reports of reliability and validity testing. Researchers at the University of British Columbia, Canada, responded to this call to action and began working on a scale to measure cyberbullying. This scale includes items concerning online behaviors instead of digital platforms (Shapka & Maghsoudi, 2017). After pilot testing with adolescents using talk aloud protocols, this scale was provided electronically to 6th and 7th grade adolescents with convergent validity (positive for depression and anxiety) and discriminate validity (negative for school connectedness) suggested.

The current study examined data collected from students using a modified version of the CBV scale developed and validated by Shapka and Maghsoudi (2017). The research questions for this study are: 1) What is the association between a multi-item and a single-item measurement of CBV? 2) How does CBV among middle school students vary by gender using both the multi-item scale and the single item? and 3) How do individual safe behaviors online relate to CBV? To the best of our knowledge, this is the first study that compares a single and a multi-item scale to capture and compare prevalence of CBV within a sample of young adolescents. This study also adds to the literature as it

considers more than just two gender categories for young adolescents, offering an option for gender non-conforming adolescents, which is essential for targeted prevention efforts.

Methods

Participants and Procedures

The current study includes primary data collected from a convenience sample of middle school students from an ethnically and racially diverse, suburban county in a Mid-Atlantic state between October and December 2017 (N=1,249). After IRB approval, the county public school system approved the study and invited all 39 middle schools to participate. After follow-up phone and e-mail communication, 10 middle schools self-selected to participate (26% participation). Some non-participating schools reported busy schedules as the reason for not participating. In order to limit systematic error, the survey was pilot tested to students from a county school not participating in the study (a male and female from 6th, 7th and 8th grades; n=6). Qualtrics software was used for all survey administration and data collection. All students enrolled in participating schools were eligible to participate; written parental consent and student assent was required. Students were offered pizza as an incentive to participate.

Measures

Demographics

Demographic items for this study modeled the 2017 YRBS (Centers for Disease Control and Prevention, 2015b). Students responded to a binary question about ethnicity and a multiple response item regarding race. Students

were also provided an option of 'other' for race. Students reported their grade and their gender. However, the current study modified the YRBS to include an option for students who do not conform to the traditional two gender options, students were given an option to 'prefer not to say'.

Cyberbully Victimization Measures

This study uses the cyber victim portion of the scale developed by (Shapka & Maghsoudi, 2017) to assess cyberbullying. Seven cyberbully victimization items were included using a 5-point Likert scale with 1=never, 2=once, 3= a few times, 4= several times and 5= all the time with a summative score ranging from 7 to 35. Inter-item correlations for the CBV scale range from .401 to .574. To estimate internal consistency, or the extent to which all the items in the scale measure the same construct, Cronbach's alpha was calculated at .858). We also included a single item measure for cyberbully victimization from the 2017 YRBS for middle school students. This item uses the term 'electronic bullying' and lists social media platforms (i.e. "Have you ever been electronically bullied? (Count being bullied through texting, Instagram, Facebook, or other social media.)" with a yes/no response option (Centers for Disease Control and Prevention, 2015b). This present study adapted this item to ask students to report only incidents that have happened while a student in their current middle school.

Safe Behaviors Online Items

The items for this construct were modified from a study of Singaporean adolescents ages 12-19 years (Lwin et al., 2012). Each item includes a 5-point

scale from 1=strongly disagree to 5=strongly agree. An additional item was included to capture average hours online each day. Responses range from 1=none to 7=more than 5 hours. Response options of "I don't know" or "I don't want to say" were coded as missing.

Statistical Analysis

For this study, survey data were analyzed using SPSS v24. One-way analysis of variance (ANOVA) was conducted to analyze the association between cyberbully victimization (CBV) and gender. In addition, descriptive statistics were computed for individual cyberbully behaviors and summative CBV scores were examined. McNemar's test (McNemar, 1947) with continuity correction (Edwards, 1948) was conducted to determine if there was a difference in the proportion of students reporting EB and those reporting CBV. For the study's third research question, Pearson's correlation coefficients were calculated examining associations between CBV and individual behaviors online.

Results

The first research question examined the association between CBV multi-item and EB single item, each CBV item was transformed into a binary variable with 1=A few times, Several times and All the time, 0=Once and Never. This conservative approach to measuring CBV included only students who reported repeated, harmful experiences online. A summative score of greater than 0 signified a cyberbully victim. In Figure 3.1, we illustrate sample data by measurement strategy. Data suggest that 37% have been cyberbullied (35% of males, 38% of females and 48% of PNTS). This compares to 12% using the

single electronic bullying item (10% of males, 13% of females, and 21% of PNTS). McNemar's test with continuity correction was conducted to determine if there was a statistical difference in the proportion of students reporting EB and those reporting CBV, a significant difference was suggested ($p < .001$).

As described in Table 3.1, this study includes a racially and ethnically diverse sample with slightly more females (52%) and 7th graders (39%). Students participating in this study reside in a wealthy county (median household income of $100,352) with approximately 32% of the students receiving free and reduced lunch (FARMS). For the first research question, we examined gender differences in CBV scores. Our study used the continuous scale variable in which higher scores indicated higher frequency of cyberbully behaviors. Mean CBV was statistically significantly different for genders when comparing the three gender groupings (males M=9.4, SD=3.5), females M=10.1, SD=4.4) and PNTS M=12.5, SD=8.5, ($p=.005$), see Table 3.2. The difference in CBV score from both male and female students to PNTS students was not statistically significant, p=.103 (male) and p=.323 (female).

Next, we examined individual items by gender. Results suggest that males were cyberbullied equally through nearly all behaviors, females most often had gossip or rumors spread about them online (M=1.6, SD=1.00) and received hurtful messages through email, text and chat rooms (M=1.6, SD = .93); and students who PNTS were cyberbullied most often through the spread of gossip or rumors (M = 2.9, SD = 1.47). Analysis of summative scores for all seven cyberbully behaviors suggests that some students (3.4%) experienced CBV

through all or most behaviors; i.e. a summative CBV score of $\geq$21. The reported genders of these students include: 1.5% of the total males, 4.3% of the females, 18% of the PNTS. Of these students, 16% report a CBV summative scores of $\geq$28 (14% male, 29% females and 57% PNTS). Examination of the seven students with the highest CBV score suggests that three were cyberbullied 'all the time' in each of the behaviors included on the scale; a summative CBV score of 35. These three PNTS students (one in 7th and two in 8th grade) were the only students to report this extreme level of CBV.

The third research question examined the association between safe behaviors online (SBO) and CBV. Overall, data suggest that participants do not discuss personal information on public websites (M=4.3, SD=1.27) while the safe behaviors with the lowest scores were seeking guidance from parents or teachers to find out what to do to prevent being bullied online (M=3.3, SD=1.39) and not discussing personal information on public websites (M=3.3, SD=1.37). Pearson's correlation coefficients were calculated to examine the association between CBV and SBO (Table 3.3). Although still small, the CBV behaviors with the greatest inverse relationship with safe behaviors included "I do not reply to people I do not know" (r = -.169, p<.01), "I use nicknames on the Internet to avoid using my real identity" (r = -.152, p<.01) and "I ask my parents or teachers what I should do if I am bullied online" (r =-.148, p<.01). All of the safe behaviors displayed a statistically significant inverse relationship with CBV (p<.01) except "I provide inaccurate information about my personal data on public websites" (r= -.044, p=.125), which was not statistically significant. Overall, the SBO with the

highest mean score was "I do not discuss my personal information on public websites" (M = 4.3, SD = 1.27). Sample data also suggest a significant positive association between hours on the Internet and CBV (r= .256, p<.01, data not shown).

Discussion

This study of 1,249 middle school students suggests that although CBV does not affect all students, approximately 37% of sampled middle school students are subject to hurtful online behaviors on a repeated basis. This estimate is based on a 7-item scale and captures online bullying that is repeated and harmful. Within that group of cyberbully victims, there is a continuum of harm where some students receive hurtful message through e-mail or text 'a few times', other students receive multiple, hurtful cyberbully behaviors 'all of the time' (approximately 1% of sample). Given the repetitive nature of bullying, the fact that cyberbullying might occur anywhere and anytime, the growth of smart phone ownership/Internet accessibility, and the important developmental changes occurring among young adolescents, cyberbullying represents a critical public health challenge for educators and public health professionals.

This study adds to the current literature by suggesting that females are more likely to be cyberbully victims though rates were also high among males in the sample. A unique and important aspect of this study is the addition of 'prefer not to say' in the available options for gender. Approximately 3% of participating students chose the option, prefer not to say, rather than to skip the question. If these students are in the gender minority, this rate is in line with previous studies

of gender non-conforming older adolescents as reported in a recent national study of LGBT adolescents (Olson-Kennedy et al., 2016) . Results of this study suggest that future studies should provide more than simply a binary option for middle school students who may not conform to traditional gender categories. This is important, as these students identifying as PNTS seem to be at a particularly high risk of CBV with almost half (48%) reporting CBV.

This study also adds to the literature by including a comparison of a single and a multi-item scale to examine CBV. Results of this study support previous research that suggest that a single item might underestimate the prevalence on cyberbullying. Through the multi-item scale, researchers not only receive a more accurate account of prevalence, but the focus on behaviors might better inform interventions. If this study had used the single item scale, prevalence estimates would suggest 12% victimization, while using a multi-item scale, data suggest prevalence of 37%. The multi-item scale also suggests that cyberbullying through hurtful messages about race or ethnicity might impact males more than females while females might receive more hurtful messages through email, text and chat. These data have important implications for future prevention and intervention strategies.

Finally, this study suggests that there is a small but statistically significant, inverse association between most safe online behaviors and CBV. This association includes the risky behaviors of adolescent response to people they don't know online and not asking adults for advice if cyberbullied. As cyberbullying involves behaviors often not witnessed by adults and may occur

24/7, the association between CBV and not telling an adult suggests that the CBV might last longer with no active bystanders to end the harmful actions. While examining online behaviors, this study further suggests that the number of hours a student spends on the Internet seems to be positively associated with CBV and thus, monitoring and limiting adolescents use of technology is a promising prevention approach.

There are several limitations of this study that should be noted. First, the cross-sectional nature of this study prevents causal and temporal associations. Furthermore, this sample is comprised of students whose parents signed and returned a consent form after understanding that this study examines cyberbullying. This sample resides within a single suburban county in a wealthy, mid-Atlantic state. Another limitation is the self-report nature of this study suggesting the possibility of bias. This study considers repetition and harm through electronic means but does not consider 'intentionality' of the perpetrator or the magnitude of the cruelty, both important aspects of cyberbullying.

However, there are many strengths including a relatively large, diverse sample of public school students representing all grades of middle school. This study compares a single and a multi-item scale to capture and compare prevalence of CBV for young adolescents. Perhaps one of the greatest strength of this study is the inclusion of a third option allowing middle school students to prefer not to report their gender. This flexibility in gender reporting provides an opportunity for researchers to learn more about the prevalence of CBV among young adolescents who may be gender non-conforming, an emerging research

topic.

Although the majority of middle school students in this study do not experience repeated CBV, there is reason for concern as: 1) In addition to the 37% of students who reported being cyberbullied more than once, an additional 36% reported that they had been cyberbullied once through at least one of the behaviors; and 2) A significant proportion of students who were cyberbullied reported victimization 'all the time' and may be at high risk for both internalizing and externalizing health problems. It is critical to identify these young adolescents to stop the abuse and to provide mental health support, as appropriate.

This study includes several implications for educators and public health practioners including the recommendation that future adolescent surveys incorporate a multi-item, behavior based scale to estimate prevalence of CBV. Educators should encourage greater acceptance of young adolescents who are gender non-conforming and recognize that differences in appearance or behaviors might make young adolescents targets for CBV. Finally, an important implication of this study is that when students were asked to agree or disagree with the statement that they will speak to an adult if cyberbullied, less than half (49%) responded that they either 'strongly agreed' or 'agreed.' When examining this question for students who experienced CBV, the percentage falls to 11%. The reasons for non-disclosure to an adult should be explored in future research and represents an opportunity where educators, professionals and parents could intervene, possibly through developing scenarios educating students on when

adult intervention is necessary. However, in order for students to trust parents

and educators, trusted adults must have access to evidence-based strategies to

stop the cyberbullying and prevent future harm.

Table 3.1 Demographic Data for Sample (N=1249)

Variable	Sample	
Gender	**N**	**%**
Male	551	44
Female	652	52
Prefer Not to Say	42	3
Grade		
6th	309	25
7th	488	39
8th	451	36
Ethnicity		
Hispanic	292	23
Non-Hispanic	885	71
Race		
White	402	33
Asian	154	12
Black/African American	192	15
American Indian/Alaska Native	14	1
Hawaiian/Pacific Islander	2	.2
Other	264	21
Multiple Races	218	17

Note: The ten participating schools reported, on average, 32% of students in their school received free or reduced meals. For the county, an average of 35% of students receive FARMS. By contrast, in the U.S., an average of 48% of students receive FARMS (http://www.montgomeryschoolsmd.org/departments/foodserv/farms/default.aspx?id=38 5157).

Table 3.2 Cyberbully Victimization Scale: Means, SD and Significance

CBV Item While a student at this school, how often have you…	Mean (SD)			*P*-value
	Male	Female	PNTS	
Had *something mean posted or re-posted about you*?	1.4 (.75)	1.4 (.84)	2.0 (1.48)	<.001
Received a hurtful message from someone by e-mail, text or chat?	1.4 (.81)	1.6 (.93)	1.9 (1.40)	<.001
Had an *embarrassing photo or video of you posted or re-posted online that you didn't want others to see*?	1.2 (.63)	1.4 (.79)	1.5 (1.14)	<.001
Been *purposefully excluded online*?	1.4 (.75)	1.5 (.89)	1.8 (1.38)	.001
Had *something personal posted or re-posted about you online that you didn't want others to know*?	1.2 (.55)	1.2 (.56)	1.6 (1.32)	<.001
Had gossip or rumors spread about you online?	1.4 (.83)	1.6 (1.00)	2.9 (1.47)	<.001
Received hurtful comments or messages about your race or ethnicity?	1.4 (.87)	1.4 (.84)	1.6 (1.23)	.291

Table 3.3 Bivariate Correlations and Means for CBV and SBO (N=1249)

Variables	CBV	1	2	3	4	5	6	Means (SD)
Safe Behaviors Online (7-item scale)								
1: I limit access to personal information online	-.091*							4.1(1.22)
2. I use nicknames on the Internet to avoid using my real identity	-.152*	.367*						3.9(1.29)
3. I seek guidance from parents or teachers to find out what I can do to prevent myself from being bullied online	-.115*	.216*	.274*					3.3(139)
4. I provide inaccurate information about my personal data on websites	-.034	.202*	.364*	.223*				3.3(1.37)
5. I do not discuss my personal information on public websites	-.137*	.386*	.373*	.289*	.366*			4.3(1.27)
6. I ask my parents or teachers what I should do if I am bullied online	-.148*	.222*	.240*	.728*	.180*	.331*		3.4(1.45)
7. I do not reply to people I do not know	-.169*	.338*	.208*	.421*	.199*	.413*	.472*	3.9(1.30)

*p<.05   SBO scale: 1=Strongly Disagree, 5=Strongly Agree: Higher mean scores indicate more safe behaviors online

Figure 3.1 Comparing a Single Item to a Multi-Item Scale for CBV
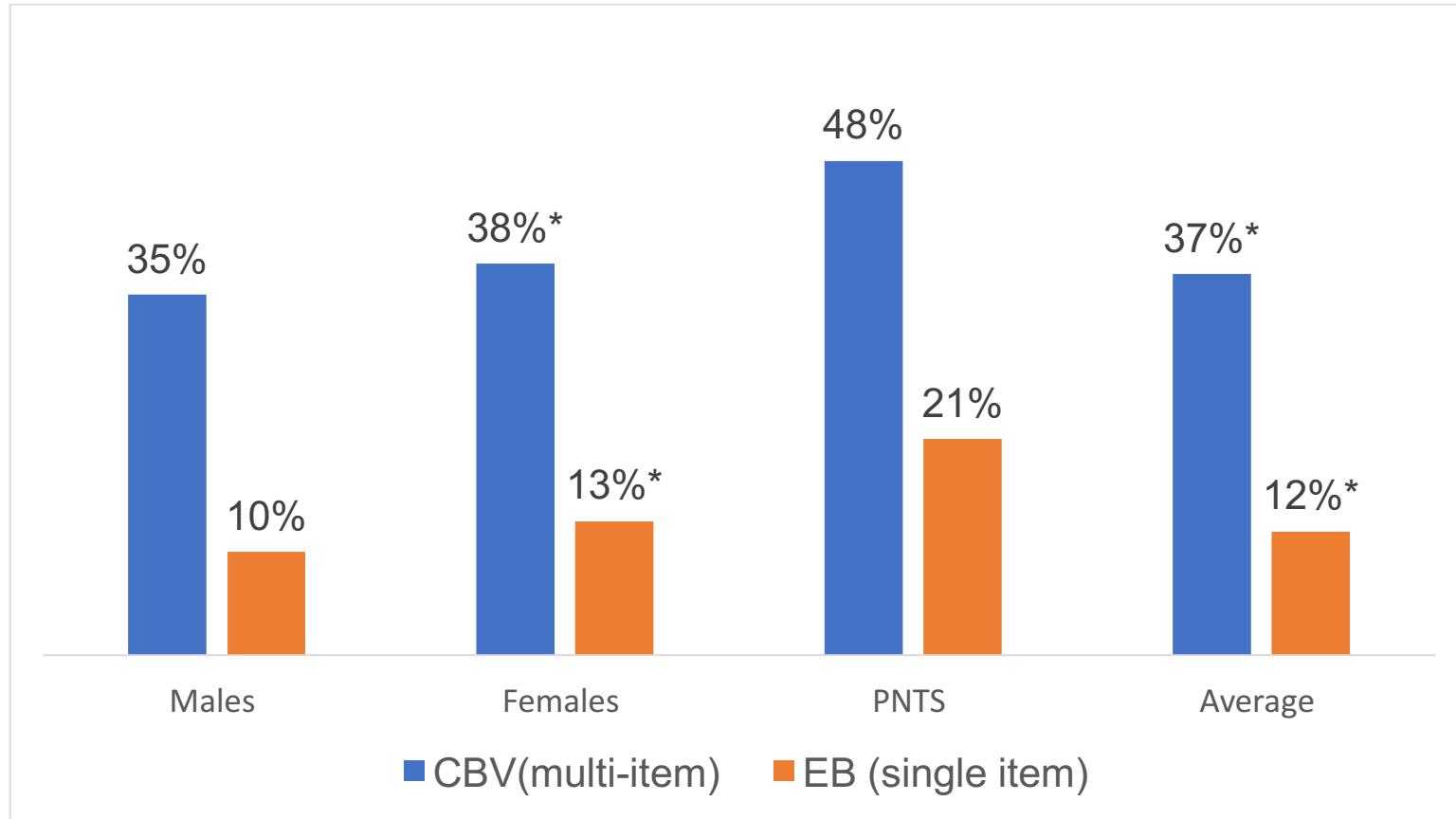
*p<.05 Both measurement strategies suggested statistically significant results for females (compared to males and PNTS). Significance was also suggested for overall prevalence comparing the multi-item scale to the single item.

Chapter 4: Study 2: *Quality over Quantity: Parent-Child Communication, Safe Behaviors Online and Cyberbully Victimization*

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Abstract

Parents and caregivers of adolescents are challenged to balance appropriate boundary setting with autonomy and respect for privacy. Young adolescents today have the opportunity to not only use technology to stay in touch with friends and form new friends online, they also use platforms to end a relationship or engage in cruel and harmful activities, referred to as cyberbullying. Research suggests that parental mediation, specifically parent-child communication might reduce the risk of cyberbully victimization (CBV). The purpose of this study of middle school students is threefold: 1) to examine the association between frequency of parent-child communication with CBV; 2) to examine the association between quality of parent child communication with CBV; and 3) to address a gap in the literature through an examination of whether safe behaviors online is the mechanism by which parent-child communication is associated with cyberbully victimization. Data were collected from a diverse sample of public-school students using an online survey administered during school hours (N=1054). Results suggest that 36% of students (38% of females and 33% of males) were repeatedly cyberbullied with prevalence highest among 8th grade students (42%). Overall 24% of participants spend more than 4 hours on the Internet each day with a positive association suggested between hours online and CBV (p<.01). Data suggest that quality (p<.001) not frequency

(p=.972) is inversely association with CBV and that safe behaviors online do not completely mediate but do explain some of the association between quality of parent-child communication and CBV. Implications for future intervention and prevention strategies are provided.

Introduction

Parents and caregivers of adolescents are challenged to balance appropriate boundary setting with autonomy and respect for privacy (Erickson et al., 2015). Today's online world presents new opportunities for children to stay in touch with friends, form new friendships. According to the Pew Research Center, more than half of adolescents (57%) are using technology to make new friends online and these adolescents might receive more than 30 text messages in one day alone. (Lenhart et al., 2015). Adolescents also use these platforms to end a relationship, 'un-friend' a peer, or engage in cruel activities such as posting embarrassing photos or videos, harassment, even threatening behaviors, often referred to as cyberbullying. Nationally, studies suggest an average of 10%-40% of adolescents are victims of cyberbullying (Hamm et al., 2015)

Cyberbully victimization (CBV) during adolescence might lead to adverse short and long-term health impacts. Numerous studies have reported that CBV is associated with both internalizing problems (e.g. depression, anxiety, anger, stress, loneliness, and low self-esteem) as well as externalizing problems (e.g. self-harm, drug use and abuse) (Bonanno & Hymel, 2013; Fahy et al., 2016; Fisher et al., 2016; Nixon, 2014). Suicide has also been linked to adolescent cyberbully victimization (Van Geel et al., 2014). Because cyberbullying often

involves an extension of in-school peer aggression, but occurs primarily outside

of school, it is often difficult for parents, teachers and school administrators to

decide how best to respond to this threat. Research suggests that parental

mediation, specifically parent-child communication, might reduce the risk for CBV

(Chang et al., 2015; Davis & Koepke, 2016; Erickson et al., 2015).

Parent-Child Communication (P-CC) as a Protective Factor

In the context of cyberbullying, parental mediation refers to activities to

protect a child from exposure to online dangers or aggression (Navarro et al.,

2013). Although 56% of parents report to monitor their child's behavior at school,

at home, and in their social lives, only 36% of parents reported monitoring their

child's online behavior toward others (M. Anderson, 2016). Studies suggest

parents recognize that taking an active role in a child's online activities might stop

or prevent repeated cyberbullying behaviors, yet parents are not in agreement

regarding the best mediation strategy (Monks et al., 2012). In general, parents

engage in either restrictive or evaluative mediation (DeHue et al., 2008; Mesch,

2009). Restrictive behaviors include limitations to online activities, regulation of

time online, parental review of a child's browser history, and insistence that an

adult be physically present when child is online (McHugh & Howard, 2017;

Monks et al., 2012). Evaluative mediation involves a more collaborative approach

including discussions of Internet use and conversations about the dangers of

some social media apps (Mesch, 2009; Navarro et al., 2013).

Although research is mixed about the effectiveness of restrictive methods

on adolescent Internet use and abuse (Chang et al., 2015; Davis & Koepke,

2016; Lee & Chae, 2007; Mesch, 2009), studies observe an inverse association between P-CC about Internet use and adverse health outcomes, e.g. loneliness (Appel et al., 2012). Although little is known about what constitutes effective P-CC about Internet use, some studies have suggested elements might include: conversations about not sharing private information online, encouragement to tell an adult when receiving harmful messages online, and warnings not to visit certain web sites or online applications (Appel et al., 2012; Davis & Koepke, 2014; Lwin et al., 2012; Mesch, 2009). Limited information exists regarding which aspects of P-CC are associated with lower CBV; namely, it is frequency or quality that matters? Van der Eijnden and colleagues (2010) asked a similar question regarding compulsive internet use. They found that although perceived higher quality of communication was associated with lower levels of compulsive Internet use, frequency of communication was not (R. J. van Den Eijnden, R. Spijkerman, A. A. Vermulst, T. J. van Rooij, & R. C. Engels, 2010).

Safe Behaviors Online (SBO)

It is plausible that P-CC leads to adolescent engagement in safe behaviors online (SBO) which then leads to less CBV. Unsafe, or risky online behaviors include: sharing personal information (Mesch, 2009), sharing passwords (Mishna, Khoury-Kassabri, Gadalla, & Daciuk, 2012), communicating with people known only online (Vandebosch & Van Cleemput, 2009) and not telling a trusted adult when harmful messages online are received (Baldry et al., 2015). Research suggests fewer than 10% of cyberbully victims tell a parent about their experience (Pettalia, Levin, & Dickinson, 2013). Although the reason

youth choose not to tell a parent has not been fully studied, one qualitative study suggests that there might be uncertainty about how the parent will react, fear of possible repercussions from the cyberbully, or the belief that the parent does not possess enough knowledge of current technology to be helpful (Navarro et al., 2013).

The purpose of this study is threefold: 1) to examine the association between frequency of parent-child communication and cyberbully victimization from the perspective of the adolescent; 2) to examine quality of parent child communication and cyberbully victimization, from the perspective of the adolescent; and 3) to address a gap in the literature through an examination of whether safe behaviors online is the mechanism by which parent-child communication is associated with cyberbully victimization.

Methods

Participants

Data were collected from a convenience sample of public middle students in a wealthy county (median household income of $100,352), within a Mid-Atlantic state (United States Census Bureau, 2016). After receiving IRB approval, an electronic invitation to participate was sent from the county office to all 39 middle school principals with investigator follow up by phone and e-mail. A total of 10 schools agreed to participate (26% of eligible schools). Several non-participating schools mentioned time limitations when declining to participate. Participation was voluntary, anonymous and included both parental consent and student assent; any adolescent enrolled in a participating school was eligible to

participate. During October through December 2017, schools collected a total of 1,276 parent consent forms. To our knowledge, only two students with consent forms chose not to assent to participate (no reason was provided). Students were informed that participation was voluntary and that participants might stop at any time with no penalty. A total of 1,054 students completed the entire survey and were included in the analysis. Students were offered pizza as an incentive to participate. The sample represents 12% of the estimated 8,506 students enrolled in the 10 participating schools and approximately 3% of the 37,371 students enrolled in all 39 county middle schools (Montgomery County Public Schools, 2015-2016). Participants were diverse with respect to grade, gender, ethnicity and race (see Table 4.1).

Instrument

Qualtrics software was used for all survey administration and data collection. Demographic survey items were modeled after the 2017 Youth Risk Behavior Surveillance Systems (YRBSS) with the few exceptions listed below (Centers for Disease Control and Prevention, 2015a). Although participants responded to a binary question about ethnicity, participants were allowed to report all races that apply and were provided an option of 'other' for race. Participants reported their grade and their gender as in YRBS, but the current study modified the response for gender to include a "prefer not to say" or PNTS option for students who do not to conform to the traditional two options: male or female.

Cyberbully Victimization (CBV)

This study builds on the work of Shapka and Maghsoudi (2017) and incorporates a multi-item, behavior specific set of items to capture specific, harmful online cyberbully behaviors experienced by victims (Shapka & Maghsoudi, 2017). This study appears to have construct validity through both convergent validity with depression and anxiety, and discriminate validity with school connectedness as well as strong internal validity with students in 6th and 7th grades (Shapka & Maghsoudi, 2017). The scale by Shapka and Maghsoudi was selected for this study as it does not focus on methods of digital communication nor does it require the adolescent to understand the elements that constitute cyberbullying (i.e. repetition, imbalance of power and intent to harm). CBV was operationalized with a 7-item measure using a 5-point Likert scale where 1=never and 5=all the time with a summative score ranging from 7 to 35; inter-item correlations for the CBV scale ranged from .414 to .595.

Parent-Child Communication (P-CC)

For this study, two distinct characteristics of P-CC were considered: frequency (FP-CC) and quality (QP-CC). The two subscales chosen for this construct were adapted from a study by Van Den Eijnden and colleagues (R. J. van Den Eijnden et al., 2010). Both FP-CC and QP-CC include 3-item scales with a high mean score indicating a high frequency or high quality of parental communication about Internet use. Items regarding FP-CC include, "How often do you and your parent talk about…1) what you are doing on the Internet; 2) the time you spend on the Internet; and 3) who you have contact with on the

Internet?" Response options: 1=Never to 5=Always (range:12; 3-15). Inter-item

correlation for the frequency scale ranged from .473 to .660. The scale for QP-

CC includes the following 3-items: " When my parent and I talk about Internet

use…1) I feel understood; 2) I feel taken seriously; and 3) I feel comfortable."

Responses include 1= Never to 5=Always (range: 12; 3-15). Inter-item correlation

for the QP-CC scale ranged from .755 to .788.

Safe Behaviors Online (SBO)

The scale for this construct was modeled after a scale developed for

adolescents ages 12-19 years by Lwin and colleagues that focused on intention

to engage in seven safe online behaviors (Lwin et al., 2012). For this study, SBO

is operationalized with a 7-item measure using a 5-point Likert scale where

1=Strongly disagree and 5=Strongly agree with a summative score ranging from

7 to 35; inter-item correlations range from .225 to .472. Examples include, "I limit

my access to personal information online" and "I ask my parents or teachers

what I should do if I am bullied online".

Grade, Gender and Hours on the Internet

Gender response options were male, female or 'prefer not to say', grade

options were 6th, 7th, and 8th. Participants reported the number of hours, on

average, spent on the Internet each day (responses include: 0=no time, 1=less

than one hour, 2=1 to 2 hours, to 6=more than 5 hours).

Statistical Analysis

Descriptive statistics were computed for all the observed variables.

Analysis of variance (ANOVA) was applied to examine differences in gender and

grade for key continuous variables. Pearson's correlation coefficients were

computed to better understand the direction and strength of the associations

between CBV and key variables. Regression analyses were computed explore

the association of QP-CC and CBV. Finally, to examine whether SBO mediated

the relationship between P-CC and CBV, traditional methods of testing mediation

were applied including Baron and Kenny's four-step approach to mediation and

Sobel's test (Baron & Kenny, 1986; Soper, 2016). According to Baron and

Kenny's, mediation occurs when the following conditions are met: (a) the

independent variable (QP-CC) significantly predicts the mediator variable (SBO);

(b) the mediator variable significantly predicts the dependent variable (CBV); (c)

when the effects of the mediator are controlled for, a previously significant

predictive association between the independent variable and the dependent

variable becomes non-significant. Sobel's z-test provides a way to determine

whether the reduction in the effect of the independent variable, after including the

mediator in the model, is a significant reduction and therefore, whether the

mediation effect is statistically significant.

Results

Descriptive statistics, demographic data and CBV items are found in

Tables 4.1, 4.2 and 4.3. CBV data were not normally distributed, and were

therefore adjusted using log transformation. All complete surveys were included

in the analyses (N=1,054). For our sample, 36% of participants were victims of

cyberbullying on a repeated basis (i.e. "a few times, 'several times' or "all the

time"). An additional 36% reported a single exposure to at least one harmful

behavior. Cyberbully victimization increased over the middle school years with victimization of over one in four 6th graders (27%), over one in three 7th graders (36%) and 42% of participating 8th graders. Study results suggest that females are at greater risk of cyberbully victimization than male students (38% females, 33% males), p=.013. Nearly half of the students who 'prefer not to say' (49%) were cyberbullied repeatedly. To better understand student Internet use, participants were asked how often they engaged in specific Internet activities and the number of hours, on average, they spend on the Internet each day. Results are available in Figures 4.1 and 4.2. Overall, 24% of students spend more than 4 hours on the Internet each day with 8th graders spending more time on the Internet than participating 6th and 7th graders. Pearson's correlation results suggest a positive association between hours on the Internet each day and CBV r = .250, (p<.01). Pearson correlation results also suggest that all Internet activities included in the survey were significantly associated with CBV (p<.001), especially visiting social media sites, r =.227 (p<.001) and uploading pictures or videos, r = .218, p<.001.

Two-way ANOVA uncovered a statistically significant interaction between gender and grade for the dependent variable: CBV score, (p = .010). A Bonferroni adjustment was used reducing the level of statistical significance to.025 out of concern for Type I error (Laerd Statistics, 2017). A statistically significant difference was found for females by grade and for 8th grade students by gender (p<.05). The mean CBV score for females in 8th grader was .086 points, 95% CI [.047, .125] higher than 6th grade females, (p <.001) and .035

points 95% CI [.001,.069] higher than 7th grade females (p<.001).

Two-way ANOVA F tests suggest no statistically significant interaction between gender and grade for QP-CC score (p = .083) and no significance interaction between grade and gender for FP-CC score (p = .69). One-way ANOVA for QP-CC for grade and gender separately also suggested no statistically significant difference (p=.083). However, FP-CC score was statistically significantly different by grade levels, (p =.01). Specifically, results suggest a decrease in score from 7th grade (M = 8.9, SD = 3.1) to 8th grade (M = 8.3, SD =3.0), a decrease of .61 which was statistically significant (p = .016). FP-CC score was also statistically significantly different by gender, (p <.001) with an increase of .69 from males (M = 8.4, SD = 2.9) to females (M = 9.1, SD = 3.1, p = .001).

Our first hypothesis, adolescents who experience frequent parent-child communication about Internet use experience less CBV was not supported by the data. Bivariate Pearson's correlation coefficient suggested a weak, non-statistically significant inverse association between summative FP-CC and CBV scores, r = -.001, p = .972. and for adolescents who report high frequency P-CC (mean scores >6), there was no statistically significant relationship with adolescents reporting repeated CBV (p =.879). An examination by grade and gender also suggests no significant associations. A small but statistically significant inverse association was discovered between FP-CC and QP-CC, r = -.080, p =.009. Further examination of grade and gender suggests that a statistically significant inverse association exists between FP-CC and QP-CC

among males (r = -.151, p=.001) and among 8th graders (r = -.121, p<.017). The association between FP-CC and SBO was also significant, r = .345, p<.001) in all grades with a positive association in 7th grade, r = .377, p<.001. Moreover, the association between FP-CC and SBO was statistically significant among all genders with females having a moderate association, r = .396, p<.001.

The second hypothesis, adolescents who experience high quality parent-child communication about Internet use experience less CBV was supported by the sample data. A bivariate Pearson's correlation coefficient suggests a small, statistically significant inverse association between summative QP-CC and CBV scores, r = -.194, p < .001 with a statistically significant inverse association between adolescents who reported high quality P-CC (mean scores >6) and adolescents who reported repeated CBV (p=.001). Pearson's partial correlation suggested the strength of the association remained constant when controlling for FP-CC. There was also a significant positive association between QP-CC and SBO, r = .184, p<.01, this association was found in both males and females with a slightly stronger association among female students r = .206, p<.01. The association between QP-CC and SBO was significant across all three grades with highest levels among 7th grade adolescents, r =.277, p<.01.

The third hypothesis, safe behaviors online explain the association between parent-child communication and less CBV was partially supported by the data. Results suggest that SBO does not completely mediate but does explain some of the association between QP-CC and CBV. A linear regression model for QP-CC and CVB was statistically significant, (p < .001); with QP-CC

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accounting for 3.8% of the variation in cyberbully victimization with adjusted R^2 = 3.7%, a small effect size. Results from the Baron & Kenny analysis indicate the inclusion of SBO into the regression model lessoned the direct effect of QP-CC on CBV but did not remove its significance. Specifically, (a) QP-CC significantly predicts SBO ($p<.001$); (b) SBO significantly predicts CBV ($p<.001$); and (c) when the effects of SBO are controlled for, a previously significant association between QP-CC and CBV remains significant but reduced, ($p<.001$). Standardized Betas are included in Figure 4.3. The Sobel test results suggest the change in the direct effect when SOB was introduced was statistically significant, ($p<.001$).

Discussion

Results of a convenience sample of public school students suggest that as middle school students age, their risk for becoming a cyberbully victim increases with 8th grade females at greatest risk for victimization. This study also suggests that 8th grade students spend more time on the Internet than their younger peers and spend less quality time talking to their parents about their Internet use. Moreover, males and 8th grade students might experience an inverse relationship between quality and frequency of parent-child discussion about Internet use – this suggests that more is not necessarily better when considering parent-child communication about Internet behaviors. Future research should consider an examination of the 'tipping point' when parent-child communication about the Internet begins to be detrimental for the quality of parent-child relationship. Results of this study suggest this tipping point might vary by grade and gender.

Additional research is also needed to better understand the characteristics that make a child feel comfortable, taken seriously and understood when it comes to the adolescent's relationship with technology and online communication.

Data from this study suggest that SBO does not fully mediate the association between QP-CC and CBV, however being safe online might play a role. Further research is needed to better understand which aspect(s) of SBO are related to QP-CC and CBV and which behaviors might have an impact on the QP-CC/CBV relationship. Future studies should also examine the critical elements in high-quality (and low-quality) P-CC from the perspective of adolescents in 6th, 7th and 8th grades. Based on the differences in grades suggested in this study, it is likely that perceived quality may differ depending upon the adolescent's grade.

There are several limitations that should be considered. First, as a cross-sectional study we cannot suggest causality or assume a temporal relationship among our variables. In addition, these data are self-reported from a convenience sample of adolescents whose parents chose to participate. Therefore, our sample may not be generalizable. Although our study considers the repetitive nature of cyberbullying, we do not consider the severity of the cyberbully behaviors nor intent to harm by the perpetrator. However, despite these limitations, there are several strengths including a relatively large and diverse sample of young adolescents. Data were collected anonymously through an online survey administered during school hours, potentially limiting the influence of parents and peers. This study expanded the work of previous

researchers by incorporating a multi-item scale for CBV and by looking at

different components of P-CC. Our results suggest that P-CC is inversely related

to CBV but also suggest that SBO may not be the only mechanism to explain

how P-CC is associated with less CBV. Perhaps most importantly, this study

suggests that our youngest adolescents are receiving harmful messages from

peers while navigating their digital environment.

Implications and Contributions

Results suggest CBV increases with grade and is most prevalent among

females and gender non-conforming adolescents. Quality (not frequent) P-CC

and SBO are associated with lower CBV but constitute a small part of the

variance. Intervention and prevention strategies should be tailored by grade and

gender.

Table 4.1 Demographic Data for Sample (N=1054)

Demographic Variables	Sample %
Gender	
Male	44
Female	53
Prefer Not to Say	3
Grade	
6th	24
7th	39
8th	37
Ethnicity	
Hispanic	22
Non-Hispanic	78
Race[1]	
White	33
Asian	13
Black/African American	14
American Indian/Alaska Native	1
Hawaiian/Pacific Islander	.2
Other	20
Multiple races	19
Avg. % of Students with Free and Reduced Meals (FARMS)	32

[1]Note: Participants were allowed to choose more than one option for race

Table 4.2 Cyberbully Victimization Scale

Q: While a student at this school, how often have you…	Mean (SD)
1. Had something mean posted or reposted about you?	1.4 (.85)
2. Received a hurtful message from someone through email, text or chat?	1.5 (.91)
3. Had an embarrassing photo or video of you posted	1.3 (.74)
4. Been purposefully excluded?	1.5 (.88)
5. Had something personal posted or reposted about you online that you didn't want others to see?	1.2 (.60)
6. Had gossip or rumors spread about you online?	1.5 (.96)
7. Received hurtful comments or messages about your race or ethnicity?	1.4 (.87)

Scale: 1=Never, 2= Once, 3=A few times, 4=Several times, 5=All the time

Table 4.3 Descriptive Statistics and Bivariate Correlations

	1	2	3	4	M(SD)	Range
1.CBV	**(.86)**				9.8 (4.3)	7-35
2.Quality of Parent-Child Communication	-.194**	**(.91)**			12.2(4.0)	3-15
3.Frequency of Parent-Child Communication	-.001	-.080**	**(.79)**		8.7(3.1)	3-15
4.Safe Behaviors Online	-.213**	.184**	.345**	**(.77)**	26.2(9.9)	7-35
5.Hours on the Internet	.250**	-.106**	-.083*	-.258**	1.9(.9)	0-5

*p<.05 **p<.01   Estimates of internal reliability are in bold and in parenthesis

Table 4.4 Multiple Regression Analysis for QP-CC and CBV

Variables	B (SE)	Standardized B	p-value
Parent-Child Communication			
Frequency of P-CC	.002(.00)	.042	.192
Quality of P-CC	-.006(.00)	-.160	<.001
Safe Behaviors Online	-.004(.00)	-.138	<.001
Hours on the Internet	.030(.00)	.184	<.001
Grade			
7th	.023(.01)	.075	.066
8th	.034(.01)	.110	.007
Gender			
Female	.025(.01)	.084	.008
Prefer not to say	.127(.03)	.121	<.001
Ethnicity			
Hispanic	-.009(.01)	-.026	.366
Race			
Asian	-.040(.02)	-.092	.007
Black/AA	-.033(.02)	-.076	.028
Other	-.013(.02)	-.005	.382
Multiple Races	-.002(.01)	-.005	.879

Note: Males, 6th graders, non-Hispanic and Whites were references

Figure 4.1 Hours on the Internet Each Day (On Average), By Grade

	Don't know	None	< 1 hr	1 to 2 hour	2 to 3 hours	3 to 4 hours	4 to 5 hours	>5 hours
8th	13%	<1%	3%	15%	21%	17%	11%	20%
7th	14%	<1%	6%	21%	22%	13%	10%	12%
6th	1%	<1%	14%	27%	18%	11%	7%	13%

6th 7th 8th
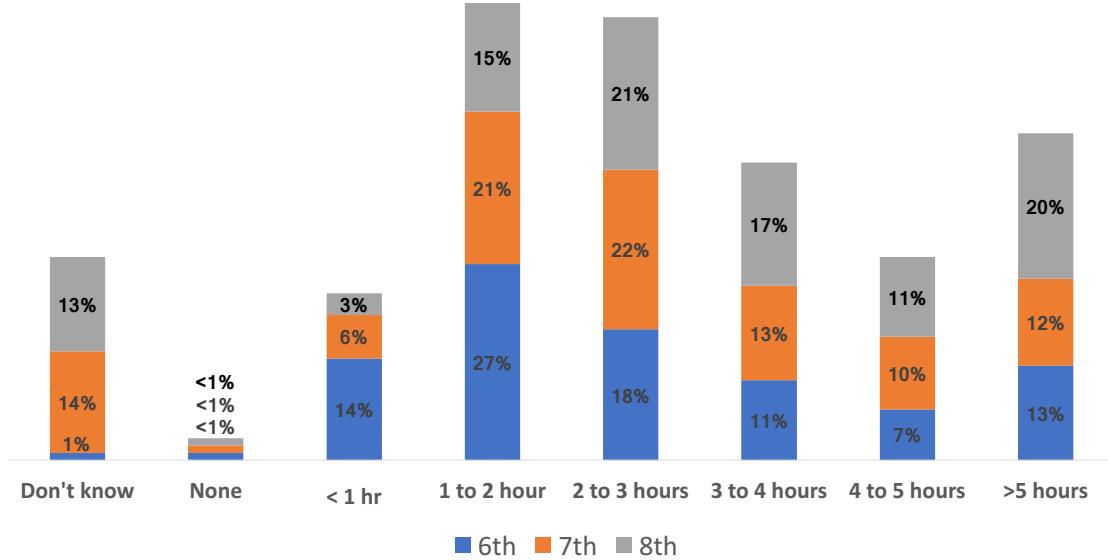
Figure 4.2 "How often, during this school year, have you..."

...Used the Internet to watch videos or look at pictures?
("Often" & "All the Time")

63% — 6th
68% — 7th
82% — 8th

...Written someone a message through email or text?
("Often" & "All the Time")

55% — 6th
60% — 7th
65% — 8th

...Used the Internet to visit social media sites?
("Often & "All the Time")

31% — 6th
44% — 7th
60% — 8th

...Used the Internet to upload pictures or videos?
("Often" & "All the Time")

11% — 6th
14% — 7th
16% — 8th
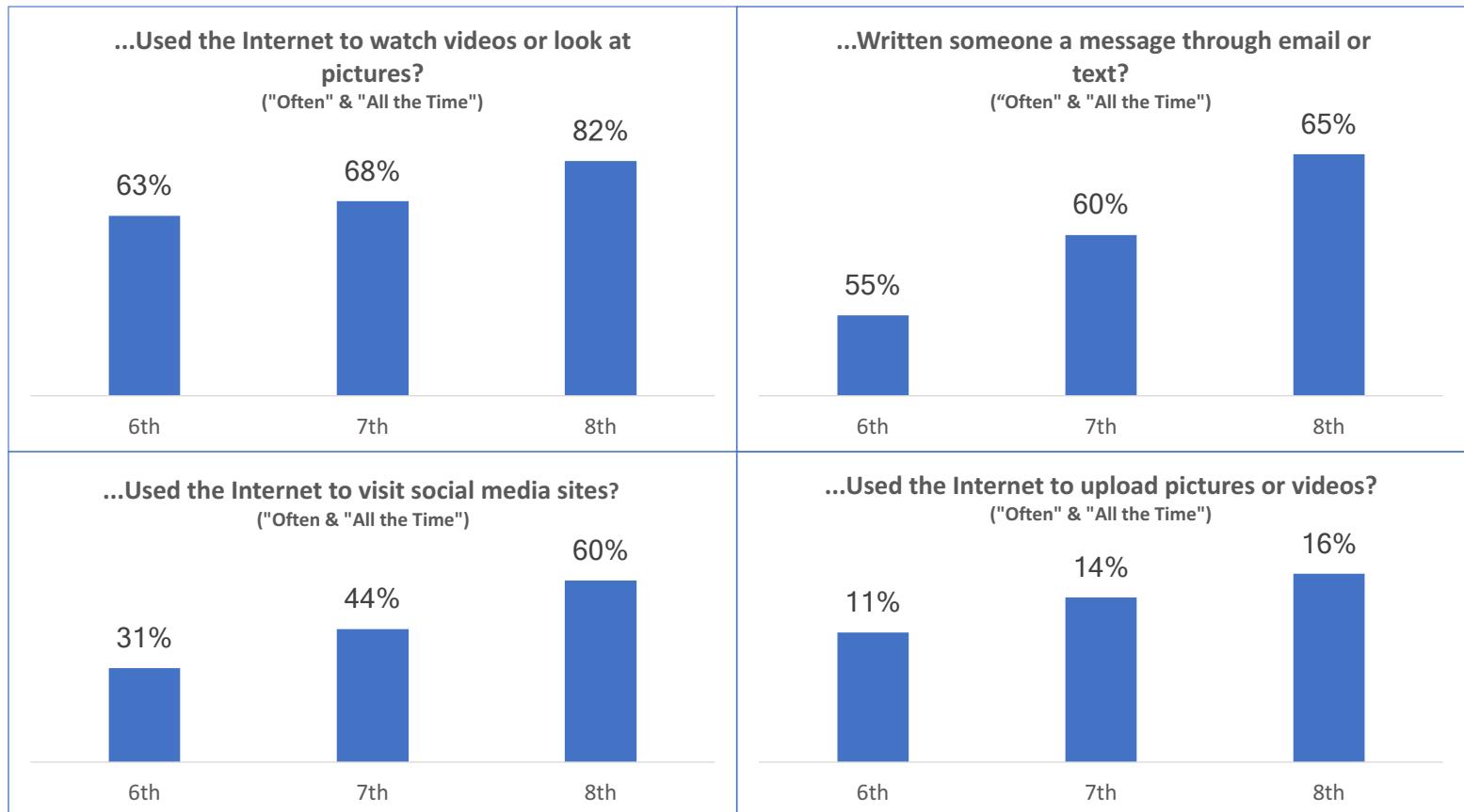
Figure 4.3 Path Diagram for QP-CC, SBO and CBV

a= .184*   Safe Behaviors Online   b= -.213*

Quality of Parent-Child Communication

Cyberbully Victimization

c'= -.194*
(c = -.160)*
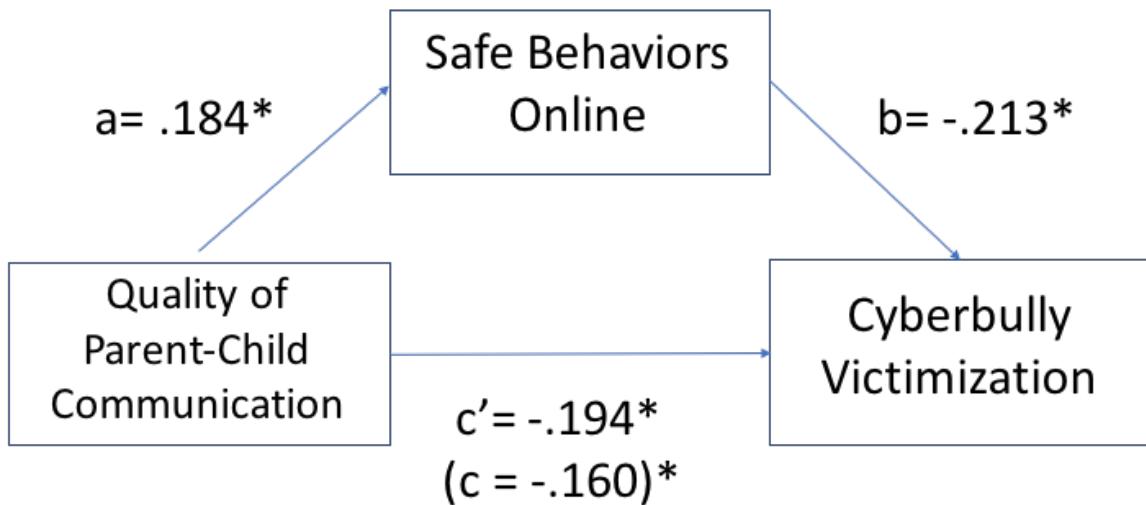
*p<.001

Path **a** = Variations in quality of parent-child communication significantly account for variations in safe behaviors online.

Path **b** = Variations in safe behaviors online significantly account for variations in cyberbully victimization scores.

Path **c**: When Paths a and b are controlled, a previously significant relation (c') between quality parent-child communication and cyberbully victimization remains significant but now includes a weakened regression coefficient.

Chapter 5: Study 3: *This is a Pretty Close-Knit School: An Examination of the Association Between Collective Efficacy and Cyberbully Victimization Among Middle School Students*

Abstract

Prevention of cyberbullying among young adolescents requires protective factors at the individual, relationship, community and societal level. An important, often overlooked, community level protective factor is collective efficacy. The present study is unique as it targets young adolescents and their perceptions of collective efficacy with cyberbullying behaviors as the criterion variable. This cross-sectional study includes data from an ethnically and racially diverse sample of public middle school students from a wealthy county through an online survey administered during school hours (N=1054). Results suggest that 36% of students were cyberbullied repeatedly with increased victimization as the adolescent gets older (27% of 6th graders, 36% of 7th graders and 42% of 8th graders), p<.01. Study data also suggest collective efficacy decreases as the student gets older with lowest levels reported in 8th grade (p=.001). For our sample, results suggest a moderate, inverse relationship between cyberbully victimization and collective efficacy, r =-.331, p<.001, with the subscale of social cohesion and trust accounting for most of this association. Results of a regression analysis suggest that although adolescent perceived collective efficacy predicts cyberbully victimization, this construct account for less than 10% in the variance in cyberbully victimization, p<.001. Future research is needed to understand the mechanism by which collective efficacy is associated with lower cyberbully victimization and why adolescents experience less collective efficacy

as they age. This study successfully builds on existing literature by introducing a school based construct to an online problem. Educators, parents and public health professionals should consider including an emphasis on building social cohesion and trust when developing strategies to address cyberbullying.

Introduction

Cyberbullying has been defined as bullying behaviors that take place online or using technology; these activities might include verbal or relational bullying or threats of physical harm (National Institute of Justice, 2016). Cyberbullying includes similar tactics as other bullying behaviors as well as unique approaches such as viral repetition and anonymity. National prevalence rates range from 10% to 40% of school aged youth, but the severity of the problem often depends upon the specificity of the definition and type of measurement used in the study(Hamm et al., 2015). The health impacts of cyberbully victimization (CBV) might include both internalizing problems (depression, anxiety and low self-esteem) and externalizing problems (substance use, and self-harm)(Fisher et al., 2016). Early adolescence (generally ages 11-14 years) is a particularly sensitive period for cognitive and social skills development and a time when youth begin to develop autonomy from parental figures, and form strong peer relationships (Sasson & Mesch, 2017). Therefore, CBV during this critical period might have particularly serious consequences.

Prevention of cyberbullying among adolescents requires protective factors at the individual, interpersonal, community and policy level (Cross et al., 2015). One important protective factor at the community level is collective efficacy

(Bandura, 2000; Goddard, 2001). The present study fills a gap in the literature by examining the association between CBV and school collective efficacy; a construct from Social Cognitive Theory that includes both social cohesion and trust among peers and teachers, as well as informal social control or the perception that peers will help the adolescent in a time of CBV. This cross-sectional study consisted of data collected from a convenience sample of 1,054 public school students in grades 6, 7 and 8.

Theoretical Rationale

All forms of bullying, including cyberbullying, take place within a framework of social relationships (Davis & Koepke, 2014; Olweus, 1994). These social relationships are determined by many factors including characteristics of the individual, the individual's peer and familial relationships and community factors; each of these factors may have their own cultural, economic and political facets. (Azeredo, Rinaldi, de Moraes, Levy, & Menezes, 2015). Although research concerning student bullying has previously focused on risk factors associated with individual characteristics, parental mediation, and peer relationships, there is growing interest in examining contextual-level risk factors related to bullying such as the existence of support and cohesion, relationships between students and teachers, peer collaboration, and the existence of rules/regulations against bullying (Azeredo et al., 2015). Despite this new focus, less attention has been paid to contextual-level factors related to cyberbullying. The current study explores the association between CBV and CE among very young adolescents.

Collective Efficacy is a construct that originates in the work of social psychologist Albert Bandura and considers "shared beliefs in the power to produce effects by collective action" (Bandura, 1982, 2000). In 1997, Sampson and colleagues applied the construct of collective efficacy to neighborhood dynamics to better understand the association between collective disadvantage, residential instability and violence (Sampson et al., 1997). In this seminal work, collective efficacy was operationalized using a combination of items representing both "social cohesion and trust" and "informal social control" or the likelihood that neighbors could be counted on to intervene when a crime is committed (Sampson et al., 1997).

The current study was modeled after four studies designed to better understand the association between collective efficacy and bullying. Two studies suggest that traditional bullying in school might be more frequent in classes with lower levels of collective efficacy (Barchia & Bussey, 2011; M. Sapouna, 2010) while a third study examined adolescent perceptions of collective efficacy with the focus on the perpetrator and bystanders in school (Williams & Guerra, 2011). These studies either did not include cyberbullying or included one, general cyberbully question. More recently, a 2017 study by Olsson and colleagues examined older adolescents and teachers to analyze the relationship between collective efficacy with traditional bullying and cyberbullying; the measure for cyberbullying was binary, requiring a "yes/no" response (Olsson, Låftman, & Modin, 2017).

The present study is unique as it targets young adolescents and their perceptions of collective efficacy with cyberbullying behaviors as the criterion variable. The multi-item scale for CBV is important as research on cyberbullying suggests that a single item requires an advanced understanding of the construct of cyberbullying and might result in an underestimation of prevalence (Gradinger et al., 2010; Shapka & Maghsoudi, 2017). The purpose of this study was to analyze the relationship between CBV and school collective efficacy. The research hypothesis for this study is that young adolescents who perceive higher levels of school collective efficacy experience less CBV than adolescents who perceive lower collective efficacy.

Methods

Participants

After receiving IRB approval and notice of support from a public-school system located within a large, wealthy, culturally diverse county in a Mid-Atlantic state, an electronic invitation to participate was sent to 39 public middle school principals. The investigator contacted each principal through telephone and personalized electronic mail. Ten middle schools agreed to participate in the study (26% of eligible schools) between October and December 2017. Non-participating schools reported the lack of time as the main reason for not taking part in the study. Any student enrolled at a participating school, with a signed parent consent and student assent form, was eligible to participate. A total of 1,054 students completed the entire survey. The sample was racially and ethnically diverse with slightly more females (53%) and more 7th graders (39%),

see Table 4.1 for demographic information.

Pilot Test

In an effort to limit systematic errors in the instrument, the online survey was pilot tested to students from a county school not participating in the study (a male and female from 6th, 7th, and 8th grades; n=6). After collecting parental consent and student assent, participants were given a link to the survey. Immediately after survey completion, participants were invited to engage in a focus group-like discussion about each question to assess readability and understanding.

Cyberbully Victimization (CBV)

This study builds on the work of Shapka and Maghsoudi (2017) by including a multi-item, behavior specific set of items to capture specific, harmful online cyberbully behaviors experienced by victims (Shapka & Maghsoudi, 2017). Original instrument results suggested construct validity through convergent validity (positive for depression and anxiety), and discriminate validity (negative for school connectedness) (Shapka & Maghsoudi, 2017). The scale created by Shapka and Maghsoudi was chosen for this study because it does not focus on methods of digital communication nor does it require the adolescent to understand the elements that constitute cyberbullying (i.e. repetition, imbalance of power and intent to harm). For the current study, CBV items were modified to include a reference to the school environment to allow for a clearer association between CBV and school CE. CBV was operationalized with a 7-item measure using a 5-point Likert scale where 1=never and 5=all the time with a summative

score ranging from 7 to 35; inter-item correlations for the CBV scale ranged from .414 to .607. To estimate internal consistency, or the extent to which all the items in the scale measure the same construct, Cronbach's alpha was estimated at .86. Exploratory factor analysis was used to examine whether all items loaded on a single component. The results suggest one factor with an eigenvalue of 3.84, accounting for 54.94% of the variance (see Figure 5.1 for Scree Plot and Table 5.2 for a list of the CBV items).

Collective Efficacy (CE)

Collective Efficacy for this study refers to a perceived sense of connectedness as well as a feeling that peers will intervene when needed (Bandura, 2000; M. Sapouna, 2010). To measure this construct, this study continues the work of other researchers by incorporating dimensional qualities to capture a single construct; social cohesion and trust (10 items); and informal social control (4 items) (Sampson et al., 1997; Maria Sapouna, 2010; Williams & Guerra, 2011). This construct included response options based on a 5-point Likert scale with 1=strongly disagree and 5=strongly agree and a summative score ranging from 14-70; inter-item correlations ranged from .183 to .709. Cronbach's alpha was estimated at .77. Results of a factor analysis, using two factors, suggested that items related to informal social control grouped together, and the remaining items clustered together as social cohesion and trust among students and teachers; these two factors together explained 54.5% of the variance (see Table 5.3). Given the multidimensional nature of this measure, regression analyses were conducted with both two factors or a single collective

efficacy measure to determine which model was a better fit.

Participants were asked for information on their gender and grade: gender response options were male, female or 'prefer not to say' (PNTS); grade was coded as 6th, 7th, and 8th. Due to the level of CBV among students who reported as PNTS, this gender category was included in the statistical analyses. Students were provided an opportunity to select all that apply when responding to the question of race and an 'other' category was provided for students who did not identify with any of the categories provided. Students were also asked how long, on average, they spend on the Internet each day with options that included no time on the Internet, < 1 hour, 1-2 hours, 2-3 hours, 3-4 hours, 4-5 hours and more than 5 hours.

Procedure

The online instrument, created for this study, contained 45 questions; constructs were clustered together in matrix form. Qualtrics software system was used to collect and store data; Qualtrics is a web-based survey tool with a range of features to facilitate data storage and analysis (Qualtrics, 2018). Any student with a signed parent consent form and student assent form was informed that participation was voluntary, confidential and participants could withdraw at any time. All surveys were administered on county-owned computers or chrome books. Participating students were offered pizza for their participation.

Data Analysis

All complete surveys were included in the analysis (N=1,054). A multi-step statistical analysis included: 1) Descriptive statistics were computed for all

observed variables; 2) Internal consistency, inter-item correlations and factor analysis were examined for collective efficacy and CBV scales; and 3) Partial correlations and regression analysis were conducted to estimate the relationship between collective efficacy and CBV while controlling for grade, gender, ethnicity and hours spent on the Internet. All statistical analyses were conducted using SPSS (v24).

Results

Although the overall measure for collective efficacy was normally distributed, a positively skewed distribution for CBV required transformation which was accomplished using logarithmic transformation in SPSS. Participants included a greater number of females than males (53% vs 44%) with 3% of respondents preferring not to provide information on their gender (PNTS). Students in all middle school grades participated with the greatest participation from 7th graders (24% from 6th, 39% from 7th, 37% from 8th grade). The sample for this study was ethnically and racially diverse with Hispanic students representing 22%, White 33%, Asian 13%, Black/African American 14%, 'other' at 20% and 19% reporting multiple races. Analysis of variance (ANOVA) and t-test results suggest that race and ethnicity were not statistically significantly associated with CBV (race, p=.106, ethnicity, p=.458). This finding is in line previous cyberbully research (Davis & Koepke, 2014).

On average, students in the sample spend from 1-3 hours online each day with nearly 1 in 3 students in 8th grader spending more than 4 hours online each day (see Figure 4.2). Results suggest that students who reported CBV "All the

time", for all or most of the cyberbully behaviors (n=6 students), spent, on average, over 5 hours each day on the Internet. The measure for CBV included seven harmful behaviors and prompted students to report how often, while in their current school, this behavior has happened to them. The definition of cyberbullying suggests that any harmful act must occur more than once to qualify as cyberbullying. Therefore, any student who reported 'A few times', 'Several times' or 'All the time' on any of the items in the scale was considered a cyberbully victim in this study. For this study, 36% of students reported CBV (27% of 6th graders, 36% of 7th graders and 42% of 8th graders with 33% of males, 38% of females and 49% of students who PNTS). The CBV behavior that occurs most often for females and PNTS students in our sample was 'receiving something hurtful from someone through e-mail, text or chatrooms'. Although males did not appear to have just one online behavior that was more common than others, PNTS participants reported higher frequency of cyberbullying in all seven online behaviors. See Table 5.3 for descriptive data for CBV.

For this study, collective efficacy refers to the student's school community. To connect this construct to online cyberbully behavior, participants who reported any frequency of CBV were asked to provide information on their relationship to the perpetrator (i.e. Someone from my school, Someone not from my school, A relative, etc.) For this study, 66% of students who reported experiencing at least one type of cyberbully behavior reported that the perpetrator was from their school, 18% reported that the harmful message was sent by either someone who does not attend their school or from a relative, and the remaining 16% of

students who reported cyberbully activity reported either did not know or preferred not to describe the perpetrator. The cyberbully behavior most often connected with someone from the student's school was 'how often have you had gossip or rumors spread about you online? For this sample, 75% of students hurt by the spread of rumors and gossip reported that the perpetrator was someone from their school, while 5% said the perpetrator was someone not in their school, less than 1% reported that it was a relative and 20% reported that they either didn't know or didn't want to say).

Two-way ANOVA suggested a statistically significant interaction between gender and grade for the dependent variable: CBV score (p = .010). Given the multiple tests for this analysis, a Bonferroni adjustment was used to avoid an inflated Type I error rate. A statistically significant difference was found for females by grade and for 8th grade students by gender. The mean CBV score for females in 8th grade was .086 points, 95% CI [.047, .125], higher than 6th grade females (p <.01), and .035 points, 95% CI [.001,.069], higher than 7th grade females (p<.01).

Results suggest that as students move through middle school, collective efficacy scores decrease and CBV scores increase. Although there was not a statistically significant interaction between gender and grade for the collective efficacy score *(p* = .191), there was a statistically significant difference between students in each grade sampled (p=.001) and a statistically significant difference between the mean scores of males and females (p=.020). The mean collective efficacy scores for PNTS were lowest all around, however, the analysis did not

indicate statistical significance.

A Pearson's product-moment correlation was conducted to examine the relationship between CBV and collective efficacy; this analysis suggested a moderate, inverse correlation, $r = -.312$, $p < .001$. When CE was divided into two components, the negative association remained for both components, however, the association between CBV and 'social cohesion and trust' was slightly higher than the association for CE as a single factor r=-.331, p<.001 (Table 5.4). When social cohesion and trust is controlled for, the association between collective efficacy and CBV was no longer statistically significant.

Linear regression was conducted to estimate the portion of the variation in CBV scores that may be accounted for by variables included in this study. First, a simple linear regression analysis suggested that collective efficacy may account for variations in CBV victimization (p<.001); collective efficacy accounted for 9.7% of the explained variability in reported victimization (with adjusted R^2 = 9.7%) – a small effect size according to Cohen (1988). Multiple linear regression analysis was conducted with collective efficacy, controlling for number of hours spent on the Internet and study categorical covariates: grade, gender and ethnicity. The result indicated a stronger fit for the model but the effect size was still small with an adjusted R^2=16.1%. When the CE measure was included into the model as two distinct components (social cohesion/trust and informal social control), the result was a slightly stronger fit with an adjusted R^2=.17.3%. In this second model, hours on the Internet and social cohesion and trust were statistically significant for cyberbully victimization, with estimated betas for social

cohesion and trust at -.296, and hours on the Internet estimated beta was .210. (both p<.001). Estimated betas for variables included in this model suggest a statistical significance for CBV with students who PNTS compared to males and for White students compared to Asian and Black/African American students (Table 5.5).

Discussion

The purpose of this study was to address a gap in existing literature by examining the theoretical construct, CE, as a possible protective factor against CBV. To do this, a convenience sample of public school students completed an online survey concerning frequency of CBV, hours they spend on the Internet, and CE operationalized as the student's perceptions of social cohesion and informal social control at school. A total of 1,054 students completed all items on the survey with 36% of participants reporting repeated victimization (27% of 6th graders, 36% of 7th grader and 42% of 8th graders). Females in our study were victims more often than males (38% vs 33%). However, of the 3% of students who reported to prefer not to say their gender (PNTS), the prevalence of victimization was suggested to be as high as 49%. This prevalence rate is in line with CBV rates reported through national studies of older LGBTQ adolescents (Cooper & Blumenfeld, 2012; Kosciw et al., 2016).

The results of this study provide support for the hypothesis that there is a statistically significant, inverse association between CE and CBV among young adolescent students. The lowest rates of CE were reported by the students with the highest CBV. Although the size of the school did not appear to be associated

with the level of CE perceived by students, 6th grade students reported to have the highest overall levels of CE. As students move through middle school, levels of CE appear to decrease. As these levels of CE decrease, the student's risk for CBV increases with highest levels of victimization in 8th grade. When considering gender, females reported a lower level of CE (mean = 45.7) than their male counterparts (mean = 47.4), those students who PNTS their gender reported the lowest levels of CE (mean = 42.8). While it is unclear why some students chose PNTS for their gender, studies suggest that by adolescents most (but not all) adolescents have chosen their perceived gender identity with from 1.5% to 5% of adolescents choosing to be gender non-conforming (Olson-Kennedy et al., 2016). Although we do not know if the students in this study who chose PNTS are gender non-conforming or just prefer not to say, this group did report low CE levels and high CBV levels suggesting that these students may be at greatest risk for victimization and related adverse health outcomes. Results of our regression analysis suggest that although CE is statistically significant in predicting CBV, CE accounted for less than 10% of the variance in CBV. When CE was considered as two subscales, the component CE most strongly associated with CBV was social cohesion and trust (p.<001).

Before considering the implications of the results of this study, a number of limitations should be noted. This cross-sectional study captures data at one point in time, not allowing for causal or temporal implications. Future studies might consider a longitudinal study examining CE and CBV over the course of a school year or over the student's three years in middle school. This study

involves only self-reported data and was based on a convenience sample of students from schools that self-selected to participate. The study design may therefore limit the generalizability of the findings. Finally, an important limitation concerns the application of the theoretical construct, collective efficacy. Collective efficacy involves the perception of the student within the school community. As most, but not all, students who were cyberbullied were bullied by someone from their school, this association between CE and CBV might not be as strong as results suggest. Future studies should consider differences in CBV when the perpetrator is someone outside the adolescent's school or when the perpetrator is a relative. Despite these limitations, this study included a sample of diverse students and successfully builds on existing literature to suggest that CE might be a significant protective factor against CBV for young adolescents.

Although most participants in our sample spend several hours on the Internet each day, not every student is a victim of repeated cyberbullying behaviors. Our study suggests, however, that some students are cyberbullied repeatedly and through many online behaviors. Of the 36% of our sample cyberbullied on more than one occasion, approximately 1% of students reported CBV "all the time" in nearly all of the cyberbullying behaviors. 'All the time" can mean the student is cyberbullied anytime and anywhere - even within the safety of the adolescents' home. This constant, relentless abuse online may place these young people at greater risk for internalizing and externalizing health problems, especially during adolescence, a critical time for mental, physical and emotional development.

This study suggests that a theory based intervention to stop or prevent CBV, might be wise to consider activities designed to increase perceptions of social cohesion and trust, especially among 7th and 8th grade students. Based on the results of this study, future research should also consider a mixed method approach to better understand why 8th grade students seem to have less social cohesion and trust than their younger peers. Of course, It is possible that lower cohesion and trust is caused by an increased prevalence of CBV, a longitudinal study would help clarify temporality.

Another important consideration might be differences in elements that build trust and cohesion by gender and by grade. As the youngest middle school students appear to be exposed to less CBV, perhaps primary prevention efforts should target 7th graders with a focus on raising levels of CE and encouraging use of the Internet in a responsible and respectful way. Given that some 7th and 8th grade students are victims of repeated cyberbullying, interventions should also consider efforts to protect student from further harm perhaps by educating parents, educators and trusted adults (such as coaches) about evidence-based interventions to effectively stop cyberbullying. This study suggests that although more research is needed to understand the mechanism by which CE is inversely associated with CBV, public health advocates, educators, and parents should engage in efforts to build trust and social cohesion among middle school students and their teachers as an important first step in reducing CBV.

Figure 5.1 (Supplemental) Scree Plot for CBV Scale

Cyberbully Victimization Scale (CBV)
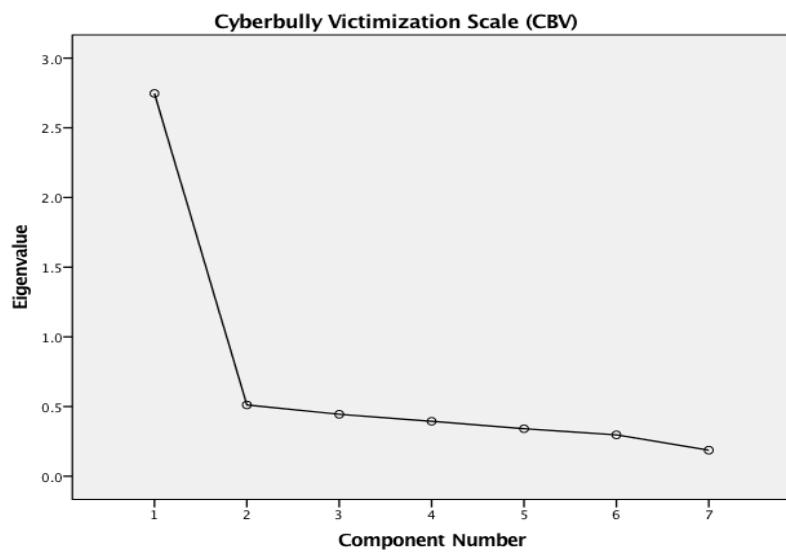
Figure 5.2: CBV Mean Scores by Grade and by Gender Category

Cyberbully Victimization by Grade
Mean (SD)

10.6*
(4.84)

9.8
(4.19)

9
(3.4)

6th   7th   8th

Cyberbully Victimization by Gender
Mean (SD)

13.5
(9.02)

10.1*
(4.45)

9.3
(3.39)

Male   Female   PNTS
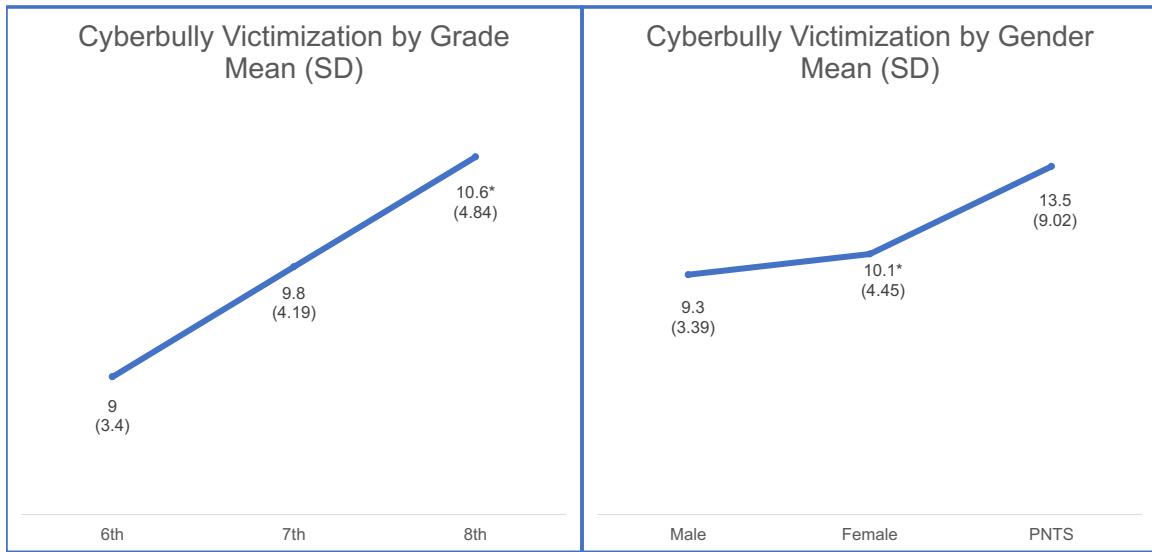
* p<.05 1=never, 2=once, 5= all the time. Higher scores indicate higher frequency of CBV with 7-item scale (range 7-35)

Table 5.2. CBV: Mean and Standard Deviation by Grade and by Gender (N=1054)

While a student at this school, how often have you…	6th Mean (SD)			7th Mean(SD)			8th Mean (SD)		
	Male	Female	PNTS	Male	Female	PNTS	Male	Female	PNTS
1. Had something mean posted or reposted about you?	1.3(.79)	1.3(.67)	1.4(.89)	1.3(.68)	1.4(.86)	**2.6(1.7)**	1.4(.75)	1.6(.93)	2.2(1.6)
2. Received a hurtful message from someone through email, text or chat?	1.4(.82)	1.4(.80)	1.0(00)	1.4(.71)	1.6(.93)	2.0(1.5)	**1.5(.89)**	**1.8(.99)**	2.3 (1.6)
3. Had an embarrassing photo or video of you posted	1.2(.66)	1.2(.56)	1.0(00)	1.2(.53)	1.4(.76)	1.6(1.3)	1.3(.63)	1.6(.91)	1.8(1.4)
4. Been purposefully excluded?	1.4(.80)	1.3(.72)	1.2(.45)	1.4(.76)	1.5(.94)	2.0(1.6)	1.4(.78)	1.6(.97)	2.2(1.6)
5.Had something personal posted about you online that you didn't want others to see?	1.2(.54)	1.1(.43)	1.0(00)	1.2(.52)	1.2(.57)	1.9(1.7)	1.2(.51)	1.3(.64)	1.9(1.5)
6. Had gossip or rumors spread about you online?	1.3(.73)	1.3(.77)	1.2(.45)	1.4(.86)	1.6(1.0)	1.8(1.5)	1.4(.80)	**1.8(1.1)**	2.0(1.7)
7. Received hurtful messages about your race or ethnicity?	1.3(.80)	1.1(.80)	1.8(1.10)	1.4(.83)	1.4(.81)	1.5(1.3)	**1.5(.93)**	1.5(.90)	1.9(1.5)

Bold indicates highest mean scores for gender category (CBV response options include: 1=never, 2=once, 5=all the time)

Table 5.3. Exploratory Factor Analysis with Varimax Rotation (N=1054)

Collective Efficacy (14 items)	Factor 1 Loading	Factor 2 Loading
<u>Informal Social Control</u>		
Students in my school would help out if a student was…		
being made fun of or was being teased online		.845
spreading rumors or telling lies about another student online		.870
purposefully excluding another student online		.841
posting embarrassing or mean photo or video of another student online		.834
<u>Social Cohesion and Trust</u>		
Students in my school can be trusted	.654	
Students in my class can be trusted	.669	
Students in my school generally get along with each other	.693	
Students in my class generally get along with each other	.684	
Students in my school generally feel the same way about things	.629	
Students in my class generally feel the same way about things	.639	
Teachers in my school can be trusted	.658	
Teachers in my school generally get along with students	.649	
Teachers in my school generally feel the same way about things	.639	
This is a pretty close-knit school	.674	
Eigenvalue	5.519	2.113
Proportion of Variance Explained	31.85%	31.85%
Percent Cumulative Proportion of Variance Explained	22.66%	54.52%

Table 5.4 Bivariate and Partial Correlations for CBV and Key Variables (N=1054)

Variables	CE	Informal Social Control	Social Cohesion Trust	Hours on the Internet
Cyberbully Victimization Scale	-.312*	-.157*	-.331*	.250*
Controlling for…				
Collective Efficacy Scale		.118*	-118*	.217*
Informal Social Control	-.296*		-.296*	-.065
Social Cohesion & Trust	-.025	-.025	-	.209*
Hours on the Internet	-.311*	-.161	-.167*	-

*p<.05

Table 5.5 Multiple Regression of CBV by Study Variables (N=1054)

	B (SE)	Standardized Beta	p-value
Collective Efficacy			
Informal Social Control	-.001(.00)	-.028	.439
Social Cohesion & Trust	-.007(.00)	-.296	<.001
Hours on the Internet	.035(.00)	.210	<.001
Grade			
7th	.015(.01)	.050	.195
8th	.017(.01)	.056	.114
Gender			
Female	.017(.01)	.056	.134
Prefer not to say	.103(.03)	.099	.002
Ethnicity			
Hispanic	.010(.01)	.031	.370
Race			
Asian	**-**.041(.02)	-.092	.006
Black/AA	-.034(.01)	-.034	.018
Other	-.008(.01)	-.020	.603
Multiple Races	-.010(.01)	-.025	.470

Note: Males, 6th graders, non-Hispanic and Whites were references.

Chapter Six: *The Collective Statistical Model*

6.1 Introduction

This study considered the associations among study variables as well as the predictive value of these key variables on cyberbully victimization (linear regression). Because it is possible that when considered together, within the study's statistical model, variables might have a collective (additive, multiplicative or even diminutive) effect on the ability to predict variations in cyberbully victimization, a second statistical model was compared to the original, independent, model to see which model was a better fit for the data collected from middle school students. Consideration of this collective model allowed the study to examine the proportion of the variation in CBV explained by multiple variables in the study. Figure 6.1 shows the key variables in the collective model.

Figure 6.1 Collective Model: Examining Collective Associations
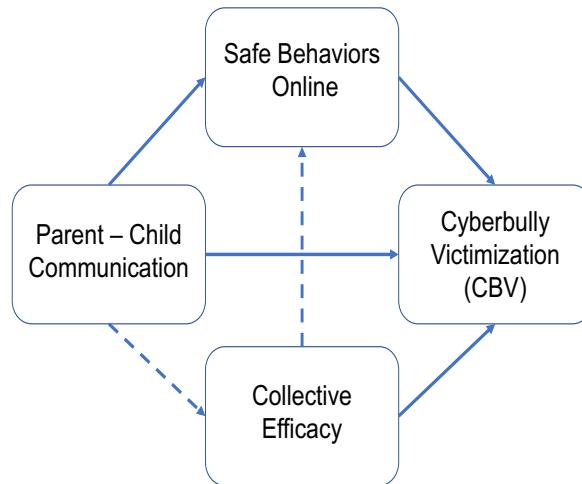
Note: Dashed lines represent associations not directly tested in the independent model but included in the collective model

Table 6.1 Associations: Bivariate and Partial Pearson's Correlations

Correlations	CE – Trust	CE - Control	QP-CC	FP-CC	SBO
CBV	-.331***	-.157***	-.194***	-.001	-.213***
Controlled for					
Cohesion/trust (CE)		-.034	-.135***	.043	-.106**
Social Control (CE)	-.294***		-.180***	.023	-.178***
Quality P-CC	-.300***	-.140***		-.017	-.184***
Frequency P-CC	-.331***	-.158***	-.194***		-.226***
Safe Behaviors Online	-.278***	-.104**	-.161***	.079*	

*p<.05, **p=.05, ***p<.001

This table includes bivariate and partial Pearson's correlations for each of the individual key variables and the study's cyberbully victimization scale (CBV). All variables were inversely related to CBV except frequency of parent-child communication.

6.2 The Independent Model

Table 6.2 Predictive Value of Key Variables on CBV (N=1054)

Key Variables	Standardized Beta	p-value
CE – Informal Social Control	-.157	<.001
CE – Cohesion/Trust	-.328	<.001
Quality Parent- Child Communication	-.194	<.001
Frequency Parent - Child Communication	-.001	.972
Safe Behaviors Online	-.213	<.001

The regression model for CE – Informal Social Control statistically significantly predicted CBV, F (1, 1052) = 26.510, p < .001
Adj. R^2 = .024

The regression model for CE – Cohesion and Trust statistically significantly predicted CBV, F (1, 1052) = 127.148, p < .001
Adj. R^2 = .107

The regression model for QP-CC statistically significantly predicted CBV, F (1, 1052) = 40.99, p < .001
Adj. R^2 = .037

The regression model for FP-CC did not significantly predicted CBV, F (1, 1052) = .001, p =.972
Adj. R^2 = .001

The regression model for Safe Behaviors Online statistically significantly predicted CBV, F (1, 1052) = 49.83, p < .001
Adj. R^2 = .044

6.3 The Collective Model

Table 6.3 An Examination of the Collective Model (N=1054)

Variable	Beta	p-value
Parent-Child Communication		
Frequency of P-CC	.054	.095
Quality of P-CC	-.117	<.001
Collective Efficacy		
Informal Social Control	-.016	.627
Trust and Cohesion	-.257	<.001
Safe Behaviors Online	-.057	.113
Hours on the Internet	.191	<.001
Grade		
7th	.050	.190
8th	.067	.093
Gender		
Females	.040	.200
Prefer not to say	.105	.001
Ethnicity		
Hispanic	-.058	.128
Race		
Black/AA	-.079	.019
Asian	-.086	.009
Multi-race	-.015	.671
Other	-.007	.866

Note: References: Males, 6th grader, White participants and non-Hispanic

Results:

This study examined the association between several possible risk factors

that might be associated with cyberbully victimization of young adolescents. The

key factors included are: safe behaviors online (Individual factor), parent-child

communication both frequency and quality (relationship factor) and school

collective efficacy, both social cohesion/trust and informal social control

(community factor). Each variable (except frequency of parent-child

communication) exhibited a statistically significant inverse association with CBV

for our sample with adjusted R^2 ranging from R^2 = .024 for informal social control

(CE) to R^2 =.107 for social cohesion and trust (CE), Table 6.2.

When examining the collective model, the primary question was how well

all of the key variables together predict CBV among our sample, and how much

of the variation in CBV is explained by all the key independent variables together.

A multiple regression analysis was conducted to predict CBV from parent-child

communication (2 subscales), collective efficacy (2 subscales), safe online

behaviors along with other study variables. The collective model statistically

significantly predicted CBV, F (15,885) = 15.595 p<.001, The addition of all of

key variables into a regression model explained 20.9% of the variability of CBV

scores with adjusted R^2 = .196.

The result of the multiple regression analysis conducted on sample data

yielded a result that was approximately the same as if each of these variables

had been added together. For our sample, we learned in Study 2 (Chapter 4) that

quality of parent-child communication is partially mediated by safe online

behaviors for our sample. It is possible that there are additional, unknown

relationships between our constructs as they are operationalized in this study.

Regardless, our collective model does not explain approximately 80% of the

variation in cyberbully victimization. It is clear that cyberbullying is a complex

issue with many factors at play.

Chapter 7: *Summary*

7.1 Key Findings

Variables at each level of the social ecological model were inversely related to

cyberbully victimization scores, except frequency of parent-child communication

Table 7.1 Key Findings by Factor

Overall
- 37% of participants were cyberbullied (repeatedly rather than one time)
- Females in 8th grade were cyberbullied most often*
- 3% of students were victims of all 7 cyberbullying behaviors
- Individual model suggests variables count for from R^2 from 2.4% to 10.7% of the variation in CBV.
- The collective model explained 21% of the variability in CBV scores*

Individual Factors
Gender
- Females were victims of CBV (38%) more often than males (35%)*
- Adolescents who prefer not to say gender (PNTS) reported highest CBV mean scores and highest prevalence (42%) – not significant
- PNTS reported higher CBV range (7-35) than both males (7-28) and females (7-30), not significant, likely due to small sample size
- 1% of participants were cyberbullied all the time (CBV score >28), these adolescents were 57% PNTS, 29% female and 14% male

Grade
- CBV frequency increased in middle school, highest in 8th (42%), moderate in (36%) in 7th and lowest levels in 6th grade (27%)*

Ethnicity
- CBV scores were not statistically significant by ethnicity (p=.458)
- Adolescents cyberbullied often (CBV scores >21) were 17% Hispanic

Race
- CBV scores were not statistically significant by race (p=.106)
- Adolescents cyberbullied often (CBV scores >21) were 74% White
- 1% of those cyberbullied 'all the time' (CBV scores >28) were 86% multiple races and 14% White

Safe Behaviors Online(SBO)
- All SBO were significantly inversely related to CBV except "I provide inaccurate information about my personal data on public websites" *
- SBO partially mediated the association between QP-CC and CBV*

Hours on the Internet
- A small positive association between hours online and CBV*
- The association was highest among females and 6th graders*
- Adolescents spend about 1-3 hours each day on the Internet.
- 31% of 8th grade students spend more than 4 hours on the Internet

Relationship Factors

Frequency of Parent-Child Communication (FP-CC_
- Sample data did not suggest an association with CBV
- An inverse association was suggested with QP-CC*
- Results suggest a decrease in scores from 7th to 8th grade*
- Results suggest an increase in scores from males to females*
- A moderate association was suggested with SBO*

Quality of Parent-Child Communication (QP-CC)
- A small inverse association was suggested between QP-CC and CBV*
- The association was partially mediated by SBO but remained significant*
- Grade and gender differences were not significantly different
- A small association suggested with SBO - highest associations found with females*

Community Factors

Collective Efficacy (CE)
- A moderate, inverse association was suggested with CBV *
- Subscale social cohesion/trust accounted for 10.7% of variation in CBV*
- Informal social control accounted for 2.5% of the variation in CBV*
- Scores for collective efficacy decrease with age with highest scores in 6th grade and lowest levels in 8th grade*
- PNTS students had the lowest levels of CE, data were not significant
- CE levels were statistically lower for males than for females*

Electronic Bullying (EB) Single Item
- Prevalence suggested at 12% of participants
- EB by gender included: 10% of males, 13% females, 21% PNTS*
- EB by grade not statistically significant
- Single item results were significantly different than the multi-item scale*

7.2 Sample Characteristics

During the months of October, November and December 2017, ten schools and 1249 students completed an online survey 37% of participants reporting cyberbully victimization. The size of the schools ranged from small (about 400) to large (over 1100) with most schools including about 800 students. Schools ranged from 5% White to 62% White with gender fairly equal in all schools. Non-participating schools stated that they were too busy to administer the survey during the allotted timeframe. ANOVA analyses were conducted for all ten schools with no statistical significance found for any key study variable. While it is not known why some schools chose to participate while others did not out, it is possible that this convenience sample included schools with administrators most interested in the topic of cyberbullying and Internet use. While many students seemed willing to answer technology related questions (particularly given the pizza incentive), it is unclear why some parents submitted consent forms while others did not. It is possible that families with experience with cyberbullying were more likely to agree to participate.

Further examination of school cyberbully victimization scores suggest that the school with the highest mean cyberbully score and lowest collective efficacy score was not the largest or the smallest school, nor was this school the most ethnically or racially diverse in the current study. Although not conclusive, this suggests that size of the school might not be a key factor in collective efficacy or cyberbully victimization scores. Demographic data for all 10 participating schools are found in Appendix VI.

The sample for this study was diverse with no statistical significance found for cyberbully victimization among ethnic or racial minority populations. However, when included in the multiple regression analysis, White participants were cyberbully victims more often than both Asian and Black/AA participants ($p<.05$). This is consistent with the findings from the National Academy of Science and Medicine report on bullying that suggests that the greater the diversity within a community, the less likely bullying will occur based on race or ethnicity, this might be due to a lack of a power imbalance. (National Academies of Sciences & Medicine, 2016).

Although the sample was diverse in race and ethnicity, it is difficult to confirm the percentages for each race. During the administration of the survey in schools, participants asked the investigator for clarification of whether a student of Indian descent should self-report as Asian or as 'other'. Another participant of Middle Eastern descent was also confused about how to respond to the question of race. Although the study of the intersection between race and cyberbullying is an important issue, care should be taken to first understand how young adolescents perceive the constructs of race and ethnicity.

7.3 Frequency and Quality of Parent-Child Communication

Among this sample of young adolescents, frequency of parent-child communication about Internet use was not found to be statistically signficantly inversely associated with CBV. Quality of parent-child communication was, however, statistically significantly inversely related but the assocation was small. Without conducting a qualititative study with participating adolescents, it is

difficult to say with confidence why the construct of parent-child communication was not suggested to have a stronger protective role in cyberbully victimization or why frequency (as it was operationalized) was not significant. This might be an important topic for future study. It is possible that middle school students have been warned too often about the dangers of Internet use and misuse by parents, teachers and society at large. These constant warnings might damage parent-child and teacher-child relationships and discourage adolescents from asking for help when receiving harmful online messages or navigating their online environment.

The current study suggests many areas for additional research. Specifically, future research should consider: 1) an examination of the frequency of overall parent-child communication among young adolescents (with grade and gender as possible confounders); 2) an examination of the impact of timing or when the parent-child communication occurs; and 3) consideration of the level of parent-child bonding that is present when communication occurs (i.e. family support and closeness as a confounder).

7.4 Safe Behaviors Online

The current study examined safe behaviors online as a mediator or mechanism by which parent-child communication is associated with less cyberbully victimization. Although results suggest that these behaviors only partially mediate the association, more research is needed to better understand this association. Data suggest 8th graders engage in less safe behaviors (see Table 7.4) and that safe behaviors online decline as the adolescent moves

through middle school. Data also suggest that 8th graders score lowest when

examining behaviors that involve talking to a parent or adult about cyberbullying.

More research is needed to better understand these results and to test if efforts

to increase these scores might lead to less cyberbully victimization.

Table 7.4 Descriptive Data for Safe Behaviors Online (N=1249)

Variables	6th	7th	8th	p-value
Safe Behaviors Online (7-item scale)				
1: I limit access to personal information online	4.2(1.21)	4.1(1.21)	4.1(1.23)	.418
2. I use nicknames on the Internet to avoid using my real identity	4.0(1.23)	4.0(1.27)	**3.6(1.34)**	<.001
3. I seek guidance from parents or teachers to find out what I can do to prevent myself from being bullied online	3.6(1.34)	3.4(1.37)	**3.0(1.37)**	<.001
4. I provide inaccurate information about my personal data on websites	3.3(1.40)	3.3(1.39)	3.3(1.32)	.679
5. I do not discuss my personal information on public websites	4.4(1.10)	4.3(1.21)	**4.2(1.19)**	.046
6. I ask my parents or teachers what I should do if I am bullied online	3.8(1.34)	**3.4(1.37)**	**3.0(1.42)**	<.001
7. I do not reply to people I do not know	4.2(1.21)	4.0(1.34)	**3.7(1.30)**	<.001

1= Strongly disagree, 5=Strongly agree. Higher scores indicate safer behaviors.
Numbers in bold indicate statistical significance.

7.5 Future Implications

Results of this study suggest that a systematic, comprehensive approach to cyberbullying is needed. There is likely not one protective factor that will guard a young adolescent from becoming a victim of cyberbullying. It can be argued that even removing access to the Internet might not protect a young adolescent. Based on results of this study data, increased hours on the Internet was positively related to cyberbully victimization. However, in the adolescent's world, access to the Internet and communication technology is the mechanism by which adolescents connect to their peers, form and sustain relationships. As peer relationships are critical during this time of adolescent social and emotional development, removing access to technology will not necessarily stop peer aggression but might limit the protective factor social cohesion and trust.

The third layer of this study involved factors at the community or school level. The variable, collective efficacy, and especially the subscale social cohesion and trust, suggested a small but statistically significant inverse association was cyberbully victimization. An examination of each item of this 10-item subscale for social cohesion and trust suggests that the item with the highest inverse association with cyberbully victimization was, "Students in my school get along with each other" ($r = -.255$, $p<.001$) followed by "Students in my school can be trusted" ($r =-.252$, $p<.001$). Perhaps it is not surprising that the mean frequency scores for these items decrease with grade in middle school and are the lowest for female students and students who identify as PNTS. The lowest mean scores for both of these items also correspond with the school in

this study with the highest mean score for cyberbully victimization. Despite these findings, future research is needed to better understand the components of social cohesion and trust that might be associated with less victimization.

Results of this study suggest that quantitative studies including young adolescents would benefit from a mixed method approach. Although this study included variables that were based on an initial set of in-depth interviews with parents within Montgomery County, follow up qualitative research would add to the meaning of the results obtained through this online survey. Specifically, focus groups or in-depth interviews with parents, teachers and students would assist in understanding the 'why' behind these data.

Finally, based on the results of this study, additional research is suggested in the area of bias-based cyberbullying among young adolescents. For example, if sample PNTS students are those that fall into the LGBTQ community, further examination is needed to inform interventions to stop the harm to this vulnerable population. Additional research is also needed to consider: 1) whether students who only experience cyberbully behaviors "once" are engaging in successful behaviors to stop the harm; 2) what types of resilience related behaviors are successful in keeping cyberbullying from leading to adverse health outcomes; 3) the role of social norms within some schools that might be associated with higher cyberbully victimization levels; and 4) the role of bystanders in preventing repetition and in stopping the isolation felt by victims that is often associated with traditional and cyberbullying.

7.6 Lessons Learned

Choose an Appropriate Measurement Strategy. This study used a

behavior-based frequency scale to capture cyberbully victimization (CBV).

However, if this study had chosen to follow the measurement strategy developed

for use in the middle school YRBS, not only would this study have reported

overall cyberbully victimization of 12% (YRBS uses a single item for electronic

bullying), but young adolescents who are gender non-conforming might be been

discarded or reported as missing data. Moreover, if this study had used a single

item for CBV, results of this study would not include the methods used most often

to cyberbully. For example, young female adolescents were cyberbullied most

often through receipt of hurtful messages from someone in their school through

email, chat or text and through the spread of gossip or rumors spread about them

online. This information has important implications for intervention and prevention

programs.

Consider Young Adolescent Perspective on Race and Ethnicity. For

this study, young adolescents were offered an opportunity to select all options for

race that apply with an additional option to select 'other' for their race. During the

administration of the survey, a number of young adolescents asked the

investigator how to respond to the question of race if they were Hispanic. In

addition, some participants of Indian descent did not feel comfortable self-

reporting as Asian so they informed the investigator that they would report as

'other'. Despite these questions, no participants left this item on the survey

missing. However, the investigator was concerned that race self-selection by

young adolescents might not correspond to race selection by parents when registering their child to attend public school (for comparative county demographics). In addition, when considering the construct of race, research should also consider the developmental level of the participating adolescents.

In addition, although a small percentage of participants missed the question of whether they were Hispanic (0.6%), it might be important to note that 95 students (7% of total participants) responded to this question that they would prefer not to say their ethnicity. These young adolescents missed additional items on the survey, these data are included in Study 1 (N=1249) only. It is difficult to say with any certainty why these students did not wish to provide their ethnicity; additional research is needed to better understand young adolescent perceptions of race and ethnicity.

When analyzing the data, approximately 14% of participants reported to be cyberbullied through hurtful comments about their race or ethnicity (19% were Black/African American, 18% were multiple races, 17% were American Indian or Alaska Native, 16% were 'other', 15% were Asian participants and 8% were White participants). The current study did not find statistically significant differences in cyberbully victimization among different racial or ethnic groups. This finding is similar to results suggested in previous research on race and cyberbullying among adolescents (Davis & Koepke, 2014) and is consistant with the National Academies of Science report that suggests that the greater the diversity in a community, the less likely to experience bullying by race (National Academies of Sciences & Medicine, 2016).

Consider the developmental stage of participants. Early adolescence (i.e. ages 10-14 years) is characterized as a period of significant cognitive growth and the development of new and 'higher order thinking skills' (Fitton, Ahmedani, Harold, & Shifflet, 2013). During this time, young adolescents are intensely self-focused, often irritable and rude with family and parents with high intensity emotion (Geldard, Geldard, & Foo, 2017). Technology is with them constantly, used for social interaction, communication and often the tool for the development of intimacy (Fitton et al., 2013). Some research suggests that computer use has a positive social effect on young adolescents with school use of computers increasing group interaction and cooperation and increases in communication (Fitton et al., 2013). Given this growth in school computer use, the association between collective efficacy and cyberbullying examined in this study is appropriate. In addition, given the pull away from parents during this time of intense individual development, parent-child communcation is also an important aspect of this study with implications for future interventions. Current research suggests that use of technology might increase memory, analytical thinking, multitasking and social competence (Mills, 2016). More research is needed involving these young adolescents and their technology use.

Conduct a Pilot Study. The current study included a pilot test of the instrument with young adolescents from a non-participating school in the county. Although this process required additional time and logistical work, the data collected were well worth the extra effort. The pilot test allowed the investigator to speak with a few young adolescents about the wording of the survey items as

well as the definition of terms. Future research should consider focus group discussions organized by grade, however, as study results suggest significant differences in CBV and protective factors at the individual, relationship and community levels. In addition, think aloud strategies should also be considered as young adolescents admitted during the pilot study that they forgot the details of the items after completing the survey. Although copies of the survey were provided in paper, students comments suggested the possibility of recall bias.

Consider a Theoretical Approach. "Theories are formulated to explain, predict, and understand phenomena and, in many cases, to challenge and extend existing knowledge within the limits of critical bounding assumptions" (Swanson & Chermack, 2013). The current study examined cyberbully victimization from a social ecological perspective, thereby using theory to help explain and understand cyberbully victimization. The social ecological model was chosen as it recognizes the complex and dynamic nature of cyberbullying with potential protective factors suggested at the individual, the family and the community levels. The social ecological model takes into account the interconnections in the adolescent's world. This study also considered a theoretical construct that had not yet been applied to cyberbully behaviors among young adolescents, collective efficacy. It was this construct, and specifically social cohesion and trust, that suggested the greatest (although small) inverse association with cyberbully victimization. Including theory in this study helped to guide the research and to organize ideas related to this important public healh challenge.

7.6 Strengths and Limitations

There are several limitations to be considered in this study. These limitations may be found in both threats to internal validity (those that may compromise confidence in the relationship between the predictor variables and the criterion variable, cyberbully victimization) and threats to external validity (those factors that may compromise confidence in whether the study may be applicable to other groups and communities). First, this study collected data at only one point in time. The cross-sectional nature of this study prevents causal and temporal conclusions. Cross-sectional designs are well suited for descriptive studies answering questions such as the first research question in this study, "What are the characteristics of cyberbully victimization among young adolescents in Montgomery County, Maryland." However, cross-sectional designs are less effective in helping to develop explanations of behavior (De Vaus & de Vaus, 2001). A longitudinal study, perhaps collecting data from students starting at the end of elementary school (5th grade) through graduation from middle school (8th grade) would allow greater understanding of the association among study variables. It is possible that reverse causality is present whereby cyberbully victimization occurred leading, for example, to increases in parent-child communication about Internet use.

Montgomery County, Maryland is a relatively affluent, well educated county in a wealthy state. Research suggests that the location and the method for collecting data for this study may limit the generalizability of the findings from this study to less affluent communities and schools without easy access to

computers and the Internet (Baldry et al., 2015). The Montgomery County Public School system also required participating students to have both written parental consent as well as written student assent. Although this requirement protects young, vulnerable adolescents, these actions might have led to participation by a convenience sample of students with parents and school communities that believe cyberbullying to be an importance issue or were not otherwise distracted with other competing priorities for their time and attention. Parents might have agreed to participate because the were aware of past cyberbully or traditional bully victimization. Alternatively, parents whose children have learning disabilities or behavioral problems might have opted out of participation. Unfortunately, for this study, data was not available regarding parents and students who chose not to send in the parental consent forms. All of these study characteristics, might limit the generalizability of this study to other communities.

A strength of this study includes the examination of collective efficacy, a variable included in social cognitive theory. Results suggest that most (but not all) cyberbully perpetrators were students in the victim's school. Items in the survey designed to examine school collective efficacy assume that the perpetrator of the cyberbullying is from the adolescent's school. Responses from students who were victimized by a relative, someone outside their school or an unknown person, might have an impact on the association between collective efficacy and cyberbully victimization. Future studies should consider an examination of differences in health consequences for adolescents victimized by individuals at different layers of the social ecological model. For example, an

examination of victimization from a relative versus someone from school compared to someone the adolescent has never met.

The instrument used in this study was designed to be brief, increasing the chance that a school would be willing to administer the survey during class time. However, in doing so, many variables were not considered in the examination of cyberbully victimization. A few important individual, relationship and community variables omitted include: previous victimization of the adolescent, socio economic status, marital and employment status of the parents, adolescent learning or developmental disabilities, pre-existing anxiety or mental health challenges, recent relocation to the school district, and the size and strength of the adolescent's friendship network. It is possible that this study includes spurious relationships or associations where a correlation between the variables are not because of any real relationship but because of a third, confounding variable, perhaps one not included in this study. It is also possible that the study variables are critical for protection against cyberbully victimization but this study might not have operationalized them in a way that effectively captures the construct from the perspective of a young adolescent.

In addition, this study did not extend to the outside layer of CDC's framework for violence prevention to include societal factors. This study might have benefited by an examination of the impact of laws and regulations within the State of Maryland or the Montgomery County school regulations to prevent or stop cyberbullying.   Another limitation pertains to the self-reported nature of this study. Not only does self-report suggest possible social desirability bias or recall

bias but by offering data only on the perspective of the cyberbully victim, this study does not include data from the perspective of the perpetrator and the bystander. This study did not capture the important element of 'intent' that is necessary to define an aggressive online event as cyberbullying. This study includes two critical components of cyberbullying (repetition and harm) with the remaining two components implied (intent and imbalance of power). In cases of cyberbullying, the nature of the online event often implies an imbalance of power, e.g. when a peer spreads gossip to a group of classmates, the student may feel powerless to defend themselves without risking an escalation in severity and/or frequency of attack. In addition, this study did not capture the severity of the cyberbullying event. Cyberbully victimization exists on a continuum ranging from fairly harmless, such as an incident where the adolescent learns to defend themselves or seek support from their social network, to cyberbullying with devastating and far reaching implications for the mental health of the adolescent.

Despite these limitations, this study had many strengths including a relatively strong sample of ethnically and racially diverse middle school students. The survey instrument was administered in the classroom of 10 public schools within a suburban county with a prevalence of cyberbully victimization higher than the state and national average. This study offered a parental consent form in both English and Spanish but similar to the YRBS, the survey was only offered in English to model the language used in a regular classroom setting (Centers for Disease Control and Prevention, 2015a). Also, similar to the YRBS, this study included a single item to capture cyberbully prevalence. However, this study also

included the addition of a multi-item behavior based scale to compare to the single item (a comparison of these two measurement strategies is found in Chapter 3). Another strength was that the study was administered online through Qualtrics, an online platform that was easy to administer and allowed students anonymity when responding to survey items. Qualtrics also enabled data to be downloaded easily without risk of data entry mistakes.

For this study, students appeared eager to participate with 84% of students completing every item on the survey within the classroom setting. A significant strength of this study was the encouragement received from school administrators and teachers in support of this research. It is likely that the number of participating schools might have been greater if the county had provided a greater timeframe in its letter of support. One principal reported that he watched a student stop and think about his Internet use while completing the survey. The Principal felt the survey offered the students a chance to reflect on their digital lives. This principal later asked permission to administer the survey to a second group of students. Moreover, participating schools in Montgomery County have requested that data from this study be shared either in writing or through an oral presentation to school Parent Teach Associations (PTA).

Although the threat of selection bias was mentioned previously, instrumentation is another factor that might jeopardize internal validity. Specifically, changes in the observer or adult who delivered the survey, might impact survey results. In five of the 10 schools (50%), the investigator for this study was invited into the school to administer the survey. However, in the

remaining schools, the link to the survey was provided by a teacher or assistant principal. Although no statistical difference was indicated for the outcome variable (CBV), undetected bias is possible.

For external validity, or the ability to generalize finding, there might also be factors to consider including history, and program interaction or multiple treatment interference. The current study was conducted in a time when powerful personalities use social media and technology to threaten and often humiliate others. As a result, examples of cyberbullying are in the news and discussed in classrooms as well as within homes. It is possible that the current environment has created a unique historical condition. In addition, two schools informed the investigator of an anti-cyberbullying presentation that was delivered the previous year (2016-2017) by the state's attorney general. CBV mean scores indicated no statistical difference among these schools and linear mixed model analysis indicated no clustering. However, it is still possible that these programs had an impact on students and their attitudes and communication with parents about cyberbullying.

7.7 Implications and Future Research Directions

Results of this study have implications for future research and theory based interventions. At the individual level, this study suggests that although nearly three out of four students receive cruel or harmful messages online, only about one out of three students receive harmful messages repeatedly, a necessary component for peer aggression to be cyberbullying. Among our study of public school students, 8th grade females and students who prefer not to say

their gender were cyberbullied most often. These 8th grade students spend the most time on the Internet, perceive less collective efficacy in their school and less quality communication with their parents. Results of this study therefore suggest that primary prevention efforts to reduce and prevention cyberbully victimization should begin in 7th grade.

As mentioned earlier, young adolescence is a time when children create new types of relationships and begin to separate from their parents. Results of this study suggest that not only is frequency of parent-child communication about Internet use not inversely associated with cyberbully victimization among our sample, but the association between quality of parent-child communication and cyberbully victimization was suggested to be relatively small, but significant. It is important to remember that this study only examined cyberbully victimization without consideration of student bystanders or cyberbully perpetrators. It is possible (perhaps even likely) that quality and frequency of parent-child communication have an association with whether a child cyberbullies another or a whether a child becomes an active (or passive) bystander when a peer is cyberbullied.

Although the current study included only one component of Social Cognitive Theory; namely, collective efficacy, the construct was found to be inversely related to cyberbully victimization scores. The subscale, social cohesion and trust, appeared to have a moderate, inverse association with cyberbullying victimization and should be further explored for reducing cyberbullying. Specifically, the research community would benefit from a

qualitative examination of: 1) the characteristics that encourage higher levels of social cohesion and trust; 2) why informal social control accounted for such a small part of the variation in cyberbully victimization; and 3) the basis for the decline in collective efficacy among middle school students over time. In addition, future research should consider an exploration of collective efficacy among cyberbully perpetrators and both active and passive bystanders.

7.8 An Evidence-based Proposal ("A Matter of Trust")

An exciting aspect of the current research is the interest by the study population (Montgomery County public schools) to understand the data and translate what is learned into activities that might prevent or reduce the impact of cyberbullying among young adolescents. The following proposal is based not only on the results of this cross-sectional study, but on a public health campaign that has been successful in reducing unhealthy adolescent behaviors; namely tobacco control and prevention. Similar to cyberbullying, tobacco use is an individual behavior that is influenced by social networks. The association between cyberbullying and tobacco is currently being studied with results suggesting that cyberbully victimization might be associated with future tobacco use, especially among females (Case, Cooper, Creamer, Mantey, & Kelder, 2016).

Based on the results of this study, and public health lessons learned tobacco prevention programs (Centers for Disease Control and Prevention, 2017), a future intervention might consider the following key elements:

- A basis in theory

1. Collective Efficacy. Future programs should consider building on what has been learned in the current study regarding the association between CBV and collective efficacy. Anti-cyberbullying programs should consider a focus on building social cohesion and trust among peers at school

2. Social Cognitive Theory. Additional components of Social Cognitive Theory and Social Learning Theory should be considered such as the role of observational learning, reciprocal determinism, self-efficacy and moral disengagement.

3. Social Norm Change Model. Best practices for tobacco control have incorporated the Social Norm Change model educating youth that not every adolescent is using tobacco. Similarly, the current study suggests that not every young adolescent is a cyberbully victim. Future interventions should consider the development of an intervention using the Social Norm Change Model to encourage young adolescents to make their online community safe and welcoming (Keller & Bauerle, 2009).

- Include mass communication and social media campaigns

1. Young adolescents are digital natives, a term used for those who may not remember life before the Internet. Young adolescents (e.g. 7th graders) might benefit from being empowered to develop a social media campaign that focuses on building trust and creating a social norm of cohesion.

- Provide tailored interventions for those already impacted (secondary prevention)

    1. Best practices for tobacco control includes a component that is directed toward individuals who have already experimented with tobacco. Likewise, an anti-cyberbullying program might consider offering an evidence-based program to support adolescents already impacted by cyberbullying, e.g. perpetrators, and cyberbully victims.

- Include surveillance and evaluation for continuous improvement

    1. The YRBS uses a single item to measure cyberbullying and is administered biannually to a selection of middle schools in each county and state. If a school is committed to reducing cyberbullying, a multi-item, behavior based measurement strategy should be incorporated as well as a system of surveillance to detect progress, as well as problems.

- Include an infrastructure with skilled staff to support and inform

   1. Trusted teachers and middle school staff should be trained in best practices when encountering peer cruelty and cyberbullying. This study suggests that most perpetrators are someone the cyberbully victim knows from school. It is likely that a trusted, trained adult in school (perhaps a coach or counselor) might be able to address the problem before it escalates, becomes repetitive and causes harm to the young adolescent.

Appendices

Appendix I: Methods

As stated in Chapter One, the current study included five specific aims: 1) Examine demographic characteristics of cyberbully victimization among young adolescents while comparing prevalence using a single item and a multi-item scale; 2) Examine the association between the adolescent perspective of parent-child communication (frequency and quality) and cyberbully victimization; 3) Test whether adolescent engagement in safe online behaviors is the mechanism by which parent-child communication is related to cyberbully victimization; 4) Examine the association between collective efficacy (social cohesion/trust and informal social control) and cyberbully victimization; and 5) Examine the collective statistical model (i.e. the collective assocation between parent-child communication, collective efficacy, safe behaviors online and cyberbully victimization). To address these aims, an electronic survey was developed that included 45 items modeled after existing scales what were tested on adolescents. Research suggests that not only do adolescents respond similarly whether using paper and pencil or web-based surveys, a 2017 study suggests that adolescents prefer the use of technology when completing surveys (Nitikman, Mulpuri, & Reilly, 2017). Questions for each construct were grouped together to eliminate random noise and enhance scale reliability (Cannell, Miller, & Oksenberg, 1981). A paper copy of the survey instrument is found in Appendix V.

The 2014 Maryland Youth Risk Behavior Survey (YRBS) suggests that those at greatest risk for cyberbullying are young adolescents in middle school (grades 6th, 7th, & 8th) with an estimated 19.7% of students reporting victimization (Maryland Department of Health and Mental Hygiene, 2014). Therefore, the priority population for this study was middle school students. For most counties in Maryland, external research involving students requires formal approval from the county public school system. An application for external research was therefore submitted to Montgomery County, this county was chosen for a number of reasons. First, Montgomery County is ethnically and racially diversity. According to 2015-2016 data for Montgomery County Schools, middle school students are 32.2% White, 27.2% Hispanic/Latino, 21.7% African American/Black, 15% Asian and less than 5% each of American Indian and Native Alaskan, Native Hawaiian and Pacific Islander (Montgomery County Public Schools, 2015-2016). Second, Montgomery County includes a relatively large number of middle schools (n=39). Montgomery County also reports a relatively high prevalence of cyberbullying with 20.1% of middle school students electronically bulled (Centers for Disease Control and Prevention, 2015a).

Procedures and Recruitment

After receiving IRB approval (see Appendix IV) and notice of support from the Office Shared Accountability in the Montgomery County Public School System, an electronic invitation to participate was sent from the county office to all public middle school principals (n=39). Each principal was then contacted both via telephone and electronic mail. Ten middle schools agreed to participate in the

study within the designated time frame of October – December 2017 (26% of eligible schools). Non-participating schools reported the lack of time as the main reason for not taking part in the study. Any student, enrolled at a participating school, with a signed parent consent and student assent form, was eligible to participate. Two schools requested the parental consent form in Spanish, therefore, Spanish and English versions of parental consent forms were available for all participating schools (Appendix IV).

Pilot Test

To limit systematic errors in the instrument, the online survey was pilot tested in September 2017 with six students (one male, one female) from each of the three target grades: 6, 7 and 8. Students who self-selected to participate in the pilot test were from a non-participating middle school in the county. After parental consent and student assent, students were provided a link to the survey. Participants in the pilot study were asked to complete the survey and then to engage in a focus group-like discussion about each question to assess readability and understanding. A copy of the moderator's guide is found in Appendix III.

Overall, when asked about general impressions about the survey, students agreed that, "it was easy". Conducting a pilot test offered an opportunity to assess the approximate time it would take some students to complete the survey (the range was from 5:05 to 7:12 minutes). Based on the feedback provided by students during the pilot test, two items were added to the survey: Question #21 "Students in my **class** can be trusted" and Question #23 "Students

in my **class** generally get along with each other". Both of these questions were modifications of original survey items included in the collective efficacy scale for social trust and cohesion. The original questions stated, "Students in my **school** can be trusted" and "Students in my **school** generally get along with each other". Participants in the pilot study felt it was important to clarify school versus class and were concerned that responses to these questions might be different. These two items were added to the survey with IRB approval.

Missing Data Strategy

This study included several strategies to minimize the number of surveys with missing data including a pilot test to minimize systematic errors, a brief, anonymous online survey instrument and constructs grouped together. However, when conducting social science research, it is very difficult to avoid missing data completely (Deletion, 2014). The original dataset for this study contained 18% missing data. Research suggests that missing data might cause two problems: 1) decreased statistical power (leading to greater chance of Type II errors), and 2) biased parameter estimates (e.g. under or overestimates of correlations, means, etc.) (Deletion, 2014). For this sample, it was clear that 25 students terminated their participation, these surveys were missing more than 10% of the items and in some cases as much as 50-75% of the items. These surveys were removed. Having removed these surveys, the dataset now contained 16% missing data (N=1,249) with every variable missing at least one data point and 125 surveys missing data for only one item.

Several missing data techniques were considered including: listwise

deletion, pairwise deletion, single imputation, and multiple imputation. Each

option for dealing with missingness was considered based on likely advantages

and disadvantages. Before making a decision on missing data strategy, Little's

MCAR test was conducted suggesting missing data was not missing completely

at random. However, a review of missing items per variable suggest a lack of

systematic pattern to missingness (see Appendix Table 1).

A critical problem caused by missing data is missing data error, or a failure

to detect true effects due to insufficient power (Deletion, 2014). Early in this

study, a priori power analysis was conducted using the primary hypothesis:

adolescents who experience frequent and quality parent-child communication

about Internet use experience less CBV than adolescents who report less

frequent, less quality parent-child communication. The power analysis

suggested a minimum data producing sample of 600 to maximize opportunities

for a one sample, one-sided correlation test with p<.05 and power of .7901 and

effect size of .3. After data collection, a post hoc power analysis of complete

surveys (N=1054), suggests a power level above 95%. This suggests that if a

statistically significant association among variables exists, it is likely to be

detected even if missing data surveys are removed.

However, there are several limitations in considering only complete

surveys including large standard errors and biased estimates especially when

missing data are not missing completely at random. This approach displays little

respect for students, parents and administrators who offered their time and

perspective to achieve the proposed research goals. In response to the first

concern, the potential impact on study results, pairwise deletion, multiple

imputation and listwise deletion were computed using SPSS v24 for the primary

hypothesis. In addition, chi square and t-test analyses were conducted with the

complete dataset (no missing) and the surveys with missing data, no statistical

significance was detected for grade (p=.398), gender (p=.079) and cyberbully

victimization summative scores (p=.572). The next section submits that all three

strategies for testing the primary hypothesis suggest statistical significance with

only slight differences in the value of the adjusted R^2.

Pairwise Deletion

- A linear regression model with missing data for QP-CC and CBV was

  statistically significant, F (1,1208) = 35.504, **p<.001** with QP-CC

  accounting for 2.9% of the variation in CBV with adjusted R^2 = 2.8%

Multiple Imputation (5 iterations)

- A linear regression model using a pooled set of 5 iterations for QP-CC and

  CBV was statistically significant, F (1,1248) = 36.722, **p<.001** with QP-CC

  accounting for 2.8% of the variation in CBV with adjusted R^2 = 2.8%

Listwise Deletion

- A linear regression model for QP-CC and CVB was statistically significant,

  F (1, 1052) = 40.987, ***p* < .001**; with QP-CC accounting for 3.8% of the

  variation in cyberbully victimization with adjusted R^2 = 3.7%, a small effect

  size.

Regarding the issue of discarding valuable data and respecting the time and perspective of the subject, this study included all available data to address the first specific aim: i.e. examine demographic characteristics of cyberbully victimization among young adolescents and compare prevalence for a single item and a multi-item scale. When necessary, pairwise deletion technique was used for situations when data was missing. Possible problems with using this technique include providing correlations based on different subsamples, including different sample sizes. This may cause bias, especially when missing data are not missing completely at random. However, prevalence for the criterion variable using all available data was 37% while using only complete surveys prevalence was only slightly lower at 36%. The overall strategy for dealing with missing data is found in Figure A.

Appendix Figure A: Strategy for Missing Data

```
                      ┌─────────────────────┐
                      │  Original Dataset   │
                      │     N=1,274         │
                      │  (18% missingness)  │
                      └─────────┬───────────┘
                                │
                                ▼
┌──────────────────┐  ┌─────────────────────┐
│ 25 surveys with  │  │                     │
│ >10% missing     │◄─│      N=1,249        │
│ data removed     │  │  (16% missingness)  │
│                  │  │                     │
│ Dataset for      │  └─────────┬───────────┘
│ Chapter 3:       │            │
│ Study 1          │            ▼
└──────────────────┘  ┌─────────────────────┐  ┌──────────────────┐
                      │                     │  │ 195 surveys with │
                      │     N=1,054         │─▶│ any missing data │
                      │  (Compete Surveys)  │  │ removed          │
                      │                     │  │                  │
                      └─────────────────────┘  │ Dataset for      │
                                               │ Chapter 4 & 5:   │
                                               │ Study 2 & 3      │
                                               └──────────────────┘
```
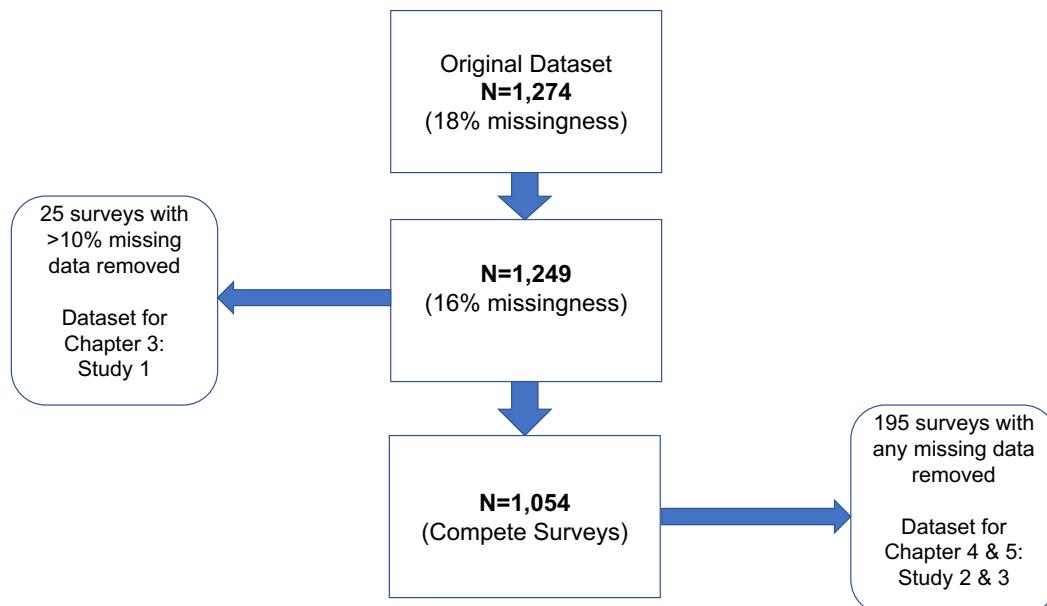
Appendix Table 1: Missing Data by Variable (N=1249)

Survey Item		#	%
Q1	In what grade are you?	1	0.1
Q2	What is your sex?	3	0.2
Q3	How many hours do you spend on the Internet each day?	2	0.2
How often have you used the Internet to…			
Q4	Visit a forum/chat room?	11	0.9
Q5	Uploading pictures or videos, such as through Youtube?	10	0.8
Q6	Write someone a message such as through email?	7	0.6
Q7	Watch videos or look at pictures?	17	1.4
Q8	Visit social media networking sites such as Facebook?	4	0.3
While a student at this school, how often have you...			
Q9	Had something mean posted or reposted about you?	1	0.1
Q10	Received a hurtful message by email/text/chat?	0	0.0
Q11	Had an embarrassing photo or video of you posted?	6	0.5
Q12	Been purposefully excluded online?	2	0.2
Q13	Had something personal posted that you didn't want others to see?	3	0.6
Q14	Had gossip or rumors spread about you online?	7	0.6
Q15	Received hurtful messaged about your race/ethnicity?	4	0.3
Q16	Students in my school would help if a student was teased online	7	0.6
Q17	Students in my school would help if a student was spreading gossip	10	0.8
Q18	Students in my school would help if a student was excluded	10	0.8
Q19	Students would help if students were posting a mean photo	8	0.6
Q20	Students in my school can be trusted	1	0.1
Q21	Students in my class can be trusted	7	0.6
Q22	Students in my school get along with each other	6	0.5
Q23	Students in my class get along with each other	15	1.2
Q24	Students in my school feel same way about things	12	1
Q25	Students in my class feel same way about things	16	1.3
Q26	Teachers in my school can be trusted	9	0.7
Q27	Teachers in my school generally get along with students	9	0.7
Q28	Teachers in my school generally feel the same way about things	9	0.7
Q29	This is a pretty close-knit school	4	0.3
Q30	I limit access to my personal information online	3	0.2
Q31	I use nicknames on the Internet to avoid using my identity	2	0.2
Q32	I seek guidance from parents to find out how to prevent bullying	3	0.2
Q33	I provide inaccurate info about personal data on websites	6	0.5
Q34	I do not discuss personal info on personal websites	3	0.2

Survey Item (continued)		#	%
Q35	I ask parents/teachers what I should do if bullied online	7	0.6
Q36	I do not reply to people I don't know	9	0.7
Q37	How often: talk about what you are doing on the Internet	6	0.5
Q38	How often: talk about the time you spend on the Internet	6	0.5
Q39	How often: talk about who you have contact with on the Internet	8	0.6
Q40	When my parent and I talk about Internet use, I feel understood	9	0.7
Q41	When my parent and I talk about Internet use, I feel taken seriously	12	1
Q42	When my parent and I talk about Internet use, I feel comfortable	13	1.2
Q43	While a student at this school, have you been electronic bullied	13	1.0
Q44	Are you Hispanic?[1]	7	0.6
Q45	What is your race? (select all that apply)	0	0

[1] Note: Although the number of participants who missed the question of ethnicity was less than 1%, an additional 95 students, who missed other data items, responded that they preferred not to respond to whether they were Hispanic.

Test for Within School Clustering

This study included students from 10 middle schools located throughout a large, diverse county. In order to account for possible clustering of sample data (which can lead to Type I error), a linear mixed effect model was conducted using grade and school as the fixed variables, school as the random effect variable, and cyberbully victimization as the continuous outcome variable. Results of this analysis suggest that the within group homogeneity is minimum. Thus, there was no need to include a random effect term for school.

Mediation Testing (Study 2)

For this research, two mediation strategies were applied to examine whether safe behaviors online mediated the relationship between parent-child communication and cyberbully victimization. The decision to use these two methods was consistent with current research on cyberbullying and mediating factors (Bayraktar, 2017; Sampasa-Kanyinga, Roumeliotis, & Xu, 2014; Sarıçam, Yaman, & Celik, 2016). First, the Baron and Kenny test for mediation was conducted suggesting a partial mediation. The Sobel test was then conducted to examine the statistical significance of the Baron and Kenny finding.

Appendix II: Descriptive Data For Study Variables (N=1249)

Survey Item	Mean(SD) 6th	Mean(SD) 7th	Mean(SD) 8th
How many hours (on average) do you spend online	3.0(1.58)	3.5(1.54)	3.8(1.55)
How often have you used a forum/chat room	2.0(1.20)	2.1(1.25)	2.1(1.22)
How often uploading pictures or videos	1.9(1.16)	2.0(1.22)	2.1(1.19)
How often use Internet to send email/text	3.4(1.46)	3.6(1.37)	3.8(1.23)
How often watch videos	3.7(1.25)	3.9(1.20)	4.2(1.03)
How often use social media	2.5(1.60)	2.9(1.69)	2.1(1.22)
CBV 1 = never, 2= once, 3=few times, 4=several times,5=all the time How often, while a student at this school have you…			
Had something mean posted	1.3(.75)	1.4(.80)	1.5(.92)
Received a hurtful message email/text/chat	1.4(.81)	1.5(.88)	1.6(.98)
Had an embarrassing photo or video of you posted	1.2(.62)	1.3(.73)	1.4(.82)
Been purposefully excluded	1.3(.72)	1.4(.89)	1.5(.91)
Had something personal posted or reposted	1.2(.48)	1.2(.61)	1.3(.65)
Had gossip/rumors spread about you	1.3(.75)	1.5(1.00)	1.6(1.04)
Received hurtful messaged about your race or ethnicity	1.3(.79)	1.4(.83)	1.5(1.00)
Collective Efficacy 1=strongly disagree 5= strongly agree			
Students in my school would help if a student is teased online	3.4(1.32)	3.3(1.27)	3.0(1.22)
Students in my school would help if a student was spreading gossip	3.3 (1.34)	3.2(1.34)	3.0(1.26)
Students in my school would help if a student was excluded	3.2(1.31)	3.0(1.26)	2.7(1.20)
Students in my school would help if students were posting a mean photo	3.3(1.42)	3.3(1.15)	2.9(1.35)
students (school) can be trusted	3.5(1.10)	3.3(1.15)	3.0(1.13)
students (class) can be trusted	3.8(1.10)	3.4(1.11)	3.2(1.14)
students (school) get along with each other	3.6(1.00)	3.4(1.10)	3.4(1.06)
students (class) get along with each other	3.9(1.00)	3.7(1.00)	3.7(1.00)
student (school) feel same way about things	2.9(1.11)	3.0(1.15)	3.0(1.10)

Survey Item	Mean(SD) 6th	Mean(SD) 7th	Mean(SD) 8th
students (class) feel same way about things	3.1(1.11)	3.1(1.10)	3.1(1.04)
teachers can be trusted	4.4(1.00)	4.0)1.20)	3.8(1.24)
teachers get along with students	4.0(1.00)	3.8(1.10)	3.6(1.24)
teachers feel the same way about things	3.5(1.10)	3.4(1.12)	3.2(1.13)
This is a pretty close-knit school	3.1(1.15)	2.8(1.24)	2.6(1.21)
Safe Behaviors Online 1=strongly disagree, 5=strongly agree			
I limit access to my personal information online	4.2(1.20)	4.1(1.21)	4.1(1.23)
I use nicknames on the Internet to avoid using my identity	4.0(1.23)	4.0(1.27)	3.6(1.34)
I seek guidance from parents/adults to find out how to prevent bullying	3.6(1.34)	3.4(1.37)	3.0(1.37)
I provide inaccurate info about personal data on websites	3.3(1.40)	3.3(1.39)	3.3(1.32)
I do not discuss personal info on personal websites	4.4(1.10)	4.3(1.21)	4.2(1.19)
I ask parents/teachers what I should do if bullied online	3.8(1.34)	3.4(1.37)	3.0(1.42)
I do not reply to people I don't know	4.2(1.21)	4.0(1.34)	3.7(1.30)
Parent-Child Communication 1 = Never, 5 = Always How often do you talk to your parents about…			
What you are doing on the Internet	2.8(1.34)	2.9(1.16)	2.7(1.16)
The time you spend on the Internet	3.1(1.24)	3.3(1.25)	3.0(1.24)
Who you have contact with on the Internet	2.8(1.34)	2.9(1.33)	2.6(1.22
When my parent and I talk about Internet use, I feel understood	4.1(1.38)	4.0(1.49)	4.0(1.51)
When my parent and I talk about Internet use, I feel taken seriously	4.1(1.40)	4.1(1.40)	4.1(1.49)
When my parent and I talk about Internet use, I feel comfortable	4.1(1.41)	4.1(1.49)	4.1(1.57)
While a student at this school, have you been electronic bullied? (yes)	10%	10%	15%
Are you Hispanic (% 'yes')	24%	23%	24%

Survey Item	Mean (SD) M	Mean (SD) F	Mean (SD) PNTS
How many hours (on average) spend online	3.5(1.5)	3.4(1.60)	3.3(1.93)
How often have you used a forum/chat room	2.2(1.20)	2.0(1.22)	2.3(1.39)
How often uploading pictures or videos	1.9(1.28)	2.0(1.21)	2.1(1.26)
How often use Internet to send email/text	3.4(1.34)	3.8(1.33)	3.5(1.38)
How often watch videos	3.9(1.13)	3.9(1.19)	4.1(1.26)
How often use social media	2.8(1.63)	3.2(1.70)	3.1(1.69)
CBV 1 = never, 2= once, 3=a few times, 4=several times,5=all the time How often have you…			
Had something mean posted	1.4(.80)	1.4(.84)	2.0(1.48)
Received a hurtful message email/text/chat	1.4(.81)	1.6(.93)	1.9(1.40)
Had an embarrassing photo or video of you posted	1.2(.63)	1.4(.84)	1.5(1.14)
Been purposefully excluded	1.4(.75)	1.5(.89)	1.8(1.38)
Had something personal posted or reposted	1.2(.55)	1.2(.56)	1.6(1.32)
Had gossip/rumors spread about you online	1.4(.83)	1.6(1.01)	2.0(1.47)
Received hurtful messages about your race or ethnicity	1.4(.87)	1.4(.84)	1.6(1.23)
Collective Efficacy 1=strongly disagree 5= strongly agree Students in my school would help if a student was…			
teased online	3.1(1.24)	3.2 (1.28)	3.1(1.53)
spreading gossip	3.0(1.29)	3.2(1.33)	2.9(1.45)
Purposefully excluded	2.9(1.21)	3.0(1.31)	2.8(1.35)
posting a mean photo	3.1(1.40)	3.2(1.40)	2.9(1.59)
students (school) can be trusted	3.5(1.05)	3.1(1.16)	3.0(1.40)
students (class) can be trusted	3.6(1.07)	3.3(1.12)	3.2(1.31)
students (school) get along with each other	3.6(1.01)	3.4(1.10)	3.2(1.31)
students (class) get along with each other	3.9(0.97)	3.7(0.99)	3.4(1.17)
student (school) feel same way about things	3.0(1.09)	2.9 (1.13)	2.6(1.28)
students (class) feel same way about things	3.1(1.06)	3.1(1.10)	2.8(1.34)
teachers can be trusted	4.2(1.14)	3.9(1.18)	3.4(1.31)
teachers get along with students	3.8(1.10)	3.7(1.09)	3.5(1.14)
teachers feel the same way about things	3.5(1.09)	3.3(1.11)	3.2(1.17)
This is a pretty close-knit school	3.0(1.17)	2.7(1.5)	2.6(1.37)

Survey Item	Mean (SD) M	Mean (SD) F	Mean (SD) PNTS
Safe Behaviors Continued			
I limit access to my personal information online	4.0(1.23)	4.2(1.17)	3.8(1.47)
I use nicknames on the Internet to avoid using my identity	3.9(.1.27)	3.8(1.32)	4.1(1.20)
I seek guidance from parents/adults to find out how to prevent bullying	3.2(1.39)	3.4(1.36)	2.6(1.50)
I provide inaccurate info about personal data on websites	3.3(1.35)	3.3(1.38)	3.5(1.45)
I do not discuss personal info on personal websites	4.3(1.14)	4.3(1.19)	4.2(1.15)
I ask parents/teachers what I should do if bullied online	3.3(1.43)	3.4(1.46)	2.7(1.41)
I do not reply to people I don't know	3.8(1.33)	4.1(1.23)	3.1(1.41)
Parent-Child Communication 1 = Never, 5 = Always			
How often do you talk to your parents about…			
What you are doing on the Internet	2.6(1.11)	2.9(1.17)	2.5 (1.17)
The time you spend on the Internet	3.1(1.19)	3.2(1.27)	2.7(1.41)
Who you have contact with on the Internet	2.6(1.23)	3.0(1.29)	2.1(1.27)
When my parent and I talk about Internet use, I feel understood	4.2(1.39)	3.9(1.48)	3.8(1.73)
When my parent and I talk about Internet use, I feel taken seriously	4.2(1.40)	4.0(1.48)	4.2(1.71)
When my parent and I talk about Internet use, I feel comfortable	4.2(1.47)	4.0(1.44)	3.8(1.88)
While a student at this school, have you been electronic bullied? (yes)	10%	13%	21%
Are you Hispanic? (% 'yes')	22%	24%	21%

Appendix III: Pilot Test

Moderator's Guide

Introduction (5 minutes)
Good Afternoon, my name is Meaghan McHugh, and I'll be your facilitator for today's discussion. Thank you for your willingness to participate in this study. With me is Abigail Bickford, a PhD student at UMD – Abigail will be our note taker for the discussion.

For about the next 30-40 minutes, you will first take a very brief online survey and then we will talk about your experiences taking the online survey. I'm not an expert in the areas to be discussed today. However, I am a doctoral candidate at the University of Maryland and have a great deal of interest in this topic. I am also a parent of an 8th grade middle school student and I live in Montgomery County, Maryland. I am here today to listen to your ideas and thoughts on these topics of discussion.

Your ideas and opinions really matter! Please know that there are no right or wrong answers, only opinions and experiences, and I'd like to hear from each of you equally. It's important that everyone gets a chance to participate in the discussions. If possible, I would like to hear from all of you, because you bring insights and experiences that we can learn from. Your comments may also capture the thoughts of others who will take the survey.

Please feel free to speak up even if you disagree with someone else here. It's OK to disagree, because it's helpful for us to hear different points of view. We just ask that this be done in a respectful manner. I'm also interested in any questions you may have as we go along. I would like to ask that anything said during today's discussion remain in this room, please be respectful of each other.

I want to assure you that all of your comments are confidential and will be used only for research purposes. Nothing you say today will ever be attributed to you. To ensure this, please only use first names (or perhaps nicknames or fictitious names) for today's discussion. In order to ensure that everyone has a chance to speak, please raise your hand if you wish to speak next and please, only one person speak at a time. Thank you!

Please remember that your participation today is completely voluntary; you may speak up or stay silent as you choose, even if I prompt you to speak.

Does anyone have any questions before we begin?

1.Student Take Online Survey (approximately 15 min): Students will be asked to complete the survey. During this time, the researcher will note the time it takes each student to complete the survey and will collect any questions.

2. Group Discussion (15 minutes)

A. Let's please go around the room and have each of you please tell me your overall thoughts about the survey. In addition, please suggest one or two questions that you found confusing or unclear.

 C. If time permits, or if no items are mentioned, we will go through each group of questions following the format below.

Comprehension/Interpretation	What does the term 'personal information' mean to you?
Paraphrasing	Can you repeat the question I just asked in your own words?
Confidence judgment	How sure are you that 'students in your school generally feel the same way about things?'
Recall probe	How do you remember that you had received a hurtful message from someone (through email, text or chat)?
Specific probe	Why do you think that 'students in your school would help out if a student was posting a mean photo or video of another student online?'
General probe	How did you arrive at that answer?

We're coming to the end of our time together today. I think we've had a very productive and fruitful discussion. Thank you again for taking the time to speak with me. Is there anything that we didn't talk about that you wish we would have, or anything that we missed that you would like to say before we leave today?

Appendix IV: Human Subjects Protection

IRB Letter of Approval

UNIVERSITY OF
MARYLAND
INSTITUTIONAL REVIEW BOARD

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College Park, MD 20742-5125
TEL 301.405.4212
FAX 301.314.1475
irb@umd.edu
www.umresearch.umd.edu/IRB

DATE: October 9, 2017

TO: Meaghan McHugh, MPH
FROM: University of Maryland College Park (UMCP) IRB

PROJECT TITLE: [1048469-4] Teens & Technology: An examination of online behaviors,
                   cyberbullying and social support among middle school students
REFERENCE #:
SUBMISSION TYPE: Amendment/Modification

ACTION: APPROVED
APPROVAL DATE: October 7, 2017
EXPIRATION DATE: June 1, 2018
REVIEW TYPE: Expedited Review

REVIEW CATEGORY: Expedited review category #7

Thank you for your submission of Amendment/Modification materials for this project. The University of
Maryland College Park (UMCP) IRB has APPROVED your submission. This approval is based on an
appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research
must be conducted in accordance with this approved submission.

Prior to submission to the IRB Office, this project received scientific review from the departmental IRB
Liaison.

This submission has received Expedited Review based on the applicable federal regulations.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires
continuing review by this committee on an annual basis. Please use the appropriate forms for this
procedure. Your documentation for continuing review must be received with sufficient time for review and
continued approval before the expiration date of June 1, 2018.

Please remember that informed consent is a process beginning with a description of the project and
insurance of participant understanding followed by a signed consent form. Informed consent must
continue throughout the project via a dialogue between the researcher and research participant. Unless
a consent waiver or alteration has been approved, Federal regulations require that each participant
receives a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this committee prior
to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others (UPIRSOs) and SERIOUS and
UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate
reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this
office.

- 1 -   Generated on IRBNet

Project Title	Teens & Technology: An examination of online behaviors, cyberbullying and social support among middle school students
Purpose of the Study	The purpose of this research is to gather information that will help schools and families understand teen use of technology and how to be safe online.
	The research is led by Meaghan McHugh, a PhD candidate at the University of Maryland. Mrs. McHugh has a Master's in Public Health from Johns Hopkins University and is the mother of two teenagers in Montgomery County, Maryland.
	We are inviting you to participate in this research project because you are a middle school student going to school in Montgomery County.
Procedures	Your parent or guardian has already signed a consent form allowing you to participate. However, **you do not have to participate in this study**. If you agree to participate, you may stop at any time, for any reason – this survey will NOT be graded.
	In this survey, you will be asked questions about your Internet use, experience with cyberbullying, communication about Internet use, and trust in your peers to help each other online. Your input is really important to the success of this study and to better understanding teens and Internet use. A few examples of questions are listed below with responses to include: Never, Once, A few times**,** Several times, Many times. **While a student at this middle school, how often have you:**
	Received hurtful comments or messages about your race or ethnicity online? **Had an embarrassing photo or video of you posted or re-posted online that you didn't want others to see?** **Had gossip or rumors spread about you online?**
	All the information we collect from this survey will be destroyed one year after the study is complete.
	Participation in this study will allow you to be eligible to receive a **free pizza party** at school. In addition, you will receive a **list of parent and child resources related to**

	being safe online. This information will be provided to you after completing the survey.
Potential Risks and Discomfort	Within the survey, there are items that may remind you of painful memories. All participants will receive a handout listing toll-free telephone numbers of local and national counselors as well as a message at the end of the online survey that encourages you to call a toll-free number if you feel anxious or need to speak to a counselor. In addition, a counselor or nurse will be available to assist you if the items in the survey upset you. However, aside from this type of discomfort, there are no known risks to participating in this research.
Potential Benefits	While you may enjoy participating in this study, the survey is not designed to teach you about how to be safe online. Participation in this study will add your perspective to current research about middle school students. This study has the potential to increase knowledge among researchers as well as parents, teachers and school administrators.
Confidentiality	All information shared by you will be kept strictly confidential and will not be shared. Your parents and teachers will not have access to your responses. Names will not be included on survey information. All survey responses will be stored electronically in a password-protected system called the UMD Box. This form will be stored in a locked file and will be destroyed at the end of the study. At the end of this study, overall results will be made available to schools and county administrators – **no individual survey responses** will be available to anyone except the two researchers listed below (McHugh & Gold).
Right to Withdraw and Questions	If you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the investigator: **Meaghan McHugh, MPH**, Doctoral Candidate **Or** **Robert S. Gold, DrPH, PhD,** Professor Department of Behavioral and Community Health, University of Maryland College Park, School of Public Health, E-mail: mcmchugh@umd.edu; Tel**:** (301) 938-5398 E-mail: rsgold@umd.edu
Participant Rights	*I*f you have questions about your rights or wish to report a research-related injury, please contact: University of Maryland College Park

	Institutional Review Board Office 1204 Marie Mount Hall College Park, Maryland, 20742 E-mail: irb@umd.edu , Telephone: 301-405-0678 This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.
Statement of Consent	Your signature indicates that you have read this assent form or have had it read to you; your questions have been answered to your satisfaction and you agree to participate in this research study. *If you agree to participate, please sign your name below.*
Signature and Date	**NAME OF STUDENT** **(Please Print)**

Institutional Review Board
1204 Marie Mount Hall ● 7814 Regents Drive ● College Park, MD 20742 ● 301-405-4212 ● irb@umd.edu
PARENTAL CONSENT TO PARTICIPATE

Project Title	Teens & Technology: An examination of online behaviors, cyberbullying and social support among middle school students
Purpose of the Study	Although much has been written about children and online behaviors, less has been written from the viewpoint of the child. The purpose of this study is to gather information, through student self-report, in order for schools and families to better understand factors that keep students safe online. Meaghan McHugh, a PhD candidate at the University of Maryland, will conduct this research. Ms. McHugh has a Master's in Public Health from Johns Hopkins University and is the mother of two teenagers in Montgomery County, Maryland. We are inviting you to participate in this research project because you are the parent of a middle school student enrolled in a school in Montgomery County.
Procedures	If you agree to your child's participation by signing this form, during school hours (either language arts class or computer class), your child will be asked if he or she would like to participate. If your child agrees to participate, your child will be asked to sign a form that looks very similar to this form. Once your student signs this 'assent' form, your student will be given a link to a short, 5-7 minute, electronic survey. The online survey is completely voluntary. You and your child's decision to participate in this study will have no positive or negative affect on their grades or standing at XXX Middle School. In this survey, your child will be asked questions about his or her Internet use, possible experiences as a victim of cyberbullying, communication about Internet use, and trust in his or her peers to help each other online. Your child's input and ideas are really important to the success of this study and to better understanding teens and Internet use. A few examples of questions are listed below. Responses include: Never, Once, A few times, Sometimes, All the time. **While a student at this middle school, how often have you:** **Received hurtful comments or messages about your race or ethnicity online?** **Had an embarrassing photo or video of you posted or re-posted online that you didn't want others to see?** **Had gossip or rumors spread about you online?** All the information we collect will from this survey will be destroyed one year after the study is complete. Participation in this study will allow your child, and his or her

	classroom, to be eligible to receive a **free pizza party** at school. In addition, by providing your consent for your child to participate, you will receive a **list of parent and child resources related to being safe online**. This information will be provided to your child after they complete the
Potential Risks and Discomfort	Within the survey, there are items for which disclosure may elicit bad or painful memories for the child. All participants will be provided a handout listing toll-free telephone numbers of local and national counselors as well as a message at the end of the online survey that encourages the child to call a toll-free number if they feel anxious, or need to speak to a counselor. In addition, a counselor or nurse will be available to assist any children who may become upset by the items in the questionnaire. However, aside from this type of discomfort, there are no known risks to participating in this research.
Potential Benefits	While your child may derive some personal benefit from participating in this study, the survey is not designed to teach your child about how to be safe online. However, this study will add to existing literature by focusing on a vulnerable population (middle school students). This study has the potential to increase knowledge among researchers as well as parents, teachers and school administrators
Confidentiality	All information shared by your child will be kept strictly confidential and individual responses will not be shared. Parents will not have access to their child's responses. **Names will not be included on survey information**. All survey responses will be stored electronically in a password-protected system called the UMD Box. Only those researchers included on this form will have access to survey responses (McHugh & Gold). Confirmation of your child's agreement to participate, and parental consent forms, will be stored in a locked file and will be destroyed at the end of the study. At the end of this study, overall results (such as the percent of participating children who have had gossip spread about them online) will be made available to schools and county administrators – no individual survey responses will be available.
Medical Treatment	The University of Maryland does not provide any medical, hospitalization or other insurance for participants in this research study, nor will the University of Maryland provide any medical treatment or compensation for any injury sustained as a result of participation in this research study, except as required by law.

Right to Withdraw and Questions	Your child's participation in this research is completely voluntary. You and your child's decision to participate in this study will have no positive or negative affect on their grades or standing at XXX Middle School. If you decide to stop your child from taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the investigator: **Meaghan McHugh, MPH**, Doctoral Candidate **Or** **Robert S. Gold, DrPH, PhD,** Professor Department of Behavioral and Community Health, University of Maryland College Park, School of Public Health, E-mail: mcmchugh@umd.edu; Tel**:** (301) 938-5398 E-mail: rsgold@umd.edu
Participant Rights	*I*f you have questions about your rights as a research participant or wish to report a research-related injury, please contact: University of Maryland College Park Institutional Review Board Office 1204 Marie Mount Hall College Park, Maryland, 20742 E-mail: irb@umd.edu , Telephone: 301-405-0678 This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.
Statement of Consent	Your signature indicates that you are at least 18 years of age; you have read this consent form or have had it read to you; your questions have been answered to your satisfaction and you voluntarily agree to have your child participate in this research study. *If you agree to participate, please sign your name below.*

Signature and Date	**NAME OF MINOR PARTICIPANT [Please Print]**		
	NAME OF PARENT [Please Print]		
	SIGNATURE OF PARTENT		**DATE**

Junta de Revisión Interna (IRB por sus siglas en Inglés)
1204 Marie Mount Hall ● 7814 Regents Drive ● College Park, MD 20742 ● 301-405-
4212 ● irb@umd.edu

CONSENTIMIENTO PARA PARTICIPAR

Título del Proyecto	**Adolescentes y Tecnología: Una examinación de comportamientos cuando estan conectados online, el acoso cibernético y el apoyo social entre los estudiantes de secundaria.**
Propósito del Estudio	Aunque se ha escrito mucho sobre los niños y los comportamientos cuando están conectados online, muy poco se ha escrito desde el punto de vista del niño. El propósito de este estudio es reunir información, a través de informes por los mismos estudiantes, para que las escuelas y las familias entiendan mejor cuales son los factores que mantienen a los estudiantes seguros cuando están conectados online. Le invitamos a participar en este proyecto de investigación porque usted es el/la padre/madre de un estudiante de secundaria matriculado en una escuela en Montgomery. Meaghan McHugh es una candidata de doctorado en la Universidad de Maryland y llevará a cabo esta investigación. La Sra. McHugh tiene una Maestría en Salud Pública de la Universidad Johns Hopkins y es madre de dos adolescentes en el Condado de Montgomery, Maryland.
Procedimientos	Si usted está de acuerdo con que su hijo/a participe, al firmar este formulario, durante las horas de clase, se le preguntará a su hijo/a si a él/ella le gustaría participar. Si su hijo/a acepta participar, se le pedirá que firme un formulario parecido a este. Una vez que el/la estudiante firme este formulario de "consentimiento", se le dará un link a una breve encuesta de 5-7 minutos. La encuesta online es completamente voluntaria. Usted y la decisión de su hijo/a de participar en este estudio no tendrán ningún efecto positivo o negativo en sus calificaciones en la escuela. En esta encuesta, se le harán preguntas a su hijo/a sobre el uso de Internet, sus experiencias con el acoso cibernético, la comunicación sobre el uso de Internet y la confianza en sus compañeros para que le ayuden online. El aporte e ideas de su hijo/a son realmente importantes para el éxito de este estudio y para entender mejor a los adolescentes y el uso de Internet. A continuación, le incluimos algunos ejemplos del tipo de pregunta que se les hará. La manera de responder incluye: Nunca, Una

	vez, Algunas veces, A veces, Todo el tiempo.
	Como estudiante en esta secundaria, ¿con qué frecuencia: **• ¿Has recibido comentarios o mensajes dañinos acerca de tu raza o origen étnico cuando estás online?** **• ¿Has tenido alguna de tus fotos o video vergonzosos publicado o re-publicado online que no querías que otros vieran?** **• ¿Se han difundido chismes sobre tí online?** Toda la información que recibamos de esta encuesta será destruida después de un año. La participación en este estudio le permitirá a su hijo/a, y a su salón de clases, ser elegible para recibir una **fiesta con pizza** gratis en la escuela. Además, al proporcionar su consentimiento para que su hijo/a participe, usted recibirá una **lista de los recursos para padres e hijos/as relacionados con la seguridad al usar el Internet**. Esta información será proporcionada a su hijo/a después de completar la encuesta.
Riesgos potenciales e incomodidad	La encuesta puede tener preguntas que pueden provocar malos o dolorosos recuerdos para el niño/a. A todos los participantes se les dará un folleto que incluye números telefónicos gratuitos de consejeros locales y nacionales, así como un mensaje al final de la encuesta que anima al niño/a a llamar a un número gratuito si se siente ansioso o necesita hablar con un consejero. Además, un consejero o enfermera estará disponible para asistir a los niños que pueden verse afectados por las preguntas de la encuesta. Aparte de este tipo de malestar, no hay riesgos conocidos para participar en esta investigación.
Beneficios Potenciales	Aunque su hijo puede obtener algún beneficio personal al participar en este estudio, la encuesta no está diseñada para enseñarle a su hijo cómo protegerse cuando este online. Sin embargo, este estudio agregará a la literatura existente enfocándose en estudiantes de la secundaria. Este estudio tiene el potencial de aumentar el conocimiento entre los investigadores, así como los padres, maestros y administradores escolares.
Confidencialidad	Toda la información compartida por su hijo/a será mantenida estrictamente confidencial y las respuestas individuales no serán compartidas. Los padres no tendrán acceso a las respuestas de sus hijos/as. **Los nombres no serán incluidos en la información de la encuesta**. Todas las respuestas de la encuesta se guardarán electrónicamente en un sistema protegido por contraseña llamado UMD Box. Sólo los investigadores

	incluidos en este formulario tendrán acceso a las respuestas de la encuesta (McHugh & Gold). La confirmación del consentimiento de su hijo/a para participar y los formularios de consentimiento de los padres serán almacenados en un archivo cerrado y serán destruidos al final del estudio. Al final de este estudio, los resultados generales estarán disponibles para las escuelas y los administradores del condado - no habrá respuestas individuales disponible.
Tratamiento Médico	La Universidad de Maryland no proporciona ningún seguro médico, de hospitalización u otro seguro para los participantes en este estudio de investigación, ni la Universidad de Maryland proporcionará ningún tratamiento médico o compensación por cualquier daño sufrido como resultado de la participación en este estudio de investigación, excepto cuando sea necesario por ley.
Derecho de Retirarse y Hacer Preguntas	La participación de su hijo/a en esta investigación es completamente voluntaria. Usted y la decisión de su hijo/a de participar en este estudio no tendrán ningún efecto positivo o negativo en sus calificaciones en la escuela. Si decide dejar de participar en el estudio, si tiene preguntas, preocupaciones o quejas, o si necesita reportar algún daño relacionado con la investigación, comuníquese con la investigadora: **Meaghan McHugh, MPH**, Candidata Doctoral O **Robert S. Gold, DrPH, PhD,** Profesor Departamento de Salud Comunitaria, Universidad de Maryland College Park, Escuela de Salud Pública, correo electrónico: mcmchugh@umd.edu; Tel: (301) 938-5398 E-mail: rsgold@umd.edu
Derechos de los Participantes	Si tiene preguntas sobre sus derechos como participante de esta investigación o desea reportar algún daño relacionado con la investigación, comuníquese con: Universidad de Maryland College Park, Oficina de Revisión Institucional 1204 Marie Mount Hall College Park, Maryland, 20742 Correo Electrónico: irb@umd.edu , Teléfono: 301-405-0678 Esta investigación ha sido revisada de acuerdo con los procedimientos de la IRB de la Universidad de Maryland, College Park para la investigación con seres humanos.
Declaración de Consentimiento	Su firma indica que tiene por lo menos 18 años de edad; ha leído este formulario de consentimiento; sus preguntas han sido respondidas a su satisfacción y usted voluntariamente acepta que su hijo/a participe en este estudio de investigación.

	Si acepta participar, por favor firme su nombre abajo.	
Firma y Fecha	**NOMBRE DEL PARTICIPANTE MENOR** **[Por favor imprima]**	
	NOMBRE DEL/ LA PADRE/MADRE **[Por favor imprima]**	
	FIRMA DEL/LA PADRE/MADRE	
	FECHA	

Appendix V: Teens & Technology Survey Codebook

Q1Grade
 In what grade are you?
- ○ 6th (1)
- ○ 7th (2)
- ○ 8th (3)

Q2Sex
What is your sex?
- ○ Male (1)
- ○ Female (2)
- ○ I prefer not to say (3)

Q3Hoursonline
How many hours (on average) do you spend on the Internet each day?
- ○ None. I do not use the Internet (0)
- ○ Less than one hour (1)
- ○ 1 to 2 hours (2)
- ○ 2 to 3 hours (3)
- ○ 3 to 4 hours (4)
- ○ 4 to 5 hours (5)
- ○ More than 5 hours (6)
- ○ I don't know (7)
- ○ I prefer not to say (8)

Q4Chatroomuse
How often, during this school year, have you use the Internet to visit a forum or chat room?
- ○ Never (1)
- ○ Rarely (2)
- ○ Occasionally (3)
- ○ Often (4)
- ○ All the time (5)

Q5Upload pictures
How often, during this school year, have you use the Internet to upload pictures or videos (such as through Youtube)?
- ○ Never (1)
- ○ Rarely (2)
- ○ Occasionally (3)
- ○ Often (4)
- ○ All the time (5)

Q6emailtext

How often, during this school year, have you use the Internet to write someone a message (such as through email or text)?

- o Never (1)
- o Rarely (2)
- o Occasionally (3)
- o Often (4)
- o All the time (5)

Q7watchvideos

How often, during this school year, have you use the Internet to watch videos or look at pictures?

- o Never (1)
- o Rarely (2)
- o Occasionally (3)
- o Often (4)
- o All the time (5)

Q8Social networking

How often, during this school year, have you use the Internet to visit social networking sites such as Facebook, Instagram or snapshot?

- o Never (1)
- o Rarely (2)
- o Occasionally (3)
- o Often (4)
- o All the time (5)

<center>Cyberbully Victimization Scale (7-items)</center>

Q9CBV1

While a student at this school, how often have you had <u>something mean posted or re-posted about you</u>?

- o Never (1)
- o Once (2)
- o A few times (3)
- o Several times (4)
- o All the time (5)

Q9Abywhom

Who sent the mean post(s)?

- o Someone from my school (1)
- o Someone not from my school (2)
- o A relative (3)
- o Both someone from my school AND someone not from my school (4)
- o I don't know (5)
- o I don't want to say (6)

Q10CBV2
While a student at this school, how often have you <u>received a hurtful message from someone by e-mail, text or chat?</u>
- o Never (1)
- o Once (2)
- o A few times (3)
- o Several times (4)
- o All the time (5)

Q10Abywhom
Who sent the hurtful message(s)?
- o Someone from my school (1)
- o Someone not from my school (2)
- o A relative (3)
- o Both someone from my school and someone not from my school (4)
- o I don' know (5)
- o I don't want to say (6)

Q11CBV3
While a student at this school, how often have you had an <u>embarrassing photo or video of you posted or re-posted online that you didn't want others to see</u>?
- o Never (1)
- o Once (2)
- o A few times (3)
- o Several times (4)
- o All the time (5)

Q11Abywhom
Who sent an embarrassing photo(s) or video(s) of you?
- o Someone from my school (1)
- o Someone not from my school (2)
- o A relative (3)
- o Both someone from my school and someone not from my school (4)
- o I don't know (5)
- o I don't want to say (6)

Q12CBV3
While a student at this school, how often have you been <u>purposefully excluded online</u>?
- o Never (1)
- o Once (2)
- o A few times (3)
- o Several times (4)
- o All the time (5)

Q12Abywhom
Who purposefully excluded you online?
- o Someone from my school (1)
- o Someone not from my school (2)
- o A relative (3)
- o Both someone from my school and someone not from my school (4)
- o I don't know (5)
- o I don't want to say (6)

Q13CBV4
While a student at this school, how often have you had <u>something personal posted or re-posted about you online that you didn't want others to know</u>?
- o Never (1)
- o Once (2)
- o A few times (3)
- o Several times (4)
- o All the time (5)

Q13Abywhom
Who posted something personal about your online?
- o Someone from my school (1)
- o Someone not from my school (2)
- o A relative (3)
- o Both someone from my school and someone not from school (4)
- o I don't know (5)
- o I don't want to say (6)

Q14CBV5
While a student at this school, how often have you <u>had gossip or rumors spread about you online</u>?
- o Never (1)
- o Once (2)
- o A few times (3)
- o Several times (4)
- o All the time (5)

Q14Abywhom
Who spread gossip or rumors about you online?
- o Someone from my school (1)
- o Someone not from my school (2)
- o A relative (3)
- o Both someone from my school and someone not from school (4)
- o I don't know (5)
- o I don't want to say (6)

Q15CBV5
While a student at this school, how often have you <u>received hurtful comments or messages about your race or ethnicity</u>?
- o Never (1)
- o Once (2)
- o A few times (3)
- o Several times (4)
- o All the time (5)

Q15Abywhom
Who made hurtful comments about your race or ethnicity online?
- o Someone from my school (1)
- o Someone not from my school (2)
- o A relative (3)
- o Both someone from my school and someone not from my school (4)
- o I don't know (5)
- o I don't want to say (6)

Collective Efficacy (14 items)

Q16CE1 (Informal Social Control)
Students in my school would help out if a student was being made fun of or was being teased through online messages

- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Q17CE2 (Informal Social Control)
Students in my school would help out if a student was spreading rumors or telling lies about another student online
- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Q18CE3 (Informal Social Control)
Students in my school would help out if a student was purposefully excluding another student online
- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Q19CE4 (Informal Social Control)
Students in my school would help out if a student was posting an embarrassing or mean photo or video of another student online
- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Q20CE5 (Social Cohesion and Trust)
Students in my school can be trusted
- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q21CE6 (Social Cohesion and Trust)
Students in my class can be trusted
- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q22CE7 (Social Cohesion and Trust)
Students in my school generally get along with each other
- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q23CE8 (Social Cohesion and Trust)
Students in my class generally get along with each other
- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q24CE9 (Social Cohesion and Trust)
Students in my school generally feel the same way about things
- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q25CE10 (Social Cohesion and Trust)
Students in my class generally feel the same way about things
- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Q26CE11 (Social Cohesion and Trust)
Teachers in my school can be trusted
- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Q27CE12 (Social Cohesion and Trust)
Teachers in my school generally get along with students
- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Q28CE13(Social Cohesion and Trust)
Teachers in my school generally feel the same way about things
- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Q29CE14 (Social Cohesion and Trust)
This is a pretty close-knit school where everyone looks out for each other
- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Safe Behaviors Online (7 items)

Q30SB1

I limit my access to personal information online
- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Q31SB2

I use nicknames on the Internet to avoid using my real identity
- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Q32SB3

I seek guidance from parents or parents to find out what I can do to prevent myself from being bullied online
- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Q33SB4

I provide inaccurate information about my personal data on websites
- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Q34SB5

I do not discuss my personal information on public websites
- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Q35SB6

I ask my parents or teachers what I should do if I am bullied online
- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Q36SB7

I do not reply to people I do not know
- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Parent-Child Communication - Frequency

Q37PC1

How often do you and your parents talk about what you are doing on the Internet?
- o Never (1)
- o Rarely (2)
- o Sometimes (3)
- o Often (4)
- o Always (5)

Q38PC2

How often do you and your parents talk about the time you spend on the Internet?
- o Never (1)
- o Rarely (2)
- o Sometimes (3)
- o Often (4)
- o Always (5)

Q39PC3

How often do you and your parents talk about who have contact with on the Internet?
- o Never (1)
- o Rarely (2)
- o Sometimes (3)
- o Often (4)
- o Always (5)

Q40PC4
When my parent and I talk about Internet use I feel understood
- o Never (1)
- o Rarely (2)
- o Sometimes (3)
- o Often (4)
- o Always (5)

Q41PC5
When my parent and I talk about Internet use I feel taken seriously
- o Never (1)
- o Rarely (2)
- o Sometimes (3)
- o Often (4)
- o Always (5)

Q42PC6
When my parent and I talk about Internet use I feel comfortable
- o Never (1)
- o Rarely (2)
- o Sometimes (3)
- o Often (4)
- o Always (5)

Q43EB
While a student at this school, have you been electronically bullied (Count being bullied through texting, Instagram, Facebook, or other social media.)?
- o No (1)
- o Yes (2)

Q44Hispanic
Are you Hispanic or Latino?
- o Yes (1)
- o No (2)
- o I prefer not to say (3)

Q45Race (Recoded)

1. American Indian or Alaska Native
   Yes (1)
   No (2)

2. Asian
   Yes (1)
   No (2)

3. Black or African American
   Yes (1)
   No (2)

4. Native Hawaiian or Other Pacific Islander
   Yes (1)
   No (2)

5. White
   Yes (1)
   No (2)

6. Other
   Yes (1)
   No (2)

Appendix VI: Participating Schools (n=10)

A total of 1,274 middle school students participated in the web-based survey. This sample represents 15% of the estimated 8,506 students enrolled in the 10 participating schools and approximately 3.4% of the 37,371 students enrolled in all 39 county middle schools (Montgomery County Public Schools, 2015-2016).

Appendix Table 2: Demographics of Participating Schools for 2016-2017 (N=10)

	Gender		Race & Ethnicity							Grade			Total
School ID	Female	Male	Alaska	Asian	Black/ AA	HI	PI	Wh	MU	6th	7th	8th	
1	45.9	54.1	<5	16.7	11.2	18.7	<5	46.9	6.4	35	33.2	31.8	911
2	50.5	49.5	<5	36.9	5.4	7.8	<5	44.5	5.2	32.6	33.3	34.1	1107
3	52.3	47.7	<5	35.9	20.3	11.4	<5	25.1	6.8	50.8	49.2	0	474
4	46.5	53.3	<5	12.4	64	14.9	<5	5.5	<5	32.8	31.8	35.4	861
5	48.3	51.7	<5	10.2	11.9	11.5	<5	61.8	<5	29.7	34.6	35.7	869
6	47.5	52.5	<5	14.8	14.8	26.1	<5	38.7	5.6	33.5	30.5	36	752
7	44.8	55.2	<5	16.9	23.9	45.1	<5	11	<5	33.6	33.5	32.9	973
8	52.1	47.9	<5	7.5	21.5	44	<5	23.3	<5	33	38.5	28.4	703
9	53.6	46.4	<5	12.9	17.3	41.4	<5	25	<5	33.3	34	32.7	957
10	47.6	52.4	<5	14.2	51	20.6	<5	9.7	<5	33.4	32.8	33.7	899
Avg	**49**	**51**	**<5**	**18**	**24**	**24**	**<5**	**29**	**4**	**35**	**35**	**30**	8506

Wh = White, Hi = Hispanic, B/AA = Black/African American, AS= Asian, All other = Native Hawaiian or Pacific Islander, American Indian or Alaskan Native and two or more races.

Appendix Table 3: Demographic Data for Sample and County

Demographic Variable	Sample N=1,054 %	39 Middle Schools N=37,371 %	P-value
Gender			p<.001
Male	44	51	
Female	53	49	
Prefer Not to Say	3	0	
Grade			p<.001
6th	24	34	
7th	39	34	
8th	37	32	
Ethnicity			p<.001
Hispanic	22	27	
Not Hispanic	74	73	
Prefer Not to Say	5		
Race[1]			
White	33	30	
Asian	13	15	
Black/African American	14	22	
American Indian/Alaska Native	1	<5	
Hawaiian/Pacific Islander	.2	<5	
Other	20	N/A	
Multiple races	19	6	
Avg. Free and Reduced Meals (FARMS)	32	35	

[1] Note: study participants were allowed to select all that apply while county data request either a single race or the choice of multiple races. Therefore, data for this demographic variable was not comparable.

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