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# Cyber-Bullying in High School: Associated Individual and Contextual Factors of Involvement

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Cyber-Bullying in High School: Associated Individual and Contextual  
Factors of Involvement

by

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A dissertation submitted in partial fulfillment  
of the requirements for degree of  
Doctor of Philosophy  
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## Dedication

I dedicate this dissertation to my parents who made this work possible with their unconditional love and support. You gave me the courage to pursue my dreams and the ability to do so, and for that I am forever grateful.

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## Abstract

For the past several decades, researchers have extensively investigated the impact of bullying on the nation's youth. Although we may now have a better understanding of these maladaptive behaviors, recent technological advances have created a new forum for bullying. The current study investigated adolescent experiences with cyber-bullying using a self-report survey. Youth ( $N=2,086$ ) from five high schools (grades 9-12) were surveyed to identify individual, peer, parenting, and school factors hypothesized to be related to involvement in cyber-bullying as a victim, perpetrator, or both. Results indicated that cyber-involvement was related to a variety of psychosocial factors, with students who were both perpetrator and victim (i.e., cyber-bully/victims) reporting worse psychosocial functioning and poorer relationships than youth classified as cyber-bullies, cyber-victims, and cyber-uninvolved. Additionally, the academic and behavioral correlates of involvement in this new and growing form of bullying were examined using school records. Inconsistent associations between cyber-bullying and school performance variables were accounted for by differences in the frequency and intensity of behaviors used to define cyber-bullying. Proposed moderators were investigated to determine whether social support buffered the negative psychosocial correlates found for adolescents involved in cyber-bullying. Social support was generally related to better psychosocial functioning for all youth, with the exception of cyber-bully/victims. Results may inform the design and implementation of universal prevention and intervention programs, as well as improve schools' ability to identify youth at risk for involvement in this rapidly growing social phenomenon.

## Introduction

Since the 1970s, researchers have been investigating the growing phenomenon of bullying (Nansel et al., 2001; Natvig, Albrektsen, & Qvarnstrom, 2001). With bullying affecting approximately 20% of children in the United States (Craig et al., 2009; Spriggs, Iannotti, Nansel, & Haynie, 2007), and upwards of 40% of youth abroad (e.g., Northern Ireland; Collins, McAleavy, & Adamson, 2004), extensive research has examined its psychological, social, and behavioral ramifications. Although researchers may now have a better understanding of this public health concern, including both risk and protective factors that contribute to youth impairment and functioning (Jankauskiene, Kardelis, Sukys, & Kardeliene, 2008; Marini, Dane, Bosacki, & YLC-CURA, 2006; Smokowski & Kopasz, 2005), recent technological advances (e.g., cell phones, personal mobile devices, internet) have created a new forum for negative peer relations. With emerging evidence suggesting problems similar to those experienced by adolescents experiencing traditional bullying, the current study examined individual, peer, parenting, and school factors associated with cyber-bullying involvement, as well as academic and behavioral correlates of this growing form of social cruelty.

### *Scope of the Problem*

Within the last decade, technology has infiltrated and dominated the lives of youth around the world. Recent reports estimate that more than 90% of adolescents, across middle and high school, use the computer daily and 55% use cellular telephones to communicate with their friends (Mishna, Cook, Gadalla, Daciuk, & Solomon, 2010). Although the benefits of technology are countless, including worldwide dissemination of knowledge and rapid communication and networking among individuals, there are also costs. As technology transforms the “landscape” of children’s social interactions from

personal to virtual, cyber-bullying (i.e., bullying through electronic media) has become a novel and growing form of social aggression (Williams & Guerra, 2007). Recent reports estimate that approximately 20% of adolescents are involved as victim, perpetrator, or both (Kowalski & Limber, 2007; Sourander et al., 2010). Although the popular press has brought cyber-bullying to the forefront of public and political awareness, empirical research remains in its infancy.

### *Definition of Cyber-Bullying*

Since cyber-bullying is increasingly recognized as a new form of bullying, an adequate understanding of the definition and nature of traditional bullying is needed. Bullying has been described as the repeated exposure to negative actions (e.g., physical contact, verbal assaults, intentional exclusion) committed by one or more individuals that are intentionally designed to inflict harm or discomfort upon individuals who are unable to defend themselves (Olweus, 1995). Thus, bullying is dependent on an asymmetric power relationship determined by physical strength or social power (Wolke, Woods, Stanford, & Schulz, 2001). Historically, two main forms of bullying were identified: physical and verbal. Physical bullying occurs when negative actions are physically committed on a peer (e.g., hitting, pushing), whereas verbal bullying involves verbal insults or taunts. Both forms of bullying can be characterized as direct aggression. More recently recognized, but often harder to identify, is a third form of bullying – relational bullying, which is an indirect form of aggression. Relational bullying involves the negative use of peer relations, such as spreading rumors, to facilitate social exclusion and rejection (Ostrov, Crick, & Stauffacher, 2006). Now, through advancing technologies, verbal and relational bullying have found a new venue.

Cyber-bullying has been defined as negative actions, using electronic devices, of an individual or group intended to cause someone else harm or distress (Campbell, 2005; Mason, 2008; Smith et al., 2008). Therefore, like traditional bullying, cyber-

bullying is based on the systematic abuse of power over others (Mason, 2008). Whereas physical stature placed bullies at an unfair advantage over their victims in the past (Nansel et al., 2001), now technological skill, paired with social anonymity, facilitates social aggression. Akin to traditional bullying, cyber-bullying can take the form of direct or indirect (i.e., requiring a third party) aggression. To illustrate, Willard (2007a) identified several behaviors that constitute cyber-bullying; (1) flaming, which is a series of insults often occurring in a public setting, (e.g., chat room), (2) harassment, which involves repetitive offensive messages communicated via private means (e.g., email), (3) denigration, which is presenting false and derogatory information to others, (4) impersonation, which occurs when the perpetrator poses as the victim and conveys hurtful messages to others, (5) outing, which involves presenting personal information to others about the victim, and (6) exclusion, which occurs when the victim is shunned by others (e.g., kicked out of social networks). Each of these behaviors can be carried out through multiple electronic communication modalities, such as text messaging, email, or web postings.

Although the medium through which students are committing negative acts on their peers has evolved, the definition of cyber-bullying largely echoes that of traditional bullying. In both instances: (1) negative actions are committed by one or more individuals and are (2) intentionally designed to inflict harm or discomfort upon individuals who are (3) unable to defend themselves. However, inconsistencies in the definition and measurement of cyber-bullying, to this point, make comparison of results across studies difficult.

### *Measurement of Cyber-Bullying*

A review of the research to date revealed that most studies have used different terminology, construct descriptions, time referents, and survey instruments to explore this social phenomenon. For example, the use of electronic communication to inflict

harm and distress on others has been termed cyber-bullying, electronic bullying, internet bullying, internet harassment, online harassment, and online victimization. While the terms “internet” and “online” are used to label bullying that occurs *only* via computers (e.g., email, web postings, instant messaging), “cyber-bullying” and “electronic bullying” are more inclusive constructs encompassing bullying that occurs through the use of *any* and *all* communication technologies (e.g., computers, personal mobile devices, cell phones).

The definition of traditional bullying requires the repetition of negative acts committed against peer(s) to distinguish this form of social interaction from normative peer conflict (Vandebosh & Van Cleemput, 2008). Although cyber-bullying researchers often recognize that “repetition” is an important component of this construct, the majority of studies examining cyber-bullying failed to include it in their definition and measurement referring instead to “behavior that can include bothering someone online, teasing in a mean way, calling someone hurtful names, intentionally leaving persons out of things, threatening someone, and saying unwanted, sexually related things to someone (Patchin & Hinduja, 2006).” In fact most researchers identified cyber-involvement by a dichotomous question (i.e., yes or no) regarding whether students had ever bullied or been bullied by others electronically (Li, 2006; Patchin & Hinduja, 2006; Ybarra & Mitchell, 2004). Students were classified as cyber-bully, cyber-victim, or cyber-uninvolved based on *any* previous experience with or exposure to cyber-bullying and cyber-victimization. No distinction was made between a student who received one mean or harmful email from a peer and someone who received mean or harmful electronic messages on a daily basis. In both instances, the student would be classified as a cyber-victim. While dropping the requirement of repetition from the definition and measurement of cyber-bullying is contrary to traditional bullying research, a single episode of cyber-bullying can have a powerful impact and, therefore, warrants

examination. In an exploratory qualitative study conducted by Raskauskas and Stoltz (2007), 93% of adolescents who experienced cyber-victimization (even only *one* incident) felt that the experience negatively affected them (e.g., “made me feel sad, hopeless, or depressed,” and/or “made me afraid to go to school”).

To further complicate measurement, the time referent for when cyber-bullying occurred varies across studies. Some studies examined cyber-bullying during defined time periods, such as the last 2-3 months (e.g., “How often have you been cyber-bullied in the past couple of months?”; Slonje & Smith, 2008) or the past year (e.g., “In the past year, did anyone ever use the Internet to threaten or embarrass you by posting or sending a message about you for other people to see?”; Wolak, Mitchell, & Finkelhor, 2007). Still others examined whether cyber-bullying *ever* occurred (e.g., “I have been cyber-bullied”; Li, 2006, 2008); thereby making it difficult to assess the current prevalence and to determine the proximal influence of these negative acts.

As with any new psychological phenomena, especially those that evolve rapidly, researchers have not yet established a standard well-accepted method or measurement tool. Instead, each research group has independently developed a survey instrument. And of all existing measures, only one has recently published psychometric properties, which was based on a Turkish sample (Topcu & Erdur-Baker, 2010). Therefore, more research is needed to develop and publish a standardized measurement tool that can be used to assess cyber-bullying among adolescents.

Furthermore, while some researchers examine cyber-bullying through two rationally created items, others have modeled their scales after validated bullying and victimization measures. Of primary interest are measures derived from the Olweus’ Bully/Victim Questionnaire (OBVQ) – the “gold standard” of the traditional bullying field (Glew, Fan, Katon, Rivara, & Kernic, 2005). Two research groups, in particular, have adapted the OBVQ to apply to cyber-bullying: Kowalski and Limber (2007) and Smith

and colleagues (2008). These researchers examined cyber-bullying and cyber-victimization by presenting a similar definition, encompassing both computer and cell phone technologies, assessing a 2-3 month time period, and classifying students based upon recent bullying experiences (e.g., occurring at least “once or twice” within the past couple of months) using Olweus’ Likert scale. However, due to the novelty of the construct and the ability of a single incident to cause marked distress and/or impairment, both research groups use a less conservative cutoff for classification than Olweus’ more stringent scoring criteria (i.e., requiring bullying or victimization to occur at least 2-3 times a month for categorization).

#### *Unique Aspects of Cyber-Bullying*

Regardless of the manner in which cyber-bullying is assessed, several differences have been consistently identified when contrasting features of cyber-bullying with traditional bullying. These include: possibility of anonymity of perpetrator, absence of social cues or direct feedback from the victim to moderate a perpetrator’s behavior, inseparability of the victim from technologies that could be used for bullying, breadth of audience, and lack of supervision and monitoring in cyberspace. These distinctions are made possible by the inherent features of the advancing technologies that likely facilitate the proliferation of bullying (e.g., a mass message can be sent from a false email account; Patchin & Hinduja, 2006).

Consistent with traditional bullying, cyber-bullying is based on a real or perceived power differential (Aricak et al., 2008). However unlike traditional bullying, which typically occurs face-to-face, cyber-bullies do not need an imbalance of physical strength or social power. Instead, they assert their dominance through their competence and mastery in using technology and their ability to hide their identity (Aricak et al., 2008). Bullying through electronic means has facilitated a perpetrator’s ability to be and remain anonymous (e.g., temporary email accounts, pseudonyms in chat rooms). This

anonymity often results in an even greater power imbalance than is typical with traditional bullying, thereby creating a stronger, and potentially more dangerous, impact on victims' social-emotional well-being.

Anonymity, moreover, removes social constraints that may influence an individual's decision to engage in or continue bullying behaviors. Invisibility often provides individuals with the opportunity to engage in behaviors that they otherwise would not (Slonje & Smith, 2008). Thus, youth who do not bully in the traditional sense, because of fear of getting caught or of direct confrontation, may still use electronic means to hurt others. This view has led researchers to propose that traditional victims might engage in electronic bullying as retribution for past acts because of diminished fear of retaliation (Hinduja & Patchin, 2008). Furthermore, without witnessing firsthand a target's emotional reactions, such as crying, cyber-bullies may not realize that their comments were inappropriate or misconstrued (Kowalski & Limber, 2007) – or at least fully appreciate their negative impact. Therefore, the propensity for negative electronic interactions between peers to re-occur in the absence of necessary social feedback and norms is greatly increased.

The inseparability of twenty-first century youth from technological devices promotes bullying across settings and time. Unlike traditional bullying, which typically occurs during school hours and on or around school campuses, cyber-bullying can occur *any time* and *anywhere*. Therefore, while children were previously able to return to the relative safety of their homes to escape victimization, they now constantly remain vulnerable targets because of the infiltration of electronic communication (e.g., computers, cell phones). Thus, cyber-bullying has expanded the reach of social cruelty (Hinduja & Patchin, 2008).

New technologies have also broadened the audience who witnesses bullying and victimization. While bystanders in traditional bullying were limited to those youth present

in the school hallways, cafeteria, or bathroom, cyber-bullying can reach large peer groups in a moment's time (Slonje & Smith, 2008). A picture posted on a website with the intention of embarrassing the target of the photograph instantaneously reaches an audience much larger (hundreds, in some instances thousands) than the youth's immediate social network. The devastating impact of this type of bullying has been dramatically illustrated in the national news on an accelerating basis (Li, 2008). One poignant example is that of a 15-year-old boy who became an instant celebrity when a group of boys posted a video online that he had created of himself acting out a Star War's fight scene. Within days, millions of people around the world downloaded the video. Due to this incident, the boy sought counseling, dropped out of school, and filed a lawsuit against his peers who posted the video online for all to see (Li, 2007).

Unlike traditional bullying, where school faculty and staff can, at least in theory and often in practice, monitor the activities of their students, there is minimal supervision in cyberspace. Some social networking sites monitor their chat rooms and postings in an attempt to control information presented on their web pages; however, their presence and oversight is negligible. Furthermore, personal communication (e.g., text messages, email) is typically only usually viewable by the sender and recipient and therefore is not supervised (Patchin & Hinduja, 2006). Thus, responsibility falls on parents to control and monitor their adolescents' safe and appropriate use of technology. Many parents, however, may be unfamiliar or uncomfortable with modern technology, and, moreover, they may not be knowledgeable about cyber-bullying. Illustratively, one study demonstrated that parents are often unaware of their child's involvement in cyber-bullying, with only 4.8% of parents reporting that their child engaged in cyber-bullying compared to 17.3% of children who self-reported participation (DeHue, Bolman, & Vollink, 2008). Therefore, youth are able to engage in cyber-bullying with little concern that their parents, teachers, or other adults will find out. Additionally, until recently,

schools lacked the authority to investigate and respond to cyber-bullying (Willard, 2007b). Even though schools can now investigate and apply consequences to those engaging in cyber-bullying, rarely do cyber-victims inform their parents (8%) or their teachers (3%; Mishna et al., 2010) that it is occurring, thereby contributing to students' confidence that cyberspace is an ideal place for bullying.

### *Demographic Characteristics of Participants of Cyber-Bullying*

Although cyber-bullying is a new and growing social phenomenon, much of the preliminary exploration has been rooted in the traditional bullying literature. By examining existing studies, specific research hypotheses have been generated to investigate demographic characteristics of those involved in cyber-bullying. Specifically, cyber-involvement was hypothesized to differ based on age and gender trends previously identified.

*Gender.* Extensive research has identified gender differences in bullying behaviors. Reports consistently indicate that males are more likely to be both perpetrator and victim of direct forms of bullying (e.g., physical; Nansel et al., 2001; Olweus, 1995). In contrast, females are more likely to engage in verbal and relational bullying (Wolke et al., 2001). Based on these patterns and the fact that communication technologies provide opportunity for verbal and relational aggression, researchers proposed that females would be more likely to be both victim and perpetrator of cyber-bullying. However, this hypothesis has only mixed support (Topcu, Erdur-Baker, & Capa-Aydin, 2008). Although most studies have reported no gender differences – with males and females equally likely to be victim and perpetrator (Hinduja & Patchin, 2008; Slonje & Smith, 2008; Topcu et al., 2008; Williams & Guerra, 2007; Ybarra & Mitchell, 2004a), some researchers have found gender differences varying by type of involvement (e.g., males were more likely to be cyber-bullies, whereas females were more likely to be cyber-victims; Kowalski & Limber, 2007; Li, 2007).

Examination of the literature, including study methodology, did not clarify why discrepant gender findings have been reported. To illustrate, two research groups that employed similar measurement techniques (i.e., adapted the OBVQ to assess bullying through *any* electronic communication technology), albeit different samples (i.e., United Kingdom versus United States) found conflicting results. Whereas Slonje and Smith (2008) reported no gender differences among their sample of youth ages 11-16 years, Kowalski and Limber (2007) found that females in grades 6-8 were disproportionately identified as cyber-victims and cyber-bully/victims. Although these results suggest that gender differences may, in part, be a function of age – gender differences disappear among older adolescents – overall gender differences among youth involved in cyber-bullying remain uncertain.

*Age.* Age is another demographic variable that has been widely explored in the bullying and victimization literature. Consensus exists that bullying gradually declines with age, with a peak in incidence rates occurring among middle school students (i.e., ages 10-14; Batsche & Knoff, 1994; Boulton, & Underwood, 1992; Swearer & Carey, 2003). Direct forms of bullying typically decrease as children acquire advanced verbal and cognitive skills. Bullying, however, does not disappear, but rather can become more subtle, complex, and difficult to detect, as in the case of relational bullying (Scheithauer, Hayer, Petermann, & Jugert, 2006). Therefore, prevalence trends for traditional bullying likely reflect not only the increased tendency of younger children to be overtly victimized by their peers (e.g., physical bullying or verbal bullying), but also a problem with the current measurement of bullying (e.g., over-reliance on observable behaviors). Hence, it is not surprising that the age trend for cyber-bullying has been shown to be opposite to that found in traditional bullying. Research has revealed that youth involvement in cyber-bullying tends to increase with age (Li, 2007; Ybarra & Mitchell, 2004b, 2007). Illustratively, one comprehensive study found that older youth were more likely to report

involvement in cyber-bullying; 8% in 7<sup>th</sup>, 12% in 8<sup>th</sup> and 9<sup>th</sup>, and 23% in 10<sup>th</sup> and 11<sup>th</sup> grade, respectively (Smith, et al., 2008). This difference may reflect not only increased access and availability of communication technologies in adolescence, but also a difference in the manner in which power dynamics are tested and revealed. However, for every study that demonstrates age differences, another refutes their findings thereby leading to inconsistencies in the literature (Tokunaga, 2010).

*Ethnicity.* Although race and ethnicity play a role in some instances of bullying, relatively little research has been conducted to examine racial and ethnic differences in the rates of bullying and victimization. Early studies failed to examine racial and ethnic differences for participants of traditional bullying due to small and/or homogenous samples (e.g., consider the demographics of Norway). Recent results however revealed that minority youth (e.g., Black adolescents followed by Hispanic youth) report less victimization than Caucasian students (Nansel et al., 2001; Sawyer, Bradshaw, & O'Brennan, 2008; Spriggs et al., 2007). Only one study, among middle school students (79% African American, 18% Caucasian), reported no racial differences for traditional bullying (Seals & Young, 2003). However, this isolated finding is consistent with a recent investigation of cyber-bullying that did not find ethnic differences (e.g. white/non-white) in cyber-bullying perpetration and victimization (Hinduja & Patchin, 2008). Due to limited research support and methodological limitations (e.g., small and homogenous samples), it is premature to draw the conclusion that there are no racial or ethnic differences for youth engaged in cyber-bullying.

In sum, the traditional bullying literature has formed a basis for cyber-bullying exploration. By examining extant findings, hypotheses were formulated to investigate demographic characteristics of youth involved in cyber-bullying. At present the literature reveals inconsistent findings regarding gender and age differences for youth involved in cyber-bullying (Tokunaga, 2010), and only one study has investigated racial/ethnic

identification among youth involved. Although these demographic characteristics have been examined *across* the literature – often with small and/or homogenous samples – only one study has examined all variables within a *single* investigation (Hinduja & Patchin 2008). Therefore, the current study further explored the relationship between demographic characteristics of youth involved in cyber-bullying (e.g., gender, age, and ethnicity) to better understand who may be at risk for involvement in this new form of social aggression so that targeted interventions can be developed and later implemented.

#### *Individual and Contextual Features of Involvement in Cyber-Bullying*

Given the rapid growth of this new form of negative peer relations, individual, peer, family, and school characteristics associated with cyber-bullying and cyber-victimization are now being identified. However, this effort is crucial to the prevention and intervention activities of educators and mental health-care providers who need to know not only the *correlates* of this type of bullying, but also the individual and/or contextual variables that *protect* students from its potential detrimental effects. As with any cross-sectional study, however, the directionality of the findings will remain uncertain until longitudinal research is conducted and disseminated.

*Individual characteristics.* Previous research has shown bullying behaviors to be negatively related to a range of psychological, social, and behavioral variables. Victims of traditional bullying frequently report symptoms of depression, social anxiety, and suicidal ideation (Kaltiala-Heino, Rimpelä, Marttunen, Rimpelä, & Rantanen, 1999; Marini, et al., 2006; Yang, Kim, Kim, & Shin, 2006). They generally suffer from poor self-esteem and possess negative cognitions about themselves, their situations, and their friendships (O'Moore & Kirkham, 2001). Bullying has also been associated with externalizing behaviors (e.g., delinquency), internalizing distress (e.g., depression), and substance abuse (Kaltiala-Heino, Rimpela, Rantanen, & Rimpela, 2000; Nansel et al.,

2001; Olweus, 1995; Yang et al., 2006). Furthermore after much speculation (Espelage & Swearer, 2003; Olweus, 1995; Rigby & Slee, 1999), research has found that low empathy, particularly affective empathy, is related to frequent, rather than occasional, physical and relational bullying (Jolliffe & Farrington, 2006). Bully/victims constitute a third and smaller group of students who are both perpetrators and targets of bullying. Bully/victims have consistently experienced the poorest psychosocial adjustment – including more rejection by peers and being more “hot tempered”, hyperactive, and impulsive than ‘pure’ bullies or victims, as measured by peer and teacher report (Schwartz, 2000).

Not surprisingly, emerging evidence suggests that cyber-involvement, like traditional bullying, is associated with considerable distress and discomfort. Ybarra, Diener-West, and Leaf (2007) reported that 40% of victims of cyber-bullying report emotional distress as a direct result of their negative online experiences. Like traditional victims, cyber-victims report both internalizing and externalizing symptoms (Kowalski, Limber, & Agatston, 2008; Perren, Dooley, Shaw, & Cross; 2010; Wang, Nansel, & Iannotti, 2011; Ybarra, 2004). In one study, males targeted by internet bullying were three times more likely to report symptoms of major depression, as measured by questions derived from the Diagnostic Statistical Manual-IV (DSM-IV), than similar peers who were not bullied through the internet (Ybarra, 2004). Additional analyses conducted on the same sample revealed that internet victims, regardless of gender, were 2.5 times more likely to report depressive symptomology (Mitchell, Ybarra, Finkelhor, 2007). This is very concerning, given that researchers recently discovered that, like those victims of traditional bullying, students who have been cyber-bullied were more likely to report suicidal thoughts and behaviors than those who were perpetrators (Hinduja & Patchin, 2010). Recent research has also revealed a significant relationship between cyber-victimization and self-esteem, with students who were cyber-bullied reporting lower self-

esteem than those students with little to no involvement (Patchin & Hinduja, 2010). In terms of externalizing behaviors, Mitchell and colleagues (2007) found that cyber-victims were 2.2 times more likely to report delinquency and twice as likely to report substance abuse than youth not involved in cyber-bullying.

Recent research on the psychosocial functioning of cyber-bullies mirrors many of the findings from the traditional bullying literature. Youth classified as a cyber-bully were more likely to report both internalizing and externalizing psychosocial challenges (Ybarra & Mitchell, 2004b). According to a national survey of adolescents, youth-reported delinquency, depressive symptomology, and substance use was associated with cyber-bullying. Moreover, as the frequency of the perpetration of cyber-bullying increased, so did the severity and intensity of the psychosocial and behavioral challenges of those youth involved (Ybrara & Mitchell, 2007). This finding is consistent with those presented by Kaltalia-Heino and colleagues (2000) who indicated that as the frequency of traditional bullying involvement increased, so did mental health problems; including depressive symptoms, anxiety, psychosomatic symptoms, and alcohol consumption. Together, these findings suggest that not only is bullying-involvement, including cyber, associated with the presence of psychosocial and behavioral challenges, but also that the frequency of involvement in bullying is proportionately related to the severity of these concerns. Moreover, recent research revealed an association between cognitive and affective empathy and cyber-bullying (Ang & Goh, 2010). In a study conducted in Asia, researchers discovered that high school students reporting low levels of affective and cognitive empathy were more likely to report higher levels (or more frequent involvement) of cyber-bullying. This finding parallels those obtained by Jolliffe and Farrington (2006) that suggested that students who frequently participate in bullying were less empathetic than those involved in infrequent bullying.

Finally, parallel to reports of traditional bully/victims, cyber-bully/victims are more likely to report greater emotional distress and difficulties compared to victim-only and bully-only youth (Sourander et al., 2010; Ybarra & Mitchell, 2004b). This finding indicates that youth involved as both victim and perpetrator of cyber-bullying are more likely to experience extreme psychological maladjustment compared to 'pure' cyber-victims and cyber-bullies. However, as is the case in the traditional bullying literature, small sample sizes often prohibit investigation into the characteristics of this newly identified group (Rigby, 2004). Therefore, more research is necessary, requiring larger samples – as in the current study – to obtain an adequate profile of youth who self-identify as both cyber-bully and cyber-victim.

Although these findings demonstrate the association between cyber-involvement, internalizing distress, and externalizing manifestations, the majority of researchers failed to administer reliable and valid self-report measures, relying instead on rationally constructed and face-valid questions created for each study. Furthermore, due to the short history of cyber-bullying, important variables previously identified in the traditional bullying literature (e.g., anxiety, self-esteem, empathy) have yet to be systematically evaluated as they relate to cyber-bullying and cyber-victimization by multiple researchers to demonstrate reliable findings (Hinduja & Patchin, 2008; Mitchell et al., 2007).

*Parenting practices.* Family variables, and in particular parenting practices, have been consistently related to bullying behaviors. Rigby (1994) found that families of bullies demonstrate lower levels of emotional support, display more negative affect, and show poorer communication patterns than families of children uninvolved in bullying. In addition, adolescents who reported low levels of emotional support from their family and inconsistent discipline practices from their parents were more prone to be involved in traditional bullying. Findings indicate that these parents use power-assertive techniques to manage their children's problematic behavior, in which physical punishment or verbal

outbursts are followed by periods of ignoring (Pellegrini, 1998; Smokowski & Kopasz, 2005). Thus, bullies may use the aggressive behaviors modeled at home in their interactions with peers to gain power and control. Lastly, a lack of parental monitoring has been associated with bullying and delinquency. Recent research revealed that less parental monitoring (e.g., tracking children's whereabouts, knowledge of their activities) differentiates youth involved as bullies and bully/victims from those uninvolved (Marini et al., 2006). Similar findings have emerged regarding the familial experiences of participants of cyber-bullying.

Ybarra and Mitchell (2004b) recently found that poor parent-child emotional bonding, less parental monitoring, and frequent parental discipline were related to an increased likelihood for cyber-bullying. Specifically, 44% of youth who bully online reported a very poor emotional bond with their parents compared to only 19% of those uninvolved. After controlling for significant demographic characteristics (i.e., age, race, household income), youth with poor parent-child emotional bonding were still twice as likely to engage in online bullying than those with a strong emotional bond. Furthermore, youth with low parental monitoring had a 54% greater likelihood of bullying online than youth who report normal to high levels of parental monitoring.

Findings also suggest a similar family profile for victims of traditional and cyber-bullying. Wolak and colleagues (2007) investigated differences in psychosocial characteristics of youth harassed online compared to those never cyber-bullied. Parent-child conflict was assessed by creating a composite score representing the times their main caregiver nagged, yelled, and took away privileges. Dichotomizing this variable into high versus low conflict, youth who were victims of online bullying were twice as likely to report higher conflict with their parents than those not bullied. This suggests if problematic social relations are modeled at home, children's relationship with peers may

be affected due either to inadequately learned pro-social interactional patterns or perhaps an inability to turn to their family for support.

Just as poor parent-child relationships can increase an adolescent's risk for involvement in bullying behaviors and delinquency, positive parent-child relationships can also moderate risk and promote healthy psychological and social outcomes (Baldry & Farrington, 2005; Espelage, Bosworth, & Simon, 2000). Although no published studies could be identified in the cyber-bullying literature, a recent study on the role of social support as a moderator for the effects of traditional bullying and victimization revealed that adolescents who perceived higher levels of parental support reported lower levels of internalizing distress (Davidson & Demaray, 2007). These results suggest that parental support may also buffer the effect of cyber-victimization on internalizing distress. Additional research, however, is necessary to determine whether parental support and monitoring protect students from involvement in cyber-bullying, as well as buffer the hypothesized negative psychosocial correlates of this form of social aggression.

*Peer relations.* Extensive research has examined the peer relations of youth involved in bullying and victimization (O'Connell, Pepler, & Craig, 1999). Typically, children form peer relationships based on shared characteristics, such as similar behavioral styles and attitudes. In this context, bullies typically affiliate with other aggressive youth because they share physical aggression and positive attitudes toward bullying (Carney & Merrell, 2001; Pellegrini, 1998). For example, Espleage, Holt, and Henkel (2003) found that bullies tended to affiliate with other youth who bullied and fought at the same frequency. Thus a bully's peer relations are typified by aggression and normative beliefs – or acceptance – of bullying as a suitable behavior (Haynie et al., 2001). Additionally, victims of bullying also demonstrate poor social adjustment (Nansel et al., 2001). Specifically, victims reported greater difficulty making and maintaining

friends than their peers (Olweus, 1995). Moreover, if friendships are formed they may not be quality ones; victims often report lower friendship satisfaction than their non-victimized peers (Jantzer, Hoover, & Narloch, 2006). Without friends to serve as support, youth are at an increased risk for victimization.

Although negative peer relations have been repeatedly demonstrated to function as a risk factor for involvement in traditional bullying, minimal research has examined the association between cyber-bullying and peer relations. A review of the cyber-bullying literature revealed no published studies investigating the problematic peer relationships of adolescent cyber-bullies. Therefore, it remains unknown whether, like traditional bullies, they affiliate with other youth involved in similar cyber-behaviors or other delinquent acts (Haynie et al., 2001). For victims, only three studies have investigated the perceived peer relations of cyber-bullied youth. Recently Katzer, Fetchenhauer, and Belschak (2009) surveyed youth in grades five through eleven to determine the frequency, context, and associated factors of chat room victimization, a specific venue for cyber-bullying. Results revealed that social integration and social popularity were negatively related to both traditional and chat room victimization. These findings suggest that youth who perceive themselves as less connected to their school and less popular are more likely to experience victimization across bullying contexts and types.

In contrast, the presence of healthy relationships may serve a protective function (Pellegrini et al., 1999). Hodges, Boivin, Vitaro, and Bukowski (1999) examined friendship presence and quality as moderators of traditional victimization and its negative ramifications. Children enrolled in the fourth and fifth grades were assessed twice during the year. Results revealed that friendships served as a buffer against negative psychological adjustment for victimized youth. While victimization measured at Time 1 predicted an increase in internalizing problems for children without a best friend, children with a best friend suffered no such increase. These results suggest that a close friend

may provide social support, and/or intervene on behalf of the victim during peer conflict (Bollmer, Milich, Harris, & Maras, 2005; Goldbaum Craig, Pepler, & Connelly, 2003). Recent research has examined whether this social phenomenon, often termed the “friendship protection hypothesis” holds true for youth identified as cyber-victims (Wang, Ionnotti, & Nansel, 2011). Unfortunately, results suggest no association between the number of friends adolescents report and cyber-victimization.

Although cyber-bullying research has demonstrated that the quantity of friends does not shield youth from cyber-victimization, it remains to be seen whether the presence of a *best* friendship or perception of support will protect youth from cyber-victimization. Furthermore, even though one study revealed that perceptions of friends to be trustworthy, caring, and supportive are related to less perpetration of cyber-bullying (Williams & Guerra, 2007), the relative relationship of psychosocial-adjustment and/or academic performance to both cyber-bullies and cyber-victims remains unknown.

*School climate.* Researchers have begun to investigate the climate and culture of schools as potential contributing factors to increased bullying (Haynie et al., 2001; Karatzias, Power, & Swanson, 2002). While some researchers have investigated the structure of the school (e.g., school size, class size; Wolke et al., 2001), others have examined contextual characteristics (e.g., discipline practices, safety problems, peer interactions; Brand, Felner, Shim, Seitsinger, & Dumas, 2003). Results revealed that large school size, lack of supervision, and a school climate that normalizes aggressive beliefs and behaviors are predictive of increased bullying (Karatzias et al., 2002). More generally, youth who report a poorer perception of school climate are more likely to participate in traditional bullying (Nansel et al., 2001).

Although cyber-bullying typically occurs outside of school, research examining the relationship between school factors and cyber-victimization is necessary since many incidents are thought to be an extension of traditional bullying (Campbell, 2005; Hinduja

& Patchin, 2008; Li, 2007; Raskauskas & Stoltz, 2007). This postulate is supported by preliminary evidence suggesting that victims of text bullying are more likely to report that they feel unsafe at school than those not involved (Marsh, McGee, Nada-Raja, & Williams, 2010). Therefore, research needs to examine the protective potential of positive school climate on youth. Similar to the findings that teacher involvement, clear boundaries, supervision, and fair discipline practices reduce traditional bullying behaviors (Olweus, 1994), Williams and Guerra (2007) have recently reported a positive relationship between school climate and cyber-bullying. As part of a statewide bullying prevention initiative, students enrolled in grades five, eight, and 11 were surveyed to examine whether key predictors of traditional bullying also predicted cyber-bullying. As expected, results revealed that a more positive perception of school climate (e.g., trusting atmosphere, fair discipline practices, and school connection) was associated with lower rates of involvement in both traditional and cyber-bullying. For every unit increase on the school climate index, there was a 9% decline in the odds of cyber-bullying. These findings suggest that the impact of school climate – including student perceptions of atmosphere, teaching experiences, and discipline – extends beyond school walls.

In sum, although researchers are beginning to explore the characteristics of youth involved in cyber-bullying to better determine the similarities and differences with traditional bullying, few well-designed studies have systematically described the associated individual characteristics and contextual factors. Most researchers have relied solely on a small sampling of face-valid questions, rather than reliable and validated measures, to determine whether variables related to traditional bullying are also associated with cyber-bullying. Although this information will help determine whether factors targeted in traditional bullying prevention initiatives can adequately address cyber-bullying and cyber-victimization, additional research is necessary to

further examine the association of factors across all cyber-bullying categories (i.e., cyber-bully, cyber-victim, cyber-bully/victim, and cyber-uninvolved).

#### *Academic and Behavioral Correlates of Cyber-Bullying*

Although research is beginning to reveal some of the psychological, emotional, and social correlates and/or predictors of involvement in cyber-bullying, few researchers have investigated the academic and behavioral correlates of this new form of social aggression. Although previous research has revealed some of the negative associations of traditional bullying (e.g., truancy, delinquency, academic decline; Feldman, et al., 2011; Kumpulainen & Rasanen, 2000; Mayer, Ybarra, & Fogliatti, 2001; Nansel et al., 2001; Perren & Hornung, 2005), it is unclear if these findings hold for cyber-bullying. Although preliminary research has explored self-reported school-related performance variables, none have explored school records.

*Academic performance.* Even though the link between bullying and psychosocial functioning has been well established, less is known about the relationship between bullying behaviors and academic performance. Cross-sectional research on traditional bullying has revealed that bullies perform worse academically than uninvolved students and victims (Nansel et al., 2001; Spriggs et al., 2007). Moreover, a recent longitudinal study of middle school bullying and victimization conducted by Feldman and colleagues (2011) revealed that the academic underachievement of middle school bullies persists years later in high school. Although the negative relationship between traditional bullying and academic performance has been replicated (Glew et al., 2005), the relationship between victimization and academic achievement has been inconsistent (Farrington, 1993; Hanish & Guerra, 2002). Although some researchers hypothesize a bi-directional link between academic achievement and victimization (Austin & Draper, 1984), most studies have concluded that there is no *direct* link between victimization and academic performance (Feldman et al., 2011; Glew et al., 2005; Hanish & Guerra,

2002). Therefore, researchers have sought to identify a possible *indirect* link between victimization and academic achievement. Of particular interest, researchers have examined whether psychological adjustment, such as depression, loneliness, motivation, and self-worth mediates the predicted relationship (Juvonen, Nishina, & Graham, 2000; Nishina, Juvonen, & Witkow, 2005; Tatura, et al., 2008). In one well-designed, large, longitudinal study, Nishina and colleagues (2005) demonstrated that psychosocial problems mediate the relationship between peer victimization and school performance. Findings suggested that students victimized by their peers were more likely to report symptoms of depression, anxiety, and loneliness, which contributes to their disengagement in school, and in effect, lower academic performance and decreased school attendance.

To date, only two studies have examined the relationship between cyber-victimization and academic performance (Huang & Chou, 2010; Ybarra et al., 2007). Ybarra and colleagues (2007) examined the relationship between cyber-victimization – excluding other bullying groups – and academic achievement by asking middle school students to report their grades (i.e., “What kinds of grades do you get in school?”). Findings from this study revealed no association between cyber-victimization and poor academic performance. However, a statistical trend revealed that *frequent* victims of online harassment, as defined by being victimized monthly or more often, were more likely to report poorer grades (i.e., C’s or poorer; 14.1%) when compared to infrequent victims (7.5%) and uninvolved students (8.7%). Despite a growing literature demonstrating that traditional bullies have poorer academic performance, only Huang and Chou (2010) have investigated this relationship amongst cyber-bullies. Again, researchers relied on student report of their academic achievement as average, below average, or above average. Results revealed no difference in performance across

cyber-bullying groups (e.g., victim, bully, bystander). At this time, more research is necessary to clarify the relationship between cyber-bullying and academic achievement.

*Behavioral conduct.* Research consistently identifies a positive association between bullying behaviors and behavioral misconduct. Through parent, teacher, and self-report measures, bullies are routinely identified as demonstrating externalizing behaviors, including conduct problems, hyperactivity, and aggressive behaviors (Kumpulainen & Rasanen, 2000; Perren & Hornung, 2005; Wolke, Woods, Bloomfield, & Karstadt, 2000). Furthermore, research reveals stability of behavioral misconduct across the lifespan as bullies' externalizing behaviors eventually manifest as rule-breaking and antisocial acts (Huesmann, Eron, & Dubow, 2002; Khatri, Kupersmidt, & Patterson, 2000; Olweus, 1995). Victimization is also related to behavioral misconduct. Most studies have found that victims are more likely to demonstrate aggressive and acting-out behaviors than students uninvolved in bullying, as indicated by parent and self reports, as well as school records data (DeRosier, Kupersmidt, & Patterson, 1994; Feldman et al., 2011; Khatri et al., 2000; Wolke et al., 2000).

Perhaps not surprisingly, cyber-bullying is also associated with externalizing behaviors. A recent study conducted by Ybarra and Mitchell (2007) revealed that youth involved in online bullying were more likely to demonstrate aggressive and rule-breaking behaviors according to the Youth Self Report (YSR). Moreover, the likelihood of reporting behavioral problems increased as cyber-bullying perpetration increased. For example, youth involved in occasional online bullying (e.g., 3-5 times over the past year) were three times more likely to report rule-breaking and aggressive behaviors, while frequent cyber-bullies (e.g., 6 or more times) were seven times more likely, than youth uninvolved in cyber-bullying.

Behavioral problems are not limited to perpetrators of online bullying. A recent survey conducted by Ybarra and colleagues (2007) found that cyber-victims also report

discipline problems at school. Adolescents victimized online by their peers were more likely to report skipping school, carrying a weapon to class, and receiving more detentions and suspensions. Alarming, those who were bullied online were eight times more likely than uninvolved students to report carrying a weapon to school within the last 30 days. Further support for the association between cyber-victimization and problematic behaviors was provided by Hinduja and Patchin (2007) whose online survey suggested that cyber-victimization is positively related to offline problem behaviors, ranging from minor forms of deviance (e.g., skipping school, cheating on a test) to more serious delinquent acts (e.g., carrying a weapon, destruction of property). These findings were further accentuated by age, with older youth reporting more problem behaviors.

In conclusion, exploration of the academic and behavioral correlates of cyber-bullying and cyber-victimization is just beginning. While researchers may extrapolate findings from the traditional bullying literature, this connection to the cyber realm remains unclear. Furthermore, current research has solely relied on self-report to assess the academic and behavioral correlates of cyber-bullying.

### *Current Study*

As the phenomenon of bullying has transformed with advancing technology, its context, modality, and impact have grown exponentially. In its new iteration, cyber-bullying includes a growing variety of behaviors and new set of challenges for schools and broader society. Although this phenomenon has attracted considerable media and political attention, systematic research exploring the correlates and implications of this form of bullying is limited. Recent findings suggest that traditional bullying and victimization predicts involvement in cyber-bullying (Hinduja & Patchin, 2008; Raskauskas & Stoltz, 2007). However, less is known regarding the individual and

contextual variables that are associated with this growing social phenomenon (Aricak et al., 2008; Raskauskas & Stoltz, 2007; Ybarra et al., 2007).

Although researchers have begun to examine the psychological and behavioral correlates of cyber-bullying and cyber-victimization, few well-designed comprehensive studies have been conducted. A review of the literature reveals that hardly any studies examine the linkages and impact of this new form of social cruelty among *both* perpetrators and victims. Instead the vast majority of studies report on one or the other (e.g., Katzer et al., 2009; Williams & Guerra, 2007; Ybarra, 2004; Ybarra et al., 2007; Ybarra & Mitchell, 2007).

The current study examined the: (1) frequencies, contexts, and types of cyber-bullying behaviors, (2) individual, parenting, peer, and school factors associated with participation in cyber-bullying as a victim, perpetrator, both, or uninvolved, (3) academic and behavioral correlates of cyber-bullying involvement, and (4) social support variables hypothesized to buffer the negative correlates of cyber-bullying and cyber-victimization. A self-report survey was administered to high school students during the 2009-2010 academic school year. School records were collected to determine whether the negative academic and behavioral correlates of traditional bullying held true for cyber-bullying. Taken together, this information provides a foundation upon which school policies and interventions can be developed and implemented.

### *Hypotheses*

Based on the current literature, the following hypotheses were explored:

*Hypothesis 1:* Cyber-bullying classification (cyber-bully, cyber-victim, and uninvolved students<sup>1</sup>) will be differentially related to specific dependent variables within the

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<sup>1</sup>Although cyber-bully/victims, are of growing interest because they often demonstrate the most serious difficulties, there were no original hypotheses related to this group because it was anticipated that the sample size would prohibit their inclusion.

individual domain of functioning (e.g., depression, anxiety, empathy, self-esteem, conduct).

- a. Cyber-victims and cyber-bullies will endorse higher rates of depression than students self-classified as cyber-uninvolved
- b. Cyber-victims will endorse the highest rates of anxiety, followed by cyber-bullies, and cyber-uninvolved students
- c. Cyber-bullies will report lower rates of empathy (high rates of unemotional/callousness) than cyber-victims and cyber-uninvolved students
- d. Cyber-victims will report lower rates of self-esteem than cyber-uninvolved students
- e. Cyber-bullies will report the highest rates of conduct problems, followed by cyber-victims, and cyber-uninvolved students

*Hypothesis 2:* Cyber-bullying classification will be differentially related to specific dependent variables within the domain of perceived parenting behaviors (e.g., parenting style, parent monitoring, strictness/supervision).

- a. Cyber-victims and cyber-bullies will be less likely to report authoritative parenting practices when compared to cyber-uninvolved students
- b. Cyber-victims will report higher rates of supervision and monitoring than cyber-uninvolved students
- c. Cyber-bullies will report lower rates of supervision and monitoring than cyber-uninvolved students
- d. Cyber-bullies will report low rates of parental support when compared to cyber-victims and cyber-uninvolved students

*Hypothesis 3:* Cyber-bullying classification will be differentially related to specific dependent variables within the peer domain of functioning (e.g., deviant peer group, negative peer interactions, support of close friend).

- a. Cyber-victims will report less peer support compared to cyber-uninvolved students
- b. Cyber-bullies will report that they affiliate with a deviant peer group when compared to cyber-victims and cyber-uninvolved students
- c. Cyber-bullies and cyber-victims will report more negative peer interactions than cyber-uninvolved students

*Hypothesis 4:* Cyber-bullying classification will be differentially related to specific dependent variables within the school domain (e.g., teacher support, consistency and clarity of rules, safety).

- a. Cyber-bullies will report the lowest rates of teacher support
- b. Cyber-bullies will report the lowest rates of consistency and clarity of rules and expectations, followed by cyber-victims
- c. Cyber-victims will perceive greater school safety problems than cyber-uninvolved students

*Hypothesis 5:* Cyber-bullying classification will be differentially related to school-related performance variables (e.g., school participation, academic performance, behavioral conduct).

- a. Both self-identified cyber-bullies and self-identified cyber-victims will have lower attendance rates than cyber-uninvolved students
- b. Cyber-bullies will have lower GPAs than cyber-victims and cyber-uninvolved, who will not differ from one another
- c. Cyber-bullies will have more behavioral problems (i.e., discipline referrals and suspensions) than cyber-victims, who will have more behavioral problems than students classified as cyber-uninvolved

*Hypothesis 6:* Perceived parental involvement, close friend support, and teacher support will moderate the relationship between cyber-victimization and individual variables

associated with distress/impairment (e.g., depression, anxiety, self-esteem).

- a. Parent involvement will moderate the relationship between cyber-involvement and symptoms of depression, anxiety, and low self-esteem with higher parental involvement being more related to improved psychological functioning for youth self-identified as cyber-victims than for those students classified as uninvolved
- b. Perceived close friend support will moderate the relationship between cyber-involvement and symptoms of depression, anxiety, and low self-esteem with greater support being related to improved psychological functioning for cyber-victims when compared to cyber-uninvolved
- c. Teacher support will moderate the relationship between cyber-involvement and symptoms of depression, anxiety, and low self-esteem with greater support being related to improved psychological functioning for cyber-victims when compared to cyber-uninvolved

*Hypothesis 7:* Perceived parental involvement, close friend support, and teacher support will moderate the relationship between cyber-bullying involvement and school-related performance variables (e.g., school participation, academic performance, and behavioral misconduct).

- a. Parent involvement will moderate the relationship between cyber-involvement and attendance, GPA, and behavioral problems with higher parental involvement being more related to improved school performance for youth self-identified as cyber-victims and cyber-bullies than for those students classified as uninvolved
- b. Perceived close friend support will moderate the relationship between cyber-involvement and attendance, GPA, and behavioral problems with greater support being related to improved performance for cyber-victims and cyber-bullies when compared to cyber-uninvolved

- c. Teacher support will moderate the relationship between cyber-involvement and attendance, GPA, and behavioral problems with higher perceived teacher support being related to improved performance for cyber-victims than cyber-uninvolved.

## Method

### *Participants*

Participants (ages 13-19;  $M=15.78$ ,  $SD=1.24$ ) were sampled from five high schools<sup>2</sup> in a large metropolitan central Florida school district. A total of 2,086 students<sup>3</sup> participated in the study. Slightly more male (53%) than female (47%) students participated. The sample was predominately Caucasian (71%), followed by Hispanic (17%), Black (5.4%), Bi-racial (4%), Asian (2%), and American Indian/Alaskan Native (1%). This distribution is consistent with those reported by the school district (e.g., 75% Caucasian, 13% Hispanic, 6% Black, 3% Multi-Racial, 2% Asian/Pacific Islander, and 1% American Indian/Alaskan Native; FLDOE, 2008). Participants were in 9<sup>th</sup> (40%), 10<sup>th</sup> (23%), 11<sup>th</sup> (20%), and 12<sup>th</sup> (17%) grade.

Participants were classified into cyber-bullying categories based on the criteria set forth by Kowalski and Limber (2007). The sample consisted of cyber-bullies ( $n=99$ , 4.7%), cyber-victims ( $n=200$ ; 9.6%), cyber-bully/victims ( $n=107$ ; 5.1%), and cyber-uninvolved ( $n=1680$ ; 80.5%)<sup>4</sup>. There was a statistically significant gender difference ( $\chi^2(3) = 57.40$ ,  $p < .01$ ) between cyber-bullying categories. Examination of the frequencies revealed that there were more females being classified as cyber-victims and cyber-bully/victims (69.5%, 60.7% respectively) than males (30.5%; 39.3%), whereas more cyber-bullies were male (58.6%) than female (41.4%; See Table 1).

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<sup>2</sup> Schools were representative of the district. School grades included 1 with B, 2 with Cs, 1 with D, and 1 not yet rated. The percentage of students receiving free and reduced lunch ranged from 25-50%.

<sup>3</sup> Although a total of 3,048 students were surveyed, all analyses were run on this reduced sample based on established inclusionary criteria outlined in the data reduction section of the paper.

<sup>4</sup> Rates of cyber-involvement for the current study are consistent with those obtained by Kowalski and Limber (2007; victims=9.4%, bullies=4.9%, bully/victims=6%, and uninvolved=79.7%)

Table 1.

*Demographics of Participants*

	Cyber-Victims		Cyber-Bullies		Cyber-Bully / Victim		Cyber-Uninvolved		Total		Sig.
	n	%	n	%	N	%	n	%	n	%	
Gender											
Male	61	30.5	58	58.6	42	39.3	946	56.3	1107	53.1	<i>p</i> <.001
Female	139	69.5	41	41.4	65	60.7	734	43.7	979	46.9	
Age											
13-14	28	14	7	7.1	12	11.2	277	16.5	324	15.5	n.s.
15-16	110	55	58	58.6	68	63.6	920	54.8	1156	55.4	
17-18	61	30.5	32	32.3	24	22.4	455	27.1	572	27.4	
>18	1	0.5	2	2	3	2.8	26	1.5	32	1.5	
Grade											
9	80	40	32	32.3	42	39.3	675	40.2	829	39.7	n.s.
10	41	20.5	28	28.3	27	25.2	382	22.7	478	22.9	
11	43	21.5	22	22.2	19	17.8	339	20.2	423	20.3	
12	35	17.5	17	17.2	19	17.8	282	16.8	353	16.9	
Ethnicity											
White	153	76.5	66	66.7	80	74.8	1179	70.2	1478	70.9	n.s.
Black	7	3.5	10	10.1	7	6.5	89	5.3	113	5.4	
Hispanic	32	16	13	13.1	15	14	297	17.7	357	17.1	
Bi-racial	5	2.5	7	7.1	2	1.9	69	4.1	83	4.0	
Asian	0	0	3	3	2	1.9	35	2.1	40	1.9	
Indian	3	1.5	0	0	1	0.9	11	0.7	15	0.7	
ESOL											
Yes	14	7	6	6.1	11	10.4	171	10.3	202	9.7	n.s.
No	186	93	92	92.9	95	89.6	1494	89.7	1867	89.5	
Free/Reduced Lunch											
Yes	105	52.5	50	50.5	59	55.1	905	53.9	1119	53.6	n.s.
No	95	47.5	49	49.5	48	44.9	775	46.1	967	46.4	

*Note.* Ns vary. Cyber-victims (n=200, 9.6%), cyber-bullies (n=99, 4.7%), cyber-bully/victims (n=107, 5.1%), cyber-uninvolved (n=160, 80.5%).

There were no statistically significant differences for ethnicity across cyber-bullying categories ( $\chi^2(15) = 21.15, p >.05$ ). Nor were there differences based on grade ( $\chi^2(9) = 4.27, p >.05$ ). An analysis of variance revealed no group differences with respect to age,  $F(3, 2048)=0.84, p>.05$ , which was calculated continuously and categorically ( $\chi^2(9) = 13.99, p >.05$ ). Cyber-bullying groups did not differ on free/reduced lunch status ( $\chi^2(3) = .63, p >.05$ ) or primary language ( $\chi^2(3) = 3.74, p >.05$ ). Group differences were found for number of friends,  $F(3, 2078)=6.03, p<.001$ , with cyber-victims reporting fewer friends ( $M=2.25, SD=1.07$ ) than those uninvolved ( $M=2.57, SD=1.06$ ).

Family demographics were also explored for all participating students (Table 2).

The majority of students reported that their parents were married (44.5%), divorced

(24.9%), or separated (11.4%). Cyber-bullying classification was related to parents' marital status,  $\chi^2(18) = 37.28, p <.01$ . Fewer cyber-bully/victims reported that their parents were married (33.6%) than did cyber-victims (46.2%), cyber-bullies (41.4%) and cyber-uninvolved (45.2%). Similarly, group differences were also found for participant's living arrangements,  $\chi^2(15) = 35.07, p <.01$ . Reflecting the findings above, fewer cyber-bully/victims resided with their mother and father (30.5%) than did cyber-victims (46.5%), cyber-bullies (42.4%), and cyber-uninvolved (46.3%). Group differences were not found for number of siblings ( $\chi^2(12) = 12.59, p >.05$ ) or frequency of family dinners ( $\chi^2(12) = 15.48, p >.05$ ).

Table 2.

*Participant Demographics Related to Family Characteristics*

	Cyber-Victims		Cyber-Bullies		Cyber-Bully/Victim		Cyber-Uninvolved		Total		Sig.
	n	%	n	%	n	%	n	%	n	%	
<b>Marital Status</b>											
Married	92	46.2	41	41.4	36	33.6	758	45.2	927	44.5	<i>p</i> <.001
Living Together	4	2	3	3	3	2.8	46	2.7	56	2.7	
Divorced	43	21.6	20	20.2	41	38.3	415	24.7	519	24.9	
Remarried	10	5	7	7.1	7	6.5	95	5.7	119	5.7	
Never Married	21	10.6	17	17.2	8	7.5	115	6.9	161	7.7	
Widowed	9	4.5	0	0	0	0	54	3.2	63	3	
Separated	20	10.1	11	11.1	12	11.2	194	11.6	237	11.4	
<b>Living Arrangement</b>											
Mother & Father	93	46.5	42	42.4	32	30.5	777	46.3	944	45.3	<i>p</i> <.001
One parent & Step	35	17.5	16	16.2	29	27.6	328	19.5	408	19.6	
Mother	49	24.5	26	26.3	26	24.8	373	22.2	474	22.7	
Father	9	4.5	5	5.1	7	6.7	95	5.7	116	5.6	
Relative	4	2	5	5.1	4	3.7	12	0.7	25	1.2	
Other	10	5	5	5.1	7	6.7	95	5.7	117	5.6	
<b>Siblings</b>											
None	18	9	4	4	9	8.4	134	8	165	8	n.s.
One	63	31.5	35	35.4	28	26.2	480	28.7	606	29.2	
Two	48	24	25	25.3	26	24.3	492	29.5	591	28.5	
Three	33	16.5	16	16.2	15	14	268	16.1	332	16	
Four or more	38	19	19	19.2	29	27.1	295	17.1	381	18.3	
<b>Family Eats Together</b>											
Never	30	15	14	14.1	20	18.7	226	13.5	290	13.9	n.s.
< once/week	18	9	11	11.1	17	15.9	190	11.3	236	11.3	
1-2 times/week	43	21.5	30	30.3	18	16.8	334	19.9	425	20.4	
3-5 times/week	37	18.5	18	18.2	23	21.5	329	19.6	407	19.6	
Almost or every day	72	36	26	36.3	29	27.1	596	35.5	723	34.7	

*Note.* Ns vary. Cyber-victims (n=200, 9.6%), cyber-bullies (n=99, 4.7%), cyber-bully/victims (n=107, 5.1%), cyber-uninvolved (n=160, 80.5%).

Due to the observed relationship between cyber-bullying and traditional bullying (Hinduja & Patchin, 2008; Raskauskas & Stoltz, 2007; Twyman, Saylor, Taylor, & Comeaux, 2010), descriptive statistics were run on the current data. Results revealed that approximately 10% of the sample reported current involvement in traditional bullying. Based on Olweus' classification system, 91 students (4.4%) could be categorized as victim, 107 (5.1%) as bully, 21 (1%) as bully/victim, and 1859 (89.1%) as uninvolved. Participants were also asked to report on their past experience with traditional bullying while in middle school. Using Olweus' criteria, simple frequencies revealed that there was greater involvement (approximately 30%) in traditional bullying during middle school; 328 (15.7%) were classified as victims, 168 (8.1%) as bullies, 84 (4%) as bully/victims, and 1501 (72%) as uninvolved.

Chi-square tests examined the relationship between traditional bullying and cyber-bullying classification (See Table 3). There was a significant association between current traditional bullying classification and past middle school classification with cyber-bullying classification,  $\chi^2(9) = 263.57, p < .001$  and  $\chi^2(9) = 289.66, p < .001$ , respectively. Results suggested that participants classified as cyber-victims were generally those students who had involvement as a traditional victim at present (30%) and middle school (20%). A similar pattern of findings emerged for cyber-bullies (18%; 19%) and cyber-bully/victims (43%; 26%). Results were also present after dichotomizing current traditional bullying involvement (0=uninvolved, 1=involved;  $\chi^2(3) = 180.74, p < .001$ ) and middle school bullying involvement ( $\chi^2(3) = 147.37, p < .001$ ), with the pattern of results being consistent with those above.

Table 3.

*Chi-Square Differences Between Traditional Bullying Classification and Cyber-Bullying Classification*

	Cyber-Victims	Cyber-Bullies	Cyber-Bully/Victims	Cyber-Uninvolved	Significance
Current Bullying					
Victim	29.7%	2.2%	12.1%	56%	$p < .001$
Bully	11.2%	17.8%	23.4%	47.7%	
Bully/Victim	19%	.0%	42.9%	38.1%	
Uninvolved	8.3%	4.2%	3.3%	84.2%	
Current Bullying					
Uninvolved	8.3%	4.2%	3.3%	84.2%	$p < .001$
Involved	19.6%	9.6%	20.5%	50.2%	
Middle School Bullying					
Victim	20.1%	6.5%	14.3%	7.4%	$p < .001$
Bully	1.8%	19%	9.5%	3.5%	
Bully/Victim	7.6%	13.7%	26.2%	2.4%	
Uninvolved	7.4%	3.5%	2.4%	86.7%	
Middle School Bullying					
Uninvolved	7.4%	3.5%	2.4%	86.7%	$p < .001$
Involved	15.3%	7.9%	12.1%	64.7%	

*Note.* Ns may vary. Due to small cell sizes for the bully/victim category, analyses were also run by dichotomizing cyber-involvement (0=uninvolved, 1=involved).

*Measures*

The Pasco County Youth Cyber Survey was developed to assess: (1) participants' demographics, (2) availability and use of technology, (3) traditional (past and present) and cyber-bullying behaviors, and (4) individual, parenting, peer, and school characteristics hypothesized to be related to involvement in cyber-bullying.

*Demographics.* Participants provided information on their background, family structure (e.g., siblings), and friends. Students reported their age, sex, grade in school, ethnic identification, and primary language. Additionally, participants provided information related to their family structure, current living situation, and number of friends. Demographic information was supplemented with data from school records, including free/reduced lunch status, primary exceptionality status, and English as a second language (ESOL) status.

*Technology availability and use.* To determine the extent and nature of the technologies available and used by adolescents, questions were modified for the

purpose of this study based on prior cyber-bullying research (Wolak et al., 2007; Ybarra & Mitchell, 2004a). In addition to students rating their overall use of computers and cell phones, students were asked to identify the frequency of involvement in social networking activities (e.g., “How frequently do you go onto a social networking site (MySpace, Facebook, etc.)?” “How frequently do you instant message other students?” “How often do you use your cell phone to text message others?” “How often do you send picture messages to others?”) on a 5-point scale (0 = never, 1 = several times/week, 2 = 1-10 times daily, 3 = 11-29 times daily, and 4 = 30+ daily)<sup>5</sup>. Higher scores indicated greater use of electronic communication.

*Traditional bullying.* The two global items from the Revised Olweus Bully/Victim Questionnaire (OBVQ-R; Olweus, 1996), which are used most frequently in the literature, were included in the survey to assess current and past bullying behavior. The scale provided a definition for bullying:

“We say a student is being bullied when another student or several other students

- say mean and hurtful things or make fun of him or her or call him or her mean and hurtful names
- completely ignore or exclude him or her from their group of friends or leave him or her out of things on purpose
- hit, kick, push, shove around, or threaten him or her
- tell lies or spread false rumors about him or her or send mean notes and try to make other students dislike him or her
- and do other hurtful things

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<sup>5</sup> Scale was altered from original response options (0 = never, 1 = rarely, 2 = several times a week, 3 = 1-3 times daily, and 4 = 4 or more times daily) based on feedback obtained during the pilot phase of the project.

These things may take place frequently, and it is difficult for the student being bullied to defend himself or herself. It is also bullying when a student is teased repeatedly in a mean and hurtful way. But we don't call it bullying when the teasing is done in a friendly and playful way. Also, it is not bullying when two students of about the same strength or power argue or fight (Solberg & Olweus, 2003, p.246)."

Based on previous research, these two global items of bullying were used to classify students' current involvement as bully, victim, both, or uninvolved (i.e., "How often have you been bullied at school in the past couple of months?" "How often have you taken part in bullying another student(s) at school in the past couple of months?"; Solberg & Olweus, 2003). Additionally, to measure *past* experiences of bullying and victimization, the Olweus global items were modified for the purpose of the current study (i.e., "How often were you bullied *in middle school*?" "How often did you take part in bullying another student(s) *in middle school*?"). Students respond on a 5-point Likert scale (0 = I haven't (been) bullied in the past couple of months, 1 = "it has only happened once or twice", 2 = "2 or 3 times a month", 3 = "about once a week", and 4 = "several times a week"). Students were identified as bullies if they reported bullying others "2 or 3 times a month" or more on the global bullying question (score = 2 to 4), while reporting being bullied no more than "only once or twice" (score = 0 to 1) on the global victimization question. Conversely, students were classified as victims if they indicated having been bullied "2 or 3 times a month" or more on the global victimization question (score = 2 to 4), while reporting no more than bullying others "only once or twice" (score = 0 or 1) on the global bullying question. Bully/victims were those that reported having been bullied and having bullied others "2 or 3 times a month" or more (score = 2 to 4). The comparison group of students is comprised of participants

reporting being bullied and bullying others at most “only once or twice” (score = 0 to 1). Previous studies report moderate to high concurrent validity ( $r=.40-.60$ ) of the OBVQ with peer nominations.

*Cyber-bullying.* Students’ experiences with cyber-bullying, as victim, perpetrator, both, or uninvolved was assessed using the Electronic Bullying Questionnaire – an adaptation of the OBVQ-R (Kowalski & Limber, 2007). The 23-item self-report measure provided a definition of cyber-bullying: “bullying through e-mail, instant messaging, in a chat room, on a website, or through a text message sent to a cell phone.” As with the OBVQ, two global items were used to classify bullying and victimization (i.e., “How often have you been bullied electronically in the past couple of months?” “How often have you electronically bullied someone in the past couple of months?”). Students responded using a 5-point scale (0 = “it hasn’t happened to me in the past couple of months” to 4 = “several times a week”). For the current study, students were classified into one of four groups based on the criteria outlined by Kowalski and Limber (2007); cyber-victims were those who had been bullied at least once in the last couple of months (score of 1 or greater on the global victim item and score of 0 on global bullying item), cyber-bullies were those that had electronically bullied others at least once in the last couple of months (score of 1 or greater on the global bullying item and 0 on the global victim item), cyber-bully/victims were those that had been both electronically bullied and had electronically bullied others (score of at least 1 or more on both the global bully item and the global victim item), and uninvolved were students who had no experience with cyber-bullying as victim or perpetrator (score of 0 on both global items).

Other items examined how the electronic bullying occurred (e.g., “Has anyone made fun of you or teased you in a hurtful way through e-mail, instant messaging, in a chat room, on a website, or through a text message sent to your cell phone?”), the

electronic modality through which it occurred (e.g., “I was bullied through an e-mail message”), and the perpetrator of the negative act (e.g., “Another student at school”). Two additional items were created for the purposes of the current study to include another venue for cyber-bullying (picture messages; “I was bullied through a picture message sent to my or other student(s) phone”).

*Depression.* The Center for Epidemiological Studies-Depression Scale for Children (CES-DC) is a 20-item self-report measure of depressive symptomology (Weissman, Orvaschel, & Padian, 1980). The questionnaire has demonstrated adequate psychometric properties for adolescents, including moderate concurrent validity ( $r = .61$  with Children’s Depression Inventory) and moderate test-retest reliability ( $r = .69$ ; Faulstich, Carey, Ruggiero, Enyart, & Gresham, 1986). The alpha coefficient for the current sample ( $\alpha = .91$ ) exceeded those in previous reports ( $\alpha = .86$ ; Faulstich et al., 1986). Items included: “I felt that I could not shake off the blues even with help from my family and friends,” “I felt lonely,” and “I had trouble keeping my mind on what I was doing.” Participants reported on a 4-point scale (0 = “not at all” to 3 = “a lot”) how often they experienced symptoms of depression within the “past week.” Higher scores indicated increasing levels of depression and greater maladjustment.

*Self-esteem.* The Rosenberg Self-Esteem Scale (RSES) was used to evaluate student’s perception of overall self worth (Rosenberg, 1989). This well established 10-item scale assessed general feelings about oneself (e.g., “I feel that I have a number of good qualities”) on a 4-point scale (1 = “strongly agree” to 4 = “strongly disagree”). Higher scores indicated higher self-esteem. The RSES has adequate construct validity as compared to Harter’s Self Perception Profile and high reliability ( $\alpha = .88-.90$ ; Hagborg, 1993; Robins, Hendin, & Trzesniewski, 2001). Consistent with previous reports, the RSES demonstrated high internal consistency with the current sample ( $\alpha = .89$ ).

*Psychological and behavioral adjustment.* Adolescent adjustment was measured using the Strengths and Difficulties Questionnaire (SDQ), self-report version (Goodman, 1997). Although the 25-item scale is divided into five subscales (Hyperactivity, Emotional Symptoms, Conduct Problems, Peer Problems, and Pro-Social Behavior), each consisting of five items, only three scales were included in the survey (Hyperactivity, Pro-social behavior, Conduct Problems), and one used for purposes of this study; *Conduct Problems* (e.g., “I am often accused of lying or cheating”). Students rated each statement on a 3-point scale (0 = “not true” to 2 = “certainly true”). For the Conduct Problem subscale higher scores indicated greater behavioral maladjustment. Research revealed adequate reliability for this subscale ( $\alpha=.60$ ; Goodman, Meltzer, & Bailey, 1998) and good convergent validity – scale appropriately assessed the construct under investigation as revealed through multi-informant report (Hill & Hughes, 2007). Reliability coefficients obtained for the current sample are comparable to previous reports ( $\alpha=.57$ ).

*Social anxiety.* The Social Anxiety Scale for Adolescents (SAS-A) is a 22-item self-report measure used to assess adolescents’ experiences with social anxiety (La Greca & Lopez, 1998). Two subscales were included in the survey (Fear of Negative Evaluation and Social Avoidance and Distress – General; SAD-G). For purposes of the current study only SAD-G, which measures generalized social distress (e.g., “I feel shy even with peers I know very well”) was assessed ( $\alpha=.82$ ). Students rated on a 5-point scale how much each statement was true for them (0 = “not at all” to 4 = “all the time”), with higher scores indicating greater social anxiety. Per previous reports, internal consistencies were adequate ( $\alpha=.83$ ). Furthermore, construct validity has been supported by the associations identified between the Social Anxiety Scale for Children Revised (SASC-R) and children’s self-perception of social acceptance on Harter’s Self

Perception Profile for Children ( $r=-.39$  to  $-.47$ ) and sociometric status (i.e., differentially related to students peer identified as popular, rejected, and neglected; La Greca & Stone, 1993).

*Empathy.* The Inventory of Callous-Unemotional Traits (ICU) is a self-report inventory of traits that are associated with serious antisocial or aggressive behavior (Frick, 2004). The 24-item scale has demonstrated high internal consistency ( $\alpha=.81$ ) and moderate construct validity – acceptable correlations with self-report measures of aggression, including proactive overt, reactive overt, proactive relational, and reactive relational ( $r =.27-.44$ ) and delinquency, including violent and nonviolent acts ( $r =.16-.39$ ; Kimonis et al., 2008). Confirmatory factor analysis reveals a three-factor structure: Callousness (e.g., “I do not care who I hurt to get what I want”), Uncaring (e.g., “I always try my best”; N.B. items are reverse scored), and Unemotional (e.g., “I express my feelings openly”; Essau, Sasagawa, & Frick, 2006). Each item was rated on a 4-point scale (0 = “not at all true” to 3 = “definitely true”), with higher scores indicating increased psychopathology. For purposes of the current study, two scales were used as indicator of empathy; Uncaring ( $\alpha=.83$ ) and Callousness ( $\alpha=.74$ ).

*Peer group affiliation.* Students were asked to rate how often their friends engaged in five antisocial behaviors using a scale developed by Laird, Pettitt, Dodge, and Bates (1998) to measure adolescents’ antisocial peer group affiliation. The scale included items such as, “The members of my group of friends get into trouble at school” and “The members of my group of friends lie to their parents and teachers.” Each behavior was rated on a 5-point scale (0 = “never” to 4 = “very often”). An average antisocial group score was calculated by taking the mean rating of all five behaviors. Internal reliability calculated on the current sample ( $\alpha=.83$ ) exceeded those obtained by Laird and colleagues (1998;  $\alpha=.74$ ).

*Perceived social support from a close friend.* The Child and Adolescent Social Support Scale (CASSS) is a 60-item scale used to measure the perceived social support of children and adolescents (Malecki & Demaray, 2000). Research revealed that the CASSS, which consists of five subscales (Parent, Teacher, Classmate, Close Friend, and School), has high reliability ( $\alpha=.90-.95$ ) and moderate construct validity ( $r=.55-.62$  with similar measures of social support including the Social Support Appraisals Scale, Social Support Scale for Children, and the Social Skills Rating System). For the current study, only the Close Friend subscale was used ( $\alpha=.96$ ) to assess social support. Students rated the frequency of 12 statements about their close friend (e.g., “Understands me,” “Helps me when I need it”) on a 6-point scale (0 = “never” to 5 = “always”). Higher scores were indicative of greater perceived support.

*Parenting style.* The Parenting Style Index (PSI), a 22-item self-report measure, assessed student perception of parenting practices (Steinberg, Elman, & Mounts, 1989). Based on previous research, the PSI was developed to reflect the categorical parenting schemes suggested by Baumrind and Maccoby and Martin (as cited in Steinberg et al., 1989). There are three scales: acceptance/involvement (e.g., “My parents spend time just talking with me”;  $\alpha=.72$ ), strictness/supervision (e.g., “How much do your parents really know - where you go at night?”;  $\alpha=.76$ ), and psychological autonomy (e.g., “My parents let me make my own plans for things I want to do”;  $\alpha=.82$ ). Reliability coefficients calculated on the current sample are .84, .71, and .81,<sup>6</sup> respectively. The three-factor structure allows student perception of parenting styles to be assessed according to the dimensions, categorically (e.g., authoritarian, authoritative, neglectful, and indulgent parenting) or continuously (e.g., level of

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<sup>6</sup> The supervision subscale is comprised of 8 items. Cronbach’s alpha for those 8 items was calculated at .52. Examination of the loadings suggested that two items were not as highly loaded on the scale as all other items (possibly due to different scaling). Therefore, those two items were removed from the calculation of the mean supervision score. Cronbach’s alpha for the remaining 6 items was .81.

authoritativeness; Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994; Steinberg, Lamborn, Dornbusch, & Darling, 1992). For purposes of the current study, participants' scores were examined on the parent involvement and supervision/strictness dimensions, and an "authoritativeness" score was created, as well. Using the methods outlined by Steinberg and colleagues (1992), families scoring above the sample median on the three domains were given a score of 3, families scoring below the median on all three domains were given a score of 0, families scoring above the median on one or two of the parenting dimensions were given a 1 or 2, respectively. Therefore, higher scores reflected increased levels of authoritative parenting.

*School climate and safety.* Adolescent perception of school climate and safety was assessed with the Inventory of School Climate-Student version (ISC-C; Brand et al., 2003). The 50-item measure assesses ten dimensions of school climate related to adolescent adjustment. Although seven scales were included in the Youth Cyber Survey (Teacher Support, Consistency and Clarity of Rules, Student Commitment and Achievement Orientation, Negative Peer Interactions, Positive Peer Interactions, Discipline Harshness, and Safety), only four were analyzed in the current study: Teacher Support (e.g., "Teachers go out of their way to help students";  $\alpha=.80$ ), Consistency and Clarity of Rules and Expectations (e.g., "If some students are acting up in class the teacher will do something about it";  $\alpha=.82$ ), Negative Peer Interactions (e.g., "Students in this school have trouble getting along with each other";  $\alpha=.79$ ), and Safety Problems (e.g., "Anyone at school threatened to beat you up or hurt you if you didn't give them money or something else that belonged to you";  $\alpha=.66$ ). Participants responded on a 5-point scale (0 = "never" to 4 = "always") to all statements except those that factor into the safety scale, which were scaled on a 4-point metric (0 = "never" to 3 = "often"). The ISC-S has a relatively stable structure, with moderate

( $\alpha=.63$ ) to high ( $\alpha=.81$ ) levels of internal consistency, moderate levels of stability (median  $r=.76$ ) when assessed over time, and good construct validity because scales were strongly and significantly correlated with related measures of student adjustment (e.g., academic achievement, behavior problems, and socio-emotional adjustment; Brand et al., 2003).

### *Records Data*

Archival data were collected with the assistance of the school district to determine academic and behavioral correlates of cyber-bullying. Specifically, attendance data, academic performance (i.e., GPA), and discipline reports were collected for all participants during the academic year in which the students were surveyed (i.e., 2009-2010).

*School attendance.* Attendance records were collected for each student during the study term. A percentage of days attended was calculated, based on total number of days present divided by number of days possible, to determine student presence at school.

*Academic performance.* Grade Point Average (GPA) is the average grade a student received in all subjects attempted for a given time period. GPA was calculated based on grades earned (i.e., A=4, B=3, C=2, D=1, F=0) for all courses during the 2009-2010 academic year. These calculations did not take into account additional points earned for honors or advanced placement courses. GPA ranged from zero to four.

*Behavioral conduct.* Disciplinary referrals and suspension records were obtained for each student and used as an indicator of externalizing behaviors. Disciplinary referrals are reports from school faculty and staff that are sent to the school administration to identify behavioral misconduct. According to district procedures, referrals are divided based on three levels of severity. Level 1 referrals include chewing gum, tardiness, and violation of dress code or parking regulations; Level 2 referrals

include classroom disruptions, skipping class, lewd language, defacing property, and fighting without injury; and Level 3 referrals, which represent the most serious offenses, include fights resulting in injury, possession of weapons, sexual harassment, possession of controlled or illegal substances, and intimidation of school staff or students. In and Out of School Suspensions (OSS and ISS), which require absence from all standard classes for a determined period of time, are typically targeted to the most serious offenses. Discipline referrals and days suspended were summed across categories due to moderate to high correlations (See Table 4). Therefore, two variables were created: total referrals and total suspensions.

Table 4.

*Correlations of Referral Levels and Suspension Types*

	Level 1 Referral	Level 2 Referral	Level 3 Referral	ISS	OSS
Level 1 Referral	-----				
Level 2 Referral	.51**	-----			
Level 3 Referral	.18**	.30**	-----		
In-School Suspension	.75**	.79**	.26**	-----	
Out-of-School Suspension	.35**	.72**	.30**	.45**	-----

Note: \*\* $p < .01$ .

*Procedure*

The current study was developed in close collaboration with the school district based in large part upon their concerns with cyber-bullying as a growing challenge for students and staff alike. The survey protocol was developed with district administrators and approved by their internal research review board with parent notification, and option to withdraw their child, but not active parental consent. In accordance with school district procedure and preferences, a waiver of consent was requested and granted from the University Institutional Review Board (IRB).

Five schools that were representative of the 12 district high schools (approximate

enrollment of 8,000 in the five participating schools; 17,000 across 12 high schools) were recruited for this survey. Students were randomly selected, with the assistance of school administration, based on class enrollment. For each of the identified classes parents were notified of the survey via a school letter sent home with students, which outlined the purpose of the survey and highlighted risks/benefits of participation. Parents were given the opportunity to inquire further about the study by contacting school personnel or request that their child not participate in the survey (Appendix A). An informational packet, including parent letters, survey instruction sheets, and a hard copy of the Youth Cyber Survey were made available to all parents (i.e., located in main office; See Appendix B). Students eligible for participation were informed of the survey approximately one week prior to administration and given the option to decline participation at the time of surveying. All students who completed the survey were entered into a school-based raffle. Raffle prizes were described on the survey instruction sheet (Appendix C) and included gift cards of various denominations (i.e., 1 prize at \$50, 2 prizes at \$20, 3 prizes at \$15, and 4 prizes at \$10) to a retailer of the winner's choosing (i.e., iTunes, Barnes and Noble, Target, Chick-fil-a, McDonalds, Walmart).

The Youth Cyber Survey was delivered via two formats: (1) computer-based technology and (2) traditional paper and pencil report. Format was determined based on the electronic capabilities of each school surveyed. Approximately 41% of participants completed the paper pencil format, while 59% completed the electronic version. Although the survey was initially intended to be administered in two sessions (approximately 115 items at a time), piloting revealed that students were able to complete the entire survey in one 45-minute administration. Therefore, the two sections of the survey (1) demographic items, technology use and availability questions, and traditional and cyber-bullying measures and (2) scales designed to assess individual,

parenting, peer, and school characteristics were merged. The presentation was counterbalanced to allow the determination of whether the order contaminated responding (e.g., surveys beginning with letters AB presented demographic questions first followed by scale items, surveys beginning with letters BA presented scale items first, followed by demographics)<sup>7</sup>.

School performance measures (attendance, grades, and discipline reports) were collected with the assistance of District staff. At the end of the academic year, school records were pulled from the main district server based on student identification number. Additionally, basic demographic data, including date of birth, gender, and ethnicity, for each student were retrieved as a way to verify that the records matched those students surveyed. Once raw data were collected and student reports had been verified, variables of interest were created for the purpose of this study.

Due to the sensitive nature of these data, procedural safeguards were developed to ensure that complete confidentiality was maintained. These same methods have been used successfully in several prior large-scale approved USF/District collaborations. Throughout data collection, staff from the University of South Florida saw only student identification numbers – names were never collected. On each self-report survey instruction sheet, a unique study code was provided. This code was entered by each student as his/her ID at the beginning of the survey. After students completed the survey, they were advised to put their student identification numbers on their instruction sheets – as a way to pair survey responses with records data). These instruction sheets were separated from all survey responses and entered into a codebook for later use. This procedure, of using paired codes, further protected confidentiality. When student records were pulled from the District database, district

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<sup>7</sup> Chi-square analyses revealed that the presentation order of the scales was not related to the classification of participants according to cyber-involvement,  $\chi^2(3) = 6.15, p > .05$ , nor was it related to core findings in general.

staff only received the student identification numbers (i.e., no information about bullying status or any other study variables was provided). Therefore, members of the University of South Florida research team were never able to pair names with data collected, nor could school staff. Moreover, results are provided in terms of aggregated means, not specific individual data.

### *Data Reduction*

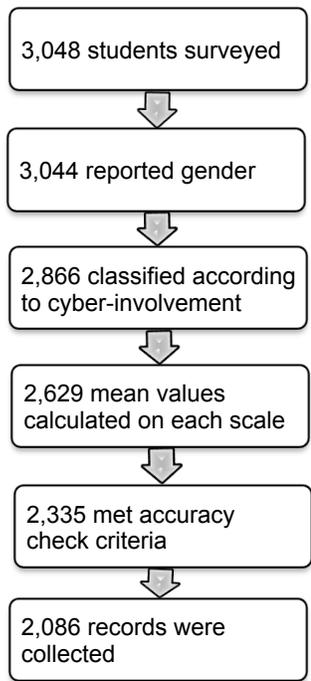
A total of 3,048 students were initially surveyed for the current study. A series of inclusionary criteria were established, which reduced the final sample to 2,086. First, students had to have reported their gender (male=1, female=0; see Figure 1). Second, participation required that the two global cyber-bullying items be completed in order to classify students as cyber-bullies, cyber-victims, cyber-bully/victims, or cyber-uninvolved. Participants who failed to respond to these two key items were excluded from analyses. Third, descriptive analyses examined the item completion rate for each study variable. Based on these analyses, participants were included if they omitted no more than one item per scale.<sup>8</sup> Next, we examined three items that were included to assess whether students were attending to the survey appropriately. Two items appeared twice during the survey to examine consistency in reporting (i.e., “When teachers make a rule they mean it;” “I felt scared”) and one item to examine honesty (i.e., “I complete the newspaper crossword puzzle every morning”). Participants whose difference score between two identical items was less than or equal to one and who responded “no” to the accuracy item were included in all analyses.<sup>9</sup> Finally, inclusion required that school

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<sup>8</sup> Considering that most participants responded to all items per scale (93-98%), we selected a more stringent criteria for inclusion (e.g., only missing one item on each scale) to maximize our sample without making too many inferences.

<sup>9</sup> Although this criterion reduced our final sample by 256 participants (or approximately 8%), the exclusion of these students does not alter the findings of our analyses of interest. Therefore, we elected to use the smaller sample to reduce any potential noise that may have resulted from students' variable attention.

records were accessible (i.e., students provided their school identification number so their records could be retrieved).<sup>10</sup>



*Figure 1.* Data reduction strategy

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<sup>10</sup> As with the previous footnote, core analyses were run on the final reduced sample as well as those participants meeting all criteria except for having records. Results were consistent across samples.

## Results

The results are divided into three sections: (1) descriptive information about technology use and specific cyber-bullying behaviors, (2) correlation matrices examining the relationship between all continuous study variables, and (3) multivariate analyses examining the relationship between cyber-bullying and psychosocial functioning. Multivariate analyses are further divided into: (1) individual, peer, family, and school factors related to cyber-bullying classification, as well as school-related performance variables associated with cyber-bullying, and (2) protective social support factors that moderate the relationship between cyber-involvement and psychological functioning, as well as that moderate the relationship between cyber-involvement and school-related performance variables.

### *Descriptive Statistics*

*Technology use.* Simple frequencies were conducted to determine the landscape of cyber-bullying. Results revealed that most participants (77.2%) used the internet every day ( $n=845$ , 40.5%) or nearly every day ( $n=765$ , 36.7%). Only 14.3% ( $n=304$ ) of participants reported using the internet a couple of times per week, while 7.6% ( $n=159$ ) reported rare or no use ( $n=9$ , 0.4%). The majority of students reported using the internet for approximately two to three hours daily ( $n=897$ , 43%), followed by less than an hour ( $n=758$ , 36.3%), and more than four hours per day ( $n=388$ , 18.6%). Only 1.9% ( $n=40$ ) reported never using the internet on a daily basis.

The overwhelming majority of participants endorsed accessing the internet from their home computers ( $n=1952$ , 93.6%). Approximately half of all students had a computer in their bedroom ( $n=1052$ , 50.4%). Although half (49.6%) of all students had computer access in a communal family location, the majority of students reported

minimal ( $n=952$ , 45.6%) or no (never;  $n=783$ , 37.5%) parental supervision over their internet use. Only 16% of students reported that their parents monitored their internet usage almost every day ( $n=267$ , 12.8%) or every day ( $n=83$ , 4%).

Multivariate analysis of variance (MANOVA) was utilized to examine differences in cyber-bullying classifications. Cyber-bullying classification was related to the frequency of internet communication (e.g., social networking, IMing, emailing;  $\Lambda=.98$ ,  $F(9, 5016.08)=5.03$ ,  $p<.001$ ;  $\eta^2=.01$ ; See Tables 5 and 6). Follow-up univariate analyses revealed group differences for frequency of social networking ( $F(3, 2063)=12.46$ ,  $p<.001$ ;  $\eta^2=.02$ ), instant messaging ( $F(3, 2063)=9.28$ ,  $p<.001$ ;  $\eta^2=.01$ ) and emailing ( $F(3, 2063)=3.12$ ,  $p=.025$ ;  $\eta^2=.01$ ). Tukey post hoc analyses revealed that uninvolved students ( $M=2.19$ ,  $SD=1.19$ ) reported using social networking sites less than cyber-victims ( $M=2.56$ ,  $SD=1.14$ ), cyber-bullies ( $M=2.57$ ,  $SD=1.21$ ), and cyber-bully/victims ( $M=2.66$ ,  $SD=1.05$ ), who did not differ from one another. A similar pattern of results emerged for frequency of instant messaging, with uninvolved students ( $M=1.50$ ,  $SD=1.32$ ) reporting less time spent instant messaging than cyber-victims ( $M=1.86$ ,  $SD=1.27$ ), cyber-bullies ( $M=1.88$ ,  $SD=1.39$ ), or cyber-bully/victims ( $M=1.94$ ,  $SD=1.28$ ). However, Tukey post hoc analyses did not reveal specific group differences for cyber-bullying classification on reported frequency of email communication.

Participant cell phone use (See Table 5) was also surveyed, as this is another mode of technology often used to perpetrate cyber-bullying behaviors. Approximately 89% ( $n=1853$ ) of students had their own cell phone. Of those, approximately 61% ( $n=1133$ ) of students' cell phones had internet capabilities. Sending and receiving text messages is more common (i.e., approximately 85% of students engage in this method of communication several times per week) than sending and receiving picture messages (approximately 45% of students).

Table 5.

*Frequencies of Electronic Communication*

	Frequency of Internet Communication					
	N	Never	Rarely	Several Times/Week	1-3 Times/Daily	4 or More Times/Daily
Social Networking	2077	180 (8.6)	357 (17.1)	631 (30.2)	544 (26.1)	365 (17.5)
IMing	2079	491 (23.5)	677 (32.5)	409 (19.6)	220 (10.5)	282 (13.5)
Emailing	2082	885 (42.4)	839 (40.2)	214 (10.3)	71 (3.4)	73 (3.5)

	Frequency of Cell Phone Communication					
	N	Never	Several Times/Week	1-9 Times/Daily	11-29 Times/Daily	30+ Times/Daily
Sending Texts	2077	315 (15.1)	185 (8.9)	180 (8.6)	214 (10.3)	1183 (56.7)
Sending Pictures	2075	1082 (51.9)	792 (38)	158 (7.6)	15 (0.7)	29 (1.3)
Receiving Texts	2074	299 (14.3)	206 (9.9)	186 (8.9)	245 (11.7)	1138 (54.6)
Receiving Pictures	2077	836 (40.1)	915 (43.9)	235 (11.3)	44 (2.1)	47 (2.3)

*Note.* Frequency (%).

A MANOVA examined the relationship between cyber-bullying classification and frequency of cell phone use (e.g., sending/receiving text messages, sending/receiving picture messages). Results revealed a significant relationship between cyber-bullying classification and cell phone use,  $\Lambda=.96$ ,  $F(12, 5453.19)=6.71$ ,  $p<.001$ ;  $\eta^2=.01$ . Follow-up univariate analyses indicated group differences in the frequency of sending text messages ( $F(3, 2064)=18.00$ ,  $p<.001$ ;  $\eta^2=.03$ ), receiving text messages ( $F(3, 2064)=16.50$ ,  $p<.001$ ;  $\eta^2=.02$ ), sending picture messages ( $F(3, 2064)=16.69$ ,  $p<.001$ ;  $\eta^2=.02$ ), and receiving picture messages ( $F(3, 2064)=17.45$ ,  $p<.001$ ;  $\eta^2=.03$ ). Tukey post hoc analyses revealed again that uninvolved students reported sending/receiving fewer text and picture messages (e.g., only approximately 1-10 messages per day) than cyber-victims, cyber-bullies, and cyber-uninvolved students (e.g., approximately 11-29 messages per day), who did not differ from each other (See Table 6).

Table 6.

*ANOVA Findings for Group Differences in Electronic Communication*

	Cyber-Victims		Cyber-Bullies		Cyber-Bully/Victim		Cyber-Uninvolved		Total		Sig.
	M	SD	M	SD	M	SD	M	SD	M	SD	
Internet											
Networking	2.56	1.14	2.57	1.21	2.66	1.05	2.19	1.19	2.27	1.19	<i>p</i> <.001
IMing	1.86	1.27	1.88	1.39	1.94	1.28	1.50	1.32	1.58	1.32	<i>p</i> <.001
Email	0.92	1.04	0.99	1.02	1.06	1.19	0.82	0.95	0.85	0.98	<i>p</i> <.03
Cell Phone											
Send Texts	2.27	1.31	3.47	1.12	3.37	1.29	2.73	1.57	2.85	1.53	<i>p</i> <.001
Receive Texts	3.24	1.32	3.39	1.10	3.33	1.31	2.72	1.55	2.82	1.52	<i>p</i> <.001
Send Pictures	0.77	0.85	0.86	0.87	0.96	0.99	0.55	0.73	0.61	0.77	<i>p</i> <.001
Receive Pictures	1.04	0.94	1.07	0.89	1.22	1.03	0.76	0.85	0.82	0.88	<i>p</i> <.001

*Note.* N's may vary due to participants not completing all of the items to assess technology use.

*Cyber-bullying behaviors.* Descriptive statistics were computed to determine the extent of cyber-bullying behaviors among high school students (See Table 7). Although results revealed that most participants had not been cyber-bullied in the past couple of months (*n*=1779, 85.3%) as indicated on the global cyber-victimization question, when asked about *specific cyber-bullying behaviors* the results appeared different. For example, 45% of students indicated that someone had “told lies or spread false rumors to make others dislike them, teased or made fun of them, or used their identity to spread rumors about someone else through electronic communication” – a number far greater than the 15% who reported having been cyber-bullied on the global item. Similarly, a total of 20% of students reported perpetrating at least one of the abovementioned acts of cyber-bullying, an increase from the 10% of participants who labeled themselves a cyber-bully on the global item. This finding suggests that cyber-bullying may be a greater problem than researchers have initially thought, with a wide range of differences depending on how cyber-bullying is defined and measured.

Table 7.

*Frequency of Specific Cyber-Bullying Behaviors*

	Frequency of Cyber-Victimization					
	N	Hasn't happened in past couple of months	Happened once or twice in past couple of months	Happened 2 or 3 times a month	Happened about once per week	Happened several times per week
Cyber-bullied	2086	1779 (85.3)	231 (11.1)	40 (1.9)	14 (0.7)	22 (1.1)
Teased or made fun of	2080	1586 (76)	367 (17.6)	85 (4.1)	22 (1.1)	20 (1.0)
Had rumors or lies told	2079	1284 (61.6)	579 (27.8)	132 (6.3)	42 (2)	42 (2)
Had identity used to spread lies	2075	1904 (91.3)	129 (6.2)	22 (1.1)	8 (0.4)	12 (0.6)
Been bullied through IM	2080	1887 (90.5)	152 (7.3)	22 (1.1)	6 (0.3)	13 (0.6)
Been bullied in chat room	2080	1980 (94.9)	75 (3.6)	9 (0.4)	4 (0.2)	12 (0.6)
Been bullied on website	2076	1830 (87.7)	185 (8.9)	32 (1.5)	11 (0.5)	18 (0.9)
Been bullied via email	2076	1950 (93.5)	92 (4.4)	16 (0.8)	7 (0.3)	11 (0.5)
Been bullied via text	2077	1709 (81.9)	286 (13.7)	49 (2.3)	15 (0.7)	18 (0.9)
Been bullied with picture sent	2080	2019 (96.8)	38 (1.8)	10 (0.5)	4 (0.2)	9 (0.4)
	Frequency of Cyber-Bullying					
	N	Hasn't happened in past couple of months	Happened once or twice in past couple of months	Happened 2 or 3 times a month	Happened about once per week	Happened several times per week
Cyber-bullied	2086	1880 (90.1)	169 (8.1)	16 (0.8)	11 (0.5)	10 (0.5)
Teased or made fun of someone	2077	1743 (83.6)	270 (12.9)	38 (1.8)	13 (0.6)	13 (0.6)
Told rumors or lies	2075	1887 (90.5)	159 (7.6)	17 (0.8)	4 (0.2)	8 (0.4)
Had used someone's identity to spread lies	2068	2000 (95.9)	47 (2.3)	13 (0.6)	4 (0.2)	4 (0.2)
Bullied through IM	2080	1926 (92.3)	125 (6)	19 (0.9)	2 (0.1)	8 (0.4)
Bullied in chat room	2082	2007 (96.2)	51 (2.4)	15 (0.7)	3 (0.1)	6 (0.3)
Bullied on website	2081	1908 (91.5)	146 (0.7)	13 (0.6)	5 (0.2)	9 (0.4)
Bullied via email	2081	2013 (96.5)	53 (2.5)	7 (0.3)	3 (0.1)	5 (0.2)
Bullied via text	2081	1840 (88.2)	196 (9.4)	28 (1.3)	10 (0.5)	7 (0.3)
Bullied with picture sent	2080	2043 (97.9)	26 (1.2)	5 (0.2)	0 (0)	6 (0.3)

*Note.* Frequency (%).

Approximately half of cyber-victims reported that they had been bullied by one of their peers at school ( $n=98$ , 49%). Surprisingly, 25% of these students reported that a friend bullied them ( $n=50$ ). Demonstrating the prevalence of anonymity of the perpetrators, 34% ( $n=68$ ) of students reported not knowing who was perpetrating the cyber-bullying and 31% ( $n=62$ ) reported that a stranger cyber-bullied them. Finally, approximately 12.5% of cyber-victims reported being cyber-bullied by a sibling ( $n=25$ ). Regardless of who was perpetrating the cyber-bullying, 22% ( $n=44$ ) of cyber-victims reported that they were seldom afraid of being cyber-bullied, 9.5% ( $n=19$ ) were sometimes afraid, 3.5% ( $n=7$ ) were fairly often afraid, 2.5% ( $n=5$ ) were often afraid, and 2.5% ( $n=5$ ) were very often afraid of being cyber-bullied. This pattern of findings is similar for cyber-bully/victims.

#### *Inter-Correlations*

A series of Pearson Product-Moment Correlations (See Table 8) was calculated to investigate relationships among study variables. Overall, the size of the correlations ranged from small ( $r=.02$ ) to large ( $r=.66$ ), with higher correlations observed for variables within a single domain (e.g., psychosocial functioning, parenting, school). For example, there were expected moderate to strong correlations among all family variables (e.g., involvement, supervision, and authoritativeness;  $r=.48$  to  $r=.60$ ). Similarly, moderate-sized correlations were observed for school performance variables (e.g., attendance, GPA, suspensions;  $r= -.25$  to  $r= -.43$ ). Suspensions were correlated negatively with attendance and GPA, with higher attendance rates and GPAs related to fewer suspensions. Correlations across domains of functioning were more variable. For example, while parent involvement was moderately and negatively correlated with most of the psychological variables (e.g.,  $r= -.16$  to  $r= -.36$ ), parent supervision was weakly related to anxiety ( $r= -.04$ ).

Table 8.

*Inter-Correlations of Study Variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1. Depression																			
2. Anxiety	.42**																		
3. Self-Esteem	-.66**	-.44**																	
4. Callous	.20**	.10**	-.19**																
5. Un-caring	.14**	.05*	-.29**	.38**															
6. Conduct Problems	.32**	.08**	-.30**	.45**	.45**														
7. Parent Involvement	-.30**	-.16**	.36**	-.21**	-.36**	-.27**													
8. Parent Supervision	-.14**	-.04*	.19**	-.27**	-.32**	-.29**	.49**												
9. Authoritat. Parenting	.28**	-.21**	.37**	-.21**	-.29**	-.28**	.60**	.48**											
10. Negative Peers	.21**	.11**	-.16**	.08**	-.01	.15**	.03	.04	-.02										
11. Deviant Peers	.23**	.09**	-.20**	.38**	.27**	.44**	-.20**	-.26**	-.22**	.16**									
12. Close Peer	-.15**	-.25**	.25**	-.19**	-.38**	-.15**	.29**	.23**	.25**	.10**	-.14**								
13. Teacher Support	-.19**	-.06**	.18**	-.15**	-.30**	-.19**	.30**	.17**	.19**	.08**	-.20**	.23**							
14. Clarity of Rules	-.17**	-.07**	.17**	-.20**	-.32**	-.23**	.29**	.19**	.17**	.13**	-.18**	.24**	.69**						
15. School Safety	.26**	.14**	-.24**	.20**	.08**	.24**	-.11**	-.14**	-.12**	.19**	.30**	-.07**	-.14**	-.15**					
16. Attend.	-.06**	.04	.04	-.06*	-.09**	-.11**	.02	.08**	-.04	-.03	-.09**	-.02	.04	.04	-.05*				
17. GPA	.03	-.10**	-.05*	.19**	.21**	.21**	-.12**	-.14**	-.07**	-.00	.15**	-.03	-.15**	-.12**	.12**	.25**			
18. Suspens.	-.12**	.02	.17**	-.22**	-.32**	-.28**	.17**	.21**	.14**	-.03	-.19**	.09**	.11**	.12**	-.09**	-.38**	-.43**		

Note. N=2,086. \* p < .05; \*\*p < .01. Authoritat. = Authoritative. Attend. = attendance. Suspens. = suspensions.

### *Cyber-Bullying and Psychosocial Functioning and School Performance*

A series of MANOVAs were conducted to examine the relationships between cyber-bullying status and individual, family, peer and school variables. Additionally, a MANOVA was conducted to identify academic and behavioral correlates of cyber-involvement. Follow-up ANOVAs and Tukey Post-Hoc tests were used to identify specific relationships among significant variables.

*Individual characteristics.* A one-way between groups MANOVA was conducted to determine whether cyber-bullying groups differed on individual characteristics. Results revealed significant differences among cyber-bullies, cyber-victims, cyber-bully/victims, and uninvolved students,  $\Lambda=.90$ ,  $F(18, 5875.13)=12.59$ ,  $p<.001$ ;  $\eta^2=.04$ . Follow-up univariate analyses revealed group differences for *all* individual variables: depression ( $F(3, 2082)=34.64$ ,  $p<.001$ ;  $\eta^2=.05$ ), anxiety ( $F(3, 2082)=5.12$ ,  $p<.002$ ;  $\eta^2=.01$ ), self-esteem ( $F(3, 2082)=22.78$ ,  $p<.001$ ;  $\eta^2=.03$ ), callousness ( $F(3, 2082)=19.22$ ,  $p<.001$ ;  $\eta^2=.03$ ), uncaring ( $F(3, 2082)=14.39$ ,  $p<.001$ ;  $\eta^2=.02$ ), and conduct problems ( $F(3, 2082)=40.43$ ,  $p<.001$ ;  $\eta^2=.06$ ; See Table 9).

Post-hoc comparisons revealed that the mean depression score for cyber-victims ( $M=1.21$ ,  $SD=0.64$ ) was significantly larger than both cyber-bullies ( $M=0.96$ ,  $SD=0.56$ ) and cyber-uninvolved students ( $M=0.84$ ,  $SD=0.56$ ), who did not differ significantly from each other. Furthermore, the mean depression score for cyber-bully/victims ( $M=1.18$ ,  $SD=0.63$ ) was larger than that of cyber-bullies and cyber-uninvolved students. Cyber-bully/victims and cyber-victims did not differ in their mean depression ratings. For anxiety, cyber-victims had higher ratings of anxiety ( $M=1.08$ ,  $SD=0.96$ ) than cyber-uninvolved students ( $M=0.83$ ,  $SD=0.85$ ). Cyber-bullies, cyber-bully/victims, and cyber-uninvolved students did not differ. Cyber-victims reported the lowest ratings of self-esteem ( $M=1.89$ ,  $SD=0.60$ ) when compared with cyber-bullies ( $M=2.10$ ,  $SD=0.60$ ) and cyber-uninvolved students ( $M=2.20$ ,  $SD=0.58$ ). Cyber-bully/victims, who looked similar

to cyber-victims, reported lower self-esteem ( $M=1.91$ ,  $SD=0.65$ ) than cyber-uninvolved students. Significant group differences on the callousness and uncaring scales were consistent with one another. On both, cyber-bullies ( $M=0.86$ ,  $SD=0.47$ ;  $M=1.36$ ,  $SD=0.63$ ) and cyber-bully/victims ( $M=0.81$ ,  $SD=0.55$ ;  $M=1.32$ ,  $SD=0.69$ ) reported scores reflecting lower empathy than cyber-victims ( $M=0.62$ ,  $SD=0.42$ ;  $M=1.04$ ,  $SD=0.61$ ) and cyber-uninvolved students ( $M=0.61$ ,  $SD=0.38$ ;  $M=1.06$ ,  $SD=0.59$ ), who did not differ. Finally, cyber-bullies ( $M=0.68$ ,  $SD=0.36$ ) and cyber-bully/victims ( $M=0.78$ ,  $SD=0.42$ ) reported higher levels of conduct problems than cyber-victims ( $M=0.53$ ,  $SD=0.37$ ) who reported increased conduct problems over cyber-uninvolved students ( $M=0.46$ ,  $SD=0.34$ ).

*Parenting practices.* A one-way between groups MANOVA was conducted to determine whether cyber-bullying groups differed on several key parenting factors. Overall, cyber-bullying was significantly related to parenting practices,  $\Lambda=.99$ ,  $F(9, 5062.32)=3.22$ ,  $p<.01$ ;  $\eta^2=.01$ . Follow-up univariate analyses revealed group differences for parent involvement ( $F(3, 2082)=7.35$ ,  $p<.001$ ;  $\eta^2=.01$ ), parent supervision ( $F(3, 2082)=4.26$ ,  $p<.01$ ;  $\eta^2=.01$ ) and authoritative parenting ( $F(3, 2082)=3.31$ ,  $p=.02$ ;  $\eta^2=.01$ ). Tukey post hoc analyses indicated that cyber-bully/victims reported significantly lower ratings of parent involvement ( $M=1.83$ ,  $SD=0.61$ ) and authoritative parenting ( $M=1.24$ ,  $SD=1.02$ ) than cyber-uninvolved students ( $M=2.08$ ,  $SD=0.60$ ;  $M=1.50$ ,  $SD=0.97$ ; respectively). However, Tukey post hoc analyses did not reveal specific group differences for cyber-bullying classification on reported level of parent supervision despite the pattern being in the expected direction.

*Peer relations.* A one-way between groups MANOVA was conducted to determine whether cyber-bullying groups differed on self reported peer relationships. Results demonstrated significant group differences on peer variables,  $\Lambda=.95$ ,  $F(9, 5062.32)=11.06$ ,  $p<.001$ ;  $\eta^2=.02$ . Follow-up univariate analyses revealed group

differences for deviant peer affiliation ( $F(3, 2082)=23.88, p=.001; \eta^2=.03$ ) and negative peer perception ( $F(3, 2082)=12.14, p<.001; \eta^2=.02$ ). Group differences were not found for close friendships,  $F(3, 2082)=.48, p=.70$ . Tukey post hoc tests revealed that cyber-bullies ( $M=1.76, SD=0.92$ ) and cyber-bully/victims ( $M=1.75, SD=0.96$ ) reported more deviant peer affiliation than cyber-victims ( $M=1.27, SD=0.81$ ) and cyber-uninvolved students ( $M=1.25, SD=0.80$ ), who do not differ. Cyber-victims ( $M=2.18, SD=0.65$ ) and cyber-bully/victims ( $M=2.27, SD=0.87$ ) identified more negative peer problems at school than cyber-uninvolved students ( $M=1.97, SD=0.66$ ).

*School climate.* A one-way between groups MANOVA was conducted to test for hypothesized group differences on school climate variables. Results indicated significant differences among cyber-bullying categories,  $\Lambda=.93, F(9, 5062.32)=18.30, p<.001; \eta^2=.03$ . Follow-up univariate analyses revealed group differences on teacher support ( $F(3, 2082)=9.92, p<.001; \eta^2=.01$ ), consistency and clarity of rules ( $F(3, 2082)=16.46, p<.001; \eta^2=.02$ ) and safety concerns ( $F(3, 2082)=44.53, p<.001; \eta^2=.06$ ). As hypothesized, Tukey post hoc tests confirmed that cyber-victims and cyber-bully/victims reported lower connectedness with their teacher ( $M=1.89, SD=0.69$  and  $M=1.86, SD=0.73$ ; respectively) than cyber-uninvolved students ( $M=2.09, SD=0.67$ ). These findings mirrored those obtained for perceived consistency and clarity of rules; lower ratings were reported for cyber-victims ( $M=2.27, SD=0.73$ ) and cyber-bully/victims ( $M=2.29, SD=0.75$ ) than cyber-uninvolved students ( $M=2.57, SD=0.68$ ). Lastly, cyber-uninvolved students reported fewer safety concerns ( $M=0.25, SD=0.32$ ) than cyber-bullies ( $M=0.40, SD=0.44$ ) and cyber-victims ( $M=0.42, SD=0.46$ ) who reported fewer concerns than cyber-bully/victims ( $M=0.60, SD=0.64$ ) at the highest ratings.

Table 9.

*ANOVA Results for the Relationship Between Cyber-Bullying and Individual Characteristics and Contextual Factors*

	Cyber-Victims		Cyber-Bullies		Cyber-Bully/Victim		Cyber-Uninvolved		Total		P
	M	SD	M	SD	M	SD	M	SD	M	SD	
Individual											
Depression	1.21 <sup>a</sup>	.64	0.96 <sup>b</sup>	0.56	1.18 <sup>a</sup>	0.63	0.84 <sup>b</sup>	0.56	0.90	0.59	<i>p</i> <.001
Anxiety	1.08 <sup>a</sup>	0.96	0.81	0.85	0.89	0.92	0.83 <sup>b</sup>	0.85	0.85	0.87	<i>p</i> =.002
Self-Esteem	1.89 <sup>a</sup>	0.60	2.10 <sup>b</sup>	0.60	1.91 <sup>a</sup>	0.65	2.20 <sup>b</sup>	0.58	2.15	0.59	<i>p</i> <.001
Callousness	0.62 <sup>a</sup>	0.42	0.86 <sup>b</sup>	0.47	0.81 <sup>b</sup>	0.55	0.61 <sup>a</sup>	0.38	0.63	0.40	<i>p</i> <.001
Uncaring	1.04 <sup>a</sup>	0.61	1.36 <sup>b</sup>	0.63	1.32 <sup>b</sup>	0.69	1.06 <sup>a</sup>	0.59	1.08	0.61	<i>p</i> <.001
Conduct Problems	0.53 <sup>a</sup>	0.37	0.68 <sup>b</sup>	0.36	0.78 <sup>b</sup>	0.42	0.46 <sup>c</sup>	0.34	0.49	0.36	<i>p</i> <.001
Family											
Involvement	1.99	0.64	1.95	0.55	1.83 <sup>a</sup>	0.61	2.08 <sup>b</sup>	0.60	2.05	0.60	<i>p</i> <.001
Supervision	1.43	0.49	1.28	0.50	1.28 <sup>a</sup>	0.53	1.40 <sup>b</sup>	0.49	1.39	0.50	<i>p</i> <.01
Authoritative	1.44	1.03	1.32	1.05	1.24	1.02	1.50	0.97	1.47	0.98	<i>p</i> <.001
Peer											
Negative Peer	2.18 <sup>a</sup>	0.65	2.08	0.64	2.27 <sup>a</sup>	0.87	1.97 <sup>b</sup>	0.66	2.01	.68	<i>p</i> <.001
Deviant Peers	1.27 <sup>a</sup>	0.81	1.76 <sup>b</sup>	0.92	1.75 <sup>b</sup>	0.96	1.25 <sup>a</sup>	0.80	1.30	0.82	<i>p</i> <.001
Close Friend	3.87	1.09	3.75	1.17	3.75	1.20	3.84	1.07	3.83	1.08	<i>ns</i>
School											
Teach Support	1.89 <sup>a</sup>	0.69	1.95	0.66	1.86 <sup>a</sup>	0.78	2.09 <sup>b</sup>	0.67	2.06	0.68	<i>p</i> <.001
Clear Rules	2.27 <sup>a</sup>	0.73	2.42	0.62	2.29 <sup>a</sup>	0.75	2.57 <sup>b</sup>	0.68	2.52	0.70	<i>p</i> <.001
Safety	0.42 <sup>a</sup>	0.46	0.40 <sup>a</sup>	0.44	0.60 <sup>b</sup>	0.64	0.25 <sup>c</sup>	0.32	0.29	0.37	<i>p</i> <.001

*Note.* *N*=2,086. Mean (standard deviations). <sup>†</sup>*P* Value calculated by conducting ANOVAs to examine group differences with follow-up Tukey post hoc tests. Significant differences are reflected by different superscripts in the same row.

*School Performance.* A MANOVA was conducted to examine the relationship between cyber-bullying status and school performance. Results revealed no significant findings for cyber-bullying status on the set of school performance variables including attendance, academic achievement, and disciplinary action,  $\Lambda=.99$ ,  $F(9, 5062.32)=1.68$ ,  $p>.05$ .

Exploratory analyses were conducted to examine whether expected findings would be obtained by re-classifying participants according to the strict criteria set forth by Olweus in the traditional bullying literature. Therefore, students were re-classified based on whether they had cyber-bullied or been cyber-bullied at least *2-3 times in the past month* as opposed to having been cyber-bullied at least once or twice in the past couple of months, the standard used more typically in the cyber-bullying literature and for prior analyses in the current study. MANOVA results revealed significant multivariate findings for cyber-bullying status on the set of school performance variables,  $\Lambda=.99$ ,  $F(12,$

5500.81)=2.17,  $p < .05$ . Follow-up univariate analyses revealed group differences on GPA ( $F(3, 2082)=5.69$ ,  $p<.001$ ;  $\eta^2=.01$ ) and total referrals ( $F(3, 2082)=2.65$ ,  $p<.05$ ;  $\eta^2=.01$ ; See Table 10). Tukey post hoc analyses showed that cyber-victims had lower GPAs ( $M=2.39$ ,  $SD=0.83$ ) than cyber-uninvolved youth ( $M=2.75$ ,  $SD=0.81$ ). Although Tukey tests did not indicate significant differences in referrals between cyber-bullying categories, the pattern of results was in the expected direction, with cyber-bullies, cyber-bully/victims, and cyber-victims having more disciplinary problems than cyber-uninvolved youth.

Table 10.

*MANOVA Results for the Relationship Between Cyber-Bullying and School Performance*

	Cyber-Victims		Cyber-Bullies		Cyber-B/Vs		Cyber-Uninvolved		<i>F</i>	Sig.
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Attendance	94.37	5.94	93.88	5.82	93.88	6.94	95.07	5.16	0.99	<i>ns</i>
GPA	2.39 <sup>a</sup>	.83	2.36	.91	2.67	.75	2.75 <sup>b</sup>	.81	5.69	$p<.001$
Referrals	1.48	2.18	1.67	1.83	3.23	5.86	1.17	2.89	2.63	$p<.05$
Suspensions	0.87	1.28	1.0	1.18	1.77	3.7	0.71	.83	1.81	<i>Ns</i>

*Note.*  $N=2,086$ . Mean (standard deviations). <sup>+</sup>*P* Value calculated by conducting ANOVAs to examine group differences with follow-up Tukey post hoc tests. Significant differences are reflected by different superscripts in the same row.

In sum, results revealed that cyber-bullying is related to the psychosocial functioning of high school students. Group differences based on cyber-bullying classification were observed across all domains of functioning (e.g., individual, parenting, peer, and school). Specific group differences followed the predicted pattern (e.g., cyber-victims endorsed more internalizing difficulties and cyber-bullies reported more externalizing difficulties). Moreover, youth involved in cyber-bullying, as both victim and perpetrator (i.e. bully/victims), tended to report poorer psychosocial functioning than others (i.e., lowest ratings of parent involvement and authoritative parenting, greater affiliation with deviant peers, lower connectedness with their teacher, and more safety concerns at school). Group differences were not initially identified on

the set of school performance. However, when analyses were conducted on youth with more frequent involvement in cyber-bullying, cyber-victims were found to have had lower GPAs than cyber-uninvolved youth, and cyber-involved youth had more disciplinary problems than those uninvolved.

#### *Moderation Effects of Social Support and Cyber-Bullying Status*

To determine whether peer, family, and teacher support moderated the relationship between cyber-bullying status and psychosocial, as well as school performance, variables a series of Multivariate Analysis of Covariance (MANCOVAs) were computed. This statistical procedure was selected based on its ability to assess the moderating influence of continuous variables (teacher support, close friend support, and family involvement) on a categorical predictor variable (cyber-bullying status) and continuous dependent variables (depression, anxiety, self-esteem, callousness, uncaring, and conduct problems<sup>11</sup>). The interaction between the predictor and moderator was examined for each dependent variable.

*Psychosocial.* To determine whether perceived parental, close friend, and teacher support moderated the relationship between cyber-bullying involvement and psychological functioning, a MANCOVA was conducted with parental involvement, peer support, and teacher support entered as the covariates (psychological functioning = cyber-bullying status + parental involvement + close friend support + teacher support + status\*parental involvement + status\*close friend support + status\*teacher support; See Table 11). Cyber-bullying status was entered as the independent variable and psychological functioning, as measured by depression, anxiety, self-esteem, callousness, uncaring, and conduct problem scales, as the dependent variables. Follow-up univariate analyses were conducted to assess specific relationships.

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<sup>11</sup> Although only three of the psychological variables (anxiety, depression, and self-esteem) were originally hypothesized to be moderated by the identified support variables, all psychological variables were included in the final analyses for a more comprehensive understanding of the moderating influence of support.

Table 11.

*ANCOVA Results for the Moderation Effects of Social Support on the Relationship Between Cyber-Bullying Psychosocial Functioning*

Variable	Source	DF	MS	F	P
Depression	Status (F)	3	.89	2.99	$p=.03$
	Connection to Teacher (C)	1	.65	2.17	<i>ns</i>
	Family Involvement (C)	1	10.14	34.02	$p<.001$
	Close Friend Support (C)	1	2.06	6.90	$p<.01$
	Status*Connection to Teacher (I)	3	.45	1.50	<i>ns</i>
	Status*Family Involvement (I)	3	.46	1.52	<i>ns</i>
	Status*Close Friend Support (I)	3	.26	.88	<i>ns</i>
	Anxiety	Status (F)	3	.42	.60
Connection to Teacher (C)		1	.79	1.13	<i>ns</i>
Family Involvement (C)		1	2.32	3.32	<i>ns</i>
Close Friend Support (C)		1	28.19	40.41	$p<.001$
Status*Connection to Teacher (I)		3	.09	.13	<i>ns</i>
Status*Family Involvement (I)		3	1.85	2.65	$p<.05$
Status*Close Friend Support (I)		3	1.06	1.52	<i>ns</i>
Self-Esteem		Status (F)	3	.41	1.43
	Connection to Teacher (C)	1	.64	2.21	<i>ns</i>
	Family Involvement (C)	1	18.53	64.20	$p<.001$
	Close Friend Support (C)	1	4.39	15.22	$p<.001$
	Status*Connection to Teacher (I)	3	.37	1.28	<i>ns</i>
	Status*Family Involvement (I)	3	.13	.44	<i>ns</i>
	Status*Close Friend Support (I)	3	.58	2.02	<i>ns</i>
	Callousness	Status (F)	3	.78	5.32
Connection to Teacher (C)		1	.08	.52	<i>ns</i>
Family Involvement (C)		1	2.77	19.03	$p<.001$
Close Friend Support (C)		1	.66	4.51	$p<.05$
Status*Connection to Teacher (I)		3	.37	2.50	<i>ns</i>
Status*Family Involvement (I)		3	.51	3.48	$p<.02$
Status*Close Friend Support (I)		3	.53	3.64	$p<.02$
Uncaring		Status (F)	3	.99	3.61
	Connection to Teacher (C)	1	11.62	42.16	$p<.001$
	Family Involvement (C)	1	9.91	35.93	$p<.001$
	Close Friend Support (C)	1	9.94	36.06	$p<.001$
	Status*Connection to Teacher (I)	3	.81	2.92	$p<.05$
	Status*Family Involvement (I)	3	.61	2.20	<i>ns</i>
	Status*Close Friend Support (I)	3	.48	1.75	<i>ns</i>
	Conduct Problems	Status (F)	3	.49	4.04
Connection to Teacher (C)		1	1.10	9.86	$p<.01$
Family Involvement (C)		1	4.76	42.54	$p<.001$
Close Friend Support (C)		1	.08	.67	<i>ns</i>
Status*Connection to Teacher (I)		3	.14	1.23	<i>ns</i>
Status*Family Involvement (I)		3	.18	1.64	<i>ns</i>
Status*Close Friend Support (I)		3	.26	2.30	<i>ns</i>

Note. N=2,086. (F = fixed factor, C = covariate, I = interaction).

Examination of the MANCOVA revealed a significant interaction effect for teacher support ( $\Lambda=.98$ ,  $F(18, 5841.19)=1.90$ ,  $p=.012$ ;  $\eta^2=.01$ ), family involvement ( $\Lambda=.98$ ,  $F(18, 5841.19)=1.88$ ,  $p=.014$ ;  $\eta^2=.01$ ), and close friend support ( $\Lambda=.98$ ,  $F(18, 5841.19)=1.95$ ,  $p<.01$ ;  $\eta^2=.01$ ) on the set of psychosocial variables.

Follow-up univariate analyses indicated that teacher support moderated the relationship between cyber-bullying status and student perception of uncaring behaviors,  $F(3,2070)=1.82$ ,  $p=.03$ ;  $\eta^2=.01$  (See Figure 2). These results suggested that while an increase in student-reported teacher support for all groups is related to a self-reported decrease in uncaring behaviors, the effect of teacher support appears most pronounced for cyber-bully/victims, those students often with the poorest psychosocial correlates. Non-significant univariate findings were found for all other individual adjustment variables, including depression ( $F(3,2070)=1.50$ ,  $p>.05$ ), anxiety ( $F(3,2070)=.13$ ,  $p>.05$ ), self-esteem ( $F(3,2070)=1.28$ ,  $p>.05$ ), callousness ( $F(3,2070)=2.50$ ,  $p>.05$ ), and conduct problems ( $F(3,2070)=1.23$ ,  $p>.05$ ).

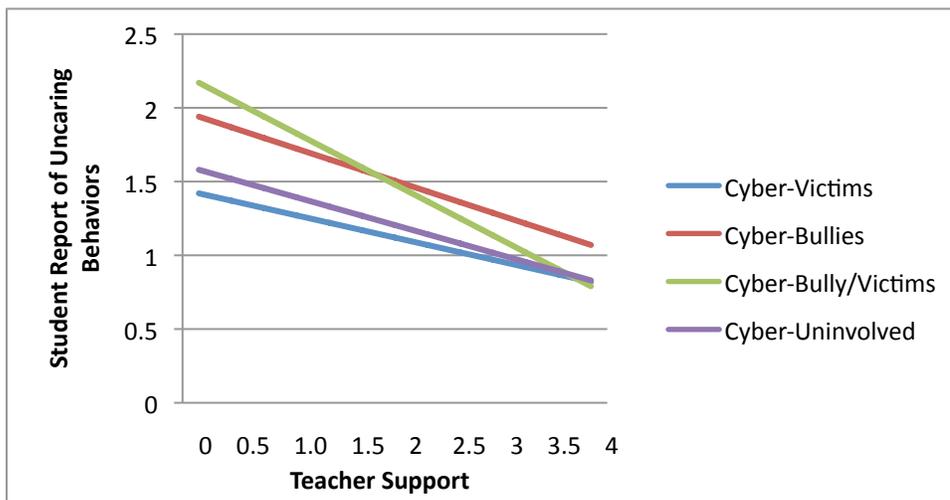


Figure 2. Moderation Effects of Teacher Support on Cyber-Bullying Status and Student Report of Uncaring Behaviors

Parent involvement moderated the relationship between cyber-bullying status and anxiety ( $F(3,2070)=2.65, p<.05; \eta^2=.004$ ; See Figure 3) and callousness ( $F(3,2070)=3.48, p<.02; \eta^2=.01$ ; See Figure 4). Findings suggest that, in general, increased parental involvement was related to improved psychosocial functioning (e.g., lower levels of anxiety and callousness) for all groups except for cyber-bully/victims for whom increased parental involvement was related to *higher* levels of anxiety.

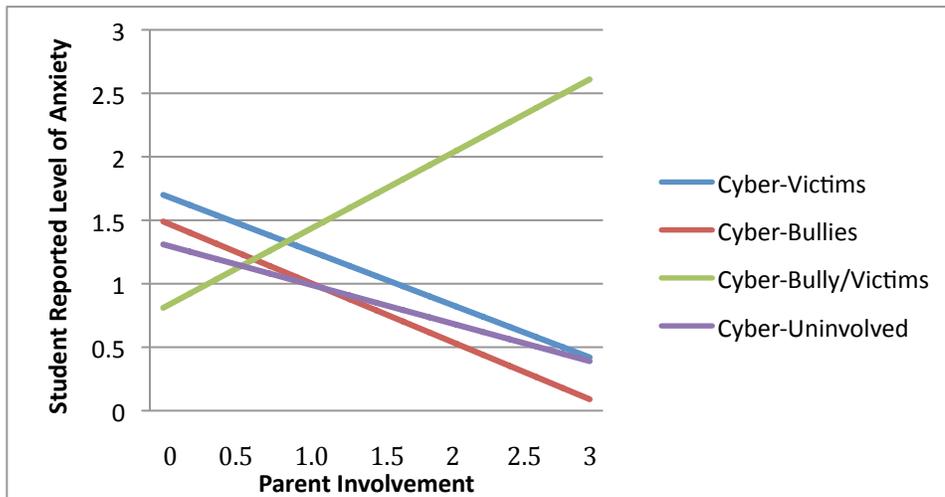


Figure 3. Moderation Effects of Parent Involvement on Cyber-Bullying Status and Student Report of Anxiety

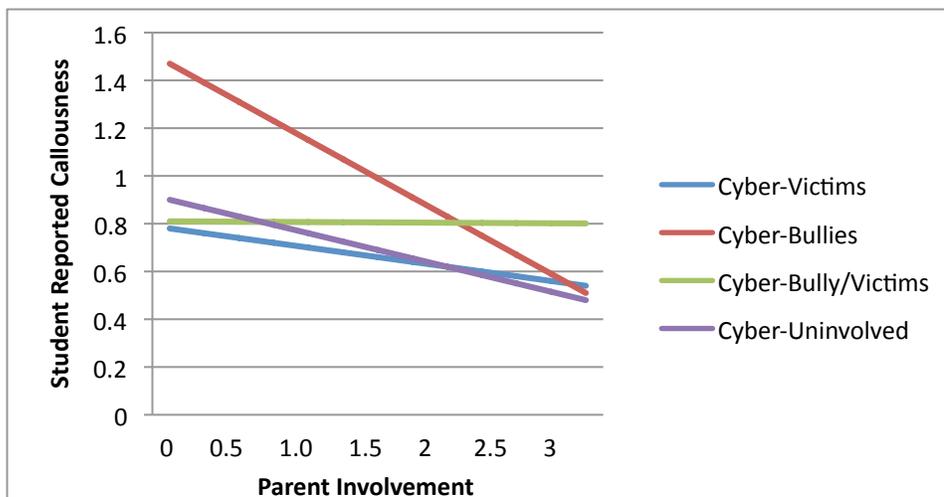


Figure 4. Moderation Effects of Parent Involvement on Cyber-Bullying Status and Student Report of Callous Behaviors

The moderating effect of parent involvement on self reported callousness was slightly different. While higher levels of parent involvement were related to lower ratings of callousness for cyber-victims, cyber-bullies, and cyber-uninvolved students, for cyber-bully/victims the amount of parent involvement was not related to the degree of callousness reported. Non-significant findings were identified for the remaining variables including depression ( $F(3,2070)=1.53, p>.05$ ), self-esteem ( $F(3,2070)=.44, p>.05$ ), un-caring ( $F(3,2070)=2.20, p>.05$ ), and conduct problems ( $F(3,2070)=1.64, p>.05$ ).

Finally, close friend support moderated the relationship between cyber-bullying status and callousness ( $F(3,2070)=3.64, p<.02; \eta^2=.01$ ; See Figure 5). Results suggest that greater levels of support from an identified close friend were related to *fewer* callous behaviors endorsed for cyber-victims, cyber-bullies, and cyber-uninvolved, whereas for cyber-bully/victims greater perceived support from a close peer was related to *more* callous behaviors, possibly demonstrating peers' approval for such acts. Non-significant findings were obtained for all other variables, including depression ( $F(3,2070)=.88, p>.05$ ), anxiety ( $F(3,2070)=1.52, p>.05$ ), self-esteem ( $F(3,2070)=2.02, p>.05$ ), un-caring ( $F(3,2070)=1.75, p>.05$ ), and conduct problems ( $F(3,2070)=2.30, p>.05$ ).

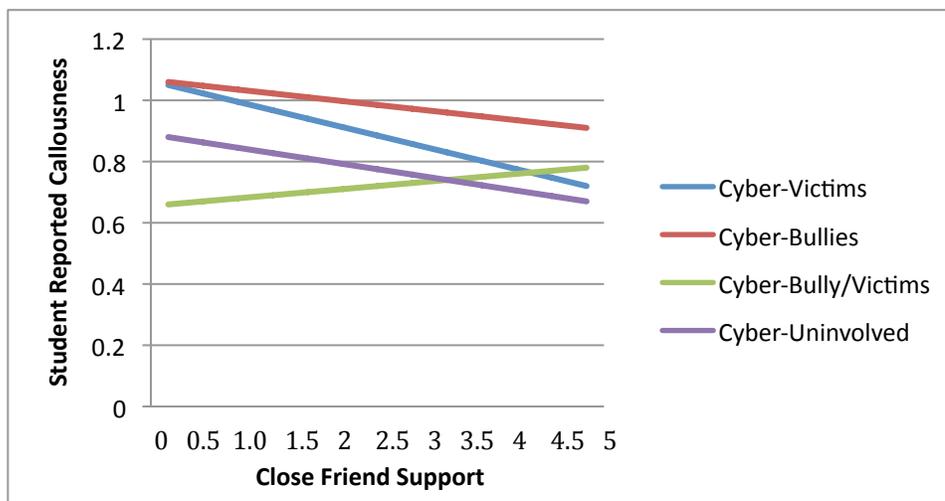


Figure 5. Moderation Effects of Close Friend Support on Cyber-Bullying Status and Student Report of Callous Behaviors

*School performance.* To determine whether perceived parental, close friend, and teacher support moderated the relationship between cyber-bullying involvement and school performance variables, a MANCOVA was conducted with parental involvement, peer support, and teacher support entered as the covariates (school performance = cyber-bullying status + parental involvement + close friend support + teacher support + status\*parental involvement + status\*close friend support + status\*teacher support). The interaction terms for each social support variable were examined to determine whether moderation had indeed occurred.

Results revealed non-significant interaction findings for all social support variables. Teacher support ( $\Lambda=1.00$ ,  $F(9, 5033.12)=0.71$ ,  $p=.70$ ), parent involvement ( $\Lambda=1.00$ ,  $F(9, 5033.12)=0.63$ ,  $p=.77$ ), and close friend support ( $\Lambda=.99$ ,  $F(9, 5033.12)=1.32$ ,  $p=.22$ ) did not moderate the relationship between cyber-bullying status and school performance. However, when a MANCOVA was conducted on participants experiencing *more* cyber-bullying behaviors (e.g., using Olweus' criteria that required more frequent bullying and victimization for classification) significant findings emerged (see Table 12).

Examination of the MANCOVA revealed a significant interaction effect for teacher support ( $\Lambda=.99$ ,  $F(12, 5469.06)=2.56$ ,  $p<.01$ ;  $\eta^2=.01$ ). Non-significant findings were revealed for parent involvement ( $\Lambda=.99$ ,  $F(12, 5469.06)=1.14$ ,  $p>.05$ ) and close friend support ( $\Lambda=.99$ ,  $F(12, 5469.06)=1.36$ ,  $p>.05$ ) on the set of school performance variables. Teacher support moderated the relationship between cyber-bullying status and attendance ( $F(3,2070)=2.67$ ,  $p<.05$ ;  $\eta^2=.01$ ; See Figure 6), as well as discipline referrals ( $F(3,2070)=3.32$ ,  $p<.02$ ;  $\eta^2=.01$ ; See Figure 7).

Table 12.

*ANCOVA Results for the Moderation Effects of Social Support on the Relationship Between Cyber-Bullying and School Performance*

Variable	Source	DF	MS	F	P
Attendance	Status (F)	3	24.74	.92	<i>ns</i>
	Connection to Teacher I	1	13.17	.49	<i>ns</i>
	Family Involvement I	1	12.81	.48	<i>ns</i>
	Close Friend Support I	1	.02	.001	<i>ns</i>
	Status*Connection to Teacher (I)	3	.72	2.67	<i>p&lt;.05</i>
	Status*Family Involvement (I)	3	21.52	.78	<i>ns</i>
	Status*Close Friend Support (I)	3	1.62	.06	<i>ns</i>
	GPA	Status (F)	3	.84	1.32
Connection to Teacher I		1	2.08	3.28	<i>ns</i>
Family Involvement I		1	.23	.37	<i>ns</i>
Close Friend Support I		1	.22	.34	<i>ns</i>
Status*Connection to Teacher (I)		3	.91	1.44	<i>ns</i>
Status*Family Involvement (I)		3	.11	.17	<i>ns</i>
Status*Close Friend Support (I)		3	.57	.90	<i>ns</i>
Referrals		Status (F)	3	2.58	.32
	Connection to Teacher I	1	9.81	1.21	<i>ns</i>
	Family Involvement I	1	.16	.02	<i>ns</i>
	Close Friend Support I	1	7.74	.95	<i>ns</i>
	Status*Connection to Teacher (I)	3	26.95	3.32	<i>p&lt;.02</i>
	Status*Family Involvement (I)	3	4.23	.52	<i>ns</i>
	Status*Close Friend Support (I)	3	5.23	.64	<i>ns</i>
	Suspensions	Status (F)	3	1.49	.46
Connection to Teacher I		1	.14	.04	<i>ns</i>
Family Involvement I		1	1.76	.54	<i>ns</i>
Close Friend Support I		1	6.06	1.88	<i>ns</i>
Status*Connection to Teacher (I)		3	5.47	1.69	<i>ns</i>
Status*Family Involvement (I)		3	2.18	.68	<i>ns</i>
Status*Close Friend Support (I)		3	2.99	.93	<i>ns</i>

Note. N=2,086. (F = fixed factor, C = covariate, I = interaction).

Specifically, results revealed that higher levels of teacher support were related to higher attendance rates for cyber-bullies and uninvolved students, but were related to lower attendance for cyber-victims and cyber-bully/victims. Moreover, while higher levels of teacher support were related to fewer referrals for cyber-victims, cyber-bullies, and cyber-uninvolved students, the findings were in the opposite direction for cyber-bully/victims. Again, this group of students appears to be unique in that the additive effect of cyber-bullying and –victimization may have altered their response to social support.

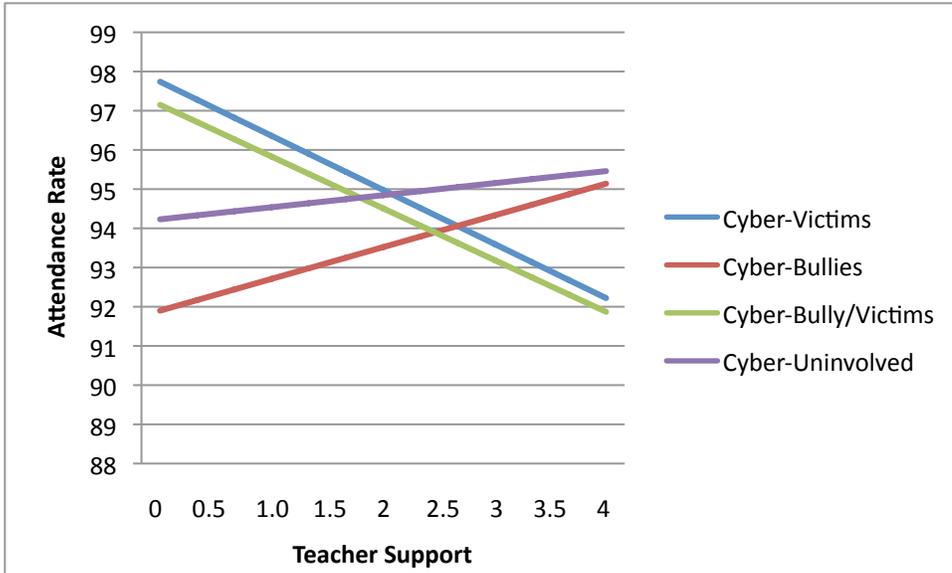


Figure 6. Moderation Effects of Teacher Support on Cyber-Bullying Status and School Attendance Rates

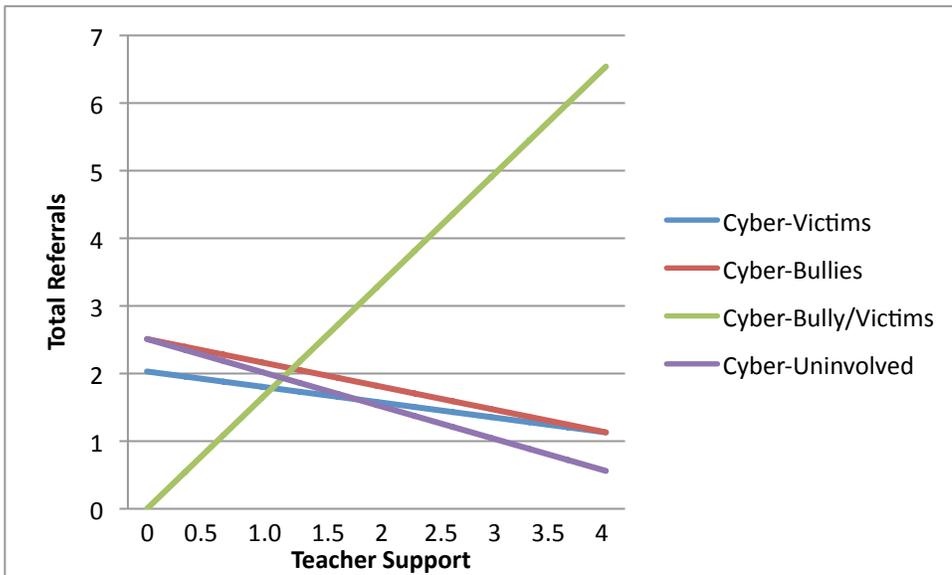


Figure 7. Moderation Effects of Teacher Support on Cyber-Bullying Status and Total Referrals.

Overall, results indicated that social support moderated the relationship between cyber-bullying involvement and psychosocial functioning. Specifically, higher levels of teacher support, as identified by students, were related to lower levels of uncaring behaviors, for cyber-bully/victims in particular, suggesting that teacher support may help promote student concern for others and their schoolwork. Similarly, parent involvement and close friend support moderated the relationship between cyber-bullying and callousness. In general, students reported lower levels of callous behaviors as parent involvement and close friend support increased, with the exception of cyber-bully/victims. This finding suggests that the quality of the relationships cyber-bully/victims have may be unique (e.g., modeling or endorsement of callous attitudes and behaviors). Finally, results indicated that increased parent involvement was related to lower levels of self-reported anxiety for all participants except for cyber-bully/victims, where again the results revealed that parent involvement is related negatively to levels of anxiety. Although social support moderated the relationship between cyber-bullying and psychosocial functioning, moderation effects were only achieved for school performance after adjusting the criteria by which youth were classified in cyber-bullying categories (i.e., for youth with higher levels of cyber-bullying involvement). Results from these exploratory analyses indicate that teacher support moderated the relationship between cyber-bullying classification and students' attendance rates and disciplinary problems.

## Discussion

Rapid and ongoing technology growth has transformed the landscape of social interactions and, along with it, the nature and structure of youth bullying and victimization. With approximately 94% of the current sample reporting ownership of a home computer, and 89% owning a cell phone, high school students are increasingly vulnerable to the dangers, as well as the advantages, inherent in new and increasingly widespread forms of communication and information technology. Their impact and reach are pervasive and at times dramatic, extending across school, home, and peer/community environments, offering little escape and often no protection. Results from the current study indicated that approximately 15% of high school students experienced some form of cyber-bullying, while approximately 10% of students perpetrated those acts.

Although numerous studies have examined the prevalence of this contemporary and growing form of peer victimization, few studies have examined the individual and contextual correlates of cyber-bullying among both perpetrators and victims (Aricak et al., 2008; Raskauskas & Stoltz, 2007; Ybarra et al., 2007). The present study contributes to the extant literature by examining individual, family, peer, and school factors hypothesized to be related to cyber-bullying across *all* involved youth. A second purpose was to test the moderating effect of social support on the relationship between cyber-bullying and a range of psychosocial and school performance variables. Results are discussed in terms of findings related to: (1) descriptive characteristics of youth involved, (2) specific associations with psychosocial adjustment variables, (3) the moderating influence of social support, (4) limitations, (5) clinical implications, and (6) recommendations for future research.

### *Technology Use by High School Students*

The proliferation of communication technologies has affected youth worldwide. Research shows that adolescents' daily use of technology ranges from 24% to 99% depending on the media platform being assessed (e.g., internet, chatroom, cell phone, MSN) and the country being sampled (e.g., Canada, Turkey, US, Taiwan; Erdur-Baker 2010; Huang & Chou, 2010; Mishna et al., 2010). Results from the current study showed that approximately 77% of youth used the internet daily, and 75% used their cell phones daily to communicate with their peers. Demonstrating the possible dangers of new media, consistent with previous research (Twyman et al., 2010), youth involved in cyber-bullying as victim, perpetrator, or both, spent more time communicating online than uninvolved youth. Cyber-involved youth also spent more time communicating via cell phones than do cyber-uninvolved youth.

### *Cyber-Bullying Involvement*

Approximately 10-50% of youth report behaviors associated with cyber-bullying and victimization (e.g., Kowalski & Limber, 2007; Mishna et al., 2010; Slonje & Smith, 2008; Wang et al., 2009; Williams & Guerra, 2007). Consistent with the prevalence rates obtained by Kowalski and Limber (2007) and Sourander and colleagues (2010), the current sample included participants identified as cyber-bullies ( $n=99$ ; 4.7%), cyber-victims ( $n=200$ ; 9.6%), cyber-bully/victims ( $n=107$ ; 5.1%), and cyber-uninvolved ( $n=1680$ ; 80.5%). Although these rates are lower than those found in other studies, measurement factors (e.g., using a limited time frame to be consistent with the traditional bullying literature; 3 months versus ever) likely contributed to these discrepancies. Moreover, rates vary depending on whether students are asked about *specific* cyber-bullying behaviors or if they would label themselves as victims, perpetrators, or both. Findings from the current study revealed that 15% of youth identified themselves as having been cyber-victims in response to a global question. However, an alarming 45%

of high school participants acknowledged experiencing one of three behaviors consistent with cyber-victimization: having been made fun of or teased by someone, had lies spread about them, or had their cyber-identity used to spread rumors. This pattern of results was similar for cyber-bullies (10% versus 20%), suggesting that cyber-bullying may be a more pervasive problem than originally believed.

### *Demographic Characteristics of Youth Involved in Cyber-Bullying*

Research has examined the demographic characteristics of youth involved in cyber-bullying to identify vulnerable students and target interventions. However, at present, the field has been unable to determine whether age and gender differences are associated with this form of peer aggression (Tokunaga, 2010). Consistent with the majority of published research (e.g., Katzer et al., 2009; Patchin & Hinduja, 2006, Smith et al., 2008; Wolak et al., 2007; Ybarra, 2004), the current study revealed no grade or age differences among cyber-bullying categories (i.e., cyber-victims, cyber-bullies, cyber-bully/victims, and cyber-uninvolved). Gender differences, however, were found, suggesting that females are more likely to be cyber-victimized (cyber-victims=69.5%; cyber-bully/victims=60.7%). This gender difference is consistent with findings obtained when looking at relational aggression. Although the majority of prior research shows no gender differences (e.g., Hinduja & Patchin, 2006; Li, 2006; Topcu et al., 2008; Williams & Guerra, 2007; Wolak et al, 2007; Ybarra, 2004), of those that do, females were more likely to experience cyber-victimization (Dehue et al., 2008; Kowalski & Limber, 2007; Ybarra & Mitchell, 2008). With mixed gender findings, more research is needed<sup>12</sup>.

### *Individual and Contextual Features of Youth Involved in Cyber-Bullying*

*Individual characteristics.* While research has repeatedly demonstrated that traditional forms of bullying and victimization are negatively related to a host of

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<sup>12</sup> Exploratory analyses are presented in the appendix examining the role of gender in the relationship between cyber-bullying involvement and psychosocial adjustment (See Appendix T). Core findings remain significant even after controlling for gender effects.

psychological, social, and behavioral variables (e.g., Espelage & Swearer, 2003; Kaltiala-Heino, et al., 1999; Marini et al., 2006; Nansel et al., 2001; Yang et al., 2006), less is known about the psychosocial functioning of youth exposed to newly emerging, or cyber, forms of bullying. However, not surprisingly, preliminary evidence suggests that cyber-involvement is negatively associated with healthy psychosocial adjustment (e.g., Hinduja & Patchin, 2010; Kowalski et al., 2008; Mitchell, et al., 2007; Ybarra, 2004). Consistent with earlier literature, cyber-bullying involvement in the present study was related to depression, anxiety, self-esteem, callousness, uncaring attitudes, and conduct problems.

As expected (Kowalski et al., 2007; Mitchell et al., 2007; Perren et al., 2010; Wang et al., 2011; Ybarra, 2004), cyber-victims reported higher levels of depression and anxiety than youth not involved in cyber-bullying. Consistent with previous literature that has explored the link between cyber-victimization and self-esteem (Patchin & Hinduja, 2010), youth classified as cyber-victims in the current study reported poorer self-esteem than those not involved. This pattern of findings can also be found with traditional victims (O'Moore & Kirkham, 2001). Taken together, these findings suggest that cyber-victims experience psychological challenges (e.g., anxiety, depression, and self-esteem issues) that are of concern and may require intervention.

As hypothesized, cyber-bullying was significantly related to increased behavioral difficulties among participants sampled. Cyber-bullies reported higher scores on the callousness (unsympathetic attitude towards others) and uncaring (lack of concern about others and their schoolwork) subscales, which are two factors assumed to be associated with psychopathy (Essau et al., 2006). These findings suggest that cyber-bullies show less guilt and empathy than other adolescents surveyed. This finding builds on those from Ang and Goh (2010) who demonstrated a link between increased participation in cyber-bullying and low levels of cognitive (e.g., ability to understand others' emotions)

and affective empathy (e.g., ability to share in another's emotions) among approximately 400 youth in Singapore. Considering that empathy is a multidimensional construct, the current study expanded our knowledge of how US youths' empathetic responses are related to cyber-bullying by examining callous-unemotional traits. Furthermore, mirroring those results found in the traditional bullying literature (e.g., Kaltaila-Heino et al., 2000; Nansel et al., 2001; Olweus, 1995), and in line with recent research on cyber-bullying behaviors (Ybarra & Mitchell, 2004b; Ybarra & Mitchell, 2007), the current study revealed that cyber-bullying was related to self-reported conduct problems (e.g., fighting, theft, and noncompliance).

Cyber-bully/victims – youth classified as *both* victim and perpetrator – were initially excluded from study hypotheses due to an expectation that the group size would be limited. Historically, traditional bully/victims have represented the smallest bullying related category, with some studies reporting prevalence rates as low as 1% (Katala-Heino et al., 2000; Rigby, 1994). Moreover, the vast majority of cyber-bullying studies present findings on one group (e.g., cyber-bullies or cyber-victims) or comparing the two – with or without uninvolved youth (Arıcak et al., 2008; Katzer et al., 2009; Mitchell et al., 2007; Patchin & Hinduja, 2006; Raskauskas & Stoltz, 2007; Slonje & Smith, 2008; Smith et al., 2008; Vandebosch & Van Cleemput, 2009; Ybarra, 2004; Ybarra & Mitchell, 2004). Very few studies in the cyber-bullying field include cyber-bully/victims in their reports (Kowalski & Limber, 2007; Ybarra & Mitchell, 2004). More recent research however, has begun to integrate this group into analyses (Erdur-Baker, 2010; Sourander et al., 2010; Twyman, et al., 2010; Wang et al., 2009). Given the larger than expected size of the group, and its distinctive profile in the traditional bullying literature, it was decided that this fourth group of students would be included in all analyses to provide a more comprehensive examination of cyber-bullying.

Consistent with findings from Ybarra and Mitchell (2004b), participants self-identified as cyber-bully/victims share the significant challenges of both cyber-bullies and cyber-victims. Specifically, cyber-bully/victims reported higher depression, lower self-esteem, lower empathy (e.g., significantly higher scores on callousness and uncaring subscales), and higher levels of conduct problems than cyber-uninvolved students. Unlike Sourander and colleagues (2010) who found among their Finnish sample that cyber-bully/victims reported greater emotional distress and difficulties than 'pure' cyber-bullies and 'pure' cyber-victims, the findings from the current study revealed that their difficulties were *not* significantly different from those reported by cyber-victims- and cyber-bullies. These differences may be a function of the duration of time in each study. Whereas Sourander and colleagues (2010) asked participants to report their experience with cyber-bullying during the past *six* months, following suggested guidelines from previous research, the current study limited involvement to the past *three* months (Kowalski & Limber, 2007; Slonje & Smith, 2008). Therefore, differences between cyber-bully/victims and 'pure' cyber-victims and –bullies may be due to a dosing effect with victimization and perpetration over a longer period of time needed to distinguish these groups on psychological variables. However, with few studies to date, more research is necessary to clarify the differences in profile characteristics of youth identified as cyber-victims, cyber-bullies, and cyber-bully/victims.

*Parenting practices.* Family functioning, and specifically parenting practices, has routinely been explored in the traditional bullying literature. Bullies typically report lower levels of emotional support, parental monitoring/supervision, and greater variability in parenting practices than youth not involved in bullying (Marini et al., 2006; Rigby, 1994, Smokowski & Kopasz, 2005). Also, victims tend to report harsher disciplinary practices by parents than uninvolved youth (Barker, et al., 2008). Preliminary examination of

family functioning among cyber-bullies has demonstrated similar findings (Wolak et al., 2007; Ybarra & Mitchell, 2004; 2007).

As hypothesized, cyber-bullying involvement was, in general, significantly related to all parenting variables assessed, including parental involvement, parental supervision, and authoritative parenting practices. Although specific significant group differences among cyber-bullies, cyber-victims, and cyber-uninvolved youth were not found, the anticipated pattern emerged. For example, bullies reported the lowest levels of parent involvement, supervision, and authoritative parenting practices, followed by victims, among the three groups. Although previous research has demonstrated that cyber-victims report poorer parental monitoring and parent-child emotional bond than youth not victimized via the internet, these results were only demonstrated for youth who reported frequent victimization (e.g., once a month or more) – there was no relationship between infrequent victimization (e.g., less frequently than monthly) and parental monitoring and bonding as Ybarra and colleagues (2007) had found. Therefore the relationship between cyber-victimization and parenting variables appears to be dependent on the level of cyber-victimization experienced. The fact that the current study was unable to find differences may again be due to the classification scheme employed (*any* experience of cyber-bullying over the past three months). That is, the sample was predominately composed of students who reported that it happened once or twice – much like the infrequent cyber-victim classification created by Ybarra and colleagues.

Cyber-bully/victims, however, reported significantly lower rates of parent involvement and authoritative parenting practices than did uninvolved students (trend present for supervision/monitoring;  $p < .10$ ). These findings are consistent with those reported by Ybarra and Mitchell (2004) who showed that youth characterized as both aggressor and target of online harassment experienced lower levels of emotional bond and supervision than youth uninvolved. Again, these findings demonstrate that youth

who are involved in cyber-bullying as victim and perpetrator tend to experience the greatest psychosocial challenges.

*Peer relations.* Minimal research has examined the peer relationships of youth involved in cyber-bullying. Therefore, the current study adds to the literature by exploring whether cyber-bullying involvement is related to youth's peer group affiliation, general perception of peer relations at school, and level of support experienced from a friend. As hypothesized, cyber-bullying groups differed in their perception of peer relations and their group affiliation. Specifically, cyber-bullies and cyber-bully/victims reported that their friends engaged in delinquent acts (e.g., got into trouble at school, lied to their parents) more often than cyber-victims and students classified as cyber-uninvolved. Although this is the first study, to our knowledge, that examined the problematic peer relationships of cyber-bullies (and cyber-bully/victims), results are consistent with the traditional bullying literature suggesting that bullies are more likely to affiliate with other youth involved in antisocial or deviant behaviors (Espleage et al., 2003; Haynie et al., 2001). For example, Haynie and colleagues (2001) found that traditional bullies and bully/victims reported that more of their friends were engaged in problematic behaviors, including fighting, damaging property, lying to parents, and being disrespectful at school.

Results from the current study also revealed that cyber-victims and cyber-bully/victims perceived more negative peer relations among classmates than did youth not involved in cyber-bullying. For example, cyber-victims and cyber-bully/victims were more likely to report that students at their school have difficulty getting along, are mean to one another, and pick on other students. These findings are not surprising given that these youth have been targets of negative interactions in cyber-space and may have also experienced face-to-face bullying at school.

Although previous research has revealed that traditional victims tend to experience difficulty making and maintaining friendships, and generally report lower friendship quality than their noninvolved peers (Jantzer et al, 2006; Olweus 1995), limited research exists exploring these associations among cyber-victimized youth. Only one study has explored peer relations of youth experiencing cyber-victimization. Wang and colleagues (2009) found no difference in the number of friends reported when comparing cyber-victimized and cyber-uninvolved youth. However, their ability to find group differences may have been restricted by the manner in which this variable was assessed (i.e., responses dichotomized into three or more friends or fewer than three friends). The current study revealed that cyber-victims reported fewer friends – when given a broader range of response options (e.g., 0, 1-2, 3-6, 7-10, or more than 10 friends) – than did cyber-uninvolved youth. Despite this difference, when cyber-victims reflect on their relationship with a close friend, the support they perceived from their peer did not differ from that experienced by cyber-uninvolved youth. For example, there is no difference in the frequency cyber-victims reported receiving help from their close friend or are given advice when asked.

*School climate.* School climate variables have been investigated in relationship to traditional bullying and victimization (e.g., Brand et al., 2003; Haynie et al., 2001; Karatzias, et al., 2002). In general, results have indicated that traditional bullies are more likely to have a negative perception of school climate and that victims are more likely to report lower perceptions of school safety (Nansel, 2001; Slee & Rigby, 1993). Furthermore, preliminary evidence suggests that the more youth perceive their school climate to be fair and pleasant, the lower their involvement in internet bullying (Williams & Guerra, 2007). Based on these findings, it was expected that cyber-bullying involvement would be differentially related to students' perception of school climate and safety. Results revealed that cyber-victims and cyber-bully/victims felt less connected

with their teachers and that the rules were less clear and consistent than did youth not involved in cyber-bullying. Moreover, cyber-bully/victims reported the greatest level of safety concerns, followed by cyber-victims and cyber-bullies, who did not differ from one another. Taken together, these findings suggest that cyber-bully/victims perceive and/or experience a more negative school climate than others involved and, even more so, not involved in cyber-bullying.

The current study contributes to the existing literature by broadening the scope of school climate variables explored in relation to cyber-bullying. Although research has examined whether cyber-victimization is related to how safe students feel at school (e.g., in the classroom, lunchroom, bathroom), studies have not examined whether cyber-bullying involvement is related to student experiences with global safety concerns (e.g., theft, violence, vandalism). Nor, have studies investigated school climate variables shown to be related to bullying, in addition to victimization (e.g., teacher support). Consistent with previous findings, cyber-bully/victims showed the poorest connection to teachers, again demonstrating that the additive effects of being bullied and bullying may be related to more maladaptive relationships and functioning (Flaspohler, Elfstrom, Vanderzee, Sink, & Birchmeier, 2009).

*School performance.* According to the traditional bullying literature, bullying and victimization are related to less attendance, poor academic achievement, and disciplinary problems (Feldman et al., 2011; Kumpulainen & Rasanen, 2000; Mayer et al., 2001; Nansel et al., 2001; Perren & Hornung, 2005; Spriggs et al., 2007; Wolke et al., 2000). However, findings, and specifically those related to attendance and academic achievement, have been inconsistent and often vary as a function of measurement (e.g., self-report versus records collection).

Few studies have examined these relationships with respect to cyber-bullying status. Of those that have, researchers have relied primarily on self-report data and

have examined these relationships among victims or perpetrators, *not* both (Hinduja & Patchin, 2007; Ybarra et al., 2007; Ybarra & Mitchell, 2007). These studies found no relationship between cyber-victimization and academic achievement among middle school students (Ybarra et al., 2007). However, one study found a relationship between cyber-bullying and self-identified aggressive and rule-breaking behaviors (Ybarra & Mitchell, 2007). Moreover, cyber-victims have been identified as reporting more behavioral problems at school (e.g., skipping school, carrying a weapon, destruction of property; Hinduja & Patchin, 2007).

The current study contributes to the broader literature by exploring the relationship between cyber-bullying and school performance variables using school records. Contrary to expectation, results revealed that cyber-involvement was *not* related to the collection of school performance variables assessed (e.g., attendance, GPA, referrals, and suspensions). One possible explanation relates to the manner in which participants were classified into cyber-bullying status – a less conservative criterion than is typically used in the traditional bullying literature –ultimately creating groups who had experienced fewer negative peer interactions. Based on this, it was hypothesized that the relationship between cyber-bullying and school performance, if it exists, would be revealed by grouping youth based on a higher frequency of cyber-bullying (e.g., 2-3 times a month versus once in the past couple of months).

Exploratory analyses using this reclassification method revealed a significant relationship between cyber-bullying and school performance, specifically on GPA and total referrals. Post hoc analyses revealed that cyber-victims had lower GPAs than cyber-uninvolved youth. Although many researchers suggest the existence of a negative association between victimization and academic achievement, results in the traditional bullying literature have been inconsistent (Austin & Draper, 1984; Farrington, 1993; Glew et al., 2005; Hanish & Guerra, 2002). Moreover, few studies have explored

this relationship among cyber-victims. Those that have, relied on self-report measures (Ybarra et al., 2007). This study is the first to report a direct link between cyber-victimization and poorer academic performance. One possible explanation is that due to the far-reaching effects of cyber-bullying (e.g., entering the home), victimized students – at least those whose victimization has been more persistent – may be distracted from homework, which a necessary component for school success.

Consistent with the literature, a pattern of results ( $p=.05$ ) emerged suggesting more discipline problems for cyber-bully/victims and cyber-bullies. This finding expands and strengthens previous self-report data suggesting that cyber-bullies and cyber-bully/victims are engaged in more rule-breaking behaviors at school (Hinduja & Patchin, 2007; Ybarra & Mitchell, 2007) by providing evidence that these youth are actually engaging in the behaviors that they are reporting. Although cyber-victims did not have significantly more disciplinary problems than cyber-uninvolved youth (mean trend was in the predicted direction), this finding was consistent with those obtained by Feldman and colleagues (2011) that showed an absence of cross-sectional relationship between victimization and behavioral misconduct in middle school, but evidence of longitudinal differences for victims on discipline actions. While previous results suggest that the negative behavioral correlates of victimization may be additive and only reach threshold over time, longitudinal research is needed to explore this hypothesis among youth involved in cyber-bullying.

In sum, the current study revealed that cyber-bullying involvement was related to a variety of psychosocial correlates, with students identified as *both* perpetrator and victim experiencing the worst psychological functioning and poorest relationships. Contrary to hypotheses, initial examination of school records data revealed that cyber-bullying was *not* significantly related to school performance (e.g., attendance rates, GPA, discipline problems) for students who engaged in *any* cyber-bullying or

experienced *any* cyber-victimization in the past couple of months. However, when participants were re-categorized, based on more frequent exposure to cyber-bullying acts – a stricter criterion consistent with Olweus, but not yet used by researchers modeling their cyber-bullying measures after his scale – significant group differences were found.

#### *Moderation Effects of Social Support*

While much of the existing research has focused on risk factors and negative correlates of cyber-bullying behaviors, factors that may moderate these relationships have been less frequently examined. The current study adds to the literature by examining whether social support variables (e.g., teacher, parent, and friend), as previously identified in the traditional bullying field (e.g., Davidson & Demaray, 2007; Hodges et al, 1999; Natvig et al., 2001), moderated the relationship between cyber-bullying and psychosocial functioning.

Previous literature suggests that friendship may protect against victimization (Goldbaum et al., 1993) and buffer the relationship between victimization and psychological distress (Boulton et al., 1999; Hodges et al., 1999; Pellegrini, 1999). Therefore, the current study examined whether close friend support moderated the relationship between cyber-victimization and internalizing distress, specifically ratings of depression and anxiety. However, consistent with a recent study conducted on middle and high school students, support for this hypothesis was not established (Aoyama, Saxon, & Fearon, 2011).

When additional psychosocial factors were examined, level of close friend support *did*, however, moderate the relationship between cyber-bullying involvement and student-reported callous attitude towards others. Whereas greater levels of support was related to lower reports of callousness for cyber-victims, cyber-bullies, and cyber-uninvolved youth, cyber-bully/victims reported greater levels of callousness as support

from a close friend increased. This difference in the directionality of the relationship for cyber-bully/victims suggests that, for this group of students in particular, close friendship support may be provided by youth who share similar attitudes and behaviors and therefore may model and encourage callous attitude and related behaviors toward others. Similar findings were obtained when examining the moderating effect of parental involvement on callousness. Again, for most cyber-involved groups, greater levels of support was related to lower levels of callousness. However, for cyber-bully/victims the level of parental support/involvement was *not* related to a decrease in self-reported callousness. Similarly, cyber-bully/victims may observe callous behaviors and attitudes may be modeled and encouraged – this time at home.

In the current study teacher support also moderated the relationship between cyber-bullying and uncaring attitudes. Results revealed that, while for all groups greater levels of teacher support was related to lower levels of uncaring behaviors, this relationship was strongest for cyber-bully/victims. This suggests that for cyber-bully/victims – the group with some of the most serious problems – improving the teacher-student relationship so that they perceive greater support could help promote pro-social attitudes and enhance their concern for others and their work school – at least at school. This intervention strategy could, in effect, help to decrease their involvement in negative peer interactions and improve their overall psychosocial adjustment. However, additional research, using pre- and post-intervention data, is needed to determine whether this strategy produces improvement in students' care and regard for others.

Social support did not moderate the relationship between cyber-bullying involvement and school performance. While this is the first study to explore these relationships, a significant interaction effect was anticipated based on prior research (Feldman et al., 2011). One possible explanation for this was that the manner in which

participants were classified into cyber-bullying status – less conservative criteria than typically used in the traditional bullying literature – made the evaluation of the moderating effects of social support more challenging. Therefore, follow-up analyses were conducted using the more stringent criteria for classification (i.e., higher frequencies of cyber involvement). These analyses revealed a significant moderation effect of teacher support on both attendance and total discipline referrals. Specifically, higher levels of teacher support were related to higher attendance rates for cyber-bullies and uninvolved students, but were related to *lower* attendance for cyber-victims and cyber-bully/victims. Moreover, while increasing levels of teacher support was related to fewer referrals for cyber-victims, cyber-bullies, and cyber-uninvolved students, the findings were in the opposite direction for cyber-bully/victims. Again, this group of students appears to be unique in that the additive effect of cyber-bullying *and* victimization may alter youth’s response to social support. And while we see that teacher support may help to alter youth’s perspectives about callous and uncaring behaviors, it may not be enough to actually alter their response to others. Considering these analyses were exploratory and there are no other studies examining these relationships among youth involved in cyber-bullying, further research is necessary to assess and confirm whether social support is beneficial for involved youth (as victim or perpetrator) since the findings can inform cyber-bullying interventions.

Based on the current findings, more research is necessary to examine possible protective factors that can moderate the relationship between cyber-bullying involvement and psychosocial functioning and school performance. Although these preliminary findings suggest that social support moderates the relationship between cyber-bullying status and student reported anxiety, callous attitude, and uncaring behaviors, the findings were weak, as indicated by the small effect sizes reported, and social support did not demonstrate a buffering effect for cyber-victims and cyber-bullies as had been

expected. While this study contributes to the literature by including cyber-bully/victims in the analyses – a group that is clearly unique and that experiences more pronounced psychosocial difficulties – the impact of social support for these youth is quite perplexing, suggesting that more research is needed. In addition, other possible protective factors, including involvement in extracurricular activities or skills training programs, remain to be studied.

### *Limitations*

Although the current study has important implications for understanding cyber-bullying and its relationship with youths' psychosocial development and functioning, several limitations qualify these findings.

Consistent with all previous work within the field, results were obtained using self-report measures for both the classification of students and the assessment of their psychosocial functioning. Therefore, there is inherently self-report bias that may influence the results. For example, cyber-bullies and cyber-victims may be underrepresented in the current study because participants may have been reluctant to classify themselves as such, or did not recognize and identify their behaviors as cyber-bullying (despite definitions having been provided). However, unlike with traditional bullying whereby teachers, parents, and peers may be able to report on students' involvement in negative peer relations, because cyber-bullying is often committed through personal communication devices (e.g., cell phones, personal computers) that are not easily witnessed, involving multiple ratings in the classification of cyber-bullying is more challenging. Moreover, even if multiple raters/informants were included, with low agreement between teacher-, peer-, and self-reports in terms of traditional bullying classification (Totura, Green, Karver, & Gesten, 2009), it is unclear whose view should carry the most weight. Determining this is complex and relies to some extent on the variables being examined and the access of each rater to the relevant data or domain of

functioning. Social desirability may also be playing a role in the self-reporting of psychosocial difficulties assessed, with youth underreporting challenges experienced. Finally, the use of retrospective reporting of middle school bullying and victimization may be influenced by current experiences (e.g., youth currently experiencing traditional bullying and cyber-bullying may report past experiences even if they didn't occur) and may not be a pure representation of negative peer relations during that moment of time.

Limitations in terms of participant characteristics were also noted. First, participants were sampled from one large southern school district, which was predominately Caucasian (71%) and Hispanic (17%). Therefore, it is unknown whether findings would apply to more ethnically diverse populations. Second, the final sample was reduced by approximately 30% due to the inclusionary criteria established. However, the sample retained was representative of the district and analyses comparing more inclusive samples (e.g., by reducing the stringency of the criteria) demonstrated that the core findings of the study were not altered (Appendix D). Lastly, although the overall sample was large, there were unequal sample sizes across bullying groups. Even though this is a consistent finding in the field, because of the nature of the phenomenon, it should be noted that the vast majority of the sample was comprised of cyber-uninvolved students ( $n=1,680$ ) and fewer participants were self-identified as cyber-bullies ( $n=99$ ) cyber-victims ( $n=200$ ), and cyber-bully/victims ( $n=107$ ). Although unbalanced sample sizes may have made finding group differences more challenging, differences across cyber-bullying status were still observed and the current findings have been able to demonstrate how *all* cyber-bullying groups compare to one another.

Definition and measurement issues are also important to consider when comparing findings across studies. While the current study utilized a pre-existing measure of cyber-bullying that was modeled after the "gold-standard" in the traditional bullying field (i.e., Olweus Bully/Victim Questionnaire; Glew et al., 2005), there is

currently no standard way to assess cyber-bullying involvement. Therefore, whereas some researchers investigate whether youth have *ever* experienced cyber-bullying (Li, 2006; Patchin & Hinduja, 2006; Ybarra & Mitchell, 2004), classification criteria used here applied only to those participants who had *recent* involvement in cyber-bullying (i.e., within the last couple of months) to be consistent with standard practice in the traditional bullying field (Kowalski & Limber, 2007; Slonje & Smith, 2008). Although this allowed for a more accurate assessment of the concurrent relationship between cyber-bullying and psychosocial functioning, it possibly decreased prevalence rates and reduced the numbers of youth classified as being cyber-involved.

Another factor to consider is whether a dosing effect of cyber-bullying and victimization is needed to fully examine group differences on psychosocial functioning and contextual variables. Because the cyber-bullying construct is relatively new and still evolving and the impact of a single act can be more disturbing due to the unique features of cyber-bullying (e.g., anonymity of bully, global audience, permanency of material), the cyber-bullying measure administered classified students as cyber-bullying participants if they had experienced *any* cyber-bullying or cyber-victimization (e.g., event occurred at least once or twice in the past couple of months) instead of the standard criteria utilized in the traditional bullying field, which is more conservative (e.g., bullying acts occurred at least 2-3 times per month). By including participants with less exposure to cyber-bullying, groups were created that could be considered “less severe” than those traditionally examined. Therefore, our ability to find group differences may have been restricted. This limitation is illustrated in the examination of the relationship between cyber-bullying and school performance. While traditional bullying research has consistently demonstrated poorer school functioning for bullies, findings were not replicated for cyber-bullies in the current study. However, when the criteria were

adjusted to mirror those used in the traditional bullying literature, a trend for cyber-bullies having more discipline problems emerged.

### *Implications*

Although prevalence rates of cyber-bullying involvement are generally less than those reported for traditional bullying (Raskauskas, 2007; Wang et al., 2009; Wang et al., 2011), the current findings reveal serious psychosocial challenges for those youth involved. As such, parents, school personnel, and mental health professionals cannot ignore or underestimate the experiences youth are having in cyber-space. Therefore, the generational gap in technological knowledge needs to be closed.

Education is the primary component of cyber-bullying prevention and intervention. As many parents are unaware of the children's experience in cyber-space (Dehue et al., 2008), informing parents of the capabilities of new media and encouraging involvement and, specifically, supervision over their children's internet and cell phone use is an important component of cyber-bullying prevention. However, the current study revealed that the majority of students (approximately 85%) report minimal supervision of their internet use. To increase this figure, parents should be encouraged to keep computers in a common area and talk with their teenagers about internet safety. Moreover, as results from the current study demonstrated, increased parental involvement was generally related to lower anxiety ratings and fewer callous behaviors, the promotion of standard positive parenting principles should be encouraged.

Although well-established interventions have been developed to combat traditional bullying (e.g., Newman-Carlson & Horne, 2004; Olweus, 1994), research has yet to identify empirically supported strategies to address cyber-bullying. However, several recommendations for school administrators and psychologists have been repeatedly provided in the literature (Diamanduros, Downs, & Jenkins, 2008; Kowalski et al., 2008; Willard, 2007). With schools now having a responsibility and authority to

respond to instances of cyber-bullying (Willard, 2007), clear and strong policies on both traditional and cyber-bullying behaviors are warranted. Therefore, the consequences of misuse of communication technologies should be outlined for students and consistently followed through. Reporting these negative interactions to school staff and parents is necessary to combat cyber-bullying, making it essential for schools to establish a protocol for reporting either witnessing or experiencing cyber-bullying. Hotlines and anonymous tip boxes may be useful, in addition to identifying key personnel who are trained in dealing with these incidents. Once cyber-bullying is reported, school staff should meet with both victim and perpetrator in order to assess the situation (e.g., determine intent and extent of the behaviors) and identify the most appropriate intervention strategy (e.g., counseling, group enrollment, disciplinary action). Students should also be provided with strategies to employ to keep themselves safe (e.g., never share personal passwords) and how to handle an incident of cyber-bullying (e.g., print evidence of the bullying and report to online moderators or give to parents and school staff). Moreover, the role of the bystander should not be overlooked and therefore they should be given the tools necessary to help intervene when cyber-bullying is observed (e.g., report; Mason, 2008). These measures could be incorporated in a universal prevention program targeted to all youth with access to new media.

Findings from the current study, in addition to those reported by Ang and Goh (2010), suggest that cyber-bullying interventions should include empathy training. Since a large meta-analysis revealed a moderate positive relationship between empathy and prosocial and cooperative behaviors (Eisenberg & Miller, 1987), youth would likely benefit from this form of training. Although empathy training would likely promote social competence for all youth (Feshbach & Feshbach, 1982), students at risk for or who are already engaging in cyber-bullying should directly be taught perspective-taking and

affective education. Doing so may decrease their willingness to engage in behaviors consistently shown to cause psychological distress upon others.

Finally, health care professionals should screen for cyber-bullying behaviors when working with adolescents. Consistent with prior reports (Mitchell et al., 2007; Patchin & Hinduja, 2010; Perren et al., 2010; Wang et al., 2011; Ybarra, 2004), results from the current study revealed psychological difficulties of youth involved in cyber-bullying. With cyber-victims reporting more depressive and anxiety symptoms than youth uninvolved in cyber-bullying, it would be important to assess risk and consider whether intervention is necessary, regardless of whether cyber-bullying precipitated feeling of depressed and anxious mood or whether these factors increased risk for victimization.

#### *Conclusions and Future Directions*

Cyber-bullying represents a significant problem among adolescents and the adults in their world who must deal with its consequences both at home and school. The current study contributes to the field of study by examining a broader range of psychosocial variables predicted to be related to cyber-bullying involvement and examining whether social support has a moderating effect on these relationships. As such, the current study has demonstrated poor psychosocial functioning across youth involved in this new form of social cruelty, with youth who are both victims and perpetrators reporting the greatest challenges. Although there is greater understanding of the behaviors committed in cyber-space, the characteristics of those involved, and the influence of social support on these relationships, there is still much more to learn as technology is ever evolving and the impact of these dangerous behaviors can have immediate negative effects.

First, future research should consider the manner in which cyber-bullying is classified. Prevalence rates vary based on whether participants are asked to label their

electronic behaviors as cyber-bullying (Kowalski & Limber, 2007; Smith et al., 2008) or endorse whether they engaged in a particular electronic behavior without explicitly calling it cyber-bullying (Mishna et al., 2010). Therefore, researchers should explore whether there are profile differences between youth who identify themselves as cyber-victims or cyber-bullies versus those who experience behaviors consistent with the act but do not call on them to label themselves as such. These analyses should, ideally, be conducted on one sample versus a comparison across samples to reduce possible measurement differences or error. Second, research should examine whether participation in specific forms of cyber-bullying are differentially related to psychosocial functioning. For example, do youth who have been embarrassed and harassed privately through instant message or text message experience fewer challenges than those publicly humiliated through social networking sites or mass text messages? This would necessitate that researchers examine items that assess *specific* cyber-bullying behaviors rather than those that are more global. Third, as cyber-bully/victims appear to have the poorest adjustment, additional research is necessary to understand this challenging group and whether different/group-specific interventions are needed to improve their general functioning and personal relationships. Possibly including collateral information (e.g., parent or teacher report) would assist this endeavor.

Another important focus essential to the *prevention* of cyber-bullying is an examination of the relationship between cyber-bullying and traditional bullying, which typically begins even earlier in elementary school and peaking in middle school (Swearer & Cary, 2003). While researchers have demonstrated that traditional bullying predicts cyber-bullying involvement, less is known about the profiles of youth engaged in both forms of bullying. Group differences should be explored to determine whether the psychosocial correlates differ (including whether they are more severe) for youth engaged in one arena of bullying or both. However, analyses to examine this research

question would necessitate a larger sample considering the low prevalence of certain groups (e.g., bully/victim). Lastly, since cyber-bullying is still a relatively new construct, the current literature solely relies on cross sectional data. With findings representing correlational relationships, it is difficult to ascertain whether cyber-bullying causes poor psychosocial functioning, youth with psychosocial difficulties are more susceptible to being cyber-bullied, or there is a bi-directional relationship that maintains both challenges. Ultimately, longitudinal studies (e.g., those tracking youth from elementary through high school) are needed to more closely examine whether there are detrimental effects of this growing form of social cruelty and at what point, or points, to intervene. This research design would also allow researchers to determine the developmental trajectories of those youth who experience more persistent bullying across the years versus those that escape the pattern of negative peer relations. In all, researchers, policy makers, school personnel, and health care professionals must continue to work hard on understanding cyber-bullying and strive to find ways to help youth overcome its related challenges.

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## Appendices

Appendix A

Sample Parent Letter

Dear Parent or Guardian,

Children succeed in environments where they feel safe and are able to freely express themselves. It is critical to our school progress and your child’s development that we do everything we can to ensure that your child feels safe and that they have an opportunity to flourish.

Our school is participating in the District’s Pasco County Youth Cyber Survey, a research project that will help us know when, where, how, and how often bullying occurs at school and in cyber-space. We also want to identify the kinds of students and their concerns that contribute to involvement in bullying activities, or as a victim. Through school records collection we also want to better understand the academic and behavioral effects of bullying. Cyber-bullying is rapidly increasing in communities and schools across the country as you know from almost weekly reports in the media. We, in Pasco, are continually seeking ways to prevent these and related problems, and protect our youth.

Your child was randomly selected to complete this survey during school hours. Surveys will be administered on the computer or paper/pencil format and will take approximately 35 minutes per administration. Your child’s participation is completely voluntary and they can stop participating at any time. Additionally, your child’s grades will not be affected if they decide not to participate. Your child’s responses will be kept strictly confidential. Your child’s name will not appear on the survey. Your child’s responses will not be shared with teachers or school staff. No single student will be identified. Instead responses will be combined for all students taking the survey. There are no known risks to completing this survey. Students with any questions or responses to the survey will of course be able to talk with school staff. A copy of this survey is on file in the front office.

The results of this survey will be provided by our USF partners who will assist with the analysis, summary, and presentation of findings. This information will allow us to determine the extent to which bullying is a problem at our school, in our District, and in cyber-space more generally. In addition, for each participating student school records data (including grades, attendance, and discipline reports) will be collected to determine the extent to which cyber-bullying is related to school performance. Again, no names will leave the district—confidentiality of this information will be maintained. Moreover, individual student responses will not be shared with district staff or become part of any district records. These findings will be invaluable as we evaluate school policy and assist with program planning to educate our youth and keep them safe.

Please contact our school principal if you have any questions. Additional information can be provided by XXXXXX (XXX-XXX-XXXX).

Thank you for your cooperation!

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IF YOU DO NOT WANT YOUR CHILD TO PARTICIPATE PLEASE RETURN THIS SIGNED FORM TO OUR FRONT OFFICE. There are no consequences for deciding not to participate. Your child’s grades will not be affected.

[  ] My child \_\_\_\_\_ does NOT have permission to participate.

Parent/Guardian Name (please print): \_\_\_\_\_

Parent/Guardian Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Appendix B

Cyber-Bullying Survey (Sample Items)

<h2 style="margin: 0;">Pasco County Youth Cyber Survey</h2>		AB
<p>This survey is part of a large-scale research project examining student perceptions of their high school experiences at home and at school. Questions are related to your feelings about different events and situations. Please answer all questions honestly. There are no right or wrong answers. By completing this survey we will have a better understanding of your high school experiences. Please watch the time, you will have 35 minutes to complete the survey. Thank you for your participation!</p>		
<p><u>Section A:</u></p>		
<p><b>Directions:</b> For items 1-2, please write in the space provided. For all other questions check ONE answer.</p>		
1. What is your code number? This # is found on your survey cover sheet.  Code #: _____	5. What is your birthdate?  _____ / _____ / _____	
2. What is your age?  <input type="checkbox"/> 13-14 <input type="checkbox"/> 15-16 <input type="checkbox"/> 17-18 <input type="checkbox"/> over 18	6. I am Hispanic.  <input type="checkbox"/> no <input type="checkbox"/> yes	
3. What is your current grade level?  <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12	7. My race/ethnicity is:  <input type="checkbox"/> African American/Black <input type="checkbox"/> Asian <input type="checkbox"/> Caucasian/White <input type="checkbox"/> Native American/Indian <input type="checkbox"/> other _____	
4. What is your gender?  <input type="checkbox"/> female <input type="checkbox"/> male	8. English is my second language.  <input type="checkbox"/> no <input type="checkbox"/> yes	
<p><u>Section B:</u></p>		
<p><b>Directions:</b> Please check ONE box for each question.</p>		
1. My parents are:  <input type="checkbox"/> married <input type="checkbox"/> remarried <input type="checkbox"/> separated <input type="checkbox"/> living together <input type="checkbox"/> single/never married <input type="checkbox"/> divorced <input type="checkbox"/> widowed	5. I have siblings.  <input type="checkbox"/> one <input type="checkbox"/> two <input type="checkbox"/> three <input type="checkbox"/> four or more <input type="checkbox"/> I do not have siblings	
2. I live with my  <input type="checkbox"/> mother and father <input type="checkbox"/> mother <input type="checkbox"/> father <input type="checkbox"/> One parent & step-parent <input type="checkbox"/> Relative _____ <input type="checkbox"/> other _____	6. How many times <i>per week</i> do you eat together as a family?  <input type="checkbox"/> never <input type="checkbox"/> less than once a week <input type="checkbox"/> 1-2 times per week <input type="checkbox"/> 3-5 times per week <input type="checkbox"/> every day or almost every day	

# PASCO COUNTY YOUTH CYBER SURVEY

Your Code Number is: \_\_\_\_\_

Please include this number on your survey. Do not include your name. This will ensure that all your responses are kept private and that no one will know how you respond.

Within this survey are questions related to your personal experiences, home life, and school environment. Other questions are related to your feelings about different events and situations that occur at school and in cyber-space. This survey is part of a large-scale research project to help develop school programs to assist students, so please respond to all questions—your answers will be very helpful to this effort! In addition, school records (including attendance, grades, and discipline reports) will be collected to better understand the high school experience. If you decide not to participate, your grades will not be affected.

All surveys will be checked for accuracy, based on responses to certain questions, and completeness. **Surveys that meet our criteria for accuracy and completeness will be entered into a school-based raffle for the following prizes.**

**Within each school, eligible students will win:**

**1 prize - \$50 gift card**

**2 prizes - \$20 gift card**

**3 prizes - \$15 gift card**

**4 prizes - \$10 gift card**

**You may choose from the following retailers: iTunes, Target, Barnes & Noble, Chick-fil-a, McDonalds, and Walmart**

**Thank you for your participation!**

## Appendix D

### Comparison of Core Findings

Table A1.

*Comparison of Core Findings Across Participant Samples*

	Final Sample (N=2,086)					Sample without Records (N=2,335)					Sample without Accuracy Checks and Records (N=2,629)				
	Overall	C-V	C-B	C-B/V	C-NI	Overall	C-V	C-B	C-B/V	C-NI	Overall	C-V	C-B	C-B/V	C-NI
<b>Individual Functioning</b>															
Depression <sup>a</sup>															
Anxiety <sup>a, b</sup>															
Self-Esteem <sup>c</sup>															
Callousness															
Uncaring Attitude															
Conduct Problems															
<b>Family Factors</b>															
Family Involvement															
Family Supervision/Monitoring															
Authoritativeness															
<b>Peer Relations</b>															
Negative Peer Relations															
Deviant Peer Affiliation															
Close Friend Support															
<b>School Climate</b>															
Teacher Support															
Clarity and Consistency of Rules															
Safety Concerns															
<b>School Performance</b>															
Attendance															
GPA															
Referrals															
Suspensions															

*Note.* For significant group findings, uninvolved students are the referents. <sup>a</sup> cyber-victims significantly different from cyber-bullies for sample without accuracy checks and records data, <sup>b</sup> cyber-victims different from cyber-bullies for sample without records, <sup>c</sup> cyber-bully/victims significantly different from cyber-bullies for sample without accuracy checks and records

Appendix E

Exploratory Analysis Examining Gender Relationships

Table A2.

*MANOVA Results for the Relationship Between Cyber-Bullying Classification, Gender, and Psychosocial Functioning*

	Gender		Cyber-Bullying Classification				Two-Way ANOVA Results		
	Females	Males	Victim	Bully	B/V	Uninvolved	Gender	Status	Gender* Status F
Individual Domains							16.57**	10.97**	1.09
Depression	1.03 (.62)	.77 (.53)	1.21 (.64)	0.96 (.56)	1.18 (.63)	0.84 (.56)	11.33**	25.35**	1.43
Anxiety	.90 (.90)	.82 (.84)	1.08 (.96)	0.81 (.85)	0.89 (.92)	0.83 (.85)	2.13	4.67**	2.52
Self-Esteem	2.04 (.60)	2.25 (.57)	1.89 (.60)	2.10 (.60)	1.91 (.65)	2.20 (.58)	9.24**	14.78**	1.17
Callousness	.54 (.36)	.71 (.42)	0.62 (.42)	0.86 (.47)	0.81 (.55)	0.61 (.38)	46.78**	23.07**	1.0
Uncaring	.98 (.57)	1.17 (.63)	1.04 (.61)	1.36 (.63)	1.32 (.69)	1.06 (.59)	11.85**	15.50**	.44
Conduct	.46 (.36)	.51 (.25)	0.53 (.37)	0.68 (.36)	0.78 (.42)	0.46 (.34)	9.81**	41.41**	.54
Family							7.06**	3.35**	1.13
Involvement	2.09 (.59)	2.01 (.61)	1.99 (.64)	1.95 (.55)	1.83 (.61)	2.08 (.60)	9.12**	8.02**	.92
Supervision	1.48 (.46)	1.31 (.52)	1.43 (.49)	1.28 (.50)	1.28 (.53)	1.40 (.49)	17.89**	5.24**	.43
Authoritative	1.55 (.99)	1.40 (.97)	1.44 (1.03)	1.32 (1.05)	1.24 (1.02)	1.50 (.97)	1.94	3.28*	84
Peer							39.75**	11.05**	2.89**
Negative	2.11 (.64)	1.92 (.69)	2.18 (.65)	2.08 (.64)	2.27 (.87)	1.97 (.66)	37.70**	7.09**	4.08**
Deviant	1.23 (.82)	1.37 (.83)	1.27 (.81)	1.76 (.92)	1.75 (.96)	1.25 (.80)	5.41*	27.60**	3.14*
Close	4.15 (.90)	3.55 (1.15)	3.87 (1.09)	3.75 (1.17)	3.75 (1.20)	3.84 (1.07)	83.37**	2.34	1.68
School							12.32**	21.43**	2.59**
Teacher	2.03 (.66)	2.08 (.70)	1.89 (.69)	1.95 (.66)	1.86 (.78)	2.09 (.67)	.55	9.81**	.91
Rules	2.52 (.76)	2.52 (.76)	2.27 (.73)	2.42 (.62)	2.29 (.75)	2.57 (.68)	2.88	18.00**	1.14
Safety	.26 (.33)	.31 (.41)	0.42 (.46)	0.40 (.44)	0.60 (.64)	0.25 (.32)	27.28**	52.94**	5.48**

Note. Mean (SD).  $p < .05^*$ ,  $p < .01^{**}$

Appendix F

Exploratory Analysis Examining Traditional Bullying

Table A3.

*MANOVA Results for the Relationship Between Cyber-Bullying Classification, Traditional Bullying Involvement, and PsychoSocial Functioning*

	Traditional Bullying Involvement		Cyber-Bullying Classification				Two-Way ANOVA Results		
	Not Involved	Involved	Cyber-Victim	Cyber-Bully	Cyber-B/V	Cyber-Uninvolved	Traditional Involvement <i>F</i>	Cyber-Status <i>F</i>	Traditional Involvement* Cyber-Status <i>F</i>
Individual Domains							10.64**	7.11**	1.56
Depression	.86 (.56)	1.21 (.68)	1.21 (.64)	0.96 (.56)	1.18 (.63)	0.84 (.56)	24.57**	16.53**	1.08
Anxiety	.83 (.84)	1.09 (1.03)	1.08 (.96)	0.81 (.85)	0.89 (.92)	0.83 (.85)	9.09**	4.80**	2.74*
Self-Esteem	2.18 (.58)	1.91 (.67)	1.89 (.60)	2.10 (.60)	1.91 (.65)	2.20 (.58)	8.25**	7.77**	1.70
Callousness	.61 (.48)	1.00 (.59)	0.62 (.42)	0.86 (.47)	0.81 (.55)	0.61 (.38)	22.37**	12.81**	3.05*
Uncaring	1.05 (.59)	1.31 (.64)	1.04 (.61)	1.36 (.63)	1.32 (.69)	1.06 (.59)	13.38**	7.76**	.62
Conduct Problems	.46 (.34)	.74 (.41)	0.53 (.37)	0.68 (.36)	0.78 (.42)	0.46 (.34)	45.50**	17.44**	1.09
Family							5.00**	.95	1.06
Involvement	2.07 (.59)	1.89 (.62)	1.99 (.64)	1.95 (.55)	1.83 (.61)	2.08 (.60)	3.30	2.02	1.03
Supervision	1.41 (.49)	1.24 (.53)	1.43 (.49)	1.28 (.50)	1.28 (.53)	1.40 (.49)	10.92**	.83	.78
Authoritative	1.51 (.97)	1.16 (.98)	1.44 (1.03)	1.32 (1.05)	1.24 (1.02)	1.50 (.97)	10.42**	1.18	1.01
Peer							16.82**	4.48**	2.26
Negative Relations	1.98 (.65)	2.33 (.75)	2.18 (.65)	2.08 (.64)	2.27 (.87)	1.97 (.66)	18.79**	3.51*	1.95
Deviant Affiliates	1.25 (.78)	1.80 (1.0)	1.27 (.81)	1.76 (.92)	1.75 (.96)	1.25 (.80)	37.95**	9.30**	2.57
Close Peer	3.86 (1.07)	3.66 (1.15)	3.87 (1.09)	3.75 (1.17)	3.75 (1.20)	3.84 (1.07)	.26	.95	2.40
School							27.37**	12.43**	3.82**
Teacher Support	2.08 (.66)	1.87 (.76)	1.89 (.69)	1.95 (.66)	1.86 (.78)	2.09 (.67)	11.14**	5.59**	.72
Clarify of Rules	2.55 (.68)	2.33 (.75)	2.27 (.73)	2.42 (.62)	2.29 (.75)	2.57 (.68)	9.38**	11.97**	2.17
Safety	.26 (.32)	.58 (.60)	0.42 (.46)	0.40 (.44)	0.60 (.64)	0.25 (.32)	76.07**	28.59**	8.89**

Note. Mean (SD).  $p < .05^*$ ,  $p < .01$

### About the Author

Marissa A. Feldman was born in Los Angeles, California and completed her undergraduate studies at Loyola Marymount University. She graduated Summa Cum Laude with a major in Psychology and a minor in Sociology. Ms. Feldman began her graduate career at the University of South Florida in 2005 where she studied under the mentorship of Dr. Ellis Gesten. She assisted on several longitudinal projects focusing on adolescent resilience and negative peer relations. In 2008, Ms. Feldman received a Master of Arts degree for her work examining the longer-term behavioral and academic outcomes of middle school bullying and victimization. As a response to the evolution of peer relations and the growing challenges experienced by schools, her dissertation expanded on her previous work. Ms. Feldman's clinical interests include the provision of evidence-based assessment and treatment for children and adolescents. She recently completed a one-year APA-approved predoctoral internship at Children's Memorial Hospital where she further developed her expertise working with pediatric populations and their families. Ms. Feldman will continue her professional development at Children's Memorial, as she begins her postdoctoral fellowship in 2011.