RELATIONAL AGGRESSION AND CYBERBULLYING:

ASSOCIATIONS WITH CONTEXT AND MENTAL HEALTH OUTCOMES

A Dissertation

Presented to

The Faculty of the Curry School of Education

University of Virginia

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

By

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Three-Manuscript Dissertation: Overview

This dissertation presents a line of research exploring the psychosocial and behavioral correlates of victims of peer aggression. This dissertation is written according to the requirements described in the Curry School of Education Ph.D. Dissertation Manual: Manuscript Style Dissertation Guidelines. The manuscript-style dissertation calls for the doctoral candidate to be the principle author on three research manuscripts and submit an introduction (linking document) that describes the conceptual and theoretical linkages among the three manuscripts. I am the lead author on all three manuscripts presented here in their entirety. The first manuscript, *Relational Aggression and Psychosocial Correlates: A Review and Synthesis of the Literature* (Morin & Bradshaw), has been adapted and accepted as a book chapter in the forthcoming *Handbook on Bullying Prevention: A Lifecourse Perspective.* The second manuscript, *Examining the Link between Peer Victimization and Adjustment Problems in Adolescence: The Role of Connectedness and Parent Engagement* (Morin, Bradshaw, & Berg), has been published in the journal *Psychology of Violence*. The third manuscript, *Adjustment Outcomes of Victims of Cyberbullying: The Role of Personal and Contextual Factors* (Morin & Bradshaw) will be submitted to the appropriate referred journal upon completion.

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APPROVAL OF THE DISSERTATION

This dissertation, "Relational Aggression and Cyberbullying: Associations with Context and Mental Health Outcomes", has been approved by the Graduate Faculty of the Curry School of Education in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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Dedication

This dissertation is dedicated to the many women mentors in my life:

Ginny Maxson, Christie Rawlings, Christie Cooper, Diana Flemma, Julie Quimby, Stacy Williams-Duncan, Catherine Bradshaw, and Debbie Morin

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Relational Aggression and Cyberbullying:
Associations with Context and Mental Health Outcomes

Rationale and Conceptual Link across the Three Manuscripts

Bullying, defined as the repeated and intentional acts that occur through physical (e.g., hitting, kicking), verbal (e.g., namecalling, threatening), and social (e.g., spreading rumors, exclusion) means, occurs when a power difference is present and directly involves roughly 40% of school-age youth (Bradshaw, Sawyer, & O'Brennan, 2007; Olweus, 1993). While most of the seminal research on aggression has focused on physical forms of aggression (e.g., punching), research over the past two decades has broadened the conceptualization of aggression and bullying and increased inquiry into nonphysical forms of aggression (Leff, Waasdorp, & Crick, 2010). Relational aggression, also referred to as social aggression, includes the subtle and hurtful behaviors enacted with the intent to manipulate and damage peer relationships and group acceptance through alienation, ostracism, and character defamation (Crick, 1995).

With the advent of the digital age, youth have also begun to use various forms of technology to interact with and victimize their peers. The increase in technology use among youth has resulted in an increase in youths' experience of cyber victimization (Ybarra, Diener-West, & Leaf, 2007). This type of victimization, also referred to as cyberbullying, online aggression, or Internet bullying, includes aggression that is carried out in an electronic context (e.g., email, blogs, social media, texts, instant messaging; See

Smith, del Barrio, & Tokunaga, 2013 for a review of the construct.) Both cyber and traditional (e.g., physical, relational) forms of bullying have a host of negative social, academic, and emotional adjustment problems (Card, Stucky, Sawalani, & Little, 2008; Kowalski, Giumetti, Schroeder, & Lattanner, 2014), which is briefly outlined below.

Peer Victimization and Adjustment Problems

One of the most robust and well-documented findings in the bullying literature is the consistent association between peer victimization and adjustment problems, such as depression, anxiety, loneliness, and lower self-esteem, as well as academic adjustment problems such as greater school avoidance and poor academic performance (Hawker & Boulton, 2000; Juvonen, Nishina, & Graham, 2000; Rigby, 2003). These effects have been observed among child, adolescent, and emerging adult victims of physical, relational, and cyber bullying (Archer & Coyne, 2005; Dempsey, Sulkowski, Nichols, & Storch, 2009; Werner & Crick, 1999).

Negative outcomes have also been documented among victims of cyberbullying. In particular, multilevel analyses conducted with the same sample of high school students used in the proceeding manuscripts found that, as compared to those students who were only victimized off-line, victims of cyberbullying (i.e., victims who were only cybervictimized or victims who had overlapping cyber and traditional forms of victimization) had increased risk for externalizing and internalizing symptoms (Waasdorp & Bradshaw, 2015). Individuals who reported high levels of cybervictimization also reported high levels of suicidal ideation, stress, anxiety, and drug and alcohol use (Kowalski , Giumetti, Schroeder, & Lattanner, 2014). As a result of the wide range of negative outcomes that have been well-documented in the literature, there has been a shift

to focusing on identifying the risk and protective factors that may help ameliorate the adjustment problems experienced by victims of bullying and aggression.

The Social Ecological Model

Bullying does not occur in a vacuum, therefore, it is important to examine the systems in which youth operate, such as their home, their neighborhood, and their school. Through examining these ecological systems, researchers can identify characteristics of these contexts, such as school climate or population density, that may heighten or attenuate the risk for being a victim of bullying and/or the risk of experiencing negative adjustment outcomes when bullied (Loukas & Pasch, 2013; O'Brennan, Waasdorp, & Bradshaw, 2014). The social-ecological model (SEM) is used to better understand how individuals relate to those around them and their environment by examining the reciprocal interplay between an individual, families, peer groups, schools, communities, and culture (Bronfenbrenner, 1977).

The SEM model, when used as a framework for violence prevention, allows for a deeper understanding of the factors that place people at risk or protect them from violence, or more specifically, bullying (Espelage & Swearer, 2004). By identifying aspects of the social ecology that may offset or exacerbate the negative outcomes associated with peer victimization, prevention scientists can develop and implement bullying interventions that address changeable aspects of the ecology.

The social-ecological model of bullying proposes that an individual involved in bullying, as a bully, bully-victim, victim, or bystander, is the center of four nested and interrelated systems (see Figure 1 for a visual representation of the model;). The most proximal system is the *microsystems*, (e.g., school, family) which includes immediate

surroundings that more directly affect the individual. When microsystems overlap, such as when a parent is involved at a child's school, it is termed a *mesosystem*, which is a next distal level of context. The proceeding level of context is the *exosystem*, which consists of the diffuse and broad contexts that influence an individual indirectly, such as a school district's anti-bullying policy. The next level within Bronfenbrenner's taxonomy is the *macrosystem*, which includes the broad patterns found in the culture, policies and economics in which a child or adolescent is embedded. A macrosystem could include the economic investment in education within a state or county.

The ecological model has been applied to bullying research to allow a close examination of systemic risk factors for peer victimization (Swearer & Espelage, 2004; See Figure 2 for a graphic representation). For example, the microsystem of the classroom, the family, or the peer group have been correlated with experiences of peer victimization (Card, Isaacs, & Hodges, 2008). Mesosystemic risk factors may include interacting microsystems such as parent-teacher relationships; however, most research has looked at microsystemic risk factors in isolation, therefore limiting the ability to examine the relationship between interacting microsystems (Card, Isaacs, et al., 2008). Several studies have examined other factors, such as the urbanicity of a school setting. However, the results from studies of school location have mixed results, as some research indicates attending an urban school increases the likelihood of experiencing racial bullying (Goldweber, Waasdorp & Bradshaw, 2013), whereas other research has not found a relationship between school urbanicity and rates of peer victimization (Nansel et al., 2001).

The outermost system, the *chronosystem,* refers to the historical and temporal context in which an individual is embedded. For example, the recent increases in the use of the Internet and cell phones for text messaging (Lenhart, Arafeh, Smith & Macgill, 2008) resulted in a unique chronosystem for the current generation of adolescents; previous generations of teenagers did not live in an era of social media (Espelage, Rao, & Craven, 2013). Unfortunately, few long-term longitudinal studies exist to fully understand the unique role of the chronosystem on victimization (Card, Isaacs, & et al., 2008).

The ecological model provides a framework from which to further understand the influence that context may have on both rates of victimization and experiences of negative mental health outcomes. By incorporating multiple levels of influence to explain and predict individual outcomes, the ecological model allows for a view of the "big picture" and creates awareness for the various contexts and systems that influence youth (Oprinas & Horner, 2006, p. 75). Through understanding the multiple levels of influence within the youth environment and how they interact, researchers posit they will be better able to identify how various factors can attenuate or exacerbate peer victimization and related psychosocial outcomes. By identifying these relevant factors that heighten the risk for negative outcomes, researchers will provide specific foci that can better guide intervention efforts. While the social-ecological model of violence prevention provides a foundation for the multiple levels of influence that may be important to comprehending what contributes to aggression and victimization, the social-ecological diathesis stress model (Swearer & Hymel, 2015) and the general aggression model (Anderson & Bushman, 2002) both provide more complete theories that connect context with the

negative adjustment problems associated with victimization. These models, as they apply to bullying victimization, are briefly reviewed below.

Social Ecological Diathesis-Stress Model

While the social ecological model recognizes that bullying is influenced by multiple personal and contextual factors, the model does not fully explain the connection to negative correlates of bullying (e.g., depression). In particular, the principles of equifinality (i.e., different experiences, same outcome) and multifinality (i.e., same early experience, different outcomes) complicate the understanding of the victimization-adjustment relationship (Cicchetti & Rogosch, 1996). For example, not all children who are victimized will become depressed, but rather, their constellation of predispositions and contextual factors will influence their response to victimization and development of adjustment problems. In an effort to explain the complexities of bullying involvement and the development of adjustment difficulties, the social ecological model has been further adapted to include diathesis-stress dynamic (Swearer & Hymel, 2015). The diathesis-stress model frames the development of psychopathology as the interaction between an individual's biological and cognitive vulnerabilities (i.e., diathesis) and an environmental event or stressor (Cicchetti & Toth, 1998).

If bullying is seen as a stressful life event (i.e., stress), then as researchers, we are interested in examining the vulnerabilities (i.e., diatheses) that lead to the development of adjustment problems as a result of that stressful bullying event. Moreover, because the stressful experience of being bullied does not completely explain the development of a negative outcome (e.g., anxiety), then an examination of an individual's social, cognitive, and biological vulnerabilities is needed. For example, family support has been shown to

be a protect factor for victimized youth, as victimized youth who reported more family support reported less suicidal ideation than their peers who reported less family support (Bonanno & Hymel, 2010). Whereas poor family support is a social vulnerability, strong family support is then viewed as a contextual protective factor that can attenuate the suicidal ideation of victims of bullying, While the social-ecological model provides a preliminary framework of bullying involvement across contexts and settings (e.g., family, neighborhood, school), the addition of the diathesis-stress model allows for the integration of these contexts as possible risk or protective factors (Swearer & Hymel, 2015). While the social-ecological diathesis-stress model bridges the gap between a victim's context and negative psychosocial outcomes, the general aggression model (Anderson & Bushman, 2002) allows for a more focused understanding of the thoughts, feelings, and behaviors that contribute to the development of the negative outcome. Below, we consider the general aggression model in reference to bullying and victimization.

The General Aggression Model

An additional integrative model that provides a theoretical framework from which to understand bullying perpetration and victimization is the general aggression model (GAM; Anderson & Bushman, 2002). The general aggression model has been used in previous research on bullying (e.g., Kowalski et al., 2014; Vannucci, Nocentini, Mazzoni, & Menesini, 2012) and involves four separate processes: the inputs, the routes, the proximal processes, and the outcomes. It has also been adapted as a model for cybervictimization (See Figure 3, Kowalski et al., 2014).

Consistent with the social ecological model, the inputs are the factors of the individual or the situation (e.g., macrosystems) that influence aggressive behavior and responses. The inputs consist of two categories of factors: person factors and situational factors. Person factors include characteristics of the perpetrator or victim such as gender, age, and behavioral scripts. Situational factors, also called contextual factors, include characteristics such as parental involvement or school climate. These inputs may increase (risk factor) or decrease (protective factor) susceptibility of being victimized. For example, a combination of poor peer support and low parental involvement may predispose youth to being a victim of bullying.

According to the GAM, once a bullying incident has occurred, the collection of personal and contextual factors influence how a victim reacts to an incident of bullying. Specifically, it influences outcomes via three direct routes: cognition, affect, and arousal. These routes are the internal states that a victim experiences as a result of being victimized. These thoughts and feelings then provide a lens through which the victim can appraise and react to the situation (proximal processes). The results of these interacting factors and internal states are both short term (i.e., proximal) and long term (i.e., distal). The proximal processes consist of an appraisal and evaluation of the circumstance followed by a decision regarding a response. The decisions that victims make about their reactive behavior can include thoughtful (i.e., controlled) or impulsive (i.e., automatic) behaviors such as seeking support or retaliating. The retaliation decisions can result in the victim becoming a bully. The decisions making process can contribute to the negative adjustment problems that are documented in the literature, such as depression or poor grades (Card, Stucky, et al., 2008). These outcomes may be related to the personal and

situational factors and arousal states, as negative affective response combined with low social support may lead a victim to respond in maladaptive ways such as drinking alcohol. A feedback loop is the final stage of the general aggression model for victimization, as an outcome like depression may alter the perception of social support (Kowalski et al., 2014).

The Three Manuscripts

The social ecological model, the social ecological diathesis-stress model, and the general aggression model together have provided the theoretical framework and scaffolding for the three manuscripts in this dissertation. All three manuscripts focused on the personal and contextual factors relevant for victims of bullying and aggression. Likewise, all three manuscripts focused on the peer victimization and the associated adjustment problems. Below is a brief summary of how the theories described above were applied in each manuscript included in the dissertation.

Manuscript 1. The first manuscript provided a comprehensive review of the literature on the psychosocial correlates of relational aggression and victimization. These findings illustrate the breadth and depth of the relationship between relational aggression and mental health outcomes. Consistent with the concept of multifinality (Cicchetti & Rogosch, 1996), the chapter explored the varied outcomes for both perpetrators and victims of relational forms of aggression. Individual characteristics such as age and gender were also considered as factors that may attenuate or exacerbate risk for relational aggression and victimization.

Manuscript 2. An empirical study was conducted to investigate how contextual factors related to peer victimization may attenuate negative mental health outcomes. This

large-scale study of adolescents explored the association among adjustment problems, peer victimization, and connectedness, with the goal of determining if connectedness moderates the associations between physical and relational victimization and adjustment problems. Mesosystemic factors such as parent-school engagement were examined as possible buffers against adjustment problems for high school victims of both physical and relational aggression. Consistent with prior research, regression analyses indicated that both forms of victimization were associated with adjustment problems across all grades, genders, and races (See Card, Stucky, et al., 2008, for a review). Connectedness was also associated with fewer adjustment problems. While several victimization by connectedness interactions were found to be statistically significant, only two interactions revealed a true buffering effect consistent with the attenuation hypothesis. Specifically, student connectedness was found to attenuate internalizing problems among relationally victimized girls, whereas parental engagement attenuated internalizing problems among relationally victimized boys.

Manuscript 3. Building on the findings related to connectedness and engagement reported in the second manuscript, we further examined additional contextual factors that may influence risk of peer victimization, specifically cybervictimization, and related mental and behavioral health correlates. While Manuscript 2 examined microsystems and mesosystems related to peer victimization, Manuscript 3 applied the general aggression model for cybervictimization (Kowalski et al., 2014) to examine person and contextual factors as they relate to risk for cybervictimization as well as adjustment outcomes of cybervictims. The study employed multilevel modeling to account for clustering within schools, while also examining school-level contextual factors such as urbanicity. This

study contributed to the literature by elucidating the specific individual and contextual characteristics that may contribute to risk of being cybervictimized, while also identifying the negative mental and behavioral health outcomes of cybervictimized high school students.

Summary

In summary, the social ecological model, the social ecological diathesis-stress model, and the general aggression model provided a helpful framework for the three manuscripts included in this dissertation. Manuscript 2 provided preliminary evidence of the relationship between context and adjustment problems of adolescent victims of peer victimization. Manuscript 3 built on these findings and employed advanced statistical methodology that better accounted for clustering and further examined contextual factors. Furthermore, Manuscript 3 focused on cybervictimization, a new phenomenon in peer aggression that has developed in concordance with the increase in technology use among adolescents (Ybarra et al., 2007). Taken together, this body of literature highlights the school-level risk factors and individual characteristics that are important to consider and monitor when conducting studies or interventions on bullying. The findings have important implications for school-based bullying prevention programs, as identifying risk factors and potential buffers represents an important step in attenuating the adjustment problems experienced by victims of bullying.

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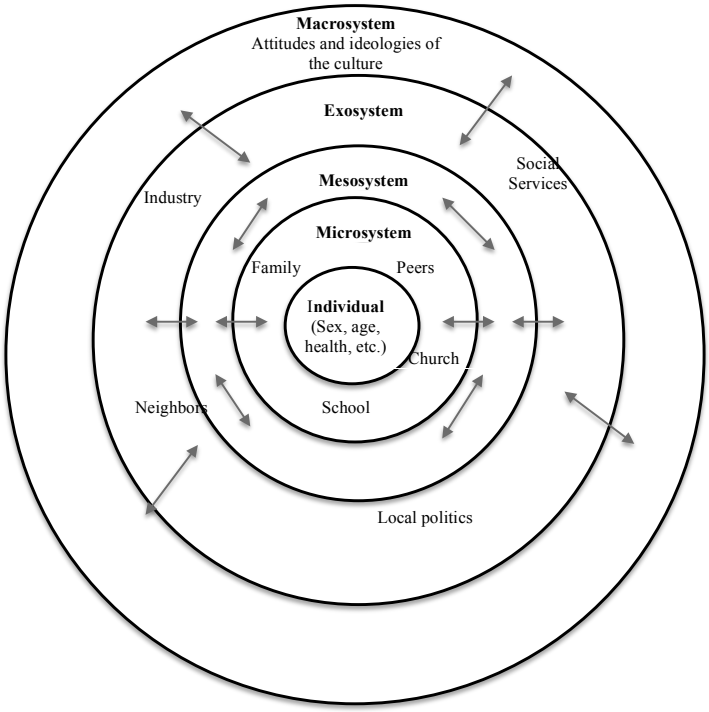
Macrosystem
Attitudes and ideologies of the culture
Exosystem
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Industry
Mesosystem
Microsystem
Family
Peers
Individual
(Sex, age, health, etc.)
Church
Neighbors
School
Local politics

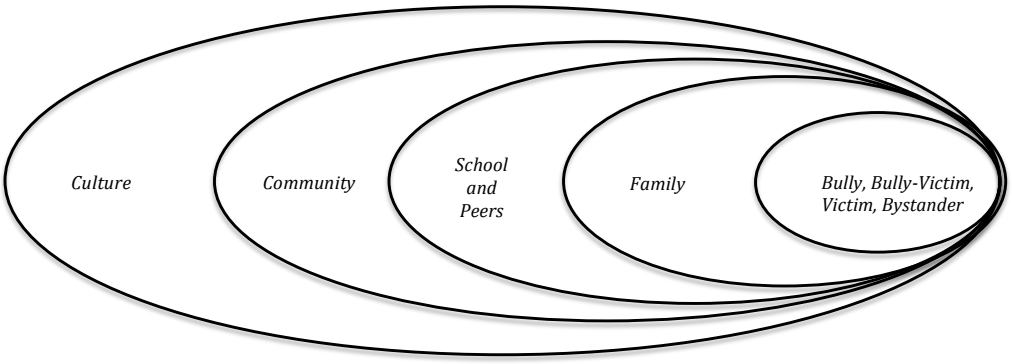

Figure 2. A social-ecological framework of bullying among youth. Adapted from "Introduction: A Social-Ecological Framework of Bullying Among Youth," by S. M. Swearer and D. L. Espelage, 2004, *Bullying in American Schools: A Social-Ecological Perspective on Prevention and Intervention,* p. 3. Copyright 2004 by Lawrence Erlbaum Associates, Inc.

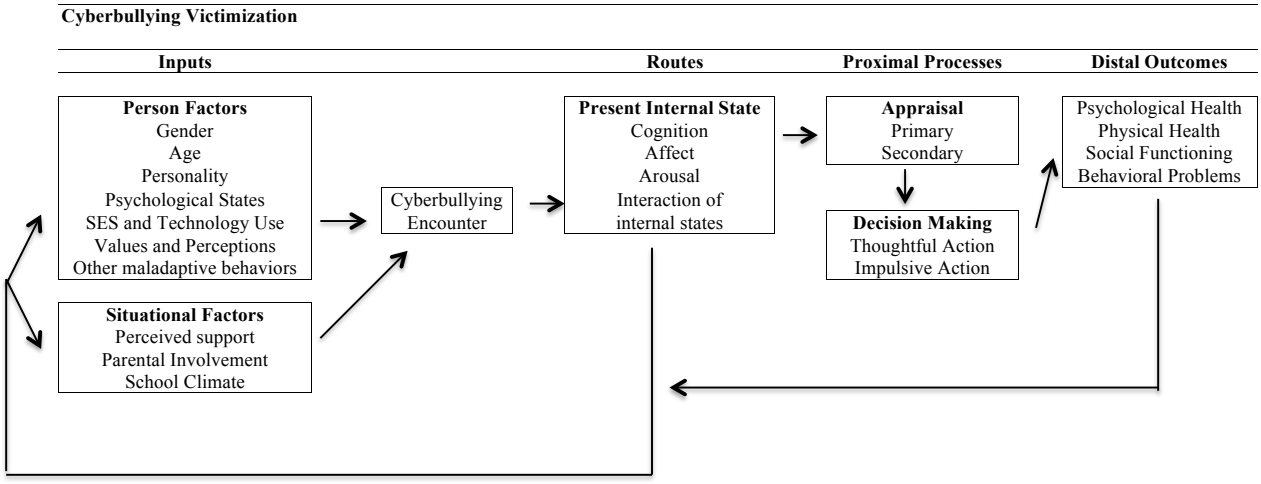

Figure 3. View of a cybervictimization experience through the general aggression model. SES = socioeconomic status. Adapted from "Bullying in the Digital Age: A Critical Review and Mata-Analysis of Cyberbullying Research Among Youth," by R. M. Kowalski, G. W. Giumetti, A. N. Schroeder, & M. R. Lattanner, 2014, *Psychological Bulletin, 140* (4), p. 1111. Copyright 2014 by the American Psychological Association.

Manuscript 1

Relational Aggression and Psychosocial Correlates:

A Review and Synthesis of the Literature

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Adapted from: Morin, H. & Bradshaw, C.P. (In Press). Relational bullying and me
health correlates. In C.P. Bradshaw (Ed.), *Handbook of bullying prevention: A life*
perspective. Washington, D.C.: National Association Of Social Workers Press.

Abstract

There is increasing awareness of the social or relational forms of bullying and their potential impact on and/or co-occurrence with mental health problems. Relational aggression is also one form of bullying which appears to persist well into adulthood. The chapter provides a conceptual overview of three overlapping forms of aggression: social aggression, indirect aggression, and relational aggression. We also summarize some of the literature regarding the association between relational forms of bullying and a range of psychosocial correlates, such as anxiety and depression. Although much of the research has focused on adjustment problems associated with relational aggression, we also consider some prosocial correlates and the potential adaptive role of relational aggression. These findings are considered in light of clinical implications and future research directions.

Relational Aggression and Psychosocial Correlates:
A Review and Synthesis of the Literature

There is a rich and growing body of literature focused on nonphysical forms of aggression, which are largely aimed at damaging or threatening to damage peer relationships and social standing through exclusion, withdrawal of friendship, or gossip and rumor spreading. It was not until 1995 that the term "relational aggression" was used to characterize the nonphysical behaviors utilized to damage another's status or social standing (Crick & Grotpeter, 1995). Previous research had focused on overt aggression and its high prevalence among boys, resulting in few studies being conducted on girls or relational aggression before the 1990s (Crick & Grotpeter, 1995). Because relatively few girls exhibit overt aggression in the same manner that boys do, psychologists often wrongly concluded that aggression was uncommon among girls (Crick, 1995). Relationally aggressive behavior among both boys and girls has since become a prominent topic of research inquiry.

Relationally aggressive behavior among both males and females has become a prominent topic of research inquiry, and a particular form of bullying of increasing concern among educators, practitioners, and families. In fact, studies have repeatedly shown high prevalence of relational aggression as well as strong relationship between relational aggression and adjustment problems (Card, Stucky, Sawalani, & Little, 2008; Crick, 1995; Galen & Underwood, 1997). Damaging effects of relational aggression have been noted for both aggressors and victims (Leff & Crick, 2010). The overarching goal of this chapter is to further delineate the association between mental health problems and relational aggression. We start by first defining the construct of relational aggression as

well as the etymology of the terminology associated with this form of non-physical aggression. We review the evidence of the association between relational aggression and both positive and negative psychosocial outcomes and consider these associations across the lifecourse. We then examine the role of gender in relational aggression, specifically how psychosocial outcomes may differ for males and females. This review will provide a more robust clinical understanding of relationally aggressive behavior by enhancing awareness of the numerous normative and pathological outcomes associated with relational aggression.

The Construct Defined

Non-physical aggression, which is also called indirect aggression, social aggression, or relational aggression, focuses on the psychological harm inflicted upon others through verbal and nonverbal means (Underwood, 2003). Studies involving these three distinct, yet overlapping concepts have helped elucidate the problematic and harmful impact of non-physical aggression. Recent studies have enumerated the negative mental health and social-emotional outcomes associated with these behaviors (Card et al., 2008; Murray-Close, Ostrov & Crick, 2007; Pristein, Boergers, & Vernberg, 2001). A meta-analytic review of 148 studies on child and adolescent direct and indirect aggression found that while the use of direct aggression was more strongly associated with externalizing symptoms, such as conduct problems, indirect aggression was more uniquely associated with internalizing problems (Card et al., 2008). In an effort to better understand how nonphysical aggression and victimization correlates with social-emotional difficulties, it is important to understand the nuanced definitions of indirect, social, and relational aggression.

Indirect Aggression

Finnish researchers Lagerspetz, Bjorkqvist, Kaukiainen, and colleagues first conducted research on indirect aggression, adapting the definition from A. H. Buss, who is credited with providing the original definition of indirect aggression in 1961 (Underwood, 2003). Buss (1961) defined indirect aggression as aggressive behavior that is both subtle and hurtful in nature that "solves the problem by rendering it difficult to identify the aggressor" (p. 8). Whereas direct aggression, such as physical fighting readily identifies the perpetrator, indirect aggression avoids confrontation and allows the aggressor to remain anonymous. By remaining unidentified, the aggressor can avoid being the target of retaliation while not drawing disapproval from peers. Indirect aggression can be verbal, such as engaging in rumor spreading, or physical, such as slashing a car tire.

Social Aggression

Social aggression, as defined by Cairns and colleagues (1989) is, "the manipulation of group acceptance through alienation, ostracism, or character defamation" (p. 323). Most notably, social aggression focused on a particular outcome of behavior: to inflict social harm on others by means of social relationship standing, friendships, and peer status. Galen and Underwood (1997) later refined this definition, adding that social aggression is geared towards negatively impacting another's self-esteem and/or social status. Examples of such behavior include both direct social aggression (the victim is aware of the perpetrator) and indirect social aggression (the aggressor is covert and circuitous) when gossiping, excluding, and manipulating relationships (Underwood, 2003).

These behavioral manifestations take many forms. Direct relational manipulation may include telling friends you will stop being friends if they do not do as told. Indirect relational manipulation is more covert, where a child or adolescent may secretly convince a peer to stop being friends with another child. Rumor spreading can be executed openly with obvious intentions to harm others, or more discreetly, perhaps appearing as trying to help others. Social exclusion can be both direct and indirect, as well as both verbal and nonverbal. Direct verbal social exclusion may include blatantly discussing an exclusive event in front of an uninvited guest. Indirect verbal social exclusion includes telling a group to avoid talking with a person who is approaching. An example of direct nonverbal social exclusion is ignoring a person or giving the "silent treatment". An example of indirect nonverbal social exclusion is exchanging an eye roll with a friend behind someone else's back (Crick & Grotpeter, 1995; Galen & Underwood, 1997). Taken together, these behaviors all involve the important goal of doing social harm to the victim.

Relational Aggression

Crick and Grotpeter (1995) proposed a third term relating to non-physical aggression. They defined relational aggression as "harming others through purposeful manipulation and damage of their peer relationships" (p. 711). Relational aggression can be enacted in a covert or secretive manner (gossiping) or overt and blatant manner (threatening to stop being friends). Examples of relationally aggressive behavior include social isolation, exclusion, ignoring, gossiping, or threatening to end a friendship. Unlike social aggression, the construct of relational aggression does not include nonverbal aggressive behavior. For example, mean faces or body language would be considered

socially aggressive, but not relationally aggressive because it is nonverbal behavior (Vitaro, Brendgen, & Barker, 2006). Whereas social aggression is predominantly non-confrontational, relationally aggressive behavior can be confrontational in nature, whereby a friend may tell another friend directly that they are not welcome at an event (e.g., a birthday party) (Xie, Swift, Cairns, & Cairns, 2002). Researchers hypothesize that relational aggression may replace physical aggression as youth learn that physically aggressive behavior often leads to discipline and legal sanctions. Relational aggression becomes a safer, yet effective, alternative method for expressing anger and displeasure (Prinstein et al., 2001).

The Construct Synthesized

Though the three constructs are overlapping and similar, it is important to identify the subtle differences in definition, in particular the exclusion of nonverbal aggression in the definition of relational aggression. When compared to physical aggression, these forms of aggression present an alternate way to express disdain and harm others without the public exposure and potential punishment consistent with physical aggression. Indirect, social, and relational aggression all include behaviors that attack self-perceptions, threaten social status, and harm an individual's relationships, often through relational and social means. Whereas indirect aggression is predominantly covert in nature, relational and social aggression can be covert and overt, however only social aggression includes nonverbal aggressive behavior (Vitaro et al., 2006). Importantly, victims of these types of aggression consider these acts as hurtful and harmful as physical aggression (Paquette & Underwood, 1999).

Given these different yet overlapping definitions of different subtypes of non-physical aggression, it is important to define how the concept will be conceptualized within the context of mental health outcomes in this paper. Though the literature varies on details of how it conceptualizes non-physical aggression, there is consensus regarding the concordance and overlap of indirect, social, and relational aggression. Given this large conceptual overlap, hereafter the term relational aggression will be used.

Cyberbullying as a Separate Construct

In more recent years as the Internet and technology have significantly impacted daily life, cyberbullying has become an increasingly complex problem within the world of bullying and aggression. Due to the perpetrator's ability to harm the target's social standing, cyberbullying is often considered a subtype of relational aggression. Cyberbullying is defined as aggressive acts that are intentionally and repeatedly carried out in an electronic context (Kowalski, Limber, & Agatston, 2012). There is continued debate as to whether the act of cyberbullying constitutes a separate type of aggression or whether it is simply a distinct method of victimization within the family of relational aggression (Dempsey, Sulkowski, Nichols, & Storch, 2009; Waasdorp & Bradshaw, 2015).

Empirical studies have also investigated the seemingly overlapping nature of relational bullying and cyberbullying. For example, factor analyses of relational, overt, and cyber victimization survey questions revealed that cybervictimization was indeed a separate latent construct distinct from overt and relational victimization (Dempsey et al., 2009). Although cybervictimization has been found to be a separate latent construct, it is important to note the overlap of prevalence of cybervictimization and other forms of

victimization. Numerous studies have shown that students rarely identify as exclusive victims of cybervictimization, but rather, approximately one to two thirds of students identify as also experiencing concurrent bullying in school (Ybarra, Diener-West, Leaf, 2007; Schneider O'Donnell, Stueve, & Coulter, 2012). Likewise, students who reported traditional (i.e. relational, verbal, physical) victimization were almost four times more likely than their non-traditionally victimized peers to report cybervictimization (Cappadocia, Craig, & Pepler, 2013).

Unlike relational bullying, cyber bullying does not facilitate a direct way for the aggressors to know how their behavior affects the victim. Whereas relationally aggressive people may be able to see the affective and behavioral change within someone who is being excluded, the cyber bully is less likely to directly or immediately experience how their actions affect the victim. Without direct supervision of the victim, the aggressors are less likely to be remorseful or empathize with the victim (Sourander et al., 2010).

Although the motivation to engage in cyberbullying may be relational in natures, there important distinctions between the motives for performing an act of cyberbullying or an act of relational bullying. Without the ability to witness the impact of an act of cyberbullying, the reward for engaging in cyberbullying may be more about the thrill of performing the action (e.g., sending the text message) rather than the reward of seeing the consequences (e.g., seeing the victim visibly upset). This is distinct from the rewards associated with engaging in relational aggression, whereby the aggressors are often able to witness the effects of the relational bullying incident (e.g., watching the victim react after they are excluded from a lunch table) (Kowalski, Giumetti, Schroeder, & Lattanner, 2014). Furthermore, the physical distance between the perpetrator and the target of

cyberbullying may also hinder any natural empathic response which might typically occur in face-to-face bullying, such that youth may be more likely to do and say things through electronic means than they would be in person (Kowalski et al., 2014).

In summary, some researchers (e.g., Beren & Li, 2005) consider this online aggression to be a form of relational aggression expressed through a virtual medium, whereas other researchers (e.g., Dempsey, 2009) consider cyberbullying to be a separate construct that is distinct from relational aggression. Due to its related nature to relational aggression and given the overlapping nature of traditional forms of victimization and cybervictimization, it is necessary to investigate the extent to which cyber victimization may be uniquely associated with mental health problems, over and above that of traditional victimization.

Gender

When reviewing negative mental health problems correlated with engagement in relational aggression and victimization, it is important to understand the way the gender of the perpetrator or victim may influence the intensity of the negative mental health impacts. Although originally considered a predominantly female behavior (Underwood, 2003), involvement in relational aggression has been shown to impact the mental health of boys and girls. There have been mixed results regarding the use of relational aggression by each gender. Some research suggests that relational aggression is more typical of girls than of boys (Bjorkqvist, Lagerspetz, & Kaukiainen, 1992; Crick & Grotpeter, 1995). Two meta-analyses examining gender differences in direct and indirect aggression found negligible gender differences in enactment of indirect aggression,

thereby providing fairly conclusive evidence that indirect aggression is *not* a predominantly female behavior (Archer, 2004; Card et al., 2008).

Gender and age together may influence patterns of indirect aggression. Developmental research has found that the use of indirect or direct aggression may vary by age. The theoretical developmental model proposed by Bjorkqvist and colleagues (1992) suggests that boys typically enact more direct aggression than girls, however, as verbal and physical forms of aggression become less socially acceptable in late childhood, both genders use social aggression as their primary aggressive strategy (Card et al., 2008; Vitaro et al., 2006). Studies have also found that females were more likely to use relational aggression during childhood, however gender differences among adolescents and young adults were less clear (Crick et al., 2000; Bailey & Ostrov, 2008). Other research indicated there were gender differences in levels of relational aggression for middle school aged children, yet not for younger children (Xie, Farmer, & Cairns, 2003). Among older adolescent and college-aged samples, more equitable endorsement of relational aggression has been found among men and women, thereby further subjugating the stereotype that relational aggression is a predominantly female behavior (Czar, Dahlen, Bullock-Yowell, & Nicholson, 2011; Dahlen, Czar, Prather, & Dyess, 2013). Although there is conflicting research, trends indicate that females engage in more relational aggression during childhood, however, the use of relational aggression becomes more balanced between the genders as they enter young adulthood.

Sociocultural gender patterns may partially explain why relational aggression is thought to be a "female" behavior. For girls, directly expressing anger, disappointment, or disagreement is socially frowned upon, therefore, they must find other ways to express

themselves and air their grievances. Consistent with social role theory (Eagley & Steffen, 1986), girls learn that responding in an overtly aggressive manner is inappropriate and is inconsistent with their feminine traits, thereby inhibiting their use of expressive response styles, such as physical aggression (See Archer, 2004, for a review of social role theory applied to aggression). According to this perspective, relational aggression can help girls can overcome their historical social role as passive homemakers, as they can covertly enact relational aggression without fear of repercussion. Being relationally aggressive enables girls to use their social competence to subtly assert their viewpoints in ways that can influence relationships and potentially hurt others' feelings without violating sociocultural gender norms (Letendre & Smith, 2011).

Relational Aggression as Normative and Adaptive Behavior

Although considerable research has been conducted to demonstrate the correlation between engagement in relational aggression and poor mental health, the normative and positive nature of relational aggression is often overlooked. Whereas high levels of relationally aggressive behavior are considered pathological, developmental psychologists posit that low and moderate levels of relational aggression may be common and normative (Geiger, Zimmer-Gembeck, & Crick, 2003). For example, in a study of attitudes about relational aggression, third through sixth grade students reported that relational aggression was a normative behavior (Crick, Bigbee, & Howes, 1996). Envisioning relational aggression along a continuum, from normative to problematic, helps clarify how certain experiences with relational aggression may be considered developmentally normal, whereas other experiences are considered deviant.

Although more frequent and/or more severe instances of relational aggression or victimization may be more indicative of psychopathology, when relational aggression occurs at lower levels of severity and in fewer instances, beneficial and positive correlates may emerge for both victims and perpetrators (e.g., popularity; maintain exclusive friendships). Gossiping can have positive outcomes for the perpetrators, despite the harm inflicted on the target. Specifically, gossiping can help increase feelings of group inclusion and build rapport among friends (Geiger et al., 2003). Likewise, those who gossip may not intend to harm the target, as gossip provides an opportunity to discuss a conflict with a third party, and it also can alert others that someone is in need of assistance (Underwood, Galen, & Paquette, 2001). Given that relational aggression is, by definition, enacted with the intent to harm, it is important to understand that gossip may not always be malevolent.

Higher levels of social intelligence are also positively correlated with elevated use of indirect aggression. Relationally aggressive acts require advanced understanding of the social context and an ability to manipulate a social infrastructure (Bjorkqvist et al., 1992). Among a sample of Finnish school children, ages 10-14, indirect aggression but not confrontational aggression was associated with social intelligence (Kaukiainen et al., 1999). Social competence is hypothesized as necessary in order to appropriately execute relationally aggressive acts. Likewise, researchers have posited that youth who bully may have a superior theory of mind that helps them manipulate and control their targets (Sutton, Smith, & Swettenham, 1999). This advanced theory of mind and social competence is a positive correlate of engagement in relational aggression.

Popularity and competence are correlates of relational aggression that can be adaptive for school aged children. Among early adolescents (mean age = 13.4) risk factors associated with being physically aggressive include low academic competence, low popularity, and low scores of affiliation (e.g., "smiles a lot" "friendly"). Verbal aggression was related to low academic competence and low "Olympian" scores (e.g. "Good at sports" "Good looking"). In contrast to these poor adjustment scores across domains, social aggression did not relate to any of these risk factors. Moreover, the use of direct relational aggression was even correlated with high popularity, Olympian, and affiliation scores (Xie, Swift, Cairns, & Cairns, 2002). These findings demonstrate how relationally aggressive early adolescents may not have the same negative interpersonal and academic correlates as their physically and verbally aggressive peers.

Girls who are more popular but not as well liked are more likely to be relationally aggressive (Lease, Kennedy, & Axelrod, 2002). Similarly, perceived popularity buffered relationally aggressive adolescents against internalizing symptoms (Rose et al., 2004). Popularity among relationally aggressive children and adolescents is likely due to their visibility and impact rather than their likeability. Of note, the association between relational aggression and popularity has been shown to increase from age 10 to age 14, whereas likeability declines over the same time period (LaFontana & Cillenssen, 2002). Relational aggression may also be more adaptive or more problematic depending on developmental periods. For example, relational aggression is correlated with acceptance and popularity among adolescents (Salmivalli, Kaukiainen, & Lagerspetz, 2000), whereas relational aggression among young children is correlated with more psychosocial adjustment problems (Crick, 1996).

With these differences in outcomes across different ages groups, it is important to understand the role of development, especially cognitive development, when assessing the adaptive or maladaptive nature of relational aggression and victimization. At the same time, Card and colleagues' (2008) meta-analysis concluded that age did not moderate the relationship between relational aggression and adjustment and maladjustment, suggesting that there are not specific ages at which relational aggression can be considered exclusively problematic or adaptive, but rather relational aggression continues to move along a continuum throughout development. Although age has not been found to moderate the relationship between relational aggression and adjustment and maladjustment, longitudinal research suggests that those adolescents who were rated as relationally aggressive toward a reciprocal best friend in a laboratory setting experienced a significant increase in their perceptions of positive friendship quality six months later (Banny, Heilbron, Ames, & Prinstein, 2011). These results indicate that relationally aggressive behavior may serve to strengthen relationships by functioning as a bonding experience. Even though these positive and adaptive outcomes color this behavior as benevolent, there are certainly negative correlates associated with increased engagement in relational aggression that deserve further investigation.

Relational Aggression as Maladaptive and Problematic

Internalizing Symptomology

Research on relational aggression has been continually linked to a host of problems for both aggressors and victims (Leff, Wassdorp, & Crick, 2010). Most notably, problems include internalizing symptoms, such as depression, anxiety, and loneliness (Murray-Close et al., 2007). In 1995, Crick and Grotpeter first argued that involvement

with relational aggression was related to psychological maladjustments and subsequent negative outcomes. Specifically, they suggested that relational victimization was significantly related to psychological distress and that victims of relational aggression were more depressed and had heightened social anxiety, social avoidance, and loneliness compared to non-victimized peers. Subsequent studies have substantiated this claim, as relationally victimized youth tend to be more emotionally upset, rejected by peers, and lonely as compared to their non-victimized peers (Crick & Bigbee, 1998). Other studies found that relationally aggressive children were lonelier than non-relationally aggressive children (Prinstein et al., 2010). Similarly, relationally victimized children showed increased loneliness as well as social difficulties, peer rejection, and social avoidance (Craig, 1998).

Depression and the Negative Self-Schema

Understanding the underlying mechanisms that promote feelings of depression and loneliness is critical to understanding the cyclical nature of relational victimization. As a result of youth's tendency to derive negative self-evaluations from their social experiences, their own self-schemas and self-perception of competence are negatively impacted, often resulting in depression and anxiety (Crick & Dodge, 1994; Haines, Metalsky, Caramone, & Joiner, 1999; Sacco, 1999). Children's heightened levels of self-criticism negatively impact their mood. In addition, the reformulation of the social information processing model applied to relational aggression (Crick & Dodge, 1994) posited that youth develop a tendency to interpret ambiguous cues in peer experiences as hostile, therefore altering their behavior among peers and decreasing the rewarding nature of their future social interactions (Rubin & Rose-Krasnor, 1992). Interpretation of these

social interactions as a negative appraisal of themselves may serve as the mechanism by which children develop internalized distress such as depression loneliness and low self-worth (Crick & Bigbee, 1998; Crick, Grotpeter, & Rockhill, 1999). Due to the overarching tendency to interpret failures in the social realm to internal causes, children often develop a sense of learned helplessness that can leave them vulnerable to social withdrawal and depression. Additionally, this relationship between social-emotional adjustment difficulties and peer experiences is transactional; as adolescents who experience adjustment difficulties may be more likely to be victimized while at the same time, victimized youth may be more likely to experience adjustment difficulties. Similarly, prior negative peer experiences, such as being victimized can reinforce the cognitive bias of social interactions, which may color future peer experiences, resulting in a cyclical relationship between mental health and victimization (Prinstein et al.,, 2001).

Mental Health Correlates for the Relationally Victimized

Many initial studies of indirect and relational aggression focused on the mental health status of the perpetrators of the behavior rather than the victims of the behavior. Subsequent studies found that relational victimization has a unique impact on mental health that is significantly different from the impact of overt victimization. Even after controlling for effects of experiences of overt victimization, overt aggression, and relational aggression, experiences of relational victimization has been linked with depression, loneliness, and self-restraint difficulties among school-age children (Crick & Grotpeter, 1996; Crick & Bigbee, 1998). Teacher-reported experiences of relational victimization predicted increases in internalizing and externalizing symptoms one year later for elementary school students without a mutual best friend (Hodges, Boivin, Vitaro,

& Bukowski, 1999). Similarly, relationally victimized teens reported higher levels of internalizing symptoms, specifically heightened depression, loneliness, and global self-worth. Yet, relational victimization was found to be a unique predictor of social anxiety, social avoidance, and loneliness (Crick & Grotpeter, 1996) as well as suicidal ideation (Klomeck, Marrocco, Kleinman, Schonfeld, & Gould, 2007).

The Compounding Effects of Poly-Victimization on Mental Health Outcomes

Studies that have compared the impact of involvement in relational aggression and overt aggression have found that those who experience both types of victimization have worse mental health outcomes than those who experience only one type of victimization. As compared to low/non-victimized adolescents, middle school and high school students who experienced verbal, physical, and relational victimization reported the highest levels of internalizing problems (Bradshaw, Waasdrop, & O'Brennan, 2013). Recent research also suggests that youth who are relationally or indirectly victimized have more difficulty coping (Waasdorp & Bradshaw, 2011). The most intensely maladjusted adolescents with the highest levels of depression, loneliness, and externalizing behaviors were those who were victimized relationally (e.g., excluded) as well as overtly (e.g., punched) (Prinstein et al., 2001).

Mental Health Correlates of Cyberbullying

As defined above, cyberbullying includes using electronic means, such as social media or text messaging, to intentionally harm another person or group. Several studies have demonstrated that being a victim of cyberbullying is associated with depressive symptomology (Dooley, Shaw, & Cross, 2012, Olenik-Shemesh, Heiman, & Eden, 2012). Cybervictims report higher levels of depression as compared to cyberbullies as

well as those who are both perpetrators and victims of cyberbullying (Wang, Nansel, & Iannotti, 2011). Several studies have found that cybervictimization can influence adolescent well-being above and beyond traditional victimization (Wigderson & Lynch, 2013). However, because those who experience cyberbullying are often involved in other types of bullying (verbal, physical, relational), it is difficult to understand the unique contribution of cyberbullying on maladjustment.

Due to the comorbidity of traditional forms of bullying and cyberbullying, research studies on the unique impact of cyberbullying on mental health, above and beyond the impact of other forms of bullying, have yielded mixed results. In a study of cybervictimized middle school students that controlled for experiences of overt and relational victimization, cybervictimization was significantly associated with depression and weakly associated with anxiety (Dempsey et al., 2009). Conversely, cyber victimized youth in Australia and Switzerland reported more depression symptomology than non-victimized youth and cyberbullies, even after controlling for involvement in traditional bullying (Perren, Dooley, Shaw, & Cross, 2010). When cyber-only victims were compared to school-only victims of bullying, the cyber-only students reported more distress than the school-only victims (Schneider et al., 2012).

More recent research has affirmed the link between cyberbullying and internalizing symptomology, specifically suicidal ideation and depression. A study of 399 adolescents (mean age =14.2 years) found that engaging in cyberbullying as a victim or a perpetrator does uniquely contribute to depressive symptomology and suicidal ideation, above and beyond the contributions of involvement in traditional bullying and gender (Bonanno & Hymel, 2013). This finding demonstrates that although traditional bullying

and cyberbullying are related, they have separate and significant impacts on mental health outcomes. These results suggest that, contrary to the arguments of Olweus (2012), cyberbullying involvement does have an additive and adverse impact on depressive symptoms and suicidal ideation, which are significantly greater than the impact of traditional bullying involvement (Bonanno & Hymel, 2013). Of note, adolescents who are both victims of and perpetrators of cyberbullying (cyber bully-victims) were not found to be at a greater risk for depression than cyber bullies or cyber victims, yet, cyber bully-victims reported significantly higher levels of suicidal ideation (Bonanno & Hymel, 2013).

Mental Health Correlates in Emerging Adulthood

Although there is a wide range of research on the mental health correlates of relational aggression and victimization, far less is known about the impact of experiencing relational aggression and victimization during late adolescence and adulthood (Schmeelk, Sylvers, & Lilienfeld, 2008). The university setting offers a unique venue to examine the impact of relational aggression on social-emotional development, as it is often the first time young adults live independently of their families, which may increase the importance of peer relationships and in turn exacerbate the impact of destructive relationally aggressive behavior. Negative mental health attributes (e.g., depression) of college students were associated with the use of relationally aggressive behaviors with peers. For example, young adults' (mean age = 19.5) recent use of relational aggression with peers was linked with several negative mental health outcomes and social-emotional maladjustment, such as depressive symptoms, peer rejection, sadness, pessimism about the future, and life dissatisfaction (Werner & Crick, 1999); a

similar pattern of adjustment problems has also been observed in younger samples of relationally aggressive youth (Murray-Close et al., 2007). Despite the negative effects of relational aggression, focus groups with late adolescent girls found that girls often cite pro-social reasons for engaging in relational aggression, such as a desire for inclusion and intimacy (Owens, Shute, & Slee, 2000), suggesting that the perpetration of relational aggression continues to fall along a continuum of normative to pathological behavior for emerging adults.

More severe pathology. Novel forms of maladjustment were also found to be linked to the use of relational aggression among college students, including features of antisocial personality disorder, features of borderline personality disorder, as well as symptoms of disordered eating (Werner & Crick, 1999). Specifically, women with high levels of relational aggression in the study were found to have significantly higher levels of bulimic behaviors. These symptoms, which are more pathological in nature, are indicative of continued difficulty with affect regulation and impulse control for those young adults behaving in relationally aggressive ways with peers.

Several recent studies have added to the literature on the impact of relational aggression and victimization among college students. Relational victimization was associated with high levels of anxiety and increased levels of self-defeating behaviors among college students (Twenge, Catanese & Baumesiter, 2002). Among college students, relational aggression was positively correlated with depression, anxiety, anger, stress, and alcohol problems. For example, one study found that relational victimization among college students was correlated with higher levels of reported depression, anxiety, loneliness, stress, academic burnout, and social problems due to alcohol consumption.

Moreover, in a study of college students that controlled for gender, race, and experiences of relational victimization, heightened anxiety, trait anger, and problems related to alcohol consumption predicted relationally aggressive behavior (Dahlen et al., 2013). These studies of relational aggression among college students illustrate the pervasive link between exposure to relational aggression and poor mental health outcomes. Additional research is needed to examine the long-term outcomes associated with being relationally aggressive and/or victimized as a child. Given that long-term longitudinal research is often logistically difficult, MacDougall and Vallancourt (2015) recommend that future research employ qualitative methodologies (e.g., hypothesis-generation), in which adults are asked directly about how their experiences with victimization and aggression in childhood have contributed to who they are as adults (i.e., long-term consequences).

Gender and Mental Health

There are gender differences in the development of psychopathology among relationally aggressive and victimized individuals. When girls were targets of gossip and rumors, they reported feeling sadder and more surprised than boys (Paquette & Underwood, 1999). Girls found relational aggression to be as hurtful as physical aggression, whereas boys found physical aggression to be more hurtful than relational aggression (Galen & Underwood, 1997). A study of 9-11 year-olds found that relational aggression was the most frequently cited harmful behavior for girls' interactions, whereas for boys' interactions, physical aggression were the most frequently cited harmful behavior (Crick et al., 1996). When relationally victimized, boys were likely to identify anger as their primary emotion whereas girls identified sadness as the primary emotion (Rigby, 1995).

While it is known that there are negative mental health correlates for adolescents of both genders who experience aggression, there is evidence of specific negative mental health correlates for adolescents who engage in gender non-normative forms of aggression. Specifically, gender non-normative aggression consists of engaging in a form of aggression less typical of their gender (i.e., boys who are relationally aggressive and girls who are overtly aggressive). Specifically, girls who engaged in high levels of overt aggression had lower self-esteem and more depressive symptoms than overtly aggressive boys. Conversely, relationally aggressive boys and relationally and overtly aggressive boys had higher levels of loneliness than relationally aggressive girls (Crick, 1997; Prinstein et al., 2001). Despite these inconsistent findings regarding gender and aggression, a recent meta-analysis that examined the moderating effect of gender did not find support that gender non-normative forms of aggression was related to greater maladjustment (Card et al., 2008). Further analysis is needed to determine if the effect of the use of gender non-normative aggression is more pronounced at certain age periods or among specific populations.

Being a relationally aggressive young adult was also associated with peer rejection and egocentricity for both genders. The use of relational aggression among college students was correlated with antisocial behavior, identity problems, self-harm behavior, lower overall life satisfaction, and depression for both males and females, whereas it was correlated with symptoms of bulimia for females only (Werner & Crick, 1999). For women, relational aggression was uniquely predictive of several psychosocial adjustment factors, including social anxiety, loneliness, depressive symptoms, and alcohol and drug problems; however, relational aggression was not predictive of

psychosocial adjustment factors for men (Storch, Bagner, Geffken, & Baumeister, 2004). Among intercollegiate athletes, relational aggression was positively correlated with peer rejection for men and women and alcohol use for women only. In contrast to previous findings, relational aggression was negatively correlated with pro-social behavior among women student-athletes (Storch, Werner, & Storch, 2003).

The increase in psychological and social difficulties among female aggressors demonstrates that despite more equal endorsement of relationally aggressive behavior among the sexes, there is still a difference in the adverse mental health correlates for female aggressors. Experiencing relational aggression was more related to negative feelings of self-worth for girls than boys, making it possible that relational aggression may have a more negative impact for girls (Merrell, Buchanan, & Tran, 2006). When asked to rate responses to peer conflicts, girls evaluate relationally aggressive responses more positively whereas boys rated physically aggressive responses more positively (Crick & Werner, 1998). These differences in evaluation of peer conflicts highlight the gender differences in how relational aggression is perceived and utilized.

Implications

The aggression literature is saturated with studies that document the relationship between relational aggression and psychosocial adjustment problems. When compared to direct aggression, relational aggression is related to internalizing problems and higher pro-social behavior (see Card et al., 2008 for a meta-analysis). Given these disparate outcomes, it is evident that there are conflicting views about the utility and consequences of engaging in relational aggression. Interpretation of research findings suggests social messages are conveyed through low levels of relational aggression, whereas others may

engage in high levels of relational aggression, which may lead to pathological outcomes (Geiger, Zimmer-Gembeck, & Crick, 2004).

In summary, there are multiple reasons individuals may employ relational aggression, which may be adaptive or maladaptive depending on the context. Unlike other reviews of the psychosocial outcomes of relational aggression that include only negative outcomes, we also considered outcomes that are both adaptive and normative. The use of relational aggression can be socially helpful and ameliorate situations, however, it can also have dire mental health consequences. It is important to understand this interplay between adaptive and maladaptive use of non-physical aggression and to measure it along a continuum. Hawley and Vaughn (2003) summarized this balance well, stating, "that it is not so much aggression per se that is adaptive or maladaptive but rather it is the specific functions of aggression that are associated with some proximal gains (e.g., status, goal attainment, dominance) or losses" (p. 241). In highlighting the normative aspects of relational aggression, practitioners will be better informed about the complex outcomes that may motivate youth to engage in relational aggression. By having a more comprehensive view of these correlates, they will be better able to intervene and react when they encounter these behaviors. For example, having greater insight into the factors that may drive or motivate an adolescent to use relational aggression (e.g., increased popularity, increased social intimacy) may inform the type of intervention approach a clinician employs. These findings may also inform prevention scientists, social workers, teachers, and parents by increasing their awareness of the numerous normative and pathological outcomes associated with relational aggression.

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Manuscript 2

Examining the Link between Peer Victimization and Adjustment Problems in Adolescents: The Role of Connectedness and Parent Engagement

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Abstract

Objective: Several studies have documented a range of adjustment problems experienced by peer victimized adolescents, however there has been less research exploring potential sources of support that may offset the negative impact of victimization. The current study explored the association among peer victimization, adjustment problems, connectedness, and parent engagement with the goal of identifying buffers of the associations between physical and relational victimization and adolescents' adjustment problems. Method: Students' (N = 28,104) from 58 high schools self-reported experiences of peer victimization. Self-report measures also assessed connectedness (student connectedness, teacher connectedness), parent engagement, and adjustment problems (internalizing problems, sleep problems, stress problems). Results: Regression analyses indicated that both forms of victimization were associated with adjustment problems across all grades, genders, and races. Interpersonal connectedness was associated with fewer adjustment problems. Despite several statistically significant interactions involving victimization and connection, only 2 interactions demonstrated buffering effects. Specifically, student connectedness was found to attenuate internalizing problems among relationally victimized girls, whereas parent engagement was associated with reduced internalizing problems among relationally victimized boys. Conclusions: Study findings highlight the potential protective influences of connection and parent engagement in the transactional relationship between victimization and adjustment problems.

Examining the Link between Peer Victimization and Adjustment Problems in Adolescents: The Role of Connectedness and Parent Engagement

Peer victimization is common among adolescents (Craig et al., 2009) and occurs through various forms, including relational victimization and physical victimization (Vitaro, Brendgen, & Barker, 2006). Much of the research on peer victimization has focused on the emotional and behavioral outcomes for those involved, whereas the possible supports that may offset the negative impact of victimization have been less often examined. One construct that has been found to offset adjustment problems in adolescents is interpersonal connectedness (Demaray, Malecki, Davidson, Hodgson, & Rebus, 2005). However, the extent to which there is a negative relationship between victims' adjustment problems and connectedness needs to be examined, as there is a gap in the aggression literature as it relates to interpersonal connectedness. A related potential buffer is parents' engagement in school, as research suggests it is a factor associated with a range of positive adjustment outcomes for youth (e.g., Davidson & Demaray, 2007; Yeung & Leadbeater, 2010). The current study aimed to determine how victimized students' perceptions of their interpersonal connectedness and parent engagement related to youths' experience of adjustment problems. We also examined unique aspects of adjustment that have not been thoroughly examined in the literature, including sleep problems and stress problems. This study intends to inform our understanding of potential sources of social support which lead to resilience among victimized youth.

Forms of Victimization

Peer victimization can take many forms, often categorized as physical, verbal, and relational. Physical victimization includes being hit or pushed, whereas verbal victimization includes experiencing taunting and verbal threats. Forms of victimization have also been categorized as direct (i.e., overt acts such as being punched) and indirect aggression (i.e., covert acts such as being gossiped about) (Card, Stucky, Sawalani, & Little, 2008). The terms indirect aggression, social aggression, and relational aggression are often used to characterize aggression that centers on harming others through manipulation of friendships with the aim of damaging another's self-esteem and/or social status (see Vitaro et al., 2006, for a comprehensive review of these terms). Although the terms social, relational, and indirect have slightly different meanings when operationally defined, the constructs converge around the theme of harming social standing while avoiding direct confrontation (Card, Isaacs, & Hodges, 2008). Cyberbullying has emerged as another form for victimizing peers. Cyberbullying involves bullying others through electronic venues, such as e-mail, instant or text messaging, websites, or social network sites (Kowalski & Limber, 2007). Although some researchers (e.g., Dempsey, Sulkowski, Nichols, & Storch, 2009) consider cyberbullying to be a separate construct that is distinct from relational aggression, many researchers (e.g., Beran & Li, 2005) consider it to be simply a medium through which various forms of aggression, including relational aggression, can be expressed (see Gladden, Vivolo-Kantor, Hamburger, & Lumpkin, 2014). Because of its relevance to relationally aggressive behaviors, such as rumor spreading and exclusion, the current study considered cybervictimization as a specific form of relational victimization. As such, we examined both relational (e.g.,

gossip, exclusion, cyber) and physical aggression (e.g., hitting, kicking). However, when reviewing the literature below, we utilized the term originally employed by the researchers.

Victimization and Adjustment Problems

Victims of peer aggression experience a range of adjustment problems, including loneliness, depression, and stress (Hawker & Boulton, 2001). A meta-analytic review of 148 studies found that direct aggression was associated with emotional dysregulation, low peer acceptance, conduct problems, and peer rejection, whereas indirect aggression was associated with internalizing problems (Card et al., 2008). The association between victimization and adjustment problems may be transactional, such that victimization may lead to psychological maladjustment, but also adolescents who experience adjustment problems are vulnerable to victimization (Prinstein, Boergers, & Vernberg, 2001).

Studies also have examined the association between victimization and other aspects of adjustment and wellness. For example, victimization has been linked with stress, such that students who reported high levels of peer and romantic relational victimization also reported higher levels of stress and academic burnout in addition to their greater levels of depression, anxiety, and loneliness (Dahlen, Czar, Prather, & Dyess, 2013). Other aspects of maladjustment, such as sleep problems, have been identified as possible correlates of victimization among children. For example, bullied children are significantly more likely to display sleep problems and symptoms of fatigue (Fekkes, Pijpers, Fredriks, Vogels, & Verloove-Vanhorick, 2006). Similarly, longitudinal research suggests that peer victimized children have physical health problems and sleep problems in adolescence (Biebl, DiLalla, Davis, Lynch, & Shinn, 2011). More research is

needed on the association between victimization and sleep problems among adolescents.

Victimization and Gender

There is also continued interest in potential gender differences in aggression, victimization, and correlated adjustment problems. To date, the findings have been mixed, with some studies reporting no gender differences in aggressive behaviors (e.g., Bailey & Ostrov, 2008), others finding gender differences. For example, some research suggests girls are more likely to engage (as both victims and perpetrators) in relational aggression than their male peers (Coyne, Archer, & Eslea, 2006), whereas boys enact significantly more direct aggression than girls (Card et al., 2008). However, indirect aggression in adolescence appears to be more equitable between genders (Card et al., 2008). Specifically, indirect aggression among males increases in adolescence to become more similar to levels in females (Archer & Coyne, 2005). This finding contradicts the popular notion that indirect aggression is predominantly used and experienced by females.

Despite the more equitable enactment of relational aggression, boys' and girls' emotional experiences of victimization differ greatly. For example, a study of early adolescents (mean age = 13.8) found that girls reported feeling sadder and worse about themselves than boys did after being victims of malicious gossip (Paquette & Underwood, 1999). Several studies have found that using gender non-normative forms of aggression is associated with higher levels of maladjustment, such that boys who used relational aggression had higher levels of loneliness than girls who used relational aggression, whereas girls who are overtly aggressive have lower self-esteem and more depressive symptoms than overtly aggressive boys (Crick, 1997; Prinstein et al., 2001).

Given the differences in the experiences of physical and relational aggression among boys and girls as well as gender's differential impact on adjustment problems, it is important to examine the extent to which these associations differ by gender.

Possible Buffers of Victimization Experiences

The various negative outcomes of adolescents who experience peer victimization have increased researchers' interest in the protective factors that may offset the associated adjustment problems and lead to resilience. Recent research has focused on a number of interrelated factors, such as support, connectedness, and engagement (Resnick et al., 1997). Although there is often inconsistency in the use and definitions of these terms (e.g., Hupcey, 1998), they involve actions derived from a personal relationship that produce positive responses in the recipient. These relationships can take many forms, such as the student–teacher relationship, the student–student relationship, or the parent–school relationship. The social context in which an adolescent is embedded has a major influence on adolescent behavior. For example, an adolescent's social context plays an important role in the variability of emotional problems among youth (Bronfenbrenner & Morris, 1998). Student, teacher, and parent contexts are all microsystems in Bronfenbrenner's ecological model that have been found to influence adolescent's resilience in the face of risk (Bronfenbrenner & Morris, 1998). Specifically, family context was shown in one study to explain 14% of the variability in emotional distress among high school students (Grades 9–12), whereas school context accounted for 13% of the variance in emotional distress (Resnick et al., 1997). School connectedness was associated with lower levels of emotional distress, signifying the important role of connection to school and parents on adolescent adjustment. Consistent with social–

cognitive theory (Bandura, 1978), parents' involvement in the school may influence how they respond to their victimized child, such that highly school-engaged parents may have more effective, informed, and authentic responses to their child's victimization experiences (Bradshaw, 2014).

Several studies have shown how other forms of interpersonal connectedness, such as connectedness with teachers, can serve as a critical protective factor, influenced in part by perceptions of caring from teachers (Resnick, Harris, & Blum, 1993). Rigby (2000) found evidence of a significant association between victimization and social support of friends and classmates, as well as a negative association between victimization and teacher support for female students. These social-ecological contexts may play a role in buffering victimized adolescents, such that the adjustment problems of victimized adolescents may be attenuated by the presence of connectedness. Evidence suggests that students' perception of connection to other students, connection to teachers, and parent engagement in their school may act as buffers of the association between victimization and adjustment problems (Schmidt & Bagwell, 2007; Yeung & Leadbeater, 2010). For example, Yeung and Leadbeater (2010) found that teacher emotional support buffered the impact of relational, but not physical, victimization on subsequent emotional problems of adolescents two year later. Furthermore, parent involvement in their child's school has been negatively linked with victimization (see Card, Isaacs, & Hodges, 2008 for a review). Similarly, social support from friends has been found to buffer the effects of victimization on adjustment (Prinstein et al., 2001). Taken together, research suggests that various forms of interpersonal connectedness and support may play a protective role for victimized adolescents, thereby promoting resilience in the face of victimization.

Prior research has also investigated some social-ecological aspects of victimization, such as the role of connectedness as a buffer against the impact of peer victimization on internalizing and externalizing symptoms among victimized adolescents (Davidson & Demaray, 2007; Loukas & Pasch, 2013). In one such study, Davidson and Demaray (2007) examined the associations between victimization, internalizing and externalizing problems, and social support (a construct closely related to connectedness) among middle school students. More specifically, they found that teacher, classmate, and school support moderated the relationship between victimization and internalizing distress among males, whereas parent support moderated the relationship for females. Similarly, Loukas and Pasch (2013) found that school connectedness buffered the impact of overt victimization on girls' subsequent conduct problems. Both studies highlight the possible protective role that connectedness and support may promote in victimized adolescents. These studies were conducted with relatively small ($N = 355$; $N = 490$, respectively) and predominantly Caucasian samples; therefore, it is unclear to what extent these findings generalize to other, more diverse samples. Moreover, they examined internalizing and externalizing distress, but did not explore other types of adjustment problems. In fact, few studies have examined impacts on the stress or sleep problems of victims; however, a recent study found that high perceived family support (but not peer or teacher support) buffered the association between experienced stress/hassles and bullying behavior (Konishi & Hymel, 2009).

Overview of the Current Study

The overarching goal of the current study was to identify potential buffers of adjustment problems associated with peer victimization, with a particular interest in teacher and

student connectedness, as well as parent engagement in school. Specifically, we hypothesized that experiences of physical and relational victimization would contribute directly to increased levels of adjustment problems (*Hypothesis 1*). We also examined whether student-to-student connectedness, student-to-teacher connectedness, and parent engagement moderated the association of victimization and adjustment, thereby contributing to resilience among victimized youth. Consistent with Yeung and Leadbeater (2010), we hypothesized that when compared with their victimized peers with low levels of interpersonal connectedness, victims' high level of interpersonal connectedness would attenuate their experience of adjustment problems (*Hypothesis 2*). We then examined the extent to which the direct and moderated associations varied by gender. Consistent with prior research (e.g., Davidson & Demaray, 2007), we hypothesized a buffering effect of victimization on adjustment problems among physically victimized boys, but not girls (*Hypothesis 3*). This work has potentially important implications for increasing understanding of factors that may promote resilience among victimized youth. We also advance prior research in this area by leveraging data from a relatively diverse high school sample, whereas prior work has largely focused on small samples of middle school students, the majority of whom were Caucasian (e.g., Loukas & Pasch, 2013). The current study is also novel in that we examined a broader set of adjustment problems, including sleep problems and stress. Our consideration of parent engagement as well as student and teacher connectedness as potential buffers is another strength of the current investigation.

Method

Participants

Data came from 58 Maryland high schools in 12 counties participating in a statewide project focusing on school climate called the Maryland Safe and Supportive Schools (MDS3) Initiative. Data were collected on 28,104 adolescents via a Web-based survey administered in the spring of 2012. The average school enrollment was 1282.8 students (*SD* = 467.9) with an average student-teacher ratio of 19.8:1 (*SD* = 3.1). An average of 25 classrooms per school (i.e., approximately seven 9th grade classrooms, and six each across 10, 11, and 12th grade) were randomly selected to participate in the data collection. The sample was approximately equal across gender (males = 48.8%). The sample was approximately half White/Caucasian (47.8%) and a third Black/African American (31.3%), with smaller percentages of Hispanic (4.7%) and Asian (4.3%) students. Approximately one third of the students received free or reduced price meals.

Procedure

Schools' participation in the MDS3 Initiative was voluntary. Districts were approached for participation by the Maryland State Department of Education. Informational sessions were held with the principals to inform them about obtain written commitment to the project. Surveys were administered by school staff using a written protocol. All student participation in the data collection was voluntary; a waiver of active parental consent was employed and the non-identifiable data were approved for analysis by the Institutional Review Board.

Measures

The MDS3 School Climate Student Survey was developed by the Johns Hopkins Center for Youth Violence Prevention in collaboration with project partners (for additional details, see Bradshaw, Waasdorp, Debnam, & Lindstrom Johnson, 2014). For

the current study, we focused on the association between peer victimization (relational and physical), adjustment problems (internalizing problems, sleep problems, and stress problems), and three possible buffers (student connectedness, teacher connectedness, and parent engagement in the school). All measures within the MDS3 School Climate Student Survey were derived from previously validated measures, as specified below (see Bradshaw et al., 2014, for psychometrics).

Youth demographic characteristics. Student-level demographic variables used for these analyses include self-reported grade, gender (1 = male, 0 = female), and race, which was coded for the correlations as White versus non-White, but White/Caucasian (reference group), Black/African American, and Other for the regression analyses.

Victimization. The survey assessed the youths' experience with different forms of peer victimization during the past 30 days, including bullying, which was defined on the survey as being "exposed, repeatedly and over time, to negative actions on the part of one or more other persons. Bullying often occurs in situations where there is a power or status difference. Bullying includes actions like threatening, teasing, name-calling, ignoring, rumor spreading, sending hurtful emails and text messages, and leaving someone out on purpose" (Gladden et al., 2014; Olweus, 1993). Consistent with previous uses of this validated measure (e.g., Solberg & Olweus, 2003), the students were prompted to read this definition in its entirety before proceeding with the questions related to bullying. The survey read, "In what way(s) were you bullied in the past 30 days?" and included the following response options: "threatening to hit or hurt you," "pushing or shoving you," "hitting, slapping, or kicking you," "stealing your things," "emailing, e-messaging, texting, or posting something bad about you on the Internet

(Facebook)," "spreading rumors or lies about you," and "ignoring your or leaving you out on purpose." Exploratory (EFA) and confirmatory (CFA) factor analyses were conducted to assess the number of factors comprising the 7-item victimization measure, such that the physical victimization factor was composed of four items (threatening to hit or hurt you, pushing or shoving you, hitting, slapping, or kicking you, and stealing your things; (α = .85; males: M = 0.12, SD = 0.32; females: M = 0.11, SD = 0.31). The relational victimization was composed of three items (emailing, e-messaging, texting, or posting something bad about someone on the Internet [Facebook], spreading rumors or lies, and ignoring or leaving a student out on purpose; α = .77; males: M = 0.10, SD = 0.30; females: M = 0.17, SD = 0.38). The response options for each item were dichotomized (0 = not victimized or 1 = victimized). Items were then summed for each factor to create count variables for the two types of aggression.

Connectedness. The school climate survey assessed student connectedness and teacher connectedness via measures derived from widely used and previously validated scales (see Hanson & Kim, 2007; Haynes, Emmons, & Ben-Avie, 2001; Resnick et al., 1997). Specifically, five items from the previously validated Healthy Kids Survey (Hanson & Kim, 2007) assessed students' connection to other students (e.g., "I feel like I belong," "Students trust one another," α =.86; males: M = 2.59; SD = 0.70; females: M = 2.40; SD = 0.66). Six items from the previously validated School Development Program School Climate Survey (Haynes et al., 2001) and the National Longitudinal Study on Adolescent Health (Resnick et al., 1997) assessed students' connection to their teachers (e.g., "My teachers care about me," "My teachers tell me when I do a good job," α = .86; males: M = 2.74, SD = 0.67; females: M = 2.73, SD = 0.59).

Parent engagement in school. Five items from previously validated measures (California Healthy Kids Survey, California Department of Education, 2010; Haynes et al., 2001) assessed students' perceptions of their parents' connectedness to their child's school (e.g., My parents/guardians feel welcome at this school, The school tries to involve parents and guardians, α = .77; males: M = 2.62, SD = 0.65; females: M = 2.60, SD = 0.58). It is important to note that this scale assessed youths' perception of their parents' engagement in school activities. All responses were measured on a 4-point Likert scale (1 = strongly disagree; 4 = strongly agree), and averaged such that higher scores indicated high levels of the buffer.

Adjustment problems. The survey included indicators of three different types of adjustment problems: internalizing problems, sleep problems, and stress problems. All three scales were derived from items from previously validated measures of adjustment problems (e.g., BASC-2, Reynolds & Kamphaus, 2004). The internalizing problems scale (e.g., "I feel sad," "I feel worried"; α = .85; males: M = 1.81, SD = 0.74; females: M = 1.95, SD = 0.71) consisted of the average of five items (Reynolds & Kamphaus, 2004). The sleep problems scale (Centers for Disease Control and Prevention, 2010; Harris et al., 2009; e.g., Have trouble falling asleep, Feel you did not get enough sleep or rest; Spearman's ρ = .62; males: M = 2.44, SD = 0.87; females: M = 2.63, SD = 0.84) consisted of the average of two items. The stress problems scale (Brown, Nobiling, Teufel, & Birch, 2011; Harris et al., 2009; e.g., felt that difficulties were piling up so high that you could not overcome them; feel stressed; Spearman's ρ = .81; males: M = 2.19, SD = 0.95; females: M = 2.54, SD = 0.94) consisted of the average of two items. All responses were measured on a 4-point Likert scale from 1 (*almost always*) to 4 (*never*).

A CFA confirmed the fit of the three-factor model (i.e., internalizing, sleep, stress) (χ^2 (24) = 680.60; CFI = .992; TLI = .987; RMSEA = .046; WRMR = 2.462); all factor loadings were high and there were no double loadings. Items were averaged such that higher scores indicated more adjustment problems.

Overview of the Analyses

We conducted a series of OLS multiple regression analyses to examine the influence of physical victimization and relational victimization on adjustment symptoms and whether the various forms of connectedness moderate these associations. Consistent with Aiken and West (1991), we mean centered the continuous student connectedness (M = 0.01), teacher connectedness (M = 0.23), and parent engagement (M = 0.11) variables before creating the interaction terms. Likewise, we mean centered the count variables for physical (M = - 1.77) and relational (M = -1.27) victimization. We built up the models in a series of steps. First we included grade level and race (model 1), then added relational victimization, and physical victimization and the interaction between the two types of victimization (model 2), then added the type of connectedness of interest (model 3), and the interaction between the type of connectedness of interest and relational and physical victimization (model 4). Based on previous research suggesting that victimization, adjustment problems, and connectedness may vary by gender (Card et al., 2008; Davidson & Demaray, 2007), together with findings from initial exploratory regression models, we stratified the primary analyses by gender. Stratification is a recommended approach for dealing with confounders when the sample size is large (Aschengrau & Seage, 2014). This approach also enabled us to further investigate and probe the role of gender in the model.

Results

Descriptive Analyses

We first conducted correlational analyses separately for boys and girls. As expected, the correlational results generally suggested that physical and relational victimization were negatively associated with connectedness for both boys and girls. Similarly, the experiences of one or multiple forms of victimization were negatively associated with connectedness and parent engagement. Victimization was positively associated with adjustment problems (i.e., internalizing symptoms, sleep problems, and stress problems). Connectedness and parent engagement were also negatively associated with adjustment problems (see Table 1).

Relation Between Victimization and Adjustment Problems

We conducted a series of stepwise multiple regression analyses, stratified by gender, to examine the association between victimization (relational and physical) on adjustment symptoms as moderated by the two forms of connectedness and parent engagement. Across both boys and girls, the analyses indicated a significant main effect for relational victimization, physical victimization, student connectedness, teacher connectedness, and parent engagement on all of the adjustment outcomes of interest, such that high levels of victimization and low levels of connectedness and engagement were associated with lower adjustment: internalizing symptoms (males: F (9,12556) = 275.524, $p < .001$; females: F (9,12822) = 329.084, $p < .001$), sleep problem (males: F (9,12041) = 92.520, $p < .001$; females: F (9,12412) = 123.939, $p < .001$), and stress (males: F (9,12029) = 158.996, $p < .001$; females: F (9,12403) = 197.851, $p < .001$). These main effects supported our hypothesis that physical and relational victimization were associated with

higher levels of adjustment problems (*Hypothesis 1*). Together, the set of predictor variables of grade, race, victimization, and connection explained 16.4% of the variance in internalizing symptoms for males, and 18.7% for females. The predictor variables explained 6.4% of the variance in stress for males and 8.2% in stress for females. The set of predictor variables also explained 10.6% of the variance in sleep problem in males and 12.5% in females. Table 2 provides standardized coefficients and level of significance for the variables of interest.

Connectedness as a Protective Factor

The Victimization × Connectedness and Victimization × Engagement interaction terms were computed on the mean-centered terms and entered into the regression model to further investigate Hypotheses 2 and 3. All significant interactions were plotted to examine their consistency with the buffering hypothesis. Although many of the interaction terms were significant, examination of the graphic representation of these interactions indicated only two of the effects were consistent with the buffering hypothesis. The significant interactions are outlined below, followed by a more detailed description of the extent to which the interactions were consistent with the buffering hypothesis.

Interactions involving physical victimization. The results indicated a significant interaction between parent engagement and physical victimization for sleep problems among girls (β =.030, $p < .01$); as shown in Figure 1 the relationship between physical victimization and sleep problems was dependent on the level of school connectedness of parents of female students. The interaction between teacher connectedness and physical victimization was significant among girls for both sleep problems (β = .034,

$p < .001$) and stress problems ($\beta = .032$, $p < .01$), but not among boys. Interactions between two social support buffers (teacher connectedness, parent engagement) and physical victimization on internalizing problems were significant among boys (e.g., teacher connectedness, ($\beta = -.041$, $p < .001$), but not among girls (e.g., teacher connectedness, ($\beta = -.005$, *ns*). Conversely, the interaction between student connectedness and physical victimization was significant for girls ($\beta = -.038$, $p < .001$) but not for boys ($\beta = -.012$, *ns*). See Table 2 for the standardized coefficients of the interaction terms for the three adjustment outcomes of interest.

Interactions involving relational victimization. The results of the two-way interactions indicated the associations between victimization and internalizing symptoms varied as a function of student connectedness for boys $\beta = -.049$, $p<.001$) and girls ($\beta = -.052$, $p < .001$ and as a function of teacher connectedness for both boys ($\beta = -.042$, $p < .001$) and girls ($\beta = -.021$, $p < .05$). The interaction of parent engagement and relational victimization was significant for sleep problems for boys $\beta = -.125$, $p < .001$) and girls ($\beta = .021$, $p < .05$).

Support for the buffering hypothesis. The two interactions that did support the buffering hypothesis suggested differences in internalizing symptoms among the students reporting high levels of relational victimization. Specifically, the interaction between student connectedness and relational victimization for internalizing problems supported the buffering hypothesis for girls ($\beta = -.052$, $p < .01$; Figure 1A), such that victimized girls who reported high levels of student connectedness had significantly lower levels of internalizing problems than victimized females who reported low levels of student connectedness. For boys, the interaction of relational victimization and parent

engagement on internalizing problems was significant (β = -.053, p < .001; Figure 1B). Further inspection of this interaction suggested that the association between relational victimization and internalizing problems was dependent on the level of parent engagement, such that victimized boys whose parents were highly engaged had significantly lower levels of internalizing problems than their male peers whose parents were less engaged.

Significant interactions that did not support the buffering hypothesis. Although many of the above interactions were significant, when plotted, their results did not support the buffering hypothesis. These interactions often had patterns where adjustment problems varied as a function of connectedness for nonvictimized students, but that variation was not found among the victimized students (e.g., Figure 1C and 1D). Specifically, when examining the highly victimized students, significant differences in adjustment problems were not found between those with high levels of connectedness and those with low levels of connectedness or parent engagement. The differences were only found among the low victimized students, wherein high levels of connectedness or engagement buffered the adjustment problems of the less victimized students.

Discussion

The current study investigated the associations among perceived interpersonal connectedness, parent engagement, peer victimization, and adjustment problems. The negative influence of peer victimization in the lives of adolescents is well documented (Card et al., 2008), however less is known about the factors that may buffer the impact of peer victimization on adjustment problems. Given the growing body of research suggesting that student connectedness may promote resilience (Davidson & Demaray,

2007; Loukas & Pasch, 2013), we were particularly interested in the protective role connectedness might play for victimized adolescents. We first consider the associations between peer victimization experiences and adjustment problems, and then discuss the direct and moderated role of connectedness.

Adjustment Problems

Consistent with prior cross-sectional and longitudinal research (Card et al., 2008; Yeung & Leadbeater, 2010), adolescents who were targets of victimization reported higher levels of internalizing problems than their less victimized peers (*Hypothesis 1*). This finding is consistent with Crick and Bigbee (1998), who argued that victims may internalize these negative peer interactions, which can result in a more negative evaluation of self and may lead to psychosocial problems. Additionally, our findings support previous research indicating that peer victimization is associated with stress problems in young adults (Dahlen et al., 2013).

Although previous studies have produced mixed results regarding gender differences in adjustment among victimized children and adolescents, our results did not provide evidence of a difference by gender. Moreover, our findings are consistent with research that found no gender differences in relationally aggressive behaviors (e.g., Bailey & Ostrov, 2008). The results indicated that victimized adolescents experienced adverse adjustment problems regardless of their gender or the type of victimization incurred. The findings also suggested that the association between both subtypes of victimization and adjustment problems was significant and consistent across gender. However, some studies have found that relational victimization may be more relevant to girls' adjustment problems and physical victimization may be more relevant to boys'

adjustment problems (Crick & Nelson, 2002). Similarly, Paquette and Underwood (1999) found that relationally victimized girls reported being more hurt than boys. Other studies have found that victimized girls were more likely to feel sad and thereby be at higher risk for depressive symptoms (e.g., Rigby, 1995). Being relationally victimized was associated with negative self-worth for girls but not boys, suggesting that the negative psychosocial effects of victimization may be more pronounced in girls (Merrell, Buchanan, & Tran, 2006). Although previous work indicates that girls generally perceive relational victimization to be significantly more distressing than boys (Crick, 1995; Galen & Underwood, 1997), the present findings suggested that both forms of victimization are associated with maladjustment for boys and girls. The current results also suggested that experiencing physical and relational aggression are both associated with maladjustment, regardless of gender. These findings inform the debate of whether victimization differentially relates to boys and girls, suggesting that assumptions that distress fall along certain gender lines may be premature.

Potential Buffers of Victimization

This study also extended the extant literature by demonstrating that some forms of connectedness may buffer the association between victimization and adjustment problems. Although several studies have shown that connection can attenuate internalizing problems (Davidson & Demaray, 2007; Loukas & Pasch, 2013; Resnick et al., 1993), few have examined the link between various forms of connectedness (i.e., student and teacher) and multiple domains of maladjustment. Specifically, 15 significant interactions were found between victimization (i.e., relational, physical) and connectedness (i.e., student and teacher) or parent engagement on internalizing, sleep,

and stress problems (see Table 2). However, inspection of the graphs of the 15 significant interactions indicated that only two of the patterns were consistent with the buffering hypothesis. The significant interactions that did not support the buffering hypothesis generally illustrated that among highly victimized students, connectedness did not exert as protective of an effect as it does for less victimized students (see Figure 1). For the two interactions that did support the buffering hypothesis, we found that high connectedness (student connectedness for girls; parent connectedness for boys) attenuated the internalizing symptoms of the relationally victimized students. Specifically, we found that as female victims of relational aggression perceived more student connectedness and male victims of relational aggression perceived more parent engagement they reported less internalizing problems.

Research has found varying support for socioecological factors that are protective for victimized girls and not for victimized boys. Consistent with Davidson and Demaray (2007), we predicted that gender would differentially influence the association between connectedness and victims' adjustment problems, such that connectedness would buffer against adjustment problems for physically victimized boys, but not girls (*Hypothesis 3*). However, we actually found that student connectedness buffered against the internalizing problems of victimized girls but not boys. Perhaps girls find student connectedness to be more beneficial than boys because girls are more likely to seek support from their friends when in distress (Schmidt & Bagwell, 2007). Previous research has also found that adolescent girls rely more heavily on peer relationships for social support and that this support can offset their loneliness, social anxiety, and depression (Adams, Bukowski, & Bagwell, 2005; Zimmer-Gembeck, Geiger, & Crick, 2005). Given this reliance, it is

possible that girls who are victimized do better when they are able to rely on peer relationships for social-emotional support. Relational victimized adolescent females who are more resilient to internalizing problems due to student connectedness likely benefit from being in an environment where students trust, like, and help one another.

The second significant buffering effect occurred among relationally victimized males. Specifically, relationally victimized males who perceived higher parent engagement in school also reported less internalizing problems, whereas the relationally victimized males who perceived low parent engagement reported more internalizing symptoms. These findings are contrary to previous research that has found parent support to attenuate internalizing problems for victimized girls, but not for boys (Davidson & Demaray, 2007). However, other studies have found that parent and peer support is also negatively associated with anxiety and depression, with a stronger relationship found for victimized girls (Rigby, 2000). Consistent with Bronfenbrenner's framework (Bronfenbrenner & Morris, 1998), the school may be an important microsystem where parent engagement can help promote adjustment among victimized adolescents. Interestingly, both buffering effects occurred for relationally victimized adolescents, but not physically victimized adolescents. Future research should further explore other social-ecological factors that may promote resilience for physically victimized adolescents.

Although stress and sleep problems varied significantly as a function of teacher connectedness for both genders, the interactions suggested that connectedness were associated with fewer adjustment problems among youth at lower risk for victimization, but not those at higher risk. This finding suggests that for students at higher risk of peer

victimization, teacher connectedness did not sufficiently buffer against experiencing stress and sleep problems. In fact, the victims of multiple forms of peer aggression may require more intensive intervention. Furthermore, we did not find evidence that any form of connectedness offset the sleep and stress problems of victimized adolescents. Whereas sleep problems and stress were significantly worse among adolescents who experienced multiple forms of victimization, connectedness and parent engagement did not appear to attenuate the association between victimization and these two psychosomatic problems. Further research is needed to determine what other protective factors may buffer victimized youth from experiencing these psychosomatic problems.

The majority of the significant interactions did not support the buffering hypothesis, but rather showed patterns in which high levels of connectedness or parent engagement were associated with lower levels of adjustment problems for the less victimized students. This suggests that connectedness and engagement may be more helpful for nonvictims, as the promotive effect of interpersonal connection and engagement may not be strong enough to offset victimization experiences.

Limitations

The current findings should be interpreted in light of several limitations. For example, the data were self-report, as a multi-informant (e.g., peers, teachers) approach was not feasible given the design and scale of the study. Although the sleep and stress problems scales comprised just two items, these items were drawn from previously validated measures. In fact, all of the measures were derived from previously validated scales which have been widely used with youth. The study sample was large and racially/ethnically diverse, which increases the potential for generalizability of the findings.

However, it only included students from Maryland high schools; therefore, it is unclear how these results would generalize to other samples. Although the questions about bullying were not exclusive to the school context, given the survey was administered in the school, participants may not have fully considered bullying incidents occurring in other settings. We did, however, include cyberbullying as a form of victimization in this study. Because of the cross-sectional nature of the study, a causal relationship cannot be inferred from these data. It is therefore possible that the adjustment problems of those surveyed preceded their victimization experiences. Given the transactional nature of adjustment problems and peer victimization, it is unclear whether the adjustment problems were the causes or consequences of the adolescents' victimization. Longitudinal research is needed to better understand the directionality of the association between adjustment problems and victimization.

Our data included information about parents' engagement in their children's schools, but we did not have information regarding the students' level of connectedness with their parents. Because of this limitation, we were not able to look more broadly at the parent– child relationship to investigate its impact on adjustment problems for victimized adolescents. Future research should further explore this and other socioecological factors that may have a protective function for victimized adolescents. Moreover, the clustering of students within schools and classrooms may have influenced the pattern of findings, because of the non-independence of observations (Raudenbush & Bryk, 2002). Yet, previous multilevel studies examining these data have demonstrated relatively small intraclass correlational coefficients (i.e., ICCs < .07; Bradshaw et al., 2014). Nevertheless, future studies will explore the utility of a multilevel approach for

addressing the clustering and modeling effects at the classroom- and school-levels.

Research Implications

These findings extend prior research by suggesting victimization experiences are associated with more adjustment problems, and that connectedness and parent engagement may buffer these effects. Although many studies have examined the association between victimization and internalizing symptoms, the current study adds to the research by exploring sleep and stress problems as two additional forms of psychosomatic problems. Although our findings add to prior research suggesting a protective effect of connectedness and parent engagement, future studies should examine other psychosocial outcomes, such as externalizing behaviors or substance use. Other potential interpersonal assets should also be explored, such as how connectedness to parents or siblings may buffer the adjustment problems of victims of aggression. Further research could also examine different forms of victimization, perhaps examining how connectedness may attenuate adjustment problems for victims of cyberbullying.

Clinical and Policy Implications

The current findings highlight the importance of connectedness and parent engagement as potential sources of resilience for victims of peer aggression, particularly relational aggression (Davidson & Demaray, 2007). Specifically, student connectedness and parent engagement in their child's school may attenuate the negative adjustment outcomes for relationally victimized adolescents. Although we are cautious to interpret these associations as causal, these findings should be considered when intervening with victimized adolescents. For example, recent research has identified school-wide programs, such as Positive Behavioral Interventions and Supports, as an effective

approach for promoting connectedness, as well as reducing rates of bullying (Bradshaw, 2013). As such, this multi-tiered framework may help attenuate the negative effects of bullying in schools. Additional research is needed to better understand the specific mechanisms involved in this process, and the role adults can play in promoting connectedness. Similarly, offering activities that provide opportunities for connectedness, such as peer support groups and parent-focused programs, may have a positive influence on relationally victimized adolescents.

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Table 1

Means, Standard Deviations, and Zero-Order Correlations for Boys' (n =13,724) and Girls' Variables (n=13,573)

	1	2	3	4	5	6	7	8	9	10	*Boy Mean*	*Boy SD*
1. Grade	—	-.01†	-.03*	-.05*	-.02	-.04*	-.01†	.03*	.03*	.05*	0.46	0.50
2. Race	.02	—	.02	.03*	.06*	.01†	.07*	.02	.05*	.04*	0.49	0.49
3. Relational Victimization	-.05*	.09*	—	.60*	-.22*	-.16*	-.19*	.33*	.17*	.25*	0.10	0.30
4. Physical Victimization	-.06*	.02	.53*	—	-.20*	-.16*	-.20*	.33*	.17*	.24*	0.12	0.32
5. Peer Connectedness	-.05*	.10*	-.21*	-.19*	—	.54*	.65*	-.22*	-.16*	-.19*	2.59	0.70
6. Parent Connectedness	-.05*	.03*	-.12*	-.13*	.51*	—	.63*	-.15*	-.16*	-.15*	2.62	0.65
7. Teacher Connectedness	.00†	.09*	-.13*	.16*	.57*	.59*	—	-.20*	-.17*	-.20*	2.74	0.67
8. Internalizing Problems	-.02	.06*	.36*	.29*	-.27*	-.18*	-.20*	—	.37*	.55*	1.81	0.74
9. Sleep Problems	.01	.09*	.17*	.13*	-.19*	-.18*	-.18*	.39*	—	.54*	2.44	0.87
10. Stress Problems	.07*	.11*	.25*	.18*	-.22*	-.17*	-.19*	.55*	.56*	—	2.19	0.95
Girl Mean	0.46	0.49	0.17	0.11	2.40	2.60	2.73	1.95	2.63	2.54		
Girl SD	0.50	0.50	0.38	0.31	0.66	0.58	0.59	0.71	0.84	0.94		

Note. Boys' correlations are above the diagonal and girls' correlations are below the diagonal. Race was analyzed as White and Non-

Table 2

OLS Regression Results Modeling the Direct and Interactive Contributions of Peer Victimization and Connectedness and Engagement among Adolescents (Standardized Coefficients)

	Internalizing				**Sleep**				**Stress**			
	Model 1		**Model 2**		**Model 1**		**Model 2**		**Model 1**		**Model 2**	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Grade	.028**	-.012	.042***	-.009	.031**	-.018*	.038***	-.026**	.055***	.075***	.065***	.088***
Race												
Black	-.062***	-.102***	-.044***	-.064***	-.079***	-.127***	-.070***	-.109***	-.072***	-.146***	-.059***	-.118***
Other	.048***	.012	.043***	-.018*	.011	-.019*	.008	-.016	.022*	-.026**	.018	-.021*
RV			.250***	.291***			.109***	.145***			.207***	.225***
PV			.222***	.197***			.117***	.081***			.160***	.130***
RV × PV			-.063***	-.076***			-.017	-.044*			-.068***	-.077***
			Model 3				**Model 3**				**Model 3**	
Student†			-.143***	-.210***			-.127***	-.175***			-.139***	-.184***
Parent†			-.084***	-.127***			-.123***	-.166***			-.099***	-.134***
Teacher†			-.126***	-.146***			-.138***	-.170***			-.147***	-.164***
			Model 4				**Model 4**				**Model 4**	
RV × Student†			-.049***	-.052***			-.005	.009			-.082**	-.013
RV × Parent†			-.053***	-.016			-.125***	.021*			-.009	.003
RV × Teacher†			-.042***	-.021*			.011	.019			-.005	.010
PV × Student†			-.038***	-.012			.005	.003			-.022*	-.002
PV × Parent†			-.036***	.075			.014	.030**			-.003	.008
PV × Teacher†			-.041***	-.005			.015	.034***			-.002	.032**

Note. N = 28,104. Race reference group was White/Caucasian. RV = relational victimization; PV= physical victimization; Student = student connectedness; Parent – parent engagement. Teacher =teacher connectedness.

† All forms of Connectedness and two-way interactions were modeled separately in the presence of appropriate main effects variables.

*p < .05. **p < .01. ***p < .001.

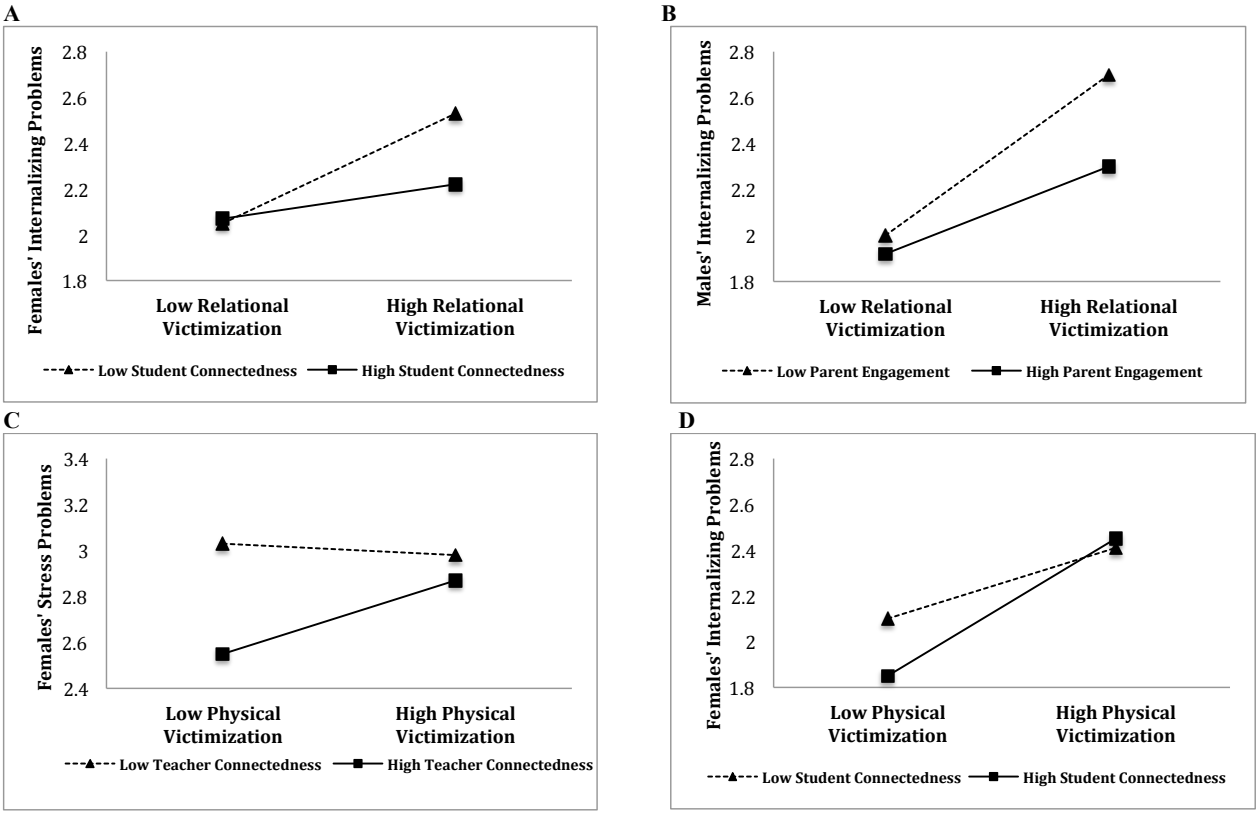

Figure 1. Examining the Victimization × Connectedness interaction. A, Relationally victimized females, student connectedness, internalizing problems. B, Relationally victimized males, parent engagement, internalizing problems. C, Physically victimized females, teacher connectedness, stress problems. D, Physically victimized females, student connectedness, internalizing problems. For illustration purposes, victimization was dichotomized, but the analyses were conducted on the original count variables.

Manuscript 3

Adjustment Outcomes of Victims of Cyberbullying:

The Role of Personal and Contextual Factors

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Abstract

With many of today's youth utilizing technology to bully their peers, there is a need to better understand both predictors and consequences of cybervictimization. However, few researchers have employed a multi-level approach to jointly identify potential individual (e.g., gender) and school-level (e.g., urbanicity) predictors of cybervictimization, or examined a range or psycho-social and adjustment outcomes. The current study used survey data from 28,583 students from 58 high schools to explore the risk factors associated with cybervictimization. We also examined the association between cybervictimization and adjustment outcomes (e.g., psychological, academic), as well as a possible buffer to these negative outcomes (e.g., student connectedness). Self-report measures assessed experiences with cybervictimization, adjustment problems, and student connectedness using previously validated measures. A series of two-level hierarchical linear modeling analyses revealed that females, Caucasian students, underclassman, and those who are traditionally victimized or are perpetrators of cyberbullying were at significantly increased risk of cybervictimization. Cybervictimization was also associated with an increased risk of psychological (internalizing problems, sleep problems, stress problems, substance use) and academic (truancy, poor grades) adjustment problems. However, student connectedness buffered some (internalizing problems, substance use) of the adjustment problems experienced by victims of cyberbullying. These findings extend prior research on cybervictimization predictors, outcomes, and buffers, and in turn inform the potential use of school-based efforts aimed at preventing cyberbullying.

Adjustment Outcomes of Victims of Cyberbullying:
The Role of Personal and Contextual Factors

With the recent advances in technology, computers and cell phones have become new venues for social interaction among youth and adults alike. Yet emailing, text messaging, and posting on social media sites are other forums through which youth can engage in bullying behaviors. This behavior, known as cyberbullying, Internet aggression, or electronic aggression, is defined as an aggressive act that is deliberately and repetitively carried out in an electronic context (e.g., instant messaging, emails, Facebook, text messaging) against a person who cannot easily defend him or herself (Kowalski, Limber, & Agatston, 2012). A recent meta-analysis of 131 studies on cyberbullying found that, in general, the lifetime prevalence of being the target of a cyberbully ranges between 10 and 40% (Kowalski, Guimetti, Schroeder, & Lattanner, 2014). Although rates of cyberbullying are lower than traditional (e.g., verbal, physical) forms of bullying, cyberbullying remains a pervasive issue for today's youth (Kowalski et al., 2014). Furthermore, there is some evidence that experiencing cybervictimization may be perceived as more hurtful and predict adjustment problems, over and above that of traditional forms of victimization (Bonanno & Hymel, 2013; Dempsey, Sulkowski, Nichols, & Storch, 2009).

A growing body of literature has attempted to identify potential predictors and outcomes of cyberbullying. Moreover, researchers have identified possible personal and contextual factors that may contribute to cyberbullying and cybervictimization, as well as exacerbate mental health outcomes among victimized youth. Although previous research has demonstrated that

cybervictimization is associated with a range of psychological adjustment problems (e.g., anxiety, depression, loneliness), few studies have explored the broader range of negative outcomes, such as academic adjustment problems. Additionally, few studies have examined the role that contextual factors play in the risk for cybervictimization and negative mental health outcomes among adolescents (Kowalski et al., 2014). The current paper aimed to address these gaps in the literature by exploring the relationship between cybervictimization and multiple adjustment problems as well as the extent to which contextual factors contribute to, and potentially exacerbate or buffer risk of cybervictimization and adjustment problems. Identifying individual and contextual risk factors for cybervictimization is important for bullying prevention efforts, as it can elucidate the high risk groups and contexts that warrant particular attention when developing prevention and intervention programs for bullying.

Theoretical Frameworks

Unlike the broader aggression literature, research on cyberbullying has generally lacked a solid theoretical foundation (Slonje, Smith, & Frisén, 2012). However, there has been some interest in the application of the general aggression model (GAM) to cyberbullying, as it may inform our understanding of the personal and contextual factors involved in aggression (Anderson & Bushman, 2002). Specifically, the GAM is an integration of several domain-specific theories of aggression that together give a more parsimonious view of both cyberbullying perpetration and victimization (Kowalski et al., 2014; Vannucci, Nocentini, Mazzoni, & Menesini, 2012). It is founded on the notion that violence can be studied at different levels: the individual, the small group, the subculture, and the society. This socio-cognitive, developmental model uses the interactions between situational and personal factors to explain aggressive behavior and victimization. The structure of the model allows for aggression to be

explained in light of the dynamic interplay between multiple levels of factors that influence the individual, including the person, the situation, and aspects of the social encounter through which the bullying occurs (Anderson & Carnegey, 2004). The theoretical basis of the GAM provides the structure to inform our exploration of individual and contextual factors that impact cybervictims and the related adjustment problems.

The social-ecological model also highlights the relevance of contextual factors, like the school and peer context, that should be considered in addition to individual-level risk factors (Bronfenbrenner & Morris, 1998). Related research on social disorganization theory (Sampson & Groves, 1989) suggests that structural characteristics of communities, such as ethnic heterogeneity, disrupt social organization, which leads to increases in crime and violence. This theory has been applied to school communities, such that school-level indicators of disorder may be predictors of bullying-related attitudes and behaviors (Bradshaw, Sawyer, & O'Brennan, 2009). Research has examined the potential influence of contextual and organization factors that may increase the risk for involvement in aggression and bullying. Taken together, these theories suggest the importance of considering a variety of potential risk and protective factors for cybervictimization at the student and school levels.

Adjustment Outcomes Related to Cyberbullying

Psychological adjustment. Cyberbullying has been linked to numerous negative mental health outcomes, including anxiety, depression, substance abuse, stress, and sleep problems (Beran & Li, 2005; Mitchell, Ybarra, & Finkelhor, 2007; Perren, Dooley, Shaw & Cross, 2010). A recent meta-analysis of 131 studies indicated that depression, anxiety, loneliness, emotional problems, and stress are all outcomes related to being cybervictimized. Among those negative outcomes, stress (r = .34) and suicidal ideation (r = .27) had the strongest associations with

cybervictimization (Kowalski et al., 2014). Even after controlling for traditional victimization, cybervictimization continues to be linked with negative mental health outcomes, including depression and anxiety (Fredstrom, Adams, & Gilman, 2011; Olenik-Shemesh, Heiman, & Eden, 2012). For example, Perren and colleagues (2010) found that cybervictimization was a significant predictor of depressive symptoms over and above that of being traditionally bullied.

Consistent with the self-medication model (Khantzian, 1997), it is possible that victims of bullying may use substances to cope with the underlying mental and behavioral health problems that result from victimization. Cyberbullying studies found that those who reported high levels of cybervictimization also reported high levels of drug and alcohol use (Kowalski et al., 2014); however, some studies found that cyber perpetration, but not cybervictimization, was associated with frequent cigarette smoking and misuse of alcohol (Sourander et al., 2010). While studies have found that cybervictims have increased alcohol use compared to their non-involved peers, the difference between the two groups is often non-significant (Ybarra & Mitchell, 2004). Given these discrepant outcomes for cybervictims, it is important to establish if there is a significant association between being cybervictimized and using substances.

Stress is another health outcome that has been linked to cybervictimization. Both traditional and cybervictimization were associated with high stress (Fredstrom, et al., 2011). Approximately 32% of youth cybervictims reported experiencing at least one symptom of stress as a result of cybervictimization, whereas another study found that 41% of college student cybervictims reported frequently feeling stressed as a result of being a victim of cyberbullying (Finkelhor, Mitchell, & Wolak, 2000; Schenk & Fremouw, 2012). Stress and suicidal ideation are also strongly associated with cybervictimization (Kowalski et al., 2014). Additionally, adolescent cybervictims and cyberbully-victims (but not cyberbullies only) were at a

significantly higher risk of developing sleeping problems than their non-victimized peers (Sourander et al., 2010). This finding is consistent with other research that found that bullied youth were at an increased risk of having sleep problems (Fekkes et al., 2006). While researchers have established a clear link between cybervictimization and psychological adjustment problems, less is known about how personal and contextual factors may attenuate or exacerbate these outcomes.

Academic adjustment. A meta-analytic review of 33 studies that examined peer victimization and academic achievement found a small but significant negative association, such that peer victimization is related to concurrent academic struggles (Nakamoto & Schwartz, 2010). Despite this consensus among studies of traditional peer victimization, there is less consensus about the relationship between cybervictimization and academic difficulties. Victims of Internet harassment (a concept closely related to cyberbullying) reported higher rates of skipping school and higher rates of truancy than their non-harassed peers (Ybarra, Diener-West, & Leaf, 2007). Similarly, a study of middle and high school students found that, compared to their non-involved peers, victims of cyberbullying are at a significant increased risk of leaving school early and receiving poor grades (Kowalski & Limber, 2013). Despite these findings relating to poor academic performance, the recent meta-analysis of cyberbullying research found that the association between academic achievement and cybervictimization was not significant (Kowalski et al., 2014), thereby suggesting a need for further investigation into how cybervictimization may be associated with academic performance. The current study also aimed to inform our understanding of some of the mixed findings by examining whether high school victims of cyberbullying are more likely to be absent from school or receive low grades.

Person Risk Factors for Cyberbullying Victimization

Gender. Given that boys are more likely than girls to be victims of traditional forms of bullying (Nansel et al., 2001), researchers have investigated if this association holds among victims of cyberbullying. In fact, several studies have found that females were more likely to be cybervictims (Cappadocia, Craig, & Pepler, 2013; Sourander et al., 2010; Ybarra et al., 2007), yet, other studies have found no gender differences when predicting cybervictimization (e.g., Williams & Guerra, 2007; Ybarra & Mitchell, 2004; Cappadocia et al., 2013). The mixed findings suggest that additional research is needed to more thoroughly examine the relationship between gender and cybervictimization.

Student ethnicity. Within the traditional bullying literature, some researchers have found no significant differences in bullying prevalence between Caucasian and African American students (Seals & Young, 2003). Other studies of traditional forms of bullying (e.g., physical, verbal, social) comparing White, African American, and Hispanic youth have found that African American children are less likely to be victimized than their White or Hispanic peers (Sawyer, Bradshaw, & O'Brennan, 2008; Spriggs, Iannotti, Nansel, & Haynie, 2007). Yet few studies have examined ethnicity as it pertains specifically to cyberbullying, for the majority of studies on cyberbullying have been conducted with predominantly Caucasian samples. The available research exploring the association between ethnicity and cybervictimization have not found significant differences in cybervictimization by race/ethnicity (Wang, Ionnotti, & Nansel, 2009) Given the limited research on this topic, further investigation is needed to better understand the role of race/ethnicity in cybervictimization.

Student grade level. Similar to the trends in the traditional bullying literature, cyberbullying appears to peak during the middle school years (Kowalski, Limber, & Agatston, 2012; Williams & Guerra, 2007). The transition to high school (grade 9) has also been identified

as a risk factor for cybervictimization, as a one-year longitudinal study of cybervictimization among high school students found that students in ninth grade at Time 1 were about 50% more likely than students in tenth and eleventh grade at Time 1 to be involved in cybervictimization at Time 2 (Cappadocia et al., 2013). With regard to adjustment problems, studies evaluating how age may moderate the relationship between victimization and mental health problems have yielded mixed results. Specifically, middle school aged cybervictims reported more emotional symptoms (e.g., depression, anxiety, stress) and peer problems than high school aged cybervictims (Dooley, Shaw, & Cross, 2012). This finding is inconsistent with studies of traditional bullying. For example, when compared to elementary and middle school victims of bullying, high school victims were more likely to report internalizing symptoms (O'Brennan et al., 2009). Because of the negative mental health outcomes that are linked to cybervictimization as well as traditional victimization, knowing the age groups that are at greatest risk of victimization and experiencing negative outcomes may help schools identify whom to target through bullying intervention and prevention initiatives.

Traditional bullying. There has been considerable debate in the literature as to how cyberbullying is different from traditional forms of bullying (social, verbal, physical). There is considerable overlap between being a victim of traditional and cyberbullying, as one-third of cybervictims report concurrent traditional victimization (Ybarra et al., 2007). Conversely, students who were traditionally victimized were almost four times more likely than their non-victimized peers to report cybervictimization and/or cyber-perpetration (Cappadocia et al., 2013). Despite this overlap, there is a subset of youth (~10-15% of victimized youth) who experience cyberbullying or victimization in the absence of traditional forms of victimization (Olweus, 2012; Raskauskas, 2010). Mental health outcomes of cybervictimization have also

paralleled findings in traditional victimization; however, because those who experience cyberbullying are often involved in other types of bullying (verbal, physical, relational), it is difficult to understand the unique contribution of cyberbullying on maladjustment. Despite the overlap, cybervictimization has been found to influence adolescent well-being above and beyond traditional victimization (Wigderson & Lynch, 2013). Research in Australia and Switzerland has found that cybervictimized youth experienced more depression symptomology and academic problems (e.g., low grades) than non-victimized youth and cyberbullies, even after controlling for involvement in traditional bullying (Perren et al., 2010). Given the overlap between traditional victimization and cybervictimization, it is possible that traditional victimization places children and adolescents at increased risk for being cybervictimized, and in turn, they are at an increased risk for adjustment problems.

Contextual Factors for Cyberbullying Victimization

As described above, a number of theoretical models highlight the significant of contextual factors in relation to involvement in bullying. For example, while several studies have examined population density, or urbanicity, in relation to aggression and violence, there is a paucity of literature on bullying that has compared the experiences of urban and non-urban youth (Bradshaw et al., 2009; Demaray & Malecki, 2003; Varjas, Henrich, & Meyers, 2009). Some research suggests that urban victims of bullying were more likely than non-urban victims to be racially bullied (Goldweber, Waasdorp, & Bradshaw, 2013), whereas other research provides evidence that children in suburban schools are disproportionately affected by bullying (Bradshaw et al., 2009). These studies have looked primarily at traditional forms of bullying as well as at elementary and middle school youth; therefore, additional research is warranted to examine the role of urbanity for cybervictims and among high school students.

The percentage of minority students in a school may also be associated with risk for cybervictimization and psychological consequences. Research on the effect of ethnic diversity in schools found that middle school students who are victims of bullying and members of a majority ethnic group might be at additional risk of the negative psychological consequences of peer victimization (Bellmore, Witkow, Graham, & Juvonen, 2004; Graham & Juvonen, 2002). Less is known about the relationship between school-based ethnic heterogeneity and high school aged victims of cyberbullying.

School size is another contextual factor that may be related to cybervictimization. Of the seven studies included in a systematic review of contextual factors related to school bullying three found a significant positive association between bullying behaviors and school size (Azeredo, Rinaldi, de Moraes, Levy, and Menezes, 2015). Other studies have not found effects of school size on bullying (Klein & Cornell, 2010; Whitney & Smith, 1993). Additionally, rather than assess school size as a risk factor, studies on school climate and bullying using multilevel modeling have typically controlled for school size in analyses (e.g., Gregory et al., 2010). Our review of the literature did not reveal any studies that looked exclusively at cyberbullying victimization and school size, indicating a need to examine this relationship in the current study.

Student connectedness. Student connectedness is defined as the perception of belonging to peers, specifically the perception that students help, like, trust, and respect one another (Bradshaw, Waasdorp, Debnam, & Lindstrom Johnson, 2014). Students' perceived connectedness to their peers has been linked with less perpetration of bullying, including cyberbullying (Williams & Guerra, 2007). For example, youth who described their school environment as having a trusting, fair, and pleasant atmosphere reported less bullying. Additionally, youth who perceived their friends as trustworthy, caring, and helpful had

significantly lower participation in bullying, including cyberbullying (Williams & Guerra, 2007). Although several studies have examined how student connectedness may act as buffers of the association between victimization and adjustment problems, they did not look specifically at cybervictimization, or at the buffering effect among high school students (Schmidt & Bagwell, 2007; Davidson & Demaray, 2007). Related research suggests that social support from close friends buffers the effects of relational and overt forms of victimization on adjustment (Prinstein, Boergers & Vernberg, 2001). Less is known about the buffering effects of student connectedness and support on the adjustment problems of victims of cyberbullying.

Current Study

The current study sought to explore how student connectedness could play a buffering role for the cybervictims who experience these adjustment outcomes. We used data from a school-based climate survey, the Maryland Safe and Supportive Schools Initiative (MDS3), to examine student- and school-level risk factors for cybervictimization. Given the nested nature of data, we employed hierarchical linear modeling techniques (Raudenbush & Bryk, 2002) to address the following three research aims. Specifically, our first research aim intended to identify the individual- and school-level factors that place students at an increased risk of being cybervictimized. As evidenced through previous studies (see Kowalski et al., 2014), we predicted that being a victim of traditional forms of bullying or a perpetrator of cyberbullying would place a student at an increased risk of being cybervictimized. Consistent with prior research, we also hypothesized that being female, Caucasian/White, and an underclass (9^{th} and 10^{th} grade) student would also be risk student-level factors for cybervictimization. As suggested by social disorganization theory (Sampson & Groves, 1989), we hypothesized that an urban

school setting, a larger school size, and a heterogeneous racial/ethnic school would place students at an increased for cybervictimization.

Our second research aim intended to identify the adjustment problems associated with cybervictimization. We were particularly interested in how cybervictimization may increase risk for psychological adjustment (internalizing problems, sleep problems, stress problems, substance use) and academic adjustment (poor grades, truancy). In particular, we were interested in determining whether cybervictims experienced more negative outcomes than their non-cybervictimized peers, while accounting for their demographic characteristics (gender, grade level, race/ethnicity) and other engagement in bullying (as a cyber perpetrator, as a traditional victim) and school-level factors. Consistent with prior research (e.g., Perren et al., 2010; Ybarra & Mitchell, 2004), we predicted that cybervictims would be at increased risk of psychological adjustment and academic adjustment problems.

Our final aim investigated the potential influence of student connectedness, hypothesizing that it would serve as a buffer against the risk of adjustment problems for victims of cyberbullying. Specifically, consistent with prior research (Williams & Guerra, 2007), we hypothesized that student connectedness would serve as a buffer against the negative outcomes associated with cybervictimization.

Method

Participants

Data came from 58 Maryland high schools participating in the statewide MDS3 project, which examined school climate and school safety. Data were collected in the spring of 2012 through a collaboration between the Johns Hopkins Center for the Prevention of Youth Violence, the Maryland State Department of Education, and Sheppard Pratt Health System. A web-based

survey was voluntarily completed by 28,583 high school students. The sample is approximately equal in gender representation. Approximately half of the sample was White/Caucasian, whereas one-third was Black/African American. See Table 1 for additional demographic details of the sample.

Procedure

Public high schools in Maryland enrolled in the MDS3 Project on a voluntary basis after being approached to participate by the Maryland State Department of Education. Following district and school-level approval of the project, the online survey was administered using a waiver of active parental consent. Approximately 25 (M = 24.83) language arts classrooms per school were randomly selected to participate in the data collection. School staff administered the survey by following a written protocol. The MDS3 research team obtained approval for analysis of the de-identified data through the Johns Hopkins University and University of Virginia Institutional Review Boards.

Measures

MDS3 School Climate Survey. The MDS3 School Climate Survey (Bradshaw, Waasdorp, Debnam, & Lindstrom Johnson, 2014) is comprised of self-report measures that have been previously published and validated for research studies (e.g., the Youth Risk Behavioral Surveillance System; CDC, 2011). The current study analyzed the following measures.

Demographic characteristics. The students answered a series of questions relating to their basic demographic characteristics. These measures included such as school, grade level (1 = 11^{th}/12^{th} grade. 0 = 9^{th}/10^{th} grade), gender (1 = male, 0 = female) and race/ethnicity. Race was dichotomized as White/Caucasian (0) and Non-White/Caucasian (1) in the current analyses. Details regarding demographic characteristics are summarized in Table 1. Several of the

demographic characteristics were dichotomized to facilitate comparison of at risk youth and for efficiency in interpreting the findings (MacCallum, Zhang, Preacher, Rucker, 2002).

Involvement in traditional bullying perpetration and victimization. Prior to answering questions regarding bullying, participants were provided a definition of bullying which read, "*A person is bullied when he or she is exposed, repeatedly and over time, to negative actions on the part of one or more other persons. Bullying often occurs in situations where there is a power or status difference. Bullying includes actions like threatening, teasing, name-calling, ignoring, rumor spreading, sending hurtful emails and text messages, and leaving someone out on purpose"* (Olweus, 1993). After reading this definition, the students answered questions about their involvement in bullying as an aggressor or as a victim within the past 30 days (see the Olweus Bully/Victim Questionnaire [Solberg & Olweus, 2003]; Bradshaw, Sawyer, & O'Brennan, 2007). They were asked, "In what way(s) were you bullied during the past 30 days?" and instructed to check all that applied. Options included: calling you bad names, threatening to hit or hurt you, teasing, picking on, or making fun of you, pushing or shoving you, hitting, slapping, or kicking you, stealing your things, spreading rumors or lies about you, ignoring you or leaving you out on purpose. These items, all examples of traditional forms of bullying, were scored 0 if the student did not endorse the item or 1 if the student did endorse the item. The items were then summed for each student, and based on the distribution of responses, the item was dichotomized (0 = no traditional victimization, 1 = one or more experiences of traditional victimization. Importantly, "e-mailing, e-messaging, texting, or posting something bad about you on the internet (Facebook)" was also a response option on this list; it was not included in the analysis as it is an example of cybervictimization. Previous research has validated this approach

to assessing bullying (Solberg & Olweus, 2003; Sawyer et al., 2007). The measurement of cybervictimization and cyber perpetration is further explained below.

Involvement in cyberbullying. Before responding to questions about cyberbullying, the participating youth were prompted to read the following definition of cyberbullying: *"Cyberbullying involves posting or sending electronic messages (text, pictures, video) that result in a person feeling hurt, humiliated, or like a victim."* After reading the definition, the youth responded to the question, "*In the past three months, have you been 'cyberbullied'?"* to assess cyberbullying victimization. Cyberbullying perpetration was assessed via the question, "*In the past three months, how many times have you 'cyberbullied' someone else (intentionally or unintentionally)?"* Response options for these questions included *never*, *once or twice*, or *more than twice* (Willard, 2007). Given the distribution of the responses, the items were dichotomized for cybervictimization (not cybervictimized = 0, cybervictimized at least once = 1) and for cyber perpetration (not a perpetrator of cyberbullying = 0, cyberbullied another student at least once = 1). The traditional and cyberbullying variables were dichotomized due to the desire to analyze group differences between those that had been victimized or bullied against those students who did not endorse involvement in bullying.

Psychological adjustment. Scales were derived for four types of psychological adjustment: internalizing problems, sleep problems, stress problems, and substance use. These measures were all based on previously validated scales (for additional information on the MDS3 Survey, see Bradshaw et al., 2014). Specifically, participants completed a five-item measure of internalizing symptoms (e.g., *I feel sad, I feel nervous or anxious;* $\alpha = .85$) derived from the Self Report of the Behavioral Assessment System for Children, Second Edition (BASC-2; Reynolds & Kamphaus, 2004). They also completed a two-item measure of sleep problems (CDC, 2011;

Harris et al., 2009) (e.g., Have trouble falling asleep, Feel you did not get enough sleep or rest; Spearman's rho = .62) and a two-item measure of stress problems (Brown, Nobling, Teufel, & Birch, 2011; Harris et al., 2009) (e.g., felt that difficulties were piling up so high that you could not overcome them; feel stressed; Spearman's rho = .81). All responses for internalizing problems, stress problems, and sleep problems were measured on a 4-point Likert scale from 1 (*Almost Always*) to 4 (*Never*). Items were reverse scored and averaged such that higher scores indicated more impairment.

Students also reported the number of days in the past month they used each of the following substances: alcohol, cigarettes, marijuana, and prescription medications (non-medical use). The items were adapted from the Youth Risk Behavior Surveillance System (YRBS), a well-validated indicator of health-risk behaviors (CDC, 2011). The four separate questions read, "In the last 30 days, how many times did you" followed by a substance use, "smoke cigarettes?"; "have at least one drink of alcohol?", "use marijuana?", "use prescription drugs or other medications for nonmedical reasons?" Response options were 0 days, 1-2 days, 3-5 days, 6-9 days, 10-19 days, 20-29 days, or all 30 days. Responses for the four substances were then summed to create a substance use count variable ($\alpha = .843$), with 0 as no substance use in the past 30 days, 1-4 corresponding with the number of substances used in the past 30 days.

Academic adjustment. Youth self-reported their academic performance by responding to a question, which read, "On your last report card, what grades did you receive?" The response options were Mostly As, Mostly Bs, Mostly Cs, Mostly Ds, or Mostly Fs. Given the distribution of responses, the item was dichotomized with responses Mostly As and Bs (0) versus Mostly Cs or worse (1) (Bradshaw et al., 2009). Truancy was assessed through a question adapted from YRBS (CDC, 2011). The question read, "During the past 30 days, how many days of school

have you missed because you skipped or 'cut'?" Response options were 0 days, 1 day, 2 or 3 days, 4 or 5 days, 6 or more days. Based on the distribution of responses, the truancy score was dichotomized as 0-1 day (0) versus 2 or more days (1).

Student connectedness. Five items from the previously validated California Healthy Kids Survey (Hanson & Kim, 2007) assessed students' connection to other students (e.g., I feel like I belong; Students trust one another, $\alpha = .86$). All responses were measured on a 4-point Likert scale (1 = *Strongly Disagree*; 4 = *Strongly Agree*), and averaged such that higher scores indicated high levels of connectedness.

School-level variables. School-level demographic variable information was obtained from the Maryland State Department of Education. Information included school enrollment (total number of students), the percentage racial and ethnic minorities in the student body (minority %), and the urbanicity of the school setting. Urbanicity was coded such that urban areas were the reference group, as compared to suburban, town, and rural. The schools' urbanicity was determined by trained on-site observers as part of a larger study of school physical environment and confirmed by a school district representative (Bradshaw, Milam, Furr-Holden, & Lindstrom Johnson, 2015). The school-level student enrollment was divided by 100 in order to facilitate easier interpretation of the coefficients (i.e., a one unit change is not one student, but rather 100 students). These variables were included in the model in order to both control for the nested nature of the data and to include salient variables consistent with social disorganization theory (Bradshaw et al., 2009; Sampson & Groves, 1989). In addition to the school-level demographic information, school climate indices were derived as an average of the scores of students within a school. Specifically, scores for student connectedness (described in detail above) were

aggregated up to the school level for each of the 58 schools (Bradshaw et al., 2009). See Table 1 for additional details of the school demographics.

Overview of the Analyses

A two-level multilevel modeling analysis was selected for the current study because the data and hypotheses are multilevel (Raudenbush & Bryk, 2002). Moreover, the students in the study were nested within schools and our hypotheses include the exploration of factors at both individual- and school-level factors in relation to cyberbullying victimization and adjustment problems. Multilevel modeling techniques account for this non-independence of students within schools through adjustment of the standard errors (Luke, 2004). Prior to conducting the multilevel analyses, we used SPSS 21 to check for multicollinearity among the student- and school-level variables (Aiken & West, 1991) in order to ensure that the control and predictor variables were not highly intercorrelated. Inspection of the correlations and variance inflation factors (VIF) suggested that multicollinearity was not a significant concern for any of the victimization/perpetration variables (e.g., traditional victimization and cybervictimization). Violations of multicollinearity existed for the support variable at the school level (i.e., student connectedness). Due to these violations, the student connectedness variable and their respective student-level aggregate variables were all added to the models independently in order to test the third aim. Given the number of tests conducted for exploring the interactions, we also applied a Bonferroni correction, which set a more conservative *p*-value of 0.003.

Level-1 continuous variables were group mean centered. For our models, group mean centering was more appropriate than grand mean centering when "the primary substantive interest involves a Level 1 (i.e. person level) predictor" as it yields a more accurate estimate of

the slope variance (Enders & Tofighi, 2007, p. 128). All Level-2 variables were grand mean centered.

In order to determine if the interactions supported the buffering hypothesis, significant interactions were further probed through graphing of the models as well as through examination of the simple slopes. Consistent with the analytical method recommended by Aiken and West (1991) and Preacher, Curran, and Bauer (2006), simple slope analyses were conducted to test the significant relationship between cybervictimization and the outcome of interest as a function of different levels of student connectedness. The simple slopes were plotted and the graphic display was used to examine the nature and directionality of the significant interactions.

Missing Data

Preliminary analysis of the data found little missing data (<5% of each of the included variables and no missing data at the school level), therefore, our analyses assumed that data were missing at random; we assumed that the reason for missingness was not related to the missing value, but was deemed random after controlling for the observed variables (Arbuckle, 2012). The HLM software uses list-wise deletion at the time of analysis (Raudenbush & Bryk, 2002).

Results

Intraclass Correlation Coefficients

Before building our multi-level models, we computed the intraclass correlation coefficients (ICCs). The fully unconditional HLM model (without covariates) provided information about the amount of variance in our outcomes of interest (cybervictimization; psychological and academic outcomes) that was accounted for by schools. The ICCs derived from the fully unconditional models delineated the certain percentage of the variability in cybervictimization and other adjustment outcomes of interest that can be accounted for by

school, thereby distinguishing if students tend to experience cybervictimization and other adjustment outcomes more similarly within schools or across schools. The ICCs were calculated as follows: cybervictimization = .017; internalizing = .007; sleep = .008; stress = .013; substance = .015; letter grades = .074; truancy = .022. These relatively low ICCs indicated that 1.7% of the variance in students' cybervictimization and 0.7 to 7.4% of the variance in the adjustment outcomes of interest is potentially associated with characteristics of the school attended.

Aim 1: Multilevel Analyses for Risk Factors of Cybervictimization

To address our hypotheses, we used a student-level cybervictimization variable as the primary dichotomous outcome. Consistent with HLM7 modeling practices (Garson, 2013; Raudenbush & Bryk, 2002), a Bernoulli model was used to appropriately account for the dichotomous outcome (1 = cybervictimized, 0 = not cybervictimized). The following student-level demographic variables were entered at Level 1: gender, grade level, and race/ethnicity. To control for other types of bullying and victimization, experiences with traditional victimization in the last 30 days as well as experiences within the last three months as a perpetrator of cyberbullying were also added to the model at Level 1. The following school-level characteristics were all grand mean centered at Level 2: urbanicity of the school, percentage of minority students, and school size.

The coefficients reported in Table 2 indicated that gender, grade level, and race were all significant student-level predictors of cybervictimization, such that males were at a decreased risk of being cybervictimized (OR = .50). Non-Caucasian ethnicity status was also associated with reduced risk in cybervictimization (OR = .82). Upperclassman status (11^{th} or 12^{th} grade) was associated with an increased risk in cybervictimization (OR = 1.20). Experiencing traditional victimization and being a perpetrator of cyberbullying were also associated with increased risk of

cybervictimization ($OR_{traditional}$ = 7.26; $OR_{cyberperpetrator}$ = 8.29). This indicates that youth who reported being a victim of traditional bullying were 7.26 times more likely to be a victim of cyberbullying as well. Likewise, youth who reported being perpetrators of cyberbullying were 8.29 times more likely to be concurrent victims of cyberbullying. School size, and urbanicity were not significantly associated with cybervictimization, however, the percentage of racial/ethnic minority students in a school was significantly associated with a decreased risk in cybervictimization (OR = .99). Assuming the effect was linear, a 10% increase in the percentage of minority students rate would result in a 10% increase in the odds of being cybervictimized.

Aim 2: Multilevel Analysis for Adjustment Problems

To examine how being a victim of cyberbullying may increase the risk of development of a range of adjustment problems, we created separate models for our student-level continuous outcomes of interest (internalizing problems, stress problems, sleep problems). Additionally, Bernoulli models were created for the dichotomous outcomes of interest (truancy, poor grades) and a Poisson model was used for the count variable of substance use. These modeling decisions were made due to the type of data distribution of the outcome variables and are consistent with HLM7 modeling practices (Garson, 2013). Due to the distribution and zero-inflation of the substance use count variable, a Poisson model was appropriate when examining substance use as an outcome of interest (Garson, 2013; Raudenbush & Bryk, 2002). Cybervictims' risk of developing a range of psychological, academic, and social adjustment problems were assessed while controlling for their age, gender, and race, as well as controlling for their experience as a perpetrator of cyberbullying and as a victim of traditional forms of bullying. School-level characteristics were also added to the model to control for the nested nature of the data (students within schools). White, female, underclass (9^{th} and 10^{th} grade) students who were uninvolved in

cyberbullying as a victim or a perpetrator and did not report traditional forms of victimization served as the reference group. The association between cybervictimization status and the various problems are delineated below and summarized in Tables 3 and 4.

Psychological adjustment. Parameter estimates indicated that compared to their respective reference categories, victims of cyberbullying reported significantly higher levels of internalizing problems ($\gamma = .328$, $p < 0.001$), sleep problems ($\gamma = .209$, $p < 0.001$), and stress problems ($\gamma = .315$, $p < 0.001$). Cybervictims also reported significantly higher levels of substance use (Event Ratio = 1.43, $p < 0.001$) than non-cybervictims. See Table 4 for additional details.

Academic adjustment. Results indicated that cybervictimization was also significantly associated with truancy (OR = 1.515, $p < .001$), such that cybervictims are at 51.5% increased risk of skipping two or more days of classes in a 30-day period. Cybervictimization was also a significant student-level predictor, such that cybervictims' odds of receiving poor grades (Cs or worse) increased by 17.5% (OR = 1.175, $p < 0.05$). See Table 3 for additional details.

Aim 3: Multilevel Analyses Involving Student Connectedness

Student connectedness was significantly inversely associated with all negative outcomes. Specifically, students who reported higher levels of student connectedness reported lower levels of internalizing problems ($\gamma = -0.189$, $p < .001$), stress problems ($\gamma = -0.235$, $p < .001$), sleep problems ($\gamma = -0.192$, $p < .001$), and substance use (Event Ratio = .773, $p < .001$). Students who reported higher levels of student connectedness also reported lower levels of academic problems, such as truancy (OR = .717, $p < .001$) and poor grades ($\gamma = 0.736$, $p < .001$). See Tables 5-7 for additional details.

With regard to the school-level aggregate predictor of student connectedness, it was a significant predictor of decreased substance use (Event Ratio = 0.639, p <0.01) and decreased truancy (OR = 0.453, p <.001), and good grades (OR = 0.085, p <.001). That is, an aggregate school-level score of student connectedness was associated with lower substance use, lower rates of truancy, and better grades. Student connectedness was not significantly associated with any of the other psychological adjustment problems (internalizing, sleep, or stress problems).

Student connectedness interaction models. A within-level interaction of cybervictimization and student connectedness was added to the model to explore the potential buffering role of student connectedness on negative outcomes for victims of cyberbullying. Results indicated significant interactions for two of the six models tested. Specifically, there was a significant interaction between cybervictimization and student connectedness for substance use (Event Ratio = 1.100, p <.001), internalizing problems (γ = -0.080, p <.001). Follow-up simple slope analyses revealed that cybervictims who reported higher levels of student connectedness had significantly lower levels substance use (simple slope = -0.188, p < .001) and internalizing problems (simple slope = -0.257, p < .001) than cybervictimized youth who reported lower levels of student connectedness. Figure 1 provides graphical representations of these interactions.

Discussion

The present study aimed to identify individual- and school-level risk factors for cybervictimization, identify adjustment problems associated with cybervictimization, as well as identify potential contextual buffers that may attenuate those problematic outcomes. This study extends prior research on risk factors, outcomes, and contextual buffers related to cybervictimization. Data from a large, diverse, high school-age sample provided sufficient power to explore a wide range of potential risk factors and problematic outcomes. The ICCs observed in

this study were relatively small. Specifically, the cybervictimization ICC was .017, which is consistent with prior research on bullying behaviors, which has found that between 0.6-2% of the variance in victimization among elementary and middle school students was associated with the clustering of students within schools (Bradshaw et al., 2009). These low ICCs suggest that there was little between group variance, however, the variance that did exist illustrated that students' response should not be assumed to be independent; therefore, analyses should adjust for the clustering of participants (Luke, 2004: Raudenbush & Bryk, 2002).

Aim 1: Multilevel Analyses for Risk Factors of Cybervictimization

Consistent with previous findings (Kowalski et al., 2014), the multilevel analyses found that being a victim of traditional bullying and being a perpetrator of cyberbullying were also significant risk factors for cybervictimization. Additionally being female, being an underclass student (9^{th} or 10^{th} grade), and being Caucasian/White were all individual risk factors for cybervictimization. These findings highlight the individual risk factors associated with increased risk for cybervictimization. Contrary to expectations and social disorganization theory, only one contextual indicator of disorder was associated with an increased risk of being cybervictimized. The racial/ethnic heterogeneity of the school-level student body was associated with an increased risk of cybervictimization; however, the neither urbanicity nor the size of a school was significantly associated with cybervictimization. Given that studies attempting to understand the complex relationship between racial differences and bullying prevalence have yield mixed results, additional research, perhaps of the qualitative nature, needs to be conducted to better capture the nuances of the bullying experience for minority students (Goldweber et al., 2013).

Aim 2: Multilevel Analysis for Adjustment Problems

We found that, compared to non-victimized youth, those who were cybervictimized had more problematic outcomes across all of the outcomes included in the study. As expected, cybervictims were at an increased risk for internalizing problems, sleep problems, and stress problems. This finding further substantiates prior evidence that cybervictims report high levels of depressive symptoms, even after controlling for their involvement in traditional forms of bullying (Perren et al., 2010).

Consistent with the self-medication model (Khantzian, 1997), cybervictimization was associated with an increased risk of substance use. Although these results are cross-sectional, it is possible that victimized youth may use substances to cope with the distress associated with victimization. Future research could explore the specific types of substances use (e.g., cigarettes versus alcohol) associated with cybervictimization and could also examine other coping mechanisms associated with cybervictimization. Consistent with our hypothesis, cybervictims were at an increased risk of skipping school. We had not predicted that cybervictims would be at an increased risk of receiving poor grades; however, our results indicated that cybervictims were 37% more likely to receive poor grades (i.e., C or worse). Parents, teachers, and other school personnel may benefit from inquiring about students' experience with cybervictimization when discussing issues related to poor academic performance.

Aim 3: Multilevel Analyses Involving Contextual Buffers

Our findings were consistent with the general aggression model, which purports that situational factors, such as high levels of student connectedness, may play a protective role for victims of cyberbullying. Specifically, student connectedness was negatively associated with all six of the outcomes of interest, suggesting that students' connection to peers was associated with mental and behavioral health. These findings support the use of the GAM and social-ecological

models to understand and interpret cyberbullying, specifically how student connectedness serves as an important contextual factor for victims of cyberbullying. The simple slopes derived from the interaction between student connectedness and cybervictimization were significant for two outcomes: internalizing problems and substance use. Student connectedness significantly attenuated the risk for substance use and internalizing problems among cybervictims. For example, the results indicate that a student who is cybervictimized may have a lower risk of depressive and anxious symptoms if the student experiences high levels of student connectedness. That is, students' feelings of belongingness among school peers may play a role in attenuating their risk of internalizing problems. Likewise, the results indicate that cybervictims may be at a higher risk of substance use if they do not feel connected to their peers. These findings partially supported our hypothesis, as student connectedness only attenuated adjustment for two of the six outcomes of interest, internalizing problems and substance use. Perhaps the attenuation was limited to internalizing problems because connectedness reduces a sense of isolation among victimized youth, thereby they were less likely to endorse symptoms of depression or anxiety. Additionally, in considering the self-medication model, (Khantzian, 1997), it may be that students are able to use their peer connections as a way of coping, therefore, they do not need to resort to the use of substances. More research is needed to further understand the relationship between student connectedness and the attenuated substance use and internalizing problems for victims of cyberbullying. Although previous studies have reported that perceived support from peers was associated with a decreased likelihood of cybervictimization (Williams & Guerra, 2007), the current study is one of the first to look at how student connectedness may attenuate negative mental and behavioral health outcomes. Future research

could consider the potential buffering role of other contextual factors, such as school safety or parental involvement.

Limitations

Although the current sample was large and diverse, it is unclear the extent to which these findings will generalize to other samples, such as elementary or middle schoolers; research within elementary and middle school-aged youth could further inform our understanding of cybervictimization among younger youth. Nevertheless, our significant finding is consistent with previous research that suggests that the being in the transitional year to high school (i.e., grade 9) is a risk factor for cybervictimization (Cappadocia et al., 2013). The current study is also cross-sectional, therefore, no causal relationships can be inferred. For example, it is possible that being depressed, receiving poor grades, or endorsing retaliatory beliefs may place a student at risk of being cybervictimized. Longitudinal research is needed to better understand the directionality of the relationships described in the current study. Issues of multicollinearity also precluded us from including other contextual factors in the multi-level models. A proxy for school-level socio-economic status (i.e., percentage of students receiving free or reduced meals), was not included in the model, due to its high correlation with other variables of interest (e.g., urbanicity). Given that higher socio-economic status was found to increase the risk of cyber perpetration and cybervictimization (Wang et al., 2009), future research should further explore this potential contextual factor. Consistent with the GAM and social-ecological models, we explored some potential contextual risk and protective factors, however, closer consideration of these factors as well as situational factors may provide further insight into the extent to which these frameworks are relevant to cyberbullying specifically, as compared to other forms of aggressive behavior and

peer victimization. Additionally, future studies would benefit from directly examining other aspects of the GAM, such as internal states or appraisals.

Conclusions and Implications

Taken together, the results of the present study suggest that cybervictimization is associated with a host of negative outcomes, even after controlling for demographic factors, contextual factors, and other bullying involvement. The study extends previous research by assessing cybervictimization among a large and diverse sample of youth. Following the Kowalski and colleagues (2014) meta-analysis of cyberbullying research and integration of the general aggression model, future research directions were delineated that included the rigorous testing of additional person and situation factors that may contribute to cybervictimization and related distal outcomes. The current study aimed to fill some important gaps in the literature by assessing the relationship between a wide range of individual- and school-level factors and the risk of cybervictimization and related negative outcomes.

The results of the current study also suggest that there are important factors and outcomes to consider when monitoring the cyberbullying climate among youth. In particular, these findings may inform the design of bullying prevention programs, as the results offer specific insight into the experiences and risk factors of cybervictims. Although the vast majority of bullying prevention programs are designed for elementary and middle school students, very few have been planned, implemented, and shown to be effective at the high school level (Ttofi & Farrington, 2011); moreover, even fewer studies have examined the impact of prevention programs on cyberbullying specifically. The findings of the current study highlight the significance of school connectedness as a possible target for cyberbullying prevention programming, as these findings suggest it may buffer the effects of cybervictimization on

internalizing problems as well as substance use. Taken together, these findings suggest that the GAM and social-ecological frameworks may inform further investigation into the various personal and contextual factors that could influence the trajectory of cybervictims' adjustment problems.

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Table 1

Individual and School-Level Demographic Characteristics of the Sample

Characteristics of participating schools (*n* = 58 schools)	Mean (SD)	Percentage
Enrollment	1268.5 (466.8)	
Minority students (%)	45.9 (25.1)	
Urbanicity		
City		6.9
Suburb		58.6
Town		6.9
Rural		27.6
Characteristics of participating students (*n*= 28,583)		Percentage[a]
Gender		
Males		48.8
Females		48.3
Ethnicity		
White		48.7
Black/African American		30.7
Hispanic/Latino		4.5
Asian/Pacific Islander		4.3
Native American/American Indian		1.5
Native Hawaiian/Other Pacific Islander		0.6
Other		6.7
Grade		
9th		26.8
10th		24.3
11th		23.3
12th		22.4

[a] Does not total to 100 due to missingness.

Note. School-level demographic data were obtained from the Maryland State Department of Education.

Table 2

Multilevel Analysis Results for Level 1 (Student) and Level 2 (School) Predictors of Being Cybervictimized

Variables	Coefficient	SE	*t*-ratio	Odds Ratio
Intercept	-2.807	0.053	-52.577	0.060**
Level 2. School				
Minority %	-0.034	0.001	-2.557	0.996*
Enrollment /100†	-0.001	0.004	-0.292	0.999
Urbanicity	0.011	0.028	0.407	1.012
Level 1. Student				
Upperclassman	0.184	0.051	3.631	1.202**
Male	-0.687	0.040	-17.000	0.503**
Non-Caucasian	-0.194	0.057	-3.429	0.823**
Traditional Victim	1.982	0.036	55.815	7.261**
Cyber Perpetrator	2.115	0.057	37.323	8.289**

* $p < .05$ ** $p < .001$. Coefficient derived from the population-average model with robust standard errors. Variables were dichotomized as follows. Cybervictimization (1 = cybervictimized, 0 = not cybervictimized). Gender (1 = male, 0 = female). Grade level (1 = $11^{th}/12^{th}$ grades, 0 = $9^{th}/10^{th}$ grades). Race/Ethnicity (0 = White/Caucasian, 1 = Non-White/Caucasian). Traditionally victimized (0 = not traditionally victimized, 1 = traditionally victimized). Cyber perpetration (0 = no perpetration of cyberbullying, 1 = cyberbullied another student). The school level variables were all grand mean centered. † indicates the school enrollment variable was divided by 100 to facilitate interpretation of the coefficient. SE = Standard Error.

Table 3

Individual and School Level Indicators of Academic Adjustment

	Academic Adjustment			
	Truancy		**Poor Grades**	
Predictor Variables	Coefficient	Odds Ratio	Coefficient	Odds Ratio
Reference Intercept	-1.388	0.250**	-1.531	0.216**
Level 2. School				
Minority %	0.002	1.002	0.008	1.001*
Enrollment /100†	0.019	1.019*	-0.004	0.996
Urbanicity	0.157	1.170**	-0.028	0.972
Level 1. Student				
Upperclassman	0.597	1.817**	-0.260	0.771**
Male	-.033	0.968	0.666	1.947**
Non-Caucasian	-.046	0.955	0.494	1.640**
Traditional Victim	0.289	1.335**	0.115	1.122*
Cyber Victim	0.416	1.515**	0.162	1.175*
Cyber Perpetrator	0.834	2.302**	0.318	1.374**

† indicates the school enrollment variable was divided by 100 to facilitate interpretation of the coefficient.
* $p < .05$ ** $p < .001$

Table 4

Individual and School Level Indicators of Psychological Adjustment

Psychological Adjustment								
	Internalizing Problems		**Sleep Problems**		**Stress Problems**		**Substance Use**	
Predictor Variables	Coefficient	*t*-ratio	Coefficient	*t*-ratio	Beta	*t*-ratio	Coefficient	Event Ratio
Reference Intercept	1.755	134.476**	2.534	177.294**	2.346	124.347**	-0.750	0.472**
Level 2. School								
Minority %	-0.001	-0.314	-0.001	-0.822	-0.001	-0.488	-0.003	0.997**
Enrollment /100†	0.002	1.054	0.007	2.971*	0.008	2.868*	0.001	1.001
Urbanicity	-0.029	-3.354**	-0.024	-1.676	-0.037	-2.025**	0.022	1.023
Level 1. Student								
Upperclassman	0.029	3.737**	0.057	5.055**	0.137	8.440**	0.355	1.426**
Male	-0.098	-9.021**	-0.170	-14.481**	-0.302	-20.110**	0.214	1.239**
Non-Caucasian	-0.036	-2.924*	-0.106	-7.196**	-0.132	-8.678**	-0.059	0.942
Traditional Victim	0.541	39.759**	0.286	18.541**	0.505	39.822*	0.246	1.279**
Cyber Victim	0.328	20.377**	0.209	12.672**	0.315	15.008*	0.364	1.439**
Cyber Perpetrator	0.155	9.570**	0.152	8.679**	0.150	9.199**	0.679	1.972**

† indicates the school enrollment variable was divided by 100 to facilitate interpretation of the coefficient.
* $p < .05$ ** $p < .001$

Table 5

Multilevel Analysis Results for Level 1 (student) and Level 2 (school) Predictors of Stress Problems and Internalizing Problems

	Stress Problems				Internalizing Problems			
	Model 1		Model 2		Model 1		Model 2	
Predictor Variables	Coefficient	*t*-ratio	Coefficient	*t*-ratio	Coefficient	*t*-ratio	Coefficient	*t*-ratio
Reference Intercept	2.365	128.915**	2.365	128.964**	1.770	134.333**	1.770	134.301**
Level 2. School								
Minority	0.001	0.684	0.001	0.686	0.001	0.095	0.001	0.177
Enrollment/100†	0.008	3.437**	0.008	3.439**	0.002	1.023	0.002	1.030
Urbanicity	-0.037	-2.295*	-0.037	-2.295*	-0.029	-3.440**	-0.029	-3.440**
Student Connectedness	0.203	1.527	0.203	1.526	0.032	0.602	0.031	0.593
Level 1. Student								
Upperclassman	0.125	7.608**	0.125	7.606**	0.018	2.525*	0.018	2.491*
Male	-0.265	-18.926**	-0.265	-18.980**	-0.068	-6.751**	-0.069	-6.937**
Non-Caucasian	-0.148	-10.336**	-0.148	-10.325**	-0.049	-4.381**	-0.049	-4.366**
Traditional Victim	0.437	35.018**	0.437	34.791**	0.486	34.954**	0.484	34.437**
Cyber Victim	0.273	13.452**	0.269	13.179**	0.295	18.860**	0.274	17.268**
Cyber Perpetrator	0.121	7.285**	0.121	7.271**	0.132	8.176**	0.131	8.094**
Student Connectedness	-.235	-18.104**	-0.234	-17.836**	-0.189	-15.164**	-0.177	-14.678**
CV+ X Student Connectedness	------	-------	-0.013	-0.581	------	------	0.080	-3.280**

† indicates the school enrollment variable was divided by 100 to facilitate interpretation of the coefficient.
* $p < .05$ ** $p < .001$
+ CV = Cyber Victim

Table 6

Multilevel Analysis Results for Level 1 (Student) and Level 2 (School) Predictors of Substance Use and Sleep Problems

	Substance Use				Sleep Problems			
	Model 1		Model 2		Model 1		Model 2	
Predictor Variables	Coefficient	Event Ratio	Coefficient	Event Ratio	Coefficient	*t*-ratio	Coefficient	*t*-ratio
Reference Intercept	-0.740	0.477**	-0.744	0.475**	2.549	176.653**	2.549	176.905**
Level 2. School								
Minority	-0.004	0.996**	-0.004	0.996**	0.001	0.028	0.001	0.029
Enrollment/100†	0.001	1.001	0.001	1.001	0.007	3.162*	0.007	3.161*
Urbanicity	0.022	1.022	0.022	1.023	-0.024	-1.812	-0.024	-1.812
Student Connectedness	-0.448	0.639*	-0.445	0.641*	0.094	0.839	0.094	0.839
Level 1. Student								
Upperclassman	0.342	1.407**	0.342	1.407**	0.048	3.994**	0.048	3.999**
Male	0.244	1.276**	0.247	1.280**	-0.139	-12.505**	-0.139	-12.564**
Non-Caucasian	-0.079	0.924*	-0.079	0.924*	-0.119	-8.517**	-0.119	-8.522**
Traditional Victim	0.166	1.181**	0.168	1.182**	0.231	14.799**	0.231	14.824**
Cyber Victim	0.320	1.377**	0.354	1.426**	0.175	10.850**	0.173	10.878**
Cyber Perpetrator	0.640	1.896**	0.640	1.900**	0.128	6.971**	0.128	6.960**
Student Connectedness	-0.257	0.773**	-0.283	0.753**	-0.192	16.120**	-0.191	-15.189**
CV+ X Student Connectedness	-------	------**	0.095	1.100**	------	------	-0.005	-0.209

† indicates the school enrollment variable was divided by 100 to facilitate interpretation of the coefficient.
* $p < .05$ ** $p < .001$
+ CV = Cyber Victim

Table 7
Multilevel Analysis Results for Level 1 (Student) and Level 2 (School) Predictors of Truancy and Poor Grades

	Truancy				Poor Grades			
	Model 1		Model 2		Model 1		Model 2	
Predictor Variables	Coefficient	Odds Ratio	Coefficient	Odds Ratio	Coefficient	Odds Ratio	Coefficient	Odds Ratio
Reference Intercept	-1.378	0.252**	-1.379	0.251**	-1.564	0.209**	-1.566	0.201**
Level 2. School								
Minority	-0.001	0.999	-0.001	0.999	0.002	1.002	0.001	1.001
Enrollment/100†	0.019	1.019*	0.019	1.019*	-0.006	0.994	-0.006	0.994
Urbanicity	0.158	1.171**	0.158	1.171**	-0.024	0.977	-0.023	0.977
Student Connectedness	-0.792	0.453*	-0.792	0.453*	-2.459	0.085**	-2.459	0.085**
Level 1. Student								
Upperclassman	0.582	1.790**	0.582	1.790**	-0.282	0.754**	-0.282	0.755**
Male	0.012	1.012	0.013	1.013	0.741	2.100**	0.743	2.103**
Non-Caucasian	-0.063	0.938	-0.064	0.938	0.484	1.623**	0.484	1.623**
Traditional Victim	0.193	1.213**	0.194	1.214**	0.041	1.041	0.043	1.044
Cyber Victim	0.371	1.449**	0.383	1.467**	0.114	1.121*	0.150	1.162*
Cyber Perpetrator	0.790	2.204**	0.790	2.204**	0.274	1.315**	0.274	1.316**
Student Connectedness	-0.333	0.717**	-0.341	0.712**	-0.307	0.736**	-0.326	0.722**
CV+ X Student Connectedness	-------	-------	0.043	1.044	-------	------	0.119	1.126

† indicates the school enrollment variable was divided by 100 to facilitate interpretation of the coefficient.
* $p < .05$ ** $p < .001$,
+CV = Cyber Victim

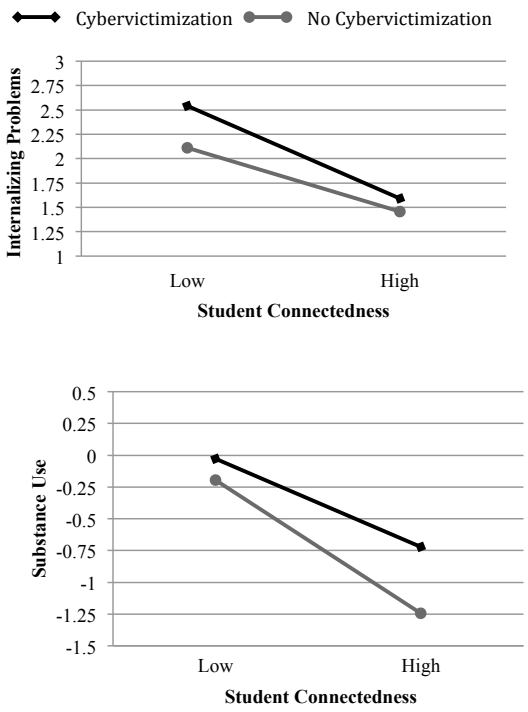

Figure 1. The interaction of cybervictimization and student connectedness for two significant outcomes of interest.

APPENDIX

HLM 7.0 Equation for Aim 1

$\eta_{ij} = \gamma_{00} + \gamma_{01}$*(Minority) + γ_{02}*(Enrollment)+ γ_{03}*(Urbanicity)
+γ_{10}*(Grade Level)
+ γ_{20}* (Gender)
+ γ_{30}* (Race)
+ γ_{40}* (Traditional Victimization)
+ γ_{50}* (Cyber Perpetration)
+ μ_{oj}