EXAMINING FACTORS ASSOCIATED WITH EXPERIENCING BULLYING AMONG ADOLESCENT SUBGROUPS

by

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ABSTRACT

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Under the Supervision of Professor Dr. Julia Snethen

Problem/Significance: The prevalence of bullying remains consistently elevated among students in Grade 9 through Grade 12. A closer look at factors with relationships among high school population subsets experiencing bullying brings new insight to this complex issue.

Background: The bullying phenomenon has been associated with behaviors of violence, self-harm, and experiencing bullying.

Purpose: The purpose of this study was to examine relationships over time between adolescent characteristics, experiencing violence, risk for self-harm, and the prevalence of experiencing bullying.

Method: De-identified data from the Centers for Disease Control YRBS 2011-2017 were compared year-to-year for comparisons across time. Adolescent characteristics were measured by grade, race and ethnicity, and gender. Violence was measured as feeling unsafe, threatened, fighting, carrying weapons, and carrying a gun. Risk for self-harm was measured as sadness and considered, planned, and number of suicidal attempts. Bullying was defined as an aggressive peer behavior comprised of an imbalance of power, repetition, and intent to harm the victim.

Results: Ninth grade students were more likely to experience violence (343.39 $p < 001$), risk for self-harm behaviors (X^2 35.05 $p < .001$), and bullying (X^2 92.25 $p < .001$). White students (80%) were more likely to experience violence behaviors compared to students of all other races and

ethnicities (20%) across the years ($X^2$96.46, $p < .001$). Female students (60%) were more likely to experience bullying at least one way (X^2 891.74, $p < .001$). High-school students who reported risk for self-harm behaviors were 4.64 times more likely to have experienced bullying electronically.

Conclusions: Students in ninth grade were more likely than other grades to experience violence, self-harm, and bullying at school or electronically. Violent behaviors were more common among male students who experienced bullying. Self-harm behaviors were more common among female students who experienced bullying. Bullying prevention efforts should target all students.

Key words: *student characteristics, violence, self-harm, bullying*

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Dedication

This dissertation is dedicated to Blake, Gretchen, Lauren, Aydin, Cameron, and all youths, with the hope they will never experience bullying.

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ACKNOWLEDGEMENTS

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Most of all, I am thankful to God, who cares for all youths. Psalm 91: 11-12.

Chapter I: Introduction

Background

Bullying among the school-age population is a serious form of youth violence and urgent public health concern (Vessey, Difazio, & Strout, 2013). High school students across the United States experience victimization by bullying at consistently alarming rates. In 2017, 20% of students in Grade 9 through Grade 12 reported experiencing bullying on the Youth Risk Behavior Survey (YRBS; Kann et al., 2018). Trend analysis of YRBS data from 2009 to 2017 did not identify a significant linear trend in overall experiences of bullying (Kann et al., 2018). Key criteria of bullying are an imbalance of power between the victim and perpetrator, intent to harm, and repetition (Olweus, 1994). The bullying phenomenon has been associated with experiences of violence, including fighting, carrying weapons, and concern for safety (Jones, Waite, & Clements, 2012; Nansel, Overpeck, Haynie, Ruan, & Scheldt, 2003; Nansel et al., 2001). Psychosomatic complaints, depression, and suicidal ideation have also been associated with experiencing bullying (Espelage & Holt, 2013; Reijntjes, Kamphuis, Prinzie, & Telch, 2010; Turner, Exum, Brame, & Holt, 2013). Experiencing bullying during school years predicted negative health and social outcomes in adulthood (Wolke, Copeland, Angold, & Costello, 2013). Furthermore, exposure to violence and childhood adversity has been associated with risk factors for leading causes of death in adulthood (Felitti et al., 1998).

Given these negative associations, bullying prevention is a national health goal. Healthy People 2020 targeted a 10% reduction in bullying on school property among adolescents by 2020 (U.S. Department of Health and Human Services [USDHS], 2018). Several antibullying programs have been tested (Ttofi & Farrington, 2011). Despite these attempts, reduction goals have not been met (Kann et al., 2018).

Problem Statement

Antibullying interventions have been tried, yet the prevalence of bullying remains consistently elevated among students in Grade 9 through Grade 12. Relationships exist between individual characteristics, risk for self-harm, violent behaviors, and bullying victimization (Barboza et al., 2009; Espelage & Holt, 2013; Nansel et al., 2001; Turner et al., 2013). The interplay of those factors in relationship to bullying prevalence among population subsets in Grade 9 through Grade 12 across time is unknown. A closer look at factors with relationships to experiencing bullying may bring new insight to this complex issue.

Purpose Statement

To examine relationships over time between adolescent characteristics, experiencing violence, risk for self-harm, and the prevalence of experiencing bullying. The study addressed the following research questions:

RQ1: What is the relationship between adolescent characteristics and experiences of violence?

RQ2: What is the relationship between adolescent characteristics and the prevalence of experiencing bullying?

RQ3: What is the relationship between adolescent violence and the prevalence of experiencing bullying?

RQ4: What is the relationship between adolescent risk for self-harm and the demonstration of violence?

RQ5: What is the relationship between adolescent risk for self-harm and the prevalence of experiencing bullying?

Assumptions

Statistical comparison was made between groups of bullied students in Grade 9 through Grade 12 from year-to-year, 2011-2017. Potential relationships between adolescent characteristics, risk for self-harm and violence, and bullying prevalence were assessed. Assumptions related to this study included:

1. Students report race and ethnicity accurately and honestly.
2. Experiences of ungraded students are captured by gender or race and ethnicity.
3. Students report experiences of violence, self-harm, and bullying honestly.

Significance: Health Risk Behaviors and Bullying

Adolescent Characteristics

Students are bullied because they are perceived by peers to differ from the peer group behavior, appearance, or other characteristics (Olweus, 1978; Vessey et al., 2013). Bullying may be predicted by individual characteristics such as gender, age, grade, and race (Barboza et al., 2009). Researchers found 10-year-old to16-year-old bullies and victims were more likely to be males (Barboza et al., 2009; Nansel et al., 2001; Olweus, 1978; Salmivalli, Lagepertz, Bjorkqvist, Osterman, & Kaukaiainen, 1996; Solberg, Olweus, & Endresen, 2007). Although the odds of perpetrating bullying increases with age, the frequency of experiencing bullying decreases (Barboza et al., 2009; Kann et al., 2018). Male victims are more likely to bully females than to bully other males (Solberg et al., 2007). From 2009 to 2017, significantly more White females experienced bullying on school property compared to males and other races in Grade 9 through Grade 12 (Centers for Disease Control and Prevention [CDC], 2018c; Kann et al., 2018).

Risk for Self-Harm

One meta-analysis revealed a significant association between experiencing bullying and internalizing behaviors characterized by psychosomatic complaints, loneliness, anxiety, and depression (Reijntjes et al., 2010). Students experiencing bullying internalized behaviors, turning withdrawal, anxiousness, and depressive responses inward (Cook, Williams, Guerra, Kim & Sadek, 2010). The strength of the relationship between internalizing behaviors and bullying victimization increased during adolescence (Cook et al., 2010). Both genders were found to have an increased risk for depression with experiences of bullying (Turner et al., 2013). Experiences of cyberbullying and verbal bullying were associated with higher levels of depression in females. Victimized males and females were at higher risk for suicide than nonbullied peers (Turner et al., 2013). Controlling for depression, female victims, bully-victims, verbal bullies, and physically aggressive bullies reported more suicidal behaviors than their male counterparts (Espelage & Holt, 2013). Data from 2009 through 2017 show an increase in persistent feelings of sadness, suicidal ideation, and suicide attempt in ninth through twelfth graders (CDC, 2018c; Kann et al., 2018). From 2009 through 2017, feelings of sadness or hopelessness and reports of seriously attempting suicide increased (CDC, 2018c; Kann et al., 2018). Attempted suicides showed no statistical change from 2015 to 2017 (Kann et al., 2018).

Violence

In the context of the school setting, incidences of fighting, carrying weapons, and experiences of bullying are measures of safety (Bradshaw, Waasdorp, Debnam, & Johnson, 2014). Nansel et al. (2001) found males described experiences of bullying by physical means of being hit, kicked, or slapped. Males and male bully-victims bully females (Olweus, 1994; Solberg et al., 2007). Females described experienced bullying as the relational type by way of

rumors or sexual comments (Nansel et al., 2001). Fighting has been associated with the bully, the victim, or the bully-victim role (Nansel et al., 2001). Students experiencing bullying and feeling unsafe at school said it was not wrong to take a gun to school (Glew, Fan, Katon, & Rivera, 2008). Odds of bullying others were 46% higher among students who carried a weapon to school (Barboza et al., 2009). Bully-victims were 15.9 times more likely to carry a weapon to school (Nansel et al., 2003). From 2007 to 2017, the frequency of being threatened or injured at school with a weapon decreased overall in Grade 9 through Grade 12 (CDC, 2018c). However in 2017, females and minorities were missing school more often for fear of safety (CDC, 2018c; Kann et al., 2018).

System- and School-Level Bullying Prevention Programs

Many system- and school-level interventions to prevent bullying have been tested. Broad-scale, public education is available by way of Stopbullying.gov (n.d.) through social media outlets Facebook, Twitter, Instagram, YouTube, and Pinterest. National television stations run antibullying commercials (AdCouncil, 2019; PassItOn.com, n.d.). However, national law does not directly address bullying. Unless bullying overlaps with discriminatory harassment or civil rights laws, there are no federal laws in place against it (USDHS, 2017a). Individual states have laws or policies specific to their population that guide schools in prevention of bullying (USDHS, 2017a).

Tested Bullying Prevention Intervention

Because of the negative effect on school climate and academic outcomes, researchers do not recommend zero tolerance policies (Limber, 2014; USDHS, 2017b). Peer mediation purports prosocial behaviors, but sends the wrong message in bullying situations by working to equalize responsibility (Limber, 2013; USDHS, 2017b). However, peer bystander education showed

positive changes in attitudes of empathy toward the victim and bystander intervention behavior (Polanin, Espelage, & Pigott, 2012). Results from two meta-analyses found comprehensive, whole-school approaches were the most effective antibullying strategies (Ttofi & Farrington, 2011). The U.S. Department of Education (USDOE) recommends the multi-tiered Positive Behavioral Interventions Supports (PBIS) framework for K-12 bullying prevention (Bradshaw, Pas, Debnam, & Johnson, 2015). Frequently used with PBIS, the Olweus Bullying Prevention Program (OBPP) is a comprehensive bullying prevention program (Bradshaw et al., 2015). The OBPP typically achieves 30% to 50% reduction in bullying among students in Grade 4 through Grade 7 in Norway after eight months of intervention (Limber, Olweus, Wang, Masiello, & Breivik, 2018). A reduction in experiencing bullying in Grade 3 through Grade 11 in the United States was found two years after OBPP implementation. Effect sizes were weaker and took longer to achieve in Grade 9 through Grade 11. There were no significant program effects among eleventh graders (Limber et al., 2018).

Background

Historical Highlights

In years past, childhood bullying was viewed in scientific literature as a normal part of childhood (National Academies of Sciences, Engineering, and Medicine [NAS], 2016). A keen interest in peer aggression in schools led to the ground-breaking Bergren study and subsequent OBPP (Olweus, 1994). Olweus (1978) defined bullying using the victim's perspective and role in the group phenomenon and social context. The definition provided by Olweus is the most widely accepted definition of school-age bullying (Gladden, Vivolo-Kantor, Hamburger, & Lumpkin, 2014). Bullying behaviors encompass characteristics that are especially harmful to youth.

Prevention programs that work for other forms of youth aggression are unsuccessful in preventing bullying behaviors (Gladden et al., 2014).

Relevant Research: Forms and Types of Bullying

Bullying may occur in multiple contexts related to school, school events, or on the internet (Gladden et al., 2014). Forms of bullying are conceptualized as direct or indirect behaviors toward the victim (Olweus, 1994; Olweus, 2013). Direct forms of bullying are aggressive behaviors that occur in the presence of the victim (Gladden et al., 2014). Types of direct bullying use physical force against the victim and harmful verbal or written communication targeting the victim (Gladden et al., 2014; Olweus, 2013). Relational behaviors are a type of indirect bullying designed to isolate the victim or harm the victim's reputation (Gladden et al., 2014). Indirect forms are not carried out directly in the presence of the victim. Examples of indirect bullying may be derogatory comments written in public places, spreading rumors, and social isolation (Gladden et al., 2014; Olweus, 1994). Researchers view cyberbullying as an indirect type of bullying (Gladden et al., 2014; Olweus & Limber, 2018). Cyberbullying is recognized as an aggressive form of communication delivered through e-mail, social media, or other form of electronic media (Jones et al., 2012; Olweus, 2013).

Study Rationale

Uniqueness

This study is unique in the examination of a nationally representative sample, intersecting factors, and types of bullying over time. No studies were found describing relationships and prevalence among these factors in U.S. students in Grade 9 through Grade 12 from 2011 to 2017. Therefore, the focus of this study are these intersecting factors, relationships, and types of bullying between 2011 and 2017.

Contribution to the Body of Knowledge

Ongoing elevated prevalence of bullying threatens the health and safety of adolescents in the United States. Effective prevention strategies incorporate individual, social, and environmental factors that facilitate bullying in the United States (Cook et al., 2010; Nansel et al., 2001). The current study answers the call to increase the body of knowledge in areas of bullying prevention in the high school population (Bradshaw et al., 2015). There has been a considerable amount of research on the bullying phenomenon in elementary and middle school-age students (Blake, Lund, Zhou, Kwok, & Benz, 2012; Naylor, Cowie, Cossin, de Bettencourt, & Lemme, 2006; Salmivalli et al., 1996). Fewer studies have been conducted on factors related to prevention of bullying in high schools (Bradshaw et al., 2015).

Insights

Many researchers have focused on males as bullies and victims and on physical forms of bullying (Barboza et al., 2009; Olweus, 1978, 1994; Solberg et al., 2007). However, researchers have found differences in bullying prevalence rates among population subsets and types of bullying that will be examined in comparisons between groups (Barboza et al., 2009; CDC, 2018c; Kann et al., 2018; Solberg et al., 2007; Turner et al., 2013). Surveillance of electronic bullying began in 2011 (CDC, 2016b). Therefore, comparison of data by groups across variables was conducted. To examine relationships by type of bullying, the bullying variable was dichotomized to electronically and on school property.

Impact on Research, Education, Policy, and Adolescents

Descriptions of current patterns of age-related experiences of bullying can guide researchers and educators in development of population-focused, targeted prevention strategies (Nansel et al., 2001). A rich description of intersecting factors in contextual and age-related

challenges faced by adolescents in Grade 9 through Grade 12 were disseminated. Such knowledge provides a foundation for researchers to develop and test new hypotheses. Researchers and educators can use data from this study to develop, test, and implement prevention and targeted intervention programs. Description of behavior relationships among groups informs researchers, educators, and clinicians, thereby improving strategies for early identification in primary prevention. Policymakers will have current details on which to base upstream policies. Dialogue among policymakers, educators, and community members can lead to policies, action, and achievement of the national bullying prevention goal. Adolescents will benefit from data-driven, school- and system-level prevention programs.

Impact on Adolescent Health Outcomes

Researchers have found a relationship between female experiences of bullying and risk for self-harm by way of suicidal ideation (Espelage & Holt, 2013; Turner et al., 2013). From 2013 to 2017 suicide was the second leading cause of death for the 10- to 24-year age group (CDC, n.d.). Females 10 years of age to 14 years of age experienced the largest increase in suicide rate of any other group (Curtin, Warner, & Hedegaard, 2016). From 1999 to 2014, suicide rates for females 10 years of age to 14 years of age increased 200% (Curtin et al., 2016). Sadness, suicidal ideation, and suicide are among the self-harm risk behaviors examined in this study. The descriptive nature of this study illuminates details of adolescent characteristics and risk behaviors. Key insights identified in this study can contribute to reduction of suicidal ideation in this group of at-risk adolescents.

Theoretical Framework

Bullying occurs within a social context, influenced by individual characteristics of the child and contextual characteristics of the setting (Cook et al., 2010). The social ecological

model (SEM) is drawn with the developing child at the center of a series of concentric circles. The SEM is used to describe the influence of relationships in the environment on child development (Barboza et al., 2009; Bronfenbrenner, 1994; Espelage, 2014). At the innermost circle is the developing child. This is the microsystem of intrapersonal relationships from where the child experiences his environment (Bronfenbrenner, 1977, 1994). Microsystem predictors of bullying are the individual characteristics of age, gender, and race (Espelage, 2014). Individual characteristics and the context of the environment can predict bullying behaviors and victimization (Cook et al., 2010). The microsystem is nested within the mesosystem (Barboza et al., 2009). In the mesosystem, interpersonal relations of the microsystems link with settings containing the child (Bronfenbrenner, 1994). Peer groups and schools are mesosystem factors in the environment and systems that can promote or prevent bullying victimization (Bronfenbrenner, 1994; Espelage, 2014).

For the current study, SEM factors were incorporated in an adapted model. The microsystem contains the interpersonal circle. Within the intrapersonal circle are adolescent characteristics and factors of the risk for self-harm associated with experiencing bullying. The mesosystem contains the intrapersonal circle and organizational circle. Violence behaviors associated with experiencing bullying are described in the interpersonal circle. The organizational circle contains the school context. Factors associated with peer relationships, school environment, and school culture are described in the organizational circle. The aim of the adapted model was to describe relationships between the adolescence individual characteristics, risk for self-harm and violence, and prevalence of bullying (see Appendix A).

Conceptual and Operational Definitions

Criteria of bullying and the social context in which bullying occurs sets it apart from other forms of abuse (Olweus, 1994). Following are key terminology and definitions used in the study, discussed within the model framework. The phenomena of bullying are characterized by the social setting (Olweus, 1978). Individual and peer relationship characteristics underpin the bullying phenomenon (Olweus, 1978). YRBS survey questions may change in number and text from year to year (CDC, 2016a).

Intrapersonal Circle

Adolescent: At the center of the model is the adolescent, a developing person enrolled in the Grade 9 through Grade 12 continuum. Adolescent refers to an adolescent male or female, as self-identified by the developing person. Adolescent is operationalized as a student in Grade 9 through Grade 12 in a school or school system. In the 2017 YRBS survey, adolescent was measured with YRBS Question 3 (CDC, 2016b).

Adolescent characteristics: Adolescent characteristics are demographic characteristics used to describe the adolescent. Adolescent characteristics are operationalized by grade, gender, race, and ethnicity. In the 2017 YRBS survey, adolescent characteristics are measured by self-report with YRBS Question 2 through Question 5 (CDC, 2016b).

Risk for self-harm: Risk for self-harm is a global term denoting the potential for deliberately damaging one's self. Risk for self-harm is measured by behaviors experienced in the past 12 months. Risk for self-harm behaviors are operationalized by sadness lasting more than two weeks, suicidal ideation, suicide plan, and/or suicide attempt. In the 2017 YRBS survey, frequency is measured by self-report with Questions 25, 26, 27, and 28 (CDC, 2016b).

Interpersonal Circle

Violence: Violence is a global term denoting aggressive risk behaviors that contribute to violence among peers. Violence is measured by violent behaviors. Violent behaviors include carrying a weapon on school property and missing school for fear of safety in the past 30 days (CDC, 2017a). Violence is also measured by violent behaviors of carrying weapons/gun, threatened with weapons/gun, and physical fighting in the past 12 months (CDC, 2017a). In the 2017 YRBS survey, frequency is measured by self-report with Questions 12, 13, 14, 15, 16, 17 and 18 (CDC, 2016b).

Organizational Circle

School context: School context is the environment and climate pertaining to the school setting. School context is measured by circumstances and relationships of interacting peers. Context and characteristics of peer relationships differentiates school bullying from other forms of abuse (Olweus, 1994, p. 1173). Adolescent bullying is one behavior contributing to violence in the environment and climate of the school setting (Kann et al., 2018). In the 2017 YRBS survey, school context was measured by self-report using YRBS Questions 12, 13, 14, 15, 16, 17, 18, 19, 23 and 24(CDC, 2016b).

Bullying: Bullying is an aggressive peer behavior comprised of an imbalance of power, repetition, and intent to harm the victim (Olweus, 1994; Solberg & Olweus, 2003). Bullying is measured by one or more students threatening, spreading rumors about, hitting, shoving, or hurting another repeatedly (CDC, 2017a). It is not bullying when two or more students of the same strength or power argue, fight, or tease in a friendly way (CDC, 2017a).

Experiencing bullying: Experiencing bullying is victimization by exposure to intentional, harmful actions of a peer of greater strength. The intentional, harmful, negative

actions are inflicted on the victim repeatedly over time (CDC, 2017a). Experiencing bullying is measured by student self-report of their perception of victimization by the peer's or peers' bullying behavior. Victimization is experienced electronically or in the context of the school environment. Experiencing bullying is measured by teasing, threatening, spreading rumors about, hitting, shoving, or hurting repeatedly during the past 12 months (CDC, 2017a). In the 2017 YRBS survey, frequency is measured by self-report with Questions 23 and 24 (CDC, 2016b).

Experiencing bullying on school property: Experiencing bullying on school property is victimization by exposure to intentional, harmful actions of a peer of greater strength. Victimization occurs in the context of the school environment. The intentional, harmful, negative actions are inflicted on the victim repeatedly over time (CDC, 2017a). Experiencing bullying on school property is measured by student self-report of their perception of victimization by the peer's or peers' bullying behavior. Bullying behaviors are measured by teasing, threatening, spreading rumors about, hitting, shoving, or hurting repeatedly during the past 12 months (CDC, 2017a). In the 2017 YRBS survey, frequency is measured by self-report with Question 23 (CDC, 2016b).

Experiencing bullying electronically: Experiencing bullying electronically is victimization by exposure to bullying behaviors via electronic means. Experiencing bullying electronically is measured by student perception of victimization by peer's or peers' bullying behavior perpetrated through electronic means. The cut-off point is the past 12 months. Electronic means are measured as Facebook, Instagram, texting, and other social media, websites, chat rooms, or e-mail (CDC, 2016b, 2017a). In the 2017 YRBS survey, frequency is measured by self-report with Question 24 (CDC, 2016b).

Summary

Bullying is a public health crisis with far-reaching consequences. Students in Grade 9 through Grade 12 experience bullying at critically high rates. Decades of research have focused on bullying in the context of the elementary and middle schools. Healthy People 2020's target to reduce bullying among high school students was not met. Despite laws, public and school policy, and antibullying programs, the prevalence of experiencing bullying has not changed in eight years. Consequently, adolescents engage in dangerous behaviors and are at risk for serious negative outcomes. An examination of intersecting factors is warranted. Intersection of these factors may be instrumental in the ongoing elevation in prevalence of bullying in high schools. A secondary analysis of the YRBS surveys by year was conducted. Relationships among groups between adolescent characteristics, risk for self-harm, violence, and prevalence of experiencing bullying across time were examined.

Chapter II: Literature Review

Chapter II is a review of the literature to examine adolescent characteristics, risk of self-harm, violent behaviors, and bullying. The literature review is organized within the framework of the SEM. With developing adolescents in the center circle, SEM describes the influence of relationships in the environment on child development (Bronfenbrenner, 1977). The review begins in the interpersonal circle with examination of individual characteristics during the developmental period of adolescence. Factors associated with grade level, age, race, and ethnicity are examined in relationship to how students perceive bullying experiences. The review is then examined for behaviors of risk for self-harm. Risk for self-harm was limited to factors associated with risk for suicidal behavior. Behaviors are examined in relationship to types of bullying experienced during adolescence. The literature review next examines intrapersonal factors associated with risk for harm and violence and prevalence of bullying.

Literature Search Strategies

Methods and direction for the review of literature were guided by the AACN evidence hierarchy (Peterson et al., 2014). The review of the literature provides an examination of past research on adolescent experiences of bullying. Bullying behavior was first characterized in the literature in the late 1800s, proliferating since the 1970s with research spurred on by Olweus (NAS, 2016). Research specific to experiencing bullying in the context of schools from 2012 through 2018 is covered in this literature review. The search included use of 12 databases over four years: Academic Search Complete, CINHAL, Cochrane Database of Systematic Reviews, Ebscohost, Eric, Medline, Psych INFO, PubMed, ProQuest, Science Direct, Web of Science, and World Cat. grey literature and reference lists of relevant articles were also examined. Search terms focus on the adolescent population experiencing bullying within the school context of the

socioecological conceptual framework. Bullying was the term found to be commonly used to describe experiences of being bullied and peer victimization. A list of search terms is provided in Appendix C. The search was completed January 8, 2019.

Study Selection Inclusion/Exclusion Criteria

The population was defined as students in their adolescence period of development. Adolescent was defined as a child or youth between 10 years and 20 years of age (World Health Organization [WHO], 2015). Only empirical studies written in English and consistent with the definition of bullying and the conceptual framework were reviewed. Articles were included if the researcher's definition or operationalization of bullying included intention, harm, power, and possible/actual repetition. To show the changing adolescent perception with age, a variety of studies of different age groups were included in the review. Studies were included if researcher reported primary research on adolescent characteristics, violent behaviors, or behaviors of self-harm. Throughout the chapter, bullying was operationalized as experiencing bullying on school property and/or experiencing bullying electronically. All studies included in the literature review examine experiencing bullying within the context of the school organization. Studies were included if they contained research related to constructs relevant to the underpinnings of the conceptual framework or diverse population. Studies were excluded based on definition of bullying, age parameters, language, unavailable statistical analysis, and quality indicators.

Results

Articles were evaluated according to the Johanna Briggs Institute (2018) critical appraisal tools, Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) approach (Moher et al., 2015) and Rodgers (1997) guidelines for critique. Thirteen studies were included in the literature review. A total of 839,257 adolescents in Grade 6 through Grade 12

were included in the review. Quantitative and mixed-methods with correlational and descriptive study designs were used.

Bullying

Intrapersonal Circle: Adolescent Characteristics

How adolescents perceive bullying experiences varies by age and their role in bullying situations. Cuadrado-Gordillo (2012) found that more students identified as victims (18.8%) than bullies (17.6%). Data were eliminated for students involved in more than one role (7.5%). Females were more likely to be victims (51%), while males were more likely to be bullies (61%) and witnesses (52%). Bullying as a form of social interaction and amusement in peer relationships explained 48.68% of the variance. Intent to hurt explained 22.56% of the variance, and power imbalance explained 12.6% of the variance. Direct physical aggression (.984) was the most highly correlated variable in the bullies' perception of bullying. Forcing others against their will (.913), intimidation (.904), and definition (.801) also loaded on power imbalance and were highly correlated. Intent to hurt (.809) was highly correlated to the victims' definition of bullying. Ridiculing others (.788), physical aggression (.755), and social isolation (.740) were highly correlated to intent to hurt. Victim perceptions correlated to intimidation (.816) and forcing others against their will (.736) with the power factor. Negative criticisms (.570) were the most highly correlated variable to the social factor. Witnesses perceived the intent to hurt factor with the definition of bullying (.789). Forcing others against their will (.800) and intimidation (.737) were correlated with the power imbalance factor. Results showed that 55% of respondents in any role believe intent to hurt must be present to be bullying. Only 30% of respondents recognized power imbalance in bullying, and 3% recognized repetition. Students' perceptions

within any of the three roles differed from the researcher's definition of bullying (Cuadrado-Gordillo, 2012).

Definitions of bullying commonly used by researchers are formulated by adults (Hellström, Persson, & Hagquist, 2015). Adolescent perceptions of bullying differed by gender and grade level. Hitting for fun was reported as bullying by seventh grade males (15%) twice as often as seventh grade females (7%). More ninth graders than seventh graders identified not allowing to join and not listening when someone is talking as bullying. Although differences were not significant, more females than males reported repeatedly writing mean things on Facebook, mean text messages, and being called mean things as bullying. Analysis of focus group interviews identified three subcategories of bullying: behavior descriptions, self-interpretation, and something hurtful. Repetition and power imbalance were primarily used to describe bullying behaviors; intent was rarely included. Bullying was viewed as repetitious or a one-time event and dependent on the intent of the behavior. Seventh and ninth grade students viewed bullying as hurtful, with potential to lead to negative health consequences. Victims expressed feelings of sadness and low self-esteem. One female described choosing between being with bullies or being alone. Online bullying was described as especially aggressive and more difficult to avoid than face-to-face experiences. According to the students, whether one is being bullied is a matter of self-interpretation. Students in both age groups shared that people set their own boundaries for what being bullied means to them. One 13-year-old male stated, "You are the only one who can decide whether you have been bullied" (Hellström et al., 2015, p. 6).

Thornberg, Rosenqvist, and Johnson (2012) explored how older students explain causes of bullying. Eighty-percent of students attributed causes of bullying to the bully. Forty-four percent of students included the victim in causes of bullying, and 21% attributed bullying to

examples of social context. Thornberg et al. (2012) identified several subcategories within bully attributing, victim attributing, and social context attributing. Students attributed motivation to bullies' psychological problems (56%) and vying for social positioning (41%). Victim deviance accounted for 44% of the blame. Group pressure (12%), school environment (5%), and peer conflicts (4%) rounded out the social context. Females were more likely to explain bullying through a combination of causes. More females (88%) than males (71%) attributed causes of bullying to the bully. More females (51%) than males (36%) contributed causes of bullying to the victims. More females than males explained bullying by referring to the bullies' psychosocial problems (70% females, 40% males, $X^2 = 18.985$, $p = .000$). Females attributed bullying to interest in social positioning (44%), emotional drive (26%), or thoughtlessness (8%). More females (20%) attributed bullying to the social context compared to males (18%). An independent *t*-test confirmed females ($M = 2.34$, $SD = .92$) used a wider range of explanations of bullying compared to males ($M = 1.75$, $SD = .88$, $t = 4.613$. $p = .000$. $r = .31$, Cohen's $d = .65$). Males and females attributed bullying primarily to individual characteristics of the bully; however, females used a wider breadth of explanations. Differences may indicate developmental changes influencing the students' bullying explanations (Thornberg et al., 2012).

Recognizing variations in adolescents' bullying perceptions, Salmon, Turner, Taillieu, Fortier, and Afifi (2018) raised concern about operationalization of bullying by power, repetition, and harm. The researchers showed 58.3% of males (99% CI = 57.0% to 59.0%) and 67.8% of females (99% CI = 67.1% to 68.5%) reported being bullied during the previous 12 months (Salmon et al., 2018). Comparing Grade 7 to Grades 8 to 12 and adjusting for gender and community, the odds of victimization increased across all types of bullying. Depending on the domain, the odds of being bullied differed between males and females. Adjusting for grade and

urban versus rural community, females had 1.38 times greater odds of being bullied, taunted, or ridiculed. Females had 2.27 times greater odds of someone saying something negative about their appearance. Females were less likely than males to be physically threatened or injured (AOR = .73, 99% CI = .69 - .76). Odds of experiencing cyberbullying were greater for females. The odds of females feeling unsafe while using the internet was 2.5 times greater than males. Controlling for sex, the odds of experiencing bullying increased across all types of bullying in eighth through twelfth grade compared to seventh grade (Salmon et al., 2018).

Pontes, Ayers, Lewandowski, and Pontes (2018) found that trends in prevalence of bullying among students in Grade 9 through Grade 12 indicated differences between student groups. No significant linear time trends were found in the likelihood of being bullied. The likelihood of males being bullied at school decreased significantly from 2009 to 2015 (OR for linear trend .93, $p < .01$). In 2009, 18.7% of males reported victimization on school property. In 2015, 15.8% of males reported bullying victimization on school property. Frequency of males being bullied at school decreased with increasing grade level (21% to 17%; OR .80, CI = .77 - .83, $p < .05$). Frequency of being bullied electronically decreased for males from 10.8% in 2011 to 9.7% in 2015. Pontes et al. found that the prevalence of being bullied decreased 16% among males compared to the Healthy People 2020 benchmark. Prevalence of being bullied on school property in the previous 12 months decreased more than 10% among males. Therefore, Healthy People 2020 IVP-35 goal to decrease bullying on school property was met among male students in ninth through twelfth grade. Conversely, females showed a significant positive linear trend in experiencing bullying. The likelihood of females experiencing bullying on school property increased (OR for linear trend = 1.08, $p < .01$). Females reported a 17% increase in experiencing bullying on school property. No statistical change was found between the first surveillance report

on electronic bullying in 2011 and 2015 (22.1% in 2011 to 21.7% in 2015). The prevalence of experiencing bullying decreased significantly for males, while increasing dramatically for females (Pontes et al., 2018).

Table 1

Summary of Research: Adolescent Perception of Bullying

Authors	Topics	Reported Measures of Association	Findings
Cuadrado-Gordillo (2012)	Similarities and differences in perceptions among 12- to 16-year-old students with different roles in bullying.	Frequencies Correlation	Females were more likely to identify as victims; males were more likely to identify as bullies. Bullies identified physical aggression and power imbalance as bullying. Intent to harm and intimidation were most highly correlated to victims' perception of experiencing bullying.
Hellstrom et al. (2015)	Male/female perception of being bullied Grade 7 to Grade 9. Perception differs by gender and grade level.	Chi Square Qualitative analysis	Males were more likely than females to identify physical aggression as bullying. Older students were more likely to identify exclusion as bullying. Whether one is bullied is a matter of self-interpretation.
Thornberg et al. (2012)	Male/female perception of being bullied 15- to 21- year-old.	Frequencies Chi Squared Independent *t*-tests	Males and females attributed bullying to social positioning, psychosocial problems, and victim deviance. Males attributed causes of bullying to bullies' psychosocial problems. Females attributed bullying to social /emotional factors.

Race/Ethnicity and Gender

Patterns of school violence from 2001 to 2011 were illustrated in Grade 9 through Grade 12 (N = 84,734) by secondary analysis of the YRBS (Rajan, Namdar, & Ruggles, 2015). The

study was based on the premise that violence in schools disproportionately affects minorities. Researchers found reports of being threatened or injured with a weapon on school property have decreased significantly between 2001 and 2011 (8.9% to 7.4%). However, threats of violence have increased among subgroups. Hispanic males reported significant increases in being threatened or injured with a weapon at school and physical fighting. Black and Hispanic males consistently reported elevated levels in physical fighting at school. Experiences of being bullied has decreased among Black, Hispanic, and other students. The decrease is due to significant decreases in prevalence within subgroups of Hispanic males and Black females. White females (t = -2.04, p = 0.042) and Hispanic females (t = -2.41, p = 0.016) reported an increased prevalence in experiencing bullying on school property. White females reported higher prevalence of experiencing electronic bullying compared to Hispanic females (25.9% vs. 18.0%). Although reports of feeling unsafe are down across all subgroups, Hispanic students reported consistently elevated levels of missing school. See Table 2.

Table 2

Comparison from 2001 to 2011 of Patterns of Violence Behaviors in the School Environment (reported as percentages)

	Threatened or injured at school with a weapon		Carrying a weapon to school		Physical fighting		Experienced bullying on school property		Experienced electronic bullying*		Feeling unsafe	
	2001	2011	2001	2011	2001	2011	2009	2011	2001	2011	2001	2011
Overall	8.9	7.4	6.4	5.4	12.5	12.0	19.9	20.1		16.2	6.6	5.9
Male	11.5	9.5	10.2	8.2	18.0	16.0	18.7	18.2		10.8	5.8	5.8
Female	6.5	5.2	2.9	2.3	7.2	7.8	21.2	22.0		22.1	7.4	6.0
White	8.5	6.1	6.1	5.1	11.2	9.9	21.6	22.9		18.6	5.0	4.4
Black	9.3	8.9	6.3	4.6	16.8	16.4	13.7	11.7		8.9	9.8	6.7
Hispanic	8.9	9.2	6.4	5.8	14.1	14.4	18.5	17.6		13.6	10.2	9.1
Other	12.6	8.8	10.5	6.7	14.7	12.8	22,0	20.2		18.0	9.9	7.0
White males	11.1	8.0	10.0	7.8	17.2	13.8	19.9	20.7		11.8	4.2	4.0
Black males	11.9	11.2	8.4	4.6	21.3	19.6	11.9	11.1		6.9	9.6	8.0
Hispanic males	11.3	12.2	9.1	8.8	17.3	19.4	18.0	16.0		9.5	9.0	8.5
Other males	15.0	10.0	16.0	11.2	21.4	15.9	23.2	17.2		11.9	8.0	7.5
White females	6.0	4.2	2.3	7.8	5.4	5.6	23.5	25.2		25.9	5.6	4.7
Black females	6.7	6.6	4.2	2.5	12.7	13.1	15.5	12.2		11.0	10.0	5.3
Hispanic females	6.4	6.0	3.8	2.6	11.0	9.0	18.9	19.3		18.0	11.4	9.6
Other females	10.4	7	5.4	1.8	8.6	9.6	20.6	23.4		24.6	11.7	6.5

Note. Adapted from Rajan et al. (2015).

*Electronic bullying was not tracked prior to 2011.

Examination of trends in experiencing bullying at school and electronically showed variations among race and gender (Pontes et al., 2018). Data by race showed the likelihood of being bullied at school between 2009 and 2015 was highest among White students (24.4%). The likelihood of being bullied at school or electronically was lowest among Black students (12.8% and 8.7%, respectively). Data by race and by gender showed White females (26.2%) and White males (18.9%) were most likely to be bullied at school and electronically (25.7% and 10.5%, respectively). Hispanic females reported the second highest frequency of being bullied at school (19.6%) and electronically (17.2%). Males in minority populations and Black females reported significantly lower frequencies of experiencing bullying. Trends in bullying by race showed significant linear relationships between grade level and likelihood of experiencing bullying at school or electronically (Pontes et al., 2018).

Table 3

Summary of Research: Race/Ethnicity and Gender

Authors	Topics	Reported Measures of Association	Findings
Pontes et al. (2018)	Prevalence of experiencing bullying.	Frequencies Chi-squared	Between 2009 and 2015 the prevalence of experiencing bullying decreased 17% among males and increased 17% among females. The likelihood of reporting being bullied at school was highest among White male and female students and Hispanic female students. Reports of experiencing bullying decreased with increasing grades.
Rajan et al. (2015)	Violence in schools disproportionately affects minorities.	Frequencies Independent sample *t*-tests	From 2001 to 2011, threats and injury by violence decreased in overall population but increased among minority subgroups. White females and Hispanic females reported increased prevalence in experiencing bullying at school. Hispanic students reported consistently elevated levels of feeling unsafe compared to other races.

Risk of Self-Harm

Kim, Colwell, Kata, Boyle, and Georgiades (2018) studied differences between within genders between forms of bullying and outcomes. A significant Wald Chi-square test identified results of interest (Kim et al. 2018). Significant Wald Chi-square indicated the beta coefficients were not equal; consequently, differences exist within genders between forms of bullying and outcomes. Results of Wald Chi-square tests were not reported. Kim et al. (2018) found that cyberbullying contributed significantly to behavior problems for males ($\beta = .185$) and females (β

= .143), $p < 0.001$. However, beta coefficients for cyberbullying on emotional problems were stronger for females (β = 1.33 for females, .074 for males, $p < .001$). Social bullying was more strongly associated with emotional problems in females (β = .227) than in males (β = .209). Compared to verbal (β = .037) and social (β = .007) bullying, cyberbullying (β = .143) had the strongest association to behavior problems in females. Physical bullying (β = .193) was more strongly associated than cyberbullying (β = .143) with behavior problems in females. Cyberbullying was more strongly associated with behavioral problems in males (β = .185) than in females (β = .143). Compared to verbal (β = .027), social (β =.047), or physical bullying (β = .114), male cyberbullying (β =.185) had the strongest association with behavior problems. All results were significant at $p < 0.001$. Kim et al. found that cyberbullying contributed to emotional and behavioral problems in males and females. Cyberbullying was more strongly associated with behavior problems in males. Cyberbullying victimization was more prevalent in females and showed a stronger association to emotional problems compared to males (Kim et al., 2018).

Undheim and Sund (2013) conducted a longitudinal found there were no differences between aggressive and victim groups' gender, grade, or socioeconomic status (Undheim & Sund, 2013). The researchers conducted longitudinal multivariate analysis. At T1 and T2, MFQ scores were higher in bullied students than their nonbullied peers ($p < .001$). Bullied and aggressive students showed significantly higher levels of suicidal ideation at T1 and T2 ($p < .001$). Compared to bullied males and noninvolved adolescents at T1 and T2, females showed significantly higher scores than males ($p < 0.001$). History of being bullied at T1, high MFQ scores at T2, and gender predicted suicidal ideation at T2, $F(6, 2{,}263) = 206.4$, $p = 0.001$. This model explained 35% of the variance. Controlling for a history of suicidal ideation at T1, being bullied did not predict suicidal ideation at T2. High MFQ scores and suicidal ideation were

predictive factors, explaining 41% of the variance, $F(7, 2{,}248) = 221.2$, $p = 0.001$. The researchers conducted analysis of the two-way interactional effects between experiencing bullying and depressive symptoms at T2. An interaction effect was observed between bullying at T1 and depression at T2, $R^2 = 36.2\%$, $F(7, 22{,}262) = 183.44$, $p < 0.001$). Interaction effects were reported as not strong; η^2 results were not reported. Undheim and Sund concluded that adolescents involved in bullying were at risk for suicidal ideation, with females at higher risk. The effect of being bullied was partly dependent on levels of depression. Males and females with a history of depression were at a slightly higher risk (Undheim & Sund, 2013).

School-age bullying influences long-term health outcomes (Sigurdson, Wallander, & Sund, 2014). Logistic regression and ANOVA analysis showed groups with a history of any classification had increased risk for lower education. Effect sizes were measured using Chi-square and odds ratios. There were no significant differences among groups in ethnicity X^2 (3) = 3.55, $p = 3.15$. Bullied, bully-victim, and aggressive groups were compared to non-involved groups. Gender differences were identified across all three groups (X (3) = 22.08, $p < 0.001$). Females (66.5%) were bullied more often. Males (66.7%) were more likely to be bully-victims and aggressive (57.5%) toward other groups. Groups who were aggressive toward others reported higher likelihood for being unemployed (adjusted odds ratio [AOR] 2.33, CI [1.52, 3.58]). Groups aggressive toward others reported more illegal drug use (AOR 3.08, CI1.6, 5.89). The bullied and bully-victim groups reported poorer health compared to their non-involved peers. The bully-victim group reported poorer general health (AOR 2.83, CI: 1.33, 6.05). Bully-victims reported more bodily pain (AOR 2.45, CI: 1.17, 5.11). Bullied groups reported more headaches (AOR 1.59, CI: 1.11, 2.28) and more legal drug use (AOR 1.67, CI: 1.09, 2.58). Problematic alcohol use was not significant for any group. Findings for the bullied and bully-

victims were significant for low education attainment (bullied AOR 1:64; 95% CI 1.18, 2.26; bully-victim AOR 3.24, 95% CI 1.65-6.35). These findings suggest that adolescents involved in any form of bullying face increased risk for adverse health outcomes in adulthood. History of being bullied, bodily aches, and frequent use of legal drugs may indicate chronic stress related to bullying during adolescence (Sigurdson et al., 2014).

Table 4

Summary of Research: Risk for Self-Harm

Authors	Topic	Reported Measures of Association	Findings
Kim et al. (2018)	Gender modifies strength of association between cyberbullying and mental health. Comparison of magnitude of association between emotional and behavior problems and cyberbullying compared to traditional.	Beta coefficients	Cyberbullying contributed significantly to behavior problems in males compared to females. Cyberbullying and social bullying contributed significantly to emotional problems for females compared to males.
Undheim & Sund (2013)	Experiencing bullying or bullying may predict suicidal ideation.	Chi-squared *t*-tests One-way ANOVA	Adolescents involved in bullying behavior or experiencing bullying were at higher risk for suicidal ideation. Males and females with a history of depression were at slightly higher risk of suicidal ideation compared to those without history of depression.
Sigurdson et al. (2014)	School-age bullying influences long-term health outcomes.	Chi-squared Odds ratios	Regardless of race, differences were noted across gender and role. Bullied and bully-victim groups reported poorer health compared to peers. Females were bullied more often than males. Males were more likely to be bully-victims.

Intrapersonal Circle: Violence

Fu, Land, and Lamb (2013) studied trends in bullying experiences among students in Grade 12 between 1999 and 2009. For all students, frequency of bullying decreased from 1999 to 2009. Analysis showed an inverse relationship in behaviors and experiences. As the number of bullying experiences per exposed student decreased, the likelihood of a particular bullying behavior increased. The inverse relationship was true of all measures of intensity. Frequencies of being threatened/injured with or without a weapon increased. Males were consistently at higher risk of being bullied and at higher levels of intensity than females. Bullying leading to injury with a weapon was highest among males. Victimization of males by threat with a weapon increased from 1989 to 1994 and from 1989 to 2009. African American twelfth graders showed a higher intensity of being injured with a weapon compared to non-African American students. However, African American students showed lower levels of intensity by being threatened without injury. The largest decrease (35%) in exposure values occurred with being threatened without injury. Intensity of school bullying without a weapon increased 20% over the 10-year period. Effect sizes were not reported. Gender and family structure were the two covariates showing disparities in exposure and intensity of victimizations across the four targeted behaviors (Fu et al., 2013).

Smalley, Warren, and Barefoot (2017) studied the connection between bullying and risk behaviors in middle and high school students. Bullied students were more likely to engage in risky health-related behaviors than nonbullied peers were. Bullied students were more likely to use tobacco, alcohol, marijuana, non-medical drugs, and illegal drugs in the previous 30 days. Self-harm was reported by 27.7% of bullied students, compared to 7.0% of nonbullied students. Effect sizes were shown using odds ratios. The odds of bullied students attempting intentional

self-harm was 4.82 times greater than it was for nonbullied students (X^2 (1, N = 261,506) = 11,617.99, p <.001 OR 4.82, CI [4.67 - 4.97[). A greater percentage of bullied students reported suicidal ideation (29.3%) and attempted suicide (18.5%) than did nonbullied peers (7.9% and 4.3%, respectively). The odds of a bullied high school student attempting suicide was 5.01 times that of nonbullied students (X^2 1, N = 261,506) = 8976.27, p < .001 OR 5.01, CI 4.83 - 5.20). Furthermore, being bullied was associated with perception of feeling unsafe. Bullied students (23.1%) were much more likely than nonbullied students (1.2%) to report missing school in the past 30 days due to not feeling safe (X^2 (1, N = 261,503) = 35,279.54 p < .001, OR 25.43, CI 24.27-26.66). Bullied students (13.3%) were much more likely than nonbullied students (1.4%) to bring a weapon to school (X^2 (1, N=261,506) =13,535.17, p < .001, OR 10.94; CI 10.41 - 11.49). Being bullied was associated with behaviors that put students at risk of negative physical and mental health consequences (Smalley et al., 2017).

Esselmont (2014) found that males feel less safe than females after bullying victimization and may resort to carrying weapons. From 2001 to 2002, males were 4.8 times more likely than females to have carried a gun in the past 30 days (p < 0.001). The influence of victimization on the likelihood of carrying a weapon was mediated by perceptions of school safety. Controlling for bullies and bully/victims, the proportion of students who carried a weapon decreased from 15% to 9%. Being Black Hispanic and increasing age increased the probability bullied students would carry weapons at school. Higher levels of perceived school safety substantially reduced the probability of a student carrying a weapon. The probability of victimized males with low levels of perceived safety carrying a weapon was 31%. The probability was lower for males (18%) who had not been victimized and had high levels of perceived safety. Victimized females with low levels of perceived safety had a low probability (11%) of carrying a weapon. The

probability of carrying a weapon was only 3% for non-victimized females who perceived high levels of safety (Esselmont, 2014).

Using 2013 YRBS data, Grinshteyn and Yang (2017) examined the relationship between electronic bullying, safety, and absenteeism. Ninety-three percent of students had not missed any school days in the previous 30 days due to feeling unsafe (Grinshteyn & Yang, 2017). However, electronic bullying was significantly associated with missing days of school. For students who were electronically bullied, the relative risk (RR) of missing one day was 1.77 (CI: 1.40, 2.23). The greatest effect of electronic bullying was fear-based absences from school two to three times per month. The RR of missing two to three days of school per month increased by a factor of 2.08, holding all other variables constant CI: 1.40, 3.11). The RR of missing school four or more days per month was expected to increase the factor by 1.77 (CI: 1.14, 2.75). Feeling sad or hopeless almost every day for the past 30 days was significantly associated with school absence. Absences were due to feeling unsafe. The RR of missing one day per month for students feeling sad increased 2.36, holding all other variables constant (CI: 1.63-3.43, $p < .0001$). The RR of missing two to three days increased by a factor of 3.08 (CI: 2.19-4.35, $p < .0001$). Missing four days or more increased by a factor of 1.77 (CI: 1.19-2.64, $p = .006$). Fear-based absences may lead to a considerable number of missed school days per year. Electronic bullying and subsequent fear-based absences put students at risk for poor academic performance, negative behaviors, and poor health outcomes (Grinshteyn & Yang, 2017).

Table 5

Summary of Research: Intrapersonal Violence

Authors	Topic	Reported Measures of Association	Findings
Fu et al. (2013)	Probability of exposure to violence behaviors and being bullied; relationship to African American males.	Zero-inflated Poisson models Frequencies	As the number of reported experiences of being bullied decreased, intensity of violence behaviors increased. African American males showed lower intensity of exposure to violent behaviors.
Smalley et al. (2017)	Relationship between risk-behaviors and experiencing bullying.	Odds ratios	Bullied students were more likely to engage in risk-behaviors.
Esselmont (2014)	Relationships between adolescent characteristics, experiencing bullying, exposure to violence, and feeling unsafe. Gender and race examined.	Frequencies Odds ratios	Bullied males were more likely than bullied females to feel unsafe at school and carry a weapon. School climate mediated response.
Grinshteyn & Yang (2017)	Examined relationships between electronic bullying, safety, and absenteeism.	Relative risk	A relationship was found between electronic bullying and fear-based absence 2-3 times per month.

Summary

Across this review of the literature, standardized effect sizes describe the strength of relationship between variables. Male/female differences were tested in eight studies (Cuadrado-Gordillo, 2012; Fu et al., 2012; Esselmont, 2014; Hellstrom et al., 2015; Kim et al., 2018; Pontes et al., 2018; Salmon et al., 2018; Thornberg et al., 2012). Associations between experiencing bullying and behaviors or gender were reported in 13 studies (Cuadrado-Gordillo, 2012; Esselmont, 2014; Fu et al., 2012; Grinshtyen & Yang, 2013; Hellstrom et al., 2015; Kim et al., 2018; Pontes et al., 2018; Smalley et al. 2017; Salmon et al., 2018; Thornberg et al., 2012; Sigurdson et al. 2013; Sigurdson et al., 2014; Undheim & Sund, 2013). Race differences were

tested in three studies (Fu et al., 2013; Rajan et al., 2015; Pontes et al., 2018). Grade differences were tested in four studies (Hellstrom et al., 2015; Pontes et al., 2018; Salmon et al., 2018; Undheim & Sund, 2013). Associations between experiencing bullying and behaviors in different types of involvement in bullying were tested in two studies (Cuadrado-Gordillo, 2012; Sigurdson et al., 2014). Changes over time were measured in five studies (Fu et al., 2013; Pontes et al., 2018; Rajan et al., 2015; Sigurdson et al. 2013; Sigurdson et al., 2014). Four studies examined relationships between risk-behaviors and experiencing bullying (Esselmont, 2014; Grinshtyen & Yang, 2013; Kim et al., 2018; Smalley et al., 2017).

Bullying is a significant public health problem impacting high school students in the United States. Reports of experiencing bullying is increasing among subgroups, while decreasing overall among students in Grade 9 through Grade 12 (Fu et al., 2012; Rajan et al., 2015; Pontes et al., 2018; Salmon et al., 2018). The national benchmark for reduction of bullying in Grade 9 through Grade 12 will not be met across subpopulations of adolescents (Pontes et al., 2018).

Statistical Significance

Central to the bullying relationship in this literature review is an imbalance of power Researchers' agreement that power, intent to harm, and repetition as constructs of bullying is a strength of the studies (Cuadrado-Gordillo, 2012; Esselmont, 2014; Fu et al., 2013; Grinshteyn & Yang, 2017; Hellstrom et al., 2015; Kim et al., 2018; Pontes et al., 2018; Rajan et al., 2015; Sigurdson et al., 2014; Salmon et al., 2018; Smalley et al., 2017; Thornberg et al., 2012). Samples in the studies were adequately described and selected. A variety of statistical analyses were appropriately chosen according to the research design and questions. However, measurement inconsistencies made comparison of results difficult (Salmon et al., 2018). Adolescents did not consistently recognize the researchers' definitions and operationalization of

bullying (Cuadrado-Gordillo, 2012; Hellstrom et al., 2015; Thornberg et al., 2012; Salmon et al., 2018). Adolescents' perceptions of bullying varied along the developmental continuum and differed from others of similar age or grade. Despite some ambiguity in their definitions and descriptions, adolescents have been clear in their assertion that bullying is harmful (Hellstrom et al., 2015; Thornberg et al., 2012).

Effect sizes to describe the strength of relationships were reported using beta coefficients (Kim et al., 2018); chi-square (Pontes et al., 2018; Sigurdson et al., 2014; Smalley et al., 2017; Thornberg et al., 2012), odds ratios (Esselmont, 2014; Pontes et al., 2018; Rajan et al., 2015; Salmon et al., 2018; Sigurdson et al., 2014; Smalley et al., 2017), independent *t*-tests (Rajan et al., 2015), dependent *t*-test (Thornberg et al., 2012), and relative risk (Grinshteyn & Yang, 2017). Chen, Cohen, and Cheng (2010) proposed interpreting the effect size of the odds ratio by relating it to Cohen's *d*. Odds ratios were used to report strength of relationship between race, gender, or grade and experiencing bullying (Esselmont, 2014; Pontes et al., 2018; Rajan et al., 2015; Salmon et al., 2018; Sigurdson et al., 2014; Smalley et al., 2017).

Large effects showed strong relationships between violent behaviors, self-harm behaviors, and experiencing bullying. Esselmont (2014) reported large effect sizes for perceived safety and carrying a weapon. Smalley et al. (2017) reported large effects with odds of self-harm and violence behaviors and experiencing bullying. Conversely, Sigurdson et al. (2014) measured the strength of relationships between negative physical and mental health effects and experiencing bullying with odds ratios across time. Odds ratios for race, gender, negative physical and mental health effects, and experiencing bullying were small (Sigurdson et al., 2014).

School attendance may be an early indication of experiencing bullying. Grinshteyn and Yang (2017) reported the RR for days missed due to feeling unsafe varied by number of days missed. When the incidence of an outcome is less than 10%, RR closely approximates odds ratio (Chen et al., 2010). Small to large effect sizes were reported as RR measuring strength of relationship between adolescent characteristics, violence, risk for self-harm, and experiencing electronic bullying (Grinshteyn & Yang, 2017). The researchers found the effect size of missing school due to being female was small (RR - .60, $p < 0.05$). The effect size of missing even one day of school due to violent behaviors was medium to large. The RR of race/ethnicity Multiple Race/ Hispanic was 1.65 ($p < 0.02$). The RR of threatened in past year was 2.93 ($p < 0.0001$), and the RR of felt sad at least 2 weeks was 2.36 ($p < 0.0001$). A medium effect size was reported for the relationship between experiencing bulling electronically and one day of school missed per month. Grinshteyn and Yang (2017) reported the RR of experiencing bulling electronically and one day of school missed per month was 1.77 ($p < 0.008$).

Effect sizes were not reported in all studies. Fu et al. (2012) did not report effect sizes. Undheim and Sund (2013) reported the size of effect, but did not report the eta squared value. This is a weakness of those studies.

Clinical Significance

Influences on relationships in the social environment were not widely recognized by students (Thornberg et al., 2012). Controlling for gender and urban versus rural community, the odds of experiencing relational and electronic bullying were higher for students in Grade 8 through Grade 12 than in Grade 7 (Salmon et al., 2018). A significant number of adolescents in subgroups experience bullying (Rajan et al., 2015; Pontes et al., 2018; Salmon et al., 2018). Bullying has become more prevalent among females (Pontes et al., 2018; Salmon et al., 2018)

and among Hispanic males (Rajan et al., 2015) and African American males in rural communities (Fu et al, 2012). White males and White females reported experiencing bullying on school property more frequently than other ethnicities (Rajan et al., 2015; Pontes et al., 2018). White females were most likely to be electronically bullied (Pontes et al., 2018) and report feeling unsafe on the internet (Salmon et al., 2018). Bullied students were more likely to be involved in violence, risk-taking behaviors, and missing school due to feeling unsafe because they are bullied (Esselmont, 2014; Rajan et al., 2015; Smalley et al., 2017).

Differences in prevalence of feeling unsafe were inconsistent from year to year and across studies. Some researchers reported fear-related absences have increased since 1977 (Grinshteyn & Yang, 2017; Rajan et al., 2015). From 2001 to 2011, Hispanic males, Hispanic females, and African Americans reported the highest rates of feeling unsafe (Rajan et al., 2015). Victimization influenced perceived level of safety in males and females (Esselmont, 2014; Grinshteyn & Yang, 2017). Between 1998 and 2009, the overall proportion of individuals exposed to bullying decreased (Fu et al., 2012; Rajan et al., 2015; Pontes et al., 2018). Meanwhile, the intensity of exposure to violence through weapons, threats, and physical fighting increased (Fu et al., 2012; Rajan et al., 2012). Between 2001 and 2011, a significant decrease in bullying prevalence was observed in African American and Hispanic students (Rajan et al., 2015). African American and Hispanic students were threatened and engaged in physical fighting more frequently than White students (Fu et al., 2012; Rajan et al., 2015). Males experience higher intensity of victimization compared to females for being bullied by being threatened with or without a weapon and being injured with or without a weapon (Fu et al., 2012; Rajan et al., 2015). Researchers reported bullied students were more likely to bring weapons to school (Fu et al., 2012; Esselmont, 2012; Smalley et al., 2017). Males, African Americans, Black Hispanics,

and Hispanic males reported carrying weapons at school most often (Esselmont, 2014; Fu et al., 2014; Rajan et al., 2015). Mediated by a perception of safety, bullied males were more likely than bullied females to carry weapons at school (Esselmont, 2014). A marked increase was shown for bullied students being threatened with a weapon and for those injured without a weapon (Fu et al., 2012).

Hispanic males and Hispanic females reported the highest frequency of feeling unsafe at school (Rajan et al., 2015). Adolescents who were electronically bullied, threatened, or injured with a weapon missed school due to fear for their safety (Grinshteyn & Yang, 2017). Although White males reported being bullied more often than other males (Pontes et al., 2018; Rajan et al., 2015), they carried weapons on school property at the lowest rate (Rajan et al., 2015). Actually, more females than males reported being bullied on school property and bullied electronically (Pontes et al., 2018; Rajan et al., 2015; Salmon et al., 2018). However, using only measures of physical bullying, Fu et al. (2012) found victimization for females in Grade 12 was flat from 1989 to 2009. This finding is contrary to researchers' reports that females were more likely to identify multiple behaviors associated with bullying (Hellstrom et al., 2015; Thornberg et al., 2012). The reported behaviors become more complex as the females increase in years (Hellstrom et al., 2015; Thornberg et al., 2012). Females were more likely to experience bullying electronically (Grinshteyn & Yang, 2017; Pontes et al., 2018; Salmon et al., 2018) and miss school days due to fear or sadness (Grinshteyn & Yang, 2017). Bullied females were more likely than males to report self-harming behavior (Undheim & Sund, 2014).

Pervasiveness of technology may make avoiding being bullied difficult (Esselmont, 2014). Findings on associations between experiencing bullying and risk for self-harm were mixed. Undheim and Sund (2013) did not differentiate between types of bullying, and the

interaction effect size was termed as not very strong. Yet their findings were clinically significant. Researchers who specifically examined cyberbullying found it harmful to both genders (Grinshteyn & Yang, 2017; Kim et al., 2018). Kim et al. (2018) supported Undheim and Sund (2013) with their findings that cyberbullying had a strong association to emotional problems in females. Undheim and Sund (2013) and Smalley et al. (2017) found suicide behaviors significantly higher among adolescents who had experienced bullying.

Gaps

This study addresses several gaps in the literature. Researchers and adolescents did not have a shared perception of experiencing bullying. Differences in operationalizing bullying exist even among the researchers. Despite statistical and clinical significance, this review of literature did not identify patterns of change among adolescent subgroups. Using consistent measures, this study examined factors associated with experiencing bullying among adolescent subgroups.

Conclusion

Alarming relationships among adolescent characteristics, risk for self-harm and violence, and experiencing bullying have been recognized. This investigation expanded on established literature by examining the variable relationships across time. Researchers have studied trends in prevalence of bullying in U.S. high schools without consideration of complex pathways of factors (Fu et al., 2013; Pontes et al., 2018; Rajan et al., 2015). This study examined intersecting factors among these relationships over time.

Chapter III: Methods

The CDC conducts cross-sectional studies to assess prevalence of adolescent health risk behaviors using the YRBS (Brener et al., 2013). Experience of bullying was the most common form of violence victimization identified in the YRBS between 2009 and 2018 (Kann et al., 2018). The public health approach to address the epidemic of bullying begins with a clear definition and determination of risk and protective factors (Masiello, 2014). Consistent definition of bullying was key to the review of the literature. A secondary analysis of the YRBS was conducted to examine relationships between risk factors and prevalence of adolescent bullying between 2011 and 2017.

Purpose

The purpose of this research was to examine the relationship over time between adolescent characteristics, risk for self-harm and violence, and the prevalence of experiencing bullying.

The study addressed the following research questions:

RQ1: What is the relationship between adolescent characteristics and experiences of violence?

RQ2: What is the relationship between adolescent characteristics and the prevalence of experiencing bullying?

RQ3: What is the relationship between adolescent violence and the prevalence of experiencing bullying?

RQ4: What is the relationship between adolescent risk for self-harm and demonstration of violence?

RQ5: What is the relationship between adolescent risk for self-harm and the prevalence of experiencing bullying?

Design

This secondary analysis of the YRBS 2011 through 2017 was a non-experimental, descriptive, correlational study design. The YRBS cross-sectional data was used to examine the relationships among factors and prevalence of bullying. The research questions were descriptive and correlational in nature; therefore, the study design was appropriate to address the research questions. Since YRBS data are publicly available and de-identified, secondary analysis was granted exempt status by the University of Wisconsin-Milwaukee (2019) Institutional Review Board.

The YRBS is a cross-sectional study using a three-stage cluster sample design to obtain a nationally representative sample of students in Grade 9 through Grade 12 in the United States. The target population consisted of all public and private high school students in the 50 U.S. states and District of Columbia. Data quality is assured by standardized testing procedures and minimizing the level of nonresponse (Brener et al., 2013). Missing data, out-of-range responses, and logical inconsistencies are edited out by the CDC prior to weighting. Weighted and unweighted de-identified data are available to the public for further study (Brener et al., 2013). Reliability has been demonstrated by test-retest method (Brener, Simon, Krug, & Lowry, 1999; Brener et al., 2002; Brener et al., 2013). No studies have tested validity of all YRBS self-report behaviors (Brener, Billy, & Grady, 2003; Brener et al., 2013). Convergent and discriminate validity have been demonstrated in YRBS questions about suicide (May & Klonksy, 2011). A general description of the YRBS can be found in Appendix D.

Sample

The sample was comprised of students in Grade 9 through Grade 12 in the United States and District of Columbia (CDC, 2012, 2014, 2016a, 2018a). All regular public, Catholic, and other private school classrooms and students were included in the sampling frame. Students in Puerto Rico, trust territories, and the Virgin Islands were excluded (CDC, 2012, 2014, 2016a, 2018a). Systematic probability sampling with random start was used to select classes from each school to participate. The YRBS data files for survey years 2011 through 2017 are comprised of students from 2011 (N = 17,672), 2013 (N = 15,480), 2015 (N = 18,165), and 2017 (N = 18,324). All students in the selected classrooms were eligible to participate in the YRBS paper-pencil questionnaires (CDC, 2012, 2014, 2016a, 2018a). A total of 69,641 participants met inclusion criteria for the time period. Response rates for each of the years was greater than 60%; therefore, data met weighting criteria (Brener et al., 2013). Weighted sample is representing the population sex, race/ethnicity, and grade proportionally and is nationally representative (Brener et al., 2013).

Procedure

De-identified data was downloaded from the CDC website to a secure laptop for analysis. Data were compared year-to-year to create comparisons across time. Variables and relationships among them are described and statistically analyzed. The study was expected to take approximately six months. A log was maintained with documentation and modification rationale. Data will be disposed of as of May 31, 2020 or one year after graduation. Aggregated YRBS data are stored on a secured laptop computer in a locked home office. Encrypted data were backed up to a cloud system. All study personnel had current CITI certification and followed ethical guidelines. The principle investigator (PI), student, UWM committee members, and

biostatistician had current CITI training and access to the data. Results are reported as aggregate data. Qualifications of the PI and PI-student (PI-S) are addressed in Appendix E.

Instrument

The YRBS was used to collect data for the study. The YRBS measures priority health risk behaviors among adolescents contributing to leading causes of morbidity and mortality in youths and adults (Kann et al., 1993). The 75-item questionnaire was designed for self-administration in the classroom and has a seventh-grade reading level (Kann et al., 1993). The 2017 YRBS is a 99-item multiple choice questionnaire for self-report use in the classroom (Kann et al., 2018). See Appendix F for a copy of the 2017 YRBS.

Variables Measured with the YRBS

Nominal categorical variables were used to answer the research questions. All response variables were binarized. To develop a parsimonious model, the interval variables were recoded to categorical variables. The extent to which the risk behavior was present was not needed to answer the research questions. Reverse coding was used with violent behaviors and suicide attempt for ease of interpretation.

Adolescent characteristics were measured by gender, grade, race, and ethnicity. Five YRBS questions measure adolescent characteristics. Gender, grade level, race, and ethnicity have been associated with experiencing bullying (Fu et al., 2013; Pontes et al., 2018; Rajan et al., 2015). Adolescent characteristics answer Research Questions 1 and 2. Race was recoded to numeric for analysis to create a code matrix based on which race(s) were chosen. Race was created to describe race and ethnicity in analysis and was coded. Coding details for race are described in Appendix G.

Global variable risk for self-harm is measured by sadness, suicide ideation, suicide plan, and suicide attempt. Four YRBS questions measure interpersonal violence as a risk for self-harm. Physical bullying was more strongly associated with behavior problems in males than it was in females (Kim et al., 2018). Researchers found social bullying and cyberbullying had a stronger association to emotional problems for females than they did for males (Kim et al., 2018). Adolescents experiencing bullying were at greater risk for suicidal ideation (Smalley et al., 2017; Undheim & Sund, 2013). Adolescents with a history of depression and experiencing bullying were at a slightly higher risk for suicidal ideation (Undheim & Sund, 2013).

Variables involving risk for self-harm were added to the model. In the YRBS, suicide is defined for students as taking some action to end their own life (CDC, 2017b). Risk for self-harm is explained as feeling so sad and depressed about their future that they may consider attempting suicide (CDC, 2017b). Students are asked about sadness lasting more than two weeks and whether they have considered and planned suicide. Number of suicide attempts in the past 12 months is also asked (CDC, 2017b). Global variable risk for self-harm measures sadness, suicide ideation, suicide plan, and suicide attempts, and answers Research Questions 4 and 5. Students answer yes/no; answering yes indicates the behavior is present. Sadness, suicide ideation, and suicide plan were coded A = 1 = no and B = 2 = yes. Suicide attempt was recoded to a nominal categorical variable. Reverse coding was used for suicide attempt A = 1= yes and B = 2 = no.

Violence is a global variable measuring behaviors that contribute to intrapersonal violence. Violence is measured by carrying a weapon, carrying a gun, and carrying a weapon on school property. Threatened with or without a weapon on school property, felt unsafe/missed school, physical fight, and physical fight on school property also measure intrapersonal violence. Seven YRBS questions used in this study measure these behaviors. Esselmont (2014) found

males who experienced bullying were more likely to carry weapons. Fu et al. (2013) found an inverse relationship between frequency of male exospore to bullying and the intensity of violence. Researchers found males were less likely to experience bullying than females were (Fu et al., 2013; Pontes et al., 2018). On the YRBS, students are asked to report violence risk behaviors in number of days and number of times (CDC, 2017a). They are asked the number of days in the past 30 days they carried a weapon (CDC, 2017a). They are asked whether they carried a weapon and on school property. The number of times threatened with a weapon on school property in past 12 months is also asked (CDC, 2017a).

Black and Hispanic males reported consistently elevated levels of engagement in physical fighting at school between 2001 and 2011 (Rajan et al., 2015). Physical fighting is a marker for additional behavioral problems and had decreased significance overall during 1993 to 2015 (CDC, 2017b). One question on the YRBS asks the number of physical fights on school property in the past 12 days (CDC, 2017a). Researchers found the likelihood of males being threatened with a weapon at school was higher in 2009 than it was in 1999 (Fu et al., 2013; Rajan et al., 2015). Furthermore, Rajan et al. (2015) found minority males carry weapons on school property at above average rates. Compared to females, males consistently carry weapons to school more often (Rajan et al., 2015). One YRBS question asks the number of days in the past 30 days the student missed school due to feeling unsafe (CDC, 2017a). Students experiencing bullying were more likely to miss school because they felt unsafe than students who were not experiencing bullying (Smalley et al., 2017). Weapons carrying, physical fighting, threatened, and absence due to feeling unsafe were added to the model (binarized for analysis purposes). These variables were used to answer Research Questions 3 and 4. Students answer yes/no; answering yes indicates behavior is present. Seven violence behaviors were recoded. Carried a weapon, carried a weapon

on school property, carried a gun, and missed school/felt unsafe were each coded A = 1 = no days and B = 2 = yes one day or more, indicating the behavior was present. Threatened or injured with a weapon on school property, in a physical fight, and in a physical fight on school property were coded A = 1 = no times, B = 2 = yes one time or more, indicating the behavior was present.

Bullying is an aggressive peer behavior comprised of an imbalance of power, repetition, and intent to harm the victim (Olweus, 1994; Solberg & Olweus, 2003). Bullying is operationalized as one or more students threatening, spreading rumors about, hitting, shoving, or hurting another over and over (CDC, 2017a). It is not bullying when two or more students of the same strength or power argue, fight, or tease in a friendly way (CDC, 2017a). Students describe experiencing bullying through their own perceptions and terminology (Cuadrado-Gordillo, 2012; Hellström et al., 2015). Frequency of bullying behavior is measured in two questions asking students about experiencing bullying (CDC, 2017b). Experiencing bullying is dichotomized to measure experiencing bullying on school property and experiencing bullying by electronic means. Experiencing bullying was coded as experiencing bullying on school property and as experiencing bullying electronically. Prior to answering the questions, students read the description of bullying:

> Bullying is when one or more students tease, threaten, spread rumors, hit, shove, or hurt another student repeatedly. It is not bullying when two students of about the same strength or power argue or fight or tease each other in a friendly way (CDC, 2017a, p. 7).

One YRBS question is, *During the past 12 months have you ever been bullied on school property?* A second YRBS question is, *During the past 12 months have you ever been bullied electronically? (Count being bullied through texting, Instagram, Facebook, or other social media)*; CDC, 2017a). Between 2011 and 2015, the question read, *During the past 12 months*

have you ever been bullied electronically? (Count being bullied through e-mail, chat rooms, instant messaging, websites, or texting); CDC, 2016b). These variables were used to answer Research Questions 2, 3, and 5. Experiencing bullying on school property and experiencing bullying electronically were coded to A = yes = 1 and B = 0 = no.

Data Analysis

Preliminary statistical analysis was conducted. All variables are nominal categorical. Descriptive statistics used to describe the data were frequencies, percent, and valid percent. Frequency distributions are reported in graphic, tabular, and narrative form. Cross tabulations were conducted to examine relationships between the variables. The categorical variables examined were adolescent characteristics gender, grade, race, and ethnicity. Global variable risk for self-harm measured sadness, suicide ideation, suicide plan, and suicide attempt. Violence was measured by carrying weapons, carrying weapons on school property, physical fighting, and physical fighting on school property. Being threatened or injured on school property and missing school also measured violence. Relationships between the categorical variables and experiencing bullying were examined using cross tabulation. Chi-square test for independence was conducted to explore the strength of association between categorical nominal variables (Simpson, 2015). Results are reported for X^2 and degrees of freedom.

The Cochran-Mantel-Haenszel (CMH) test is a powerful summary of evidence against the null (Agresti, 2013). The CMH test was used because it is an inferential test for association between binary nominal variables while controlling for confounding variables (Agresti, 2013). The CMH test was performed to compare odds ratios among several 2x2 tables, including adolescent characteristics, risk for self-harm, violent behaviors, and experiencing bullying.

Results are reported for X^2, odds ratios, confidence levels, degrees of freedom, and significance. Results are reported in graphic, tabular, and narrative form.

Logistic regression models were used because logistic regression allows testing association between predictor and nominal outcome variables (Simpson, 2015). Logistic regression models were conducted to identify the odds of experiencing bullying in relationship to risk for self-harm and violence. Results are reported for coefficient b, standard of error, odds ratio, and confidence intervals. Results are reported in tabular and narrative form.

The codebook for the study is available in Table 1. Data edits are addressed in Appendix G. The research questions were answered as follows:

Research Question 1: What is the relationship between adolescent characteristics and experiences of violence? Frequencies were computed. Crosstabs were performed to examine the association between gender, grade, race, ethnicity, and carrying a weapon, carrying a gun, carrying a weapon on school property, threatened or injured with a weapon on school property, felt unsafe/missed school, physical fight, and physical fight on school property. If there was a significant difference between the years, a stratified analysis was performed. Chi-square and summary stratification Cochran-Mantel-Haenszel test were performed.

Research Question 2: What is the relationship between adolescent characteristics and the prevalence of experiencing bullying? Frequencies were computed. Crosstabs were performed to examine the association between gender, grade, race, and ethnicity and the prevalence of bullying. If there was a significant difference between the years, a stratified analysis was performed. Chi-square and summary stratification Cochran-Mantel-Haenszel test were performed.

Research Question 3: What is the relationship between adolescent violence and the prevalence of experiencing bullying? Frequencies were computed. Logistic regression was used to answer the questioned variable bullying. For the logistic regression, predictor variables were the measures of violence: carrying a weapon, carrying a gun, carrying a weapon on school property, threatened or injured with a weapon on school property, felt unsafe/missed school, physical fight, and physical fight on school property. The outcome variable was experiencing bullying. If there was a significant difference between the measures of violence and experiencing bullying, the Cochran-Mantel-Haenszel test was performed. The Cochran-Mantel-Haenszel test examined the relationship between carrying a weapon, carrying a gun, carrying a weapon on school property, threatened or injured with a weapon on school property, felt unsafe/missed school, physical fight, physical fight on school property, and experiencing bullying stratified by year.

Research Question 4: What is the relationship between adolescent risk for self-harm and the demonstration of violence? Frequencies were computed. Logistic regression was performed on the global variable risk for self-harm and demonstration of violent behaviors of carrying a weapon, carrying a gun, carrying a weapon on school property, threatened or injured with a weapon on school property, felt unsafe/missed school, physical fight, and physical fight on school property. If there was a significant difference, the Cochran-Mantel-Haenszel test was performed to examine the relationship between risk for self-harm and carrying a weapon, carrying a gun, carrying a weapon on school property, threatened or injured with a weapon on school property, felt unsafe/missed school, physical fight, and physical fight on school property and stratified by year.

Research Question 5: What is the relationship between adolescent risk for self-harm and the prevalence of experiencing bullying? Frequencies were computed. Crosstabs were performed to examine the association between the global variable risk for self-harm and experiencing bullying. Chi-square was calculated for risk for self-harm and experiencing bullying, stratified by year. If there was a significant difference, the Cochran-Mantel-Haenszel test was performed to examine the relationship between risk for self-harm behaviors of sadness, suicidal ideation, suicide plan, suicide attempt, and experiencing bullying, stratified by year.

Limitations

While attempts have been made to reduce bias and enhance rigor, this study is not without limitations. First, in a secondary analysis, measures are limited by the data collected in the original study. This study was limited in scope by inconsistent data. The YRBS data regarding physical fighting, opioid drug use, and sexual orientation were limited. Due to inconsistencies in the data concerning these, issues related to experiencing bullying were not addressed in this study. In addition, survey administration protocols for special populations in the mainstream classroom were not described. Special populations are not identified in the data set. Prevalence of bullying reported in YRBS data is aggregated data of the special needs populations in mainstream classrooms and typical students. Multiple tests were run from the same data set. Therefore, the Bonferroni correction was computed to set a conservative alpha. The *p*-value was set at $p < .01$. Clinical significance must be considered with results.

Bullying is a complex phenomenon. Descriptive correlational research design provides a snapshot in time of relationships among the variables. This study measured relationships among socially relevant variables that would be unethical to test experimentally. However, it is important to note that descriptive correlational research cannot be used to draw conclusions

about the causal relationships among the measured variables. The YRBS data are only generalizable to students in Grade 9 through Grade 12 attending public, parochial, and private schools in the United States (Brener et al., 2013). All of the questions to fully explain risk factors and relationships to prevalence of experiencing bullying are not answered in this study. It is likely there are other factors and confounding variables not examined in this study. Therefore, results must be interpreted with caution.

Chapter IV: Results

Introduction

Information on the demographic characteristics, including the examination of participant's characteristics with the study years are reported here. The findings from the investigation are discussed in this chapter, including the examination of associations between adolescent characteristics and predictor variables between the study years. Behaviors and details of the data analysis and findings are described throughout the chapter.

Process

The analyses were conducted in three steps. First, frequency distributions were presented to describe and organize the data. An analysis was performed to identify differences between study years in terms of gender, grade, race and ethnicity. A cross tabulation was performed to identify if there was any difference in predictor variables. Analyses were performed to examine associations between adolescent characteristics and predictor variables between the study years. Chi-squared (X^2) results were reported between the study years for gender, grade, race and ethnicity. There were no statistically significant differences between study years for gender, grade, and race and ethnicity. Therefore, stratification was not computed.

Next, the data were examined for each separate study year. Chi-squared analyses were performed to examine if an association was likely between the variables. Chi-squared tests were conducted between nominal, binary variables for characteristics, violence behaviors, risk for self-harm behaviors, and experiencing bullying. Chi-squared results were provided by gender, grade, and race and ethnicity for each study year. Odds ratios were computed to compare likelihood of the behavior compared to gender. Odds ratios were provided by gender for each study year. Confidence intervals and *p* values were provided to determine significance. Confidence levels

were computed at 95%. A conservative *p* value was established for interpretation at .001 statistical significance.

Finally, the data files from each of the years were then merged for logistic regression analyses. Nonlinear logistic regressions were computed to test association between binary predictor variables and binary outcome variables. An analysis of predictor variables for each study year was provided. Predictor variables of adolescent characteristics, violence behaviors, risk for self-harm, and experiencing bullying were used in the analyses. The reference group was identified for each logistic analysis. Odds ratios were reported to provide an estimate of an event occurring (Polit & Beck, 2012). Significance was assessed by examining the confidence intervals around the odds ratios Significance of individual predictors in the model was reported in the Wald statistic. Significance of the Wald statistic assessed by examining the confidence intervals around the Wald value (Polit & Beck, 2012).

Description of Sample

Participants for this investigation were a sample of 59,397 students in grades 9 through 12 who responded to the YRBS survey during years 2011, 2013, 2015, and 2017. Adolescents self-reported their characteristics of gender, grade, and race and ethnicity. No significant differences were found across the years between gender (X^2 20.27, $p > .45$), grade (X^2 1.83, $p > 1.00$), or race and ethnicity (X^2 161.26, $p > .98$). For each survey year, the frequency distributions for gender, grades 9 through 12, and all race and ethnicities were calculated (see Table 6).

Table 6

Characteristics of Students Who Participated in the YRBS for Each Survey Year (N = 59,937) *

Individual Characteristic	2011 *n* = 15,425		2013 *n* = 13,583		2015 *n* = 15,624		2017 *n* = 14,765	
	n	%	*n*	%	*n*	%	*n*	%
Gender								
Male	7,656	51.60	6,950	50.00	7,749	51.30	7,112	49.30
Female	7,708	48.40	6,221	50.00	7,757	48.70	7,526	50.70
Grade								
Grade 9	3,774	27.60	3,588	27.30	3,988	27.20	3,906	27.30
Grade 10	3,693	25.80	3,152	25.70	3,920	25.70	3,704	25.60
Grade 11	4,133	23.80	3,184	23.80	3,917	23.90	3,589	23.90
Grade 12	3,699	26.00	3,557	23.10	3,590	23.10	3,376	23.10
Race/Ethnicity								
American Indian or Alaska Native	293	0.90	121	0.70	161	0.60	137	0.05
Asian	476	3.20	491	3.00	627	3.80	646	3.50
Black or African American	2,767	14.20	2,991	14.30	1,658	13.60	2,790	13.40
Native Hawaiian/Other Pacific Islander	125	0.90	135	0.80	98	0.60	114	0.08
Hispanic	2,227	9.20	1,734	2.40	2,357	9.90	1,540	9.80
Multiple Races and Hispanic/ Latino	2,400	10.80	1,661	2.40	2,743	12.30	2,094	13.10
White	6,171	56.90	5,447	55.60	6,830	54.50	6,244	53.50

*Response varies per question, as students did not respond to each question on gender, grade, and/or race and ethnicity. 58,988 students responded for grade level; 58,594 responded for gender, and 59, 397 responded for race/ethnicities. Missing data accounts for variations in total numbers by year.

Adolescent Characteristics and Violence Behaviors

Research Question 1: What is the relationship between adolescent characteristics and experiences of violence?

To answer the first research question, the data were examined to identify whether there was a relationship between adolescent characteristics and violence experiences as represented by violence behaviors. Adolescent characteristics included gender, grade, and race and ethnicity.

Due to limited diversity, race and ethnicities variables were merged to become dichotomous variables of White and all other races and ethnicities. Violence was operationalized as anything that represented a form of violence, including: carrying a weapon, gun, felt unsafe, and forms of physical fights. All variables representing forms of violence were merged to create a global violence variable. In order to answer the research questions findings are presented for the complete sample for all four study years. Analyses presented reflect the sample for each study year.

Sample Analyses

Adolescent characteristics and the dependent variable of violence behaviors were examined for the total sample. Across the merged survey years there were statistically significant differences for White when compared with and all other races/ethnicities for all violence behaviors combined (X^2 96.43, $p < .001$, *OR* .81, CI: .76, .87). Students in grade 9 (30%) were more likely to experience violence (X^2 475.29 p <.001) when compared to grades 10 (27 %), 11 (23%), and 12 (20%). Males (63%) were more likely than females (37%) to experience violence (X^2 2114.58 $p < .001$, *OR* 2.22, CI: 2.09, 2.36) across the years (see Table 7).

Physical fights in the past 12 months was statistically significant (X^2 477.41, $p < .001$). Fighting at school in the past year was also statistically significant (X^2 209.99, $p < .001$). As students achieved higher levels in school, the frequencies of physical altercations decreased. Students were more likely to have engaged in a physical fight in 2011 (33%) when compared to data from students in 2013 (25%), 2015 (23%), and 2017 (24%). In the school setting, students more likely to have engaged in a physical fight in 2011 (12%) when compared to data from students in 2013 (8%), 2015 (8%), and 2017 (9%). No statistically significant difference was found between the school years for students feeling unsafe (X^2 32.32, $p > .13$), threatened (X^2

38.33, p >.01), carried a weapon (X^2 26.09, p >.472) or for carrying a gun in the past 30 days (X^2 2.04, p > .76). Statistically significant differences for violence behaviors occurred by students' grade, gender, race and ethnicity (see Table 7).

Grade level and violence behaviors. Across all 4 years of data that were collected, there were 58,988 responses from students regarding violence behaviors by grade level. Out of all of the responses, there were 21,836 (37%) students across all grade levels who reported experiencing at least one form of violence**.** Violence behaviors in school were more likely to occur with students in Grade 9 than adolescents in grades 10 through 12 (X^2 343.39 p < 0.001). Of the 56,257 students who answered the question regarding safety by grades, 3,867 students reported they have a lower perception of safety. Ninth graders (30%) were more likely to have felt unsafe (X^2 211.74, p < 0.001) or threatened (30%) (X^2 352.29, p < 0.001). Across the 4 years, 14,231 students reported they had engaged in fighting. Students in Grade 9 (38%) were more likely to report physical fighting in the past 12 months than students in grades 10 (32%), 11 (22%), and 12 (18%) reported fighting in the past 12 months than students in tenth grade (X^2 525.74, p < 0.001). Out of 57,959 self-reports, students (n = 5,593) shared they fought at school. Fights at school were more likely among freshman (38%), than students in grades 10 (27%), 11 (19%), and 12 (15%) (X^2 794.66, p < 0.001). Students (n = 2,196) reported they carried guns. Fewer students in grades 9 (25%), 11 (24%), and 12 (23%) carried a gun in the past 30 days than students in the tenth grade (26%, X^2 326.65, p < .001). Conversely, 714 students had carried a gun in the past 12 months. Students in the 12th grade (27%) were more likely than students in grades 9 (25%), 10 (22%), and 11 (25%) to have carried a gun in the past 12 months (X^2 83.03, p < 0.001) (see Table 7).

Table 7

Patterns of Violence Behaviors for Grades 9, 10, 11, and 12, Across the Years ^*

Violence Behavior	*N*	*n* by grade level	% in Grade 9	*n* by grade level	% in Grade 10	*n* by grade level	% in Grade 11	*n* by grade level	% in Grade 12	X^2
All Violence Behaviors	58,988	6,216	30	5,533	27	5,314	23	4,681	20	343.39 $p < 001$
Unsafe	56,257	1,120	30	1,020	28	895	21	786	20	211.74 $p < 001$
Threatened	58,222	1,211	32	1,011	27	950	22	784	18	352.29 $p < 001$
Fight	53,290	4,302	32	3,679	28	3,327	22	2,866	18	525.74 $p < 001$
Fight at School	57,959	2,007	38	1,436	27	1,179	19	907	15	794.66 $p < 001$
Weapons	54,113	2,292	27	2,153	26	2,272	24	2,101	22	166.30 $p < 001$
Guns 30	40,847	545	25	515	26	566	24	535	23	326.65 $p < 001$
Guns 12	14,095	180	25	156	22	176	25	188	27	83.03 $p < 001$

$p < 0.001$

*Data represent merged dataset across all 4 years. Missing data represent students who did not report grade level.

^ Out of $N = 58,988$ students, 37% ($n = 21,836$) experienced at least one violence behavior across all grades for all 4 years.

Race and ethnicities and violence behaviors. Across the 4 years there were 59,397 responses from students regarding violence behaviors by grade level, 22,026 (37%) of students across all races/ethnicities experienced at least one violence behavior. Statistically significant differences were found between students based on their race and ethnicity and reported behaviors of violence. White students (80%) were more likely than students of all other races/ethnicities (20%) to report experiencing violence behaviors across all high school years (X^2 96.43 $p < 0.001$). A combined total of 58,594 students reported they had been threatened at school. Of the 4,050 who had been threatened, 2,907 were White students (80%) and 1,143 (20%) were students of other races and ethnicities. Comparatively, 56,608 students reported their perception of safety on their way to, from, or while at school. Of those 3,901 who felt unsafe, 2,695 were White students (73%), and 1,212 were students of other races and ethnicities (27%). Of the 14,346 students who reported they had fought at school, 10,780 were White students (79%) and 3,566 were students

of other races and ethnicities (21%). Additionally, 5,667 students reported they had engaged physical altercations on school property. Of those, 4,128 were White students (77%) and 1,539 were of all other races and ethnicities (23%). No statistical significance was found between White and all other students regarding carrying a weapon in the past month (X^2 7.17, $p > .09$) or gun (X^2 6.87, $p > .06$) or a gun in the past year (X^2 12.41, $p > .01$) (see Table 8).

Table 8

Patterns of Violence Behaviors for White Students and All Other Students, Across the Years^*

Behavior	*N*	*n*	White %	All Others %	X^2	*OR*	CI
All Violence Behaviors	59,397	22,026	80	20	96.43	.81	.75, .87
Unsafe	56,608	3,907	73	27	214.59	.57	.51, .63
Threatened	58,594	4,050	75	25	121.32	.65	.58, .73
Fight	53,619	14,346	79	21	108.28	.77	.71, .83
Fight at School	58,344	5,667	77	23	104.02	.71	.64, .78
Weapons 30	54,437	8951	81	19	7.17 $p > .09$	.92	.84, 1.01
Guns 30	41,078	2211	81	19	6.87 $p > .06$	.86	.74. 1.01
Guns 12	14,195	728	75	25	12.41 $p > .01$	.73	.57, .92

$p < 0.001$

*Data represents merged dataset across all 4 years.

^ Out of $N = 59,397$ students, 37% ($n = 22,026$) experienced at least one violence behavior for race and ethnicities across all 4 years.

Gender and violence behaviors. Across the 4 years there were 59,079 responses from students regarding gender and violence behaviors. Approximately a third of the students (n = 21,865) reported at least one violence behavior for gender. Of the 13,379 male students (63%) were significantly more likely than the 8,486 female students (47%) to experience violence behaviors (X^2 2114.59, $p < .001$). There was a combined total of 56,348 students who responded to the question regarding feeling unsafe. Of those, 3,850 students reported feeling unsafe, with a majority of the 2,107 female students (54%) reporting having felt more unsafe than the 1,743 male students (46%).

A combined total of 58,306 students responded to the question of whether they had been threatened at school. Of those 3,379 students who had been threatened, 2,453 male students (63%) were threatened, compared to 1,540 female students (27%). Across all 4 years, 53,377 students responded to the question regarding physical fight. Fighting was more common among the 8,731 male students (63%) than the 5,534 female students (37%). Furthermore, 58,050 reported having engaged in physical altercations at school. Of the 5,603 students who reported they fought on school property, a majority were males (n = 3,624), compared to 1,979 female students (68% vs 37%). A combined total of 2,190 students reported they carried a gun in the past 30 days during 2011, 2013, and 2015. Of those students, 1,860 were male students (78%) and 330 were female students (22%). In 2017, more male students (n = 556) reported carrying a gun in the past 12 months than did female students (n = 151) (80% vs 20%) (see Table 9).

Table 9

Patterns of Violence Behaviors for Male and Female Students, Across the Years *^

Violence Behavior Across the Years	*N*	*n*	% Male	% Female	X^2	OR	CI
All Violence Behaviors	59,079	21,865	63	37	2,114.59 $p < .001$	2.22	2.00, 2.36
Unsafe	56,348	3,850	46	54	43.13 $p < .001$	0.80	0.73, 0.87
Threatened	58,306	3,993	63	37	223.11 $p < .001$	1.67	1.56, 1.84
Fight	53,377	14,265	63	32	1,197.82 $p < .001$	2.00	1.88, 2.14
Fight at School	58,050	5,603	68	37	675.50 $p < .001$	2.18	2.00, 2.38
Weapons	54,202	8,891	78	22	3,258.94 $p < .001$	4.32	3.93, 4.75
Guns 30	40,932	2,190	86	14	1,116.36 $p < .001$	6.45	5.32, 7.59
Guns 12	14,080	707	80	20	261.75 $p < .001$	4.30	3.29, 5.63

$p < 0.001$

*Data represent merged dataset across all 4 years.

^ Out of N = 59,079 students, 37% (n = 21,865) experienced at least one violence behavior for gender across all 4 years.

Sub-Sample Analyses by Individual Years

Grade. Statistically significant differences were found by years in high school for violence behavior. As described in Table 20, in 2011, students in Grade 9 through Grade 12 (n = 1,007) reported feeling unsafe on their way to, from, or while at school during the previous 30

days. Statistical significance was found between grades for students having felt unsafe *(X^2* 77.31, $p > .001$). Tenth grade students (29%) were more likely to have felt unsafe than students in Grade 9 (27%). Students in grades 11 (21%) and 12 (21%) were the least likely to have felt unsafe (see Table 10).

In 2013, high school students ($n = 1{,}048$) reported having felt unsafe during the past month. No statistical significance was found between grades and having felt unsafe during the previous year *(X^2 19.61, $p > .08$*). Ninth grade 9 students (30 %) were more likely to report feeling unsafe than students in grades 10 (29%) or 11 (24%). Fewer twelfth grade students (18%) than younger grades reported having felt unsafe in the past 30 days (see Table 10).

High school students ($n = 974$) in 2015 reported feeling unsafe. Statistical significance was found between having felt unsafe in the past 30 days and students grade level *(X^2* 68.43, $p < .001$). Ninth grade students (31%) were more likely to have felt unsafe compared to students in grades 10 (25%) 12 (24%). Eleventh grade students (20%) were the least likely to have felt unsafe in the past month (see Table 10).

Students' ($n = 838$) perception of safety was reported to be low in 2017. Statistical significance was found between feeling unsafe and students' grade level *(X^2* 107.64 $p < .001$). Tenth grade students (31%) were more likely to report feeling unsafe than students in grades 9 (30%) or 11 (19%). Students in the twelfth grade (18%) were the least likely to report feeling unsafe in the past month (see Table 10).

Table 10

*Patterns of Students Who Felt Unsafe in Grades 9, 10, 11, and 12, by Survey Year**

Characteristic	2011 *n* = 1,007 *N* = 15,321		2013 *n* = 1,048 *N* = 13,480		2015 *n* = 974 *N* = 15,457		2017 *n* = 838 *N* = 12,089	
	n	%	*n*	%	*n*	%	*n*	%
Grade								
Grade 9	252	27	318	30	314	31	234	30
Grade 10	283	29	267	29	241	25	229	31
Grade 11	249	21	239	24	221	20	186	19
Grade 12	210	21	218	18	181	24	177	18

*Data represent merged dataset across all 4 years. Missing data represent students who did not report grade level.

Over 1,000 students (n = 1,115) reported being threatened at school with some form of weapon in the past 12 months. When examining students being threatened with a weapon, there were statistically significant differences between the students' grade levels of students and being threatened (X^2 97.92, p < .001). Students in ninth grade (31%) were more likely to have been threatened with a weapon than students in grades 10 (26%) or 11 (24%) to have been threatened. Students in Grade 12 (18%) were the least likely to have been threatened with a weapon (see Table 14). Students (n = 851) also reported being threatened by a weapon in 2013. A significant number of students reported having been threatened with a weapon on school property in the past year (X^2 44.84, p < .001). Ninth graders (37%) were more likely than students in 10th grade (26%) or 11th grade (24%) to have been threatened with a weapon. Students in 12th grade (17%) were less likely to be threatened with a weapon (see Table 15). In 2015, students (n = 942) reported they were threatened on school property with a weapon during the previous year. A statistically significant difference was found between students' grade level and having been threatened with a weapon (X^2 126.93, p < .001). Ninth graders (33%) were more likely to be threatened with a weapon than students in grades 10 (27%) or 11 (22%) during the past year. Twelfth grade students (17%) were the least likely to have been threatened with a weapon (see

Table 16) during the past 12 months. A statistically significant difference was found in 2017 between high school students who were threatened with a weapon (n = 919) and students' grade level in school (X^2 117.13, p < .001). Students were more likely to have been threatened with a weapon in 9th (31%), 10th 10 (29%) and 11th grade (20%) when compared to high school seniors. Twelfth grade students were the least likely to have been threatened with a weapon at school (18%) during the previous year (see Table 11).

Table 11

*Patterns of Students Who Were Threatened with a Weapon at School in Grades 9, 10, 11, and 12, By Survey Year**

Characteristic	2011 n = 1,155 N = 15,253		2013 n = 851 N = 13,481		2015 n = 942 N = 14,894		2017 n = 919 N = 14,594	
	n	%	n	%	n	%	n	%
Grade								
Grade 9	323	31	321	37	293	33	274	31
Grade 10	287	26	232	26	247	27	245	29
Grade 11	303	24	232	24	216	22	199	20
Grade 12	228	18	200	17	172	17	184	18

*Data represent merged dataset across all 4 years. Missing data represent students who did not report grade level.

A number of students (n = 4,986) reported that in 2011 they engaged in a physical fight during the previous 12 months. Prevalence of students having engaged in a physical fight in the prior year was statistically significant by student's grade levels. (X^2 148.61, p < .001). Students in Grade 9 (32%) were more likely than students in 10th (28%) or students in 11th grade (22%) to have been in a fight during the past month. Students in the 12th grade (19%) were the least likely to have engaged in a physical fight in the past 12 months (see Table 12).

During 2013 students (n = 3,597) reported participating in a physical fight. Students having engaged in a physical fight in the previous year was statistically significant between grade levels for the past year (X^2 98.20, p < .001). Students in 9th grade (31%) were more likely than students in grades 10 (28%) or 11 (23%) to have been in a fight in the past year. Students in

their senior year (18%) were the least likely to have engaged in a physical fight in the past 12 months (see Table 12).

High school students (n = 2,859) reported in 2015 that they were in a physical fight during the previous year. Statistical significance was found between grades for having engaged in a physical fight in the past 12 months (X^2 132.72, $p < .001$). Students in Grade 9 (34%) were more likely than students in grades 10 (27%) or 11 (22%) to have physically fought in the past year. Twelfth grade students (18%) were the least likely to have engaged in a physical fight in the past 12 months (see Table 12).

High school students (n = 2,789) also reported in 2017 that they had been in physical fight during the previous 12 months. A statistically significant difference was found between having engaged in a physical fight and grade level in the previous year (X^2 165.58, $p < .001$). Students in 9th grade (33%) were more likely than students in 10th graders (29%) or 11th graders (21%) to have been in a physical fight. Students in 12th grade (17%) were the least likely to have engaged in a physical fight in the past 12 months (see Table 12).

Table 12

*Patterns of Students Who Engaged in a Physical Fight in Grades 9, 10, 11, and 12, By Survey Year **

Characteristic	2011 n = 4,896 N = 15,016		2013 n = 3,597 N = 13,260		2015 n = 2,859 N = 13,042		2017 n = 2,789 N = 11,972	
	n	%	*n*	%	*n*	%	*n*	%
Grade								
Grade 9	1,435	32	117	31	882	34	868	33
Grade 10	1,265	28	905	28	715	27	794	29
Grade 11	1,252	22	814	23	668	22	593	21
Grade 12	1,015	19	749	18	582	18	520	17

*Data represent merged dataset across all 4 years. Missing data represent students who did not report grade level.

In 2011, high school students (n = 5,593) reported they were in a physical fight on school property during the previous year. A statistically significant difference was found between

having engaged in a physical fight on school property and grade level in the past 12 months (X^2 177.74, $p < .001$). Of the students who reported fighting at school, those 9th grade (38%) were more likely than students in grades 10 (26%) or 11 (19%) to have fought in the past year. Twelfth grade students (15%) were the least likely to have engaged in a physical fight on school property in the past 12 months (see Table 13).

During 2013, high school students (n = 1,235) reported that they had been in a fight on school property during the past 12 months. A statistically significant difference was found between having engaged in a physical fight on school property by grade level in the previous year (X^2 108.90, $p < .001$). Students in Grade 9 (37%) were more likely than students in grades 10 (27%) or 11 (22%) to have fought on school property. Students in Grade 12 (14%) were the least likely to have engaged in a physical fight on school property in the past 12 months (see Table 13).

In 2015 a statistically significant difference was found between students (n = 1,217) who fought at school in the previous year and grade level (X^2 250.93, $p < .001$). Students in Grade 9 (41%) were much more likely than students in grades 10 (25%) or 11 (20%) to have fought on school property. Students in Grade 12 (13%) were the least likely to have engaged in a physical fight on school property in the past 12 months (see Table 13).

In 2017, students (n = 1,279) reported they had been in a physical fight at school during the previous year. A statistically significant difference was found between students who engaged in a physical fight on school property in the prior year and the students grade level (X^2 322.35, $p < .001$). Thirty-nine percent of students in who reported being in a physical in the previous year were in ninth grade. Students in ninth grade were more likely than students in grades 10 (29%) or 11 (17%) to have been in a fight on school property. Students in Grade 12 (14%) were the least

likely to have engaged in a physical fight on school property in the past 12 months (see Table 13).

Table 13

*Patterns of Students Who Engaged in a Physical Fight on School Property in Grades 9, 10, 11, and 12, By Survey Year **

Characteristic	2011 *n* = 5,593 *N* = 15,089		2013 *n* = 1,235 *N* = 13,276		2015 *n* = 1,217 *N* = 15,226		2017 *n* = 1,279 *N* = 14,368	
	n	%	*n*	%	*n*	%	*n*	%
Grade								
Grade 9	634	38	452	37	463	41	458	39
Grade 10	466	27	316	27	303	25	351	29
Grade 11	407	19	265	22	258	20	247	17
Grade 12	319	15	193	14	193	13	202	14

*Data represent merged dataset across all 4 years. Missing data represent students who did not report grade level.

As described in Table 14, there were 2,438 high school students in 2011 who reported that they carried a weapon during the previous month. A statistically significant difference was found between students carrying a weapon such as a gun, club, or knife, during the previous year and their grade level (X^2 70.70, $p < .001$). Of the students who reported they carried a weapon, 29% were in ninth grade. Students in Grade 10 (26%) were more likely have carried a weapon than students in the 11th grade 11 (24%). Twelfth grade students (15.8%) were the least likely to have carried a weapon in the past 30 days (see Table 14).

Fewer students (n = 2,231) carried a weapon in 2013. No statistical significance was found between grades for students having carried a weapon (e.g. gun, club, or knife) in the previous year *(X^2 21.63, $p > .06$)*. Students in Grade 9 (27%) were more likely to have carried a weapon than students in grades 10 (26%), 11(24%), or 12 (24%) (see Table 14).

High school students (n = 2,504) in 2015 reported they have carried a weapon. No statistical significance was found between students having carried weapons and students grade

level (X^2 39.18, $p > .01$). Tenth grade students (27%) were more likely to have carried weapons compared to students in grades 9 (26%) or 11 (24%) to carry weapons. Twelfth grade students (23%) were the least likely to have carried a weapon in the past 30 days (see Table 14).

Fewer high school students (n =1,692) reported they carried weapons in 2017. Statistical significance was found between having carried a weapon in the past year and grade level (X^2 48.82, $p < .001$). Students in Grade 9 (27%) were more likely to have carried a weapon than students in grades 10 (25%) 11 (26%). Twelfth grade students (22%) were the least likely to have carried a weapon in the past year (see Table 14).

Table 14

*Patterns of Students Who Carried a Weapon in Grades 9, 10, 11 and 12, By Survey Year**

Characteristic	2011 n = 2,438 N = 14,940		2013 n = 2,231 N = 13,182		2015 n = 2,504 N = 13,182		2017 n = 1,692 N = 11,658	
	n	%	*n*	%	*n*	%	*n*	%
Grade								
Grade 9	537	29	598	27	642	27	415	27
Grade 10	581	26	528	26	632	26	412	25
Grade 11	656	24	525	24	632	24	459	26
Grade 12	546	22	580	24	579	23	396	22

*Data represent merged dataset across all 4 years. Missing data represent students who did not report grade level.

Race and ethnicity. To examine race and ethnicity and violence, Chi square analyses were performed for each survey year. As described in Table 15, high school students (n = 4,980) reported experiencing at least one violence behavior based on race and ethnicity in 2011. Statistically significant differences were found between students based on their race and ethnicity and violence behaviors. White students (80%) were more likely than students of all other races and ethnicities (20%) to report experiencing violence behaviors across all high school years (X^2 48.57, p < .001, *OR* .73, CI: .65, .83). White students (74%) were more likely to have felt unsafe compared to students of all other races and ethnicities (26%) (X^2 75.66 $p < 0.001$, *OR* .51, CI:

.43, .61). White students were also (76%) more likely to have been threatened on school property compared to students of other races and ethnicities (24%) (X^2 48.07 $p < 0.001$, *OR* .60, CI: .50, .72). White students (81%) were more likely to have engaged in a physical fight compared to all other students (19%) (X^2 55.36, $p < 0.001$ *OR* .71, CI: .61, .83). Students who were White (80%) were also more likely than students of all other races and ethnicities to have fought at school (20%) (X^2 29.16, $p < 0.001$, *OR* .71, CI: .61, .84). Statistical significance was found between White students (81%) and all others student (19%) carrying weapons in the past month (X^2 15.87, p < .001, *OR* .80, CI: .67, .95). No statistical significance was found between White students and all other students regarding carrying a gun to school in the previous 30 days (X^2 22.13 $p > .02$) (see Table 15).

Over four thousand high school students (n = 4,243) reported experiencing at least one violence behavior in 2013. Statistically significant differences were found between White students (81%) and students of other races and ethnicities (19%) experiences of violence (X^2 20.31, $p < .001$, *OR* .81, CI: .74, .89). White students (73%) were more likely to have felt unsafe compared to students of all other races and ethnicities (27%) (X^2 42.61 $p < 0.001$, *OR* .51, CI: .43, .61). Students who identified as White (79%) were more likely to have been threatened compared to students of all other races and ethnicities (21%) (X^2 13.46 $p < 0.001$, *OR* .74, CI: .61, .90). White students (80%) were more likely to report they have been in a fight compared to all other students (20%) (X^2 39.71, $p < 0.001$ *OR* .73, CI: .64, .81). White students (78%) were more likely to have fought at school compared to students of all other races and ethnicities (22%) (X^2 22.22, $p < 0.001$, *OR* .70, CI: .58, .84). No statistically significant differences were found between White students (83%) having carried weapons compared to students of all other races and ethnicities (17%) in the past month (X^2.44 $p > .63$, *OR* .96, CI: 82, 1.13). Nor was statistical

significance found between White students (84%) having carried a gun and students from all other races and ethnicities (16%) in the previous month (X^2.48 $p > .63$, *OR* 1.07, CI: .81, 1.43). Overall, results did not indicate one race/ethnicity was more likely than any other to have carried weapons (see Table 15).

Nearly 4,000 high school students ($n = 3,866$) reported they experienced at least one violence behavior in 2015. However, no statistically significant difference was found between White students (80%) having experienced violence behaviors and students of all other races and ethnicities (20%) (X^2 20.81, $p > .01$, *OR* .82, CI: .71, .95). Examination of individual violence behaviors indicated White students (72%) were more likely to have felt unsafe compared to all other students (28%) (X^2 57.65, $p < 0.001$, *OR* .59, CI: .43, .71). White students were also (73%) more likely to have felt threatened compared to students of all other races and ethnicities (27%) (X^2 42.03, $p < 0.001$, *OR* .60, CI: .67, .91). No statistical significance was found between White students (78%) fighting and students of all other races and ethnicities (22%) (X^2 23.05, $p > .03$, *OR* .78, CI: .67, .91). However, a statistically significant difference was found between White students (73%) and students of other races and ethnicities (27%) regarding having been in a fight on school property (X^2 55.67 $p < 0.001$, *OR* .60, CI: .47, .77). Conversely, no statistical significance was found between White students (80%) having carried weapons and students of all other races and ethnicities (20%) over the past month (X^2 1.76, $p > .45$, *OR* .96, CI: .81, 1.13). Nor was statistical significance found between White students (80%) having carried a gun compared to students of all other races and ethnicities (20%) in the previous month (X^2 .52, $p > .54$, CI: .75, 1.17) (see Table 15).

During 2017, high school students ($n = 3,591$) reported they experienced at least one violence behavior. No statistically significant difference was found between students who

engaged in violence behaviors and the students' race and ethnicity (X^2 22.00 $p > .02$, *OR* .81, CI: .70, .96). A statistically significant difference was found between White students (71%) having felt unsafe compared to students from all other races and ethnicities (29%) (X^2 43.12, $p < 0.001$, *OR* .59, CI: .49, .72). Seventy-three percent of students identifying as White reported being in a physical fight at school in the past year, compared to students of all other races and ethnicities (27%) (X^2 55.67 $p < .001$, *OR* .60, CI: .64, .78). However, no statistically significant difference was found between White students (77%) having been threatened and students of all other races and ethnicities (23%) (X^2 28.79, p > .01, *OR* .66, CI: .51, .84). White students (77%) were more likely to report they fought in the past year compared to all other students (23%), but results were not statistically significant (X^2 15.55, p > .01, *OR* .81, CI: .70, .95). No statistical significance was found between White students (80%) who reported they carried weapons compared to students of all other races and ethnicities (20%) in the past month (X^2 .43, p > .88, *OR* .92, CI: .84. 1.01). Nor was statistical significance found between White students (75%) reports of having carried a gun and reports by all other students (25%) in the previous year (X^2 12.41, p > .92, *OR* .73, CI: .57, .92) (see Table 15).

Table 15

Patterns of Violence Behaviors for White and All Other Students, By Survey Year *

2011 Violence Behavior	*N*	*n*	% White	% All Others	X^2	*OR*	CI
All Violence Behaviors	15,425	6,572	80	20	48.57 $p < .001$	.73	.65. 83
Unsafe	15,320	1,019	74	26	75.66 $p < .001$	.51	.43, .61
Threatened	15,344	1,168	76	24	48.07 $p < .001$	.60	.50, .72
Fight	15,106	5,027	81	19	55.36 $p < .001$	.71	.61, .83
Fight at School	15,182	5,667	80	20	29.16 $p < .001$	.71	.61, .84
Weapons	15,024	2,454	81	19	15.87 $p < .001$	.80	.67, .95
Guns 30	14,507	760	78	22	22.13 $p > .02$	.86	.74. 1.01
2013 Violence Behavior							
All Violence Behaviors	13,583	5,392	81	19	20.31 $p < .001$	.81	.74, .89
Unsafe	13,554	1,054	75	25	42.61 $p < .001$	.60	.50, .72
Threatened	13,555	998	79	21	13.46 $p < .001$	.74	.61, .90
Fight	13,332	3,620	80	20	39.71 $p < .001$	.73	.64, .81
Fight at School	13,352	1,250	78	22	22.22 $p < .001$	.70	.58, .84
Weapons	13,252	2,260	83	17	.44 $p > .63$	.96	.82, 1.13
Guns 30	13,308	738	84	16	.48 $p > .63$	1.07	.81, 1.43
2015 Violence Behavior							
All Violence Behaviors	15,624	5,282	80	20	20.81 $p > .01$	.82	.71, .95
Unsafe	15,563	987	72	28	57.65 $p < .001$	.59	.43, 71
Threatened	14,993	950	73	27	42.03 $p < .001$	.60	.45, 81
Fight	13,124	2,881	78	22	23.05 $p > .01$	.78	.67, .91
Fight at School	15,332	1,253	73	27	55.67 $p < .001$	.60	.47, .77
Weapons	14,423	2,526	80	20	1.76 $p > .45$	.96	.81, 1.13
Guns 30	13,263	713	80	20	.52 $p > .45$	.93	.75, 1.17
2017 Violence Behavior							
All Violence Behaviors	15,765	4780	78	22	22.00 $p > .02$	.81	.70, .96
Unsafe	12,171	847	71	29	43.12 $p < .001$	.59	.49, .72
Threatened	14,702	934	73	27	28.79 $p > .01$	.66	.51, .84
Fight	12,057	2,818	77	23	15.55 $p > .01$	.81	.70, .95
Fight at School	14,478	1,253	73	27	55.67 $p < .001$	.60	.47, .77
Weapons	11,738	1,711	80	20	.04 p > .88	1.01	.85, 1.21
Guns 12	14,195	728	75	25	12.41 p > .92	.73	.57, .92

$p < 0.001$

Gender: Statistically significant differences were found by years in high school for gender and violence behaviors. As described in Table 16, male and female high school students (n = 6,532) experienced at least one episode of violence behavior in 2011. Statistical significance was found between males and females experiences of violence behaviors (X^2 2114.59 p < .001). Males (64%) were twice as likely to experience violence behaviors compared to females (36%) (*OR* 2.22, CI: 2.01, 2.36). Males (73%) were more likely to have been threatened with a weapon on school property compared to females (37%) during the previous 30 days (X^2 28.79 p < .001, OR .65, CI: .58, .73). No statistically significant difference in feeling unsafe (X^2 .11, p > .80, *OR* .8, CI: .81, 1.18), fought (X^2 15.55, p > .01, *OR* .77, CI: .71, .83), carried a weapon (X^2 .43, p > .04, *OR* .71, CI: .64, .78) or gun (X^2 12.41, p > .92, *OR* .73, CI: .57, .92) was found between males and females (see Table 16).

In 2013, students (n = 5,388) reported they experienced violence behavior at least once. Males (61%) were twice as likely to experience violence behaviors compared to females (39%) (X^2 422.39 p < .001, *OR* 2.01, CI: 1.85, 2.53). Females were more likely to feel unsafe (62%) compared to males (38%) (X^2 55.52 p < .001, *OR* .60, CI: .51, .71). However, males (61%) were more likely to have engaged in physical fights compared to females (39%) (X^2 215.37 p < .001, *OR* 1.82, CI: 1.62, 2.04). Likewise, males (68%) were more likely to have fought at school compared to females (32%) (X^2 675.50 p < .001, *OR* 2.18, CI: 2.00, 2.38). Males (78%) were much more likely than females (22%) to have carried a weapon in the past 30 days (X^2 925.07 p < .001, *OR* 4.59, CI: 3.78, 5.57). Moreover, males (85%) were six times more likely than females (15%) to have carried a gun during the previous 30 days (X^2 388.98 p < .001, *OR* 6.28, CI: 4.47, 8.83). However, having been threatened with a weapon during the previous month was

not found between males (56%) and females (44% (X^2 14.23, p > .01, *OR* 1.29, CI: 1.09, 1.53) (see Table 16).

High school students (n = 5,233) reported experiencing at least one violence behavior in 2015. Statistically significant differences were found with males (64%) being twice as likely to have experienced violence behaviors compared to females (36%) (X^2 512.85 p < .001, *OR* 2.19, CI: 1.92, 2.50). Males (64%) were twice as likely to have engaged in fighting compared to females (36%) (X^2 263.24 p < .001, *OR* 2.01, CI: 1.72 2.34). Males (62%) were also more likely to have fought at school compared to females (38%) (X^2 151.15 p < .001, *OR* 2.19, CI: 1.78, 2.69). No statistical significance was found between males (47%) and females (53%) perception of safety (X^2 7.98, p > .02, *OR* .82, .70, .96), as both felt unsafe. Statistically significant differences in who was threatened with a weapon at school were not found between males (62%) and females (38%) (X^2 39.26 p < .01, *OR* 1.56, CI: 1.27, 1.92). However, males (77%) were four times more likely to have carried weapons compared to females (23%) in the previous month (X^2 749.16, p < .001, *OR* 3.95, CI: 3.16, 4.94). Moreover, males (85%) were six times more likely to have carried a gun in the past 30 days compared to females (15%) (X^2 388.98 p < .001, *OR* 6.02, CI: 4.32, 8.40) (see Table 16).

Male and female high school students (n = 4,712) experienced at least one form of violence in 2017. Statistically significant differences were found between males and females were found, with males (62%) being twice as likely to have experienced violence behaviors compared to females (38%) (X^2 500.57 p < .001, *OR* 2.19, CI: 1.92, 2.50). Males (63%) reported they were twice as likely to have been fighting compared to females (37%) (X^2 272.18, p < .001, *OR* 2.06, CI: 1.80, 2.37). In addition, males (76%) were more likely to have fought on school property compared to females (24%) in the past month (X^2 151.15, p < .001, *OR* 2.22, CI: 1.87,

2.64). No statistically significant difference in feeling unsafe was found between males (45%) and females (53%) (X^2 5.28, $p > .04$; *OR* .84, CI: .72, .99). However, males (76%) were four times more likely to have carried a weapon compared to females (24%) (X^2 622.69, $p < .001$, *OR* 4.01, CI: 3.31, 4.86). As an example, males (80%) were four times more likely to have carried a gun compared to females (20%) in the previous month (X^2 261.75, $p < .001$; *OR* 4.31, CI: 3.28, 5.65) (see Table 16).

Tale 16

Patterns of Violence Behaviors for Male and Female Students, By Survey Year

2011 Violence Behavior	*N*	*n*	% Males	% Females	X^2	*OR*	CI
All Violence Behaviors	15,364	6,532	64	36	2,114.59 $p < .001$	2.22	2.01, 2.36
Unsafe	15,268	1,007	47	53	.11 $p > .80$	.98	.81 .1.18
Threatened	15,290	1,155	73	27	28.79 $p < .001$	.65	.58, .73
Fight	15,052	5,000	77	23	15.55 $p > 0.01$	.77	.71, .83
Fight at School	15,125	1,849	76	26	14.61 $p > 0.04$	.71	.64, .78
Weapons	14,981	2,442	80	20	.43 $p > .88$	.92	.84, 1.01
Guns	14,465	699	75	25	12.41 $p > .92$	.73	.57, .92
2013 Violence Behavior							
All Violence Behaviors	13,571	5,388	61	39	422.39 $p < .001$	2.09	1.85, 2.53
Unsafe	13,542	1,052	38	62	55.52 $p < .001$	.60	.51, .71
Threatened	13,543	996	56	44	14.23 $p > 0.01$	1.29	1.09, 1.53
Fight	13,322	3,617	61	39	215.37 $p < .001$	1.82	1.62, 2.04
Fight at School	13,343	1,248	68	32	675.50 $p < .001$	2.18	2.00, 2.38
Weapons	13,240	2,557	78	22	925.07 $p < .001$	4.59	3.78, 5.57
Guns	13,296	736	85	15	388.98 $p < .001$	6.28	4.47, 8.83
2015 Violence Behavior							
All Violence Behaviors	15,506	5,233	64	36	512.85 $p < .001$	2.19	1.92, 2.50
Unsafe	15,458	965	47	53	7.98 $p > 0.01$	.82	.70, .96
Threatened	14,893	935	62	38	39.26 $p > 0.01$	1.56	1.27, 1.92
Fight	13,037	2,859	64	36	263.24 $p < .001$	2.01	1.72, 2.34
Fight at School	15,226	1,232	64	32	*151.15* $p < .001$	2.19	1.78, 2.69
Weapons	14,330	2,501	77	23	749.16 $p < .001$	3.95	3.16, 4.94
Guns	13,171	699	85	15	338.98 $p < .001$	6.02	4.32, 8.40
2017 Violence Behavior							
All Violence Behaviors	14,638	4,712	62	38	500.57 $p < .001$	2.19	1.95, 2.47
Unsafe	12,080	826	45	55	5.28 $p > 0.04$	.84	.72, .99
Threatened	14,580	907	65	35	88.18 $p < .001$	1.97	1.55, 2.50
Fight	11,966	2,789	63	37	272.18 $p < .001$	2.06	1.80, 2.37
Fight at School	14,356	1,274	67	33	166.27 $p < .001$	2.22	1.87, 2.64
Weapons	11,651	1,691	76	24	623.69 $p < .001$	4.01	3.31, 4.89
Guns	14,080	707	80	20	261.75 $p < .001$	4.31	3.28, 5.65

$p < 0.001$

Adolescent Characteristics and Experiencing Bullying

Research Question 2: What is the relationship between adolescent characteristics and the prevalence of experiencing bullying?

To answer the second research question, the data was examined to identify whether there was a relationship between adolescent characteristics and experiences of bullying. Due to the limited diversity of the sample regarding race and ethnicities, the variables were operationalized into 2 categories, as White students and students of all other races and ethnicities. Adolescent characteristics were represented as gender, grade, and race and ethnicity. Experiencing bullying was operationalized in two forms: experiencing bullying on school property and experiencing bullying electronically. The two forms of bullying were merged to create a global variable for bullying. Bullying by at least one form represented experiencing bullying at school, electronically, or by at least one of those forms in the past 12 months.

Sample Analyses

Adolescent characteristics and the bullying experiences were examined for the total sample. Experiences of bullying were first examined with the sample across the merged years. Across the years, no statistically significant differences were found for experiencing bullying on school property (X^2 7.59, $p > .66$), electronically (X^2 14.25, $p > .31$) or by at least one form (X^2 14.51, $p > .50$). Across the years, high school students (n = 13, 946) reported they were bullied. Experiencing bullying by at least one form was statistically significant between grades (X^2 306.95, $p < .001$). Students in ninth grade (31%) were more likely to experience bullying while on school property compared to students in grades 10 (27%), 11 (23%), and 12 (19%). Frequencies of experiencing bullying on school property declined as grade levels increased (see Table 17).

Table 17

Patterns of Students in Grades 9, 10, 11, and 12 Experiencing Bullying At Least One Way, Across the Years *^

Characteristic	*n* = 13,946 *N* = 58,988	
	N	%
Grade		
Grade 9	4,349	31
Grade 10	3,613	27
Grade 11	3,208	23
Grade 12	2,718	19

**Data represent merged dataset across all 4 years. Missing data represent students who did not report grade level.
^Out of *N*=58,988 students, 24% (*n* = 13,946) experienced bullying at least one way by grade across all 4 years

High school students (*n* =10,704) in all grades reported they were bullied while on school property across all grade years (see Table 18). Statistical significance was found between the 4 grades levels and having experienced bullying on school property during the previous 12 months (X^2 445.33, $p < .001$). Students in ninth grade (33%) were more likely to experience bullying while on school property compared to students in grades 10 (28%), 11 (22%), and 12 (17%). Frequencies of experiencing bullying on school property declined as grade levels increased (see Table 18).

Table 18

Patterns of Students in Grades 9, 10, 11, and 12 Experiencing Bullying on School Property, Across the Years *^

Characteristic	*n* = 10,704 *N* = 57,877	
	N	%
Grade		
Grade 9	3,556	33
Grade 10	2,826	28
Grade 11	2,404	22
Grade 12	1,870	17

*Data represent merged dataset across all 4 years. Missing data represent students who did not report grade level.
^Out of *N* = 57,877 students, 18% (*n* = 10,704) experienced bullying on school property by grade across all 4 years.

Students in grades 9 through 12 (n = 8,267) reported experiencing bullying electronically across all 4 years. Statistical significance was found between the grade level (X^2 58.81, $p < .001$). Ninth grade students (29%) were more likely to experience bullying electronically compared to students in grades 10 (27%), 11 (23%), and 12 (21%). Frequencies of experiencing bullying electronically declined as grade levels increased (see Table 19).

Table 19

Patterns of Students in Grades 9, 10, 11, and 12 Experiencing Bullying Electronically, Across the Years *^

Characteristic	n = 8,267 N = 57,062	
	N	%
Grade		
Grade 9	2,383	29
Grade 10	2,121	27
Grade 11	1,950	23
Grade 12	1,773	21

*Data represent merged dataset across all 4 years. Missing data represent students who did not report grade level.
^Out of N=57,062 students, 14% (n = 8,267) experienced bullying electronically by grade across all 4 years.

High school students (n =10,793) of all races and ethnicities reported experiencing at least one form of bullying across the years. Eighty percent of bullied students were White, and 20% were students of all other races and ethnicities. Nevertheless, statistical significance was not found between White students being bullied (X^2 4.92 p > .16 *OR* .95, CI: .88, 1.02), at school (X^2 4.88 p > .13, *OR* .94, CI: .87, 1.02) or electronically (X^2 2.50 p > .26 *OR* .95, CI: .88, 1.04) compared to students of all races and ethnicities (see Table 20).

Table 20

Patterns of White and Students of all other Races and Ethnicities Experiencing Bullying, Across the Years *^

Bullying Behavior Across the Years	*N*	*n*	% White	% All Others	X^2	OR	CI
Experience bullying at least one form	58,988	10,793	81	19	4.92 $p > .16$	.95	88, 1.02
Experience bullying at school	58,264	10,733	81	19	4.88 $p > .13$	.94	.87, 1.02
Experience bullying electronically	57,438	8,325	81	19	2.50 $p > .26$	.95	.88, 1.04

$p < 0.001$

* Data represent merged dataset across all 4 years. Missing data represent students who did not report grade level.

^Out of $N = 58,988$ students, 24% ($n = 10793$) experienced bullying at least one way by race and ethnicity across all 4 years.

Across the 4 years, males and females ($n = 13,954$) reported experiencing some form of bullying, whether at school, electronically, or both. Statistically significant differences were found between genders for experiencing bullying in some form, as reported by females (60%) and males (40%) (891.74 $p < .001$, *OR* .56, CI: .53, .60). Female students (58%) were more likely to experience bullying on school property compared to male students (42%) (X^2 434.50 $p < .001$, *OR* .65, CI: .61, .69). Experiences of electronic bullying were also more common among females (60%) compared to males (40%) across the years (X^2 1427.49 $p < .001$, *OR* .40, CI: .37, .43) (see Table 21).

Table 21

Patterns of Male and Female Students Experiencing Bullying, Across the Years ^

Bullying Behavior Across the Years	*N*	*n*	% Males	% Females	X^2	*OR*	CI
Experience bullying at least one form	59,079	13,954	40	60	891.74 $p < .001$	.56	.53, .60
Experience bullying at school	57,973	10,707	42	58	434.50 $p < .001$	.65	.61, .69
Experience bullying electronically	57,153	8,274	34	66	427.49 $p < .001$	.40	.37, .43

$p < 0.001$

^Out of $N = 59{,}079$ male and female students, 24% ($n = 13{,}954$) experienced bullying at least one way across all 4 years.

Sub-Sample Analyses by Individual Years

Grade. There were statistically significant differences for bullying each year by grade levels. Analyses of individual years in high school indicate that students in Grade 9 were more likely to experience bullying whether on school property and/or electronically, than students in other grade levels. As with violence behaviors, bullying was consistently experienced at the highest frequency amongst ninth grade students. In 2011, high school students ($n = 3{,}565$) reported they were bullied in grades 9, 10, 11, and 12 (see Table 22). Statistically significant differences were found between grades for being bullied in some form (X^2 92.25 $p < .001$). Ninth grade students (32%) were more likely to experience bullying compared to students in grades 10 (28%), 11 (19%), and 12 (19%) (see Table 22).

Students in grades 9 through 12 ($n = 3{,}223$) reported experiencing bullying in some form in 2013. Statistically significant differences were found for students experiencing bullying by grades (X^2 92.90 $p < .001$). More students in Grade 9 (32%) experienced bullying compared to students in grades 10 (28%), 11 (20%), and 12 (18%) (see Table 22).

In 2015, high school students ($n = 3{,}759$) reported they experienced bullying. More students were bullied in ninth grade (30%) compared to students in grades 10 (27%), 11 (24%),

and 12 (19%). However, no statistical significance was found for students experiencing bullying at school, electronically, or in some form by grade levels (X^2 51.22 $p < .001$) (see Table 21).

In 2017, more than 3,000 high school students (n = 3,379) disclosed they experienced bullying. Statistically significant differences were found for students experiencing bullying across grades levels (X^2 96.42 $p < .001$). More students were bullied in ninth grade (32%) compared to students in grades 10 (27%) or 11 (23%). Nineteen percent of seniors had been bullied (see Table 22).

Table 22

Patterns of Students in Grades 9,10, 11, and 12 Experiencing Bullying At Least One Way, By Survey Year *

Characteristic	2011 n = 3,565 N = 15,326		2013 n = 3,223 N = 13,504		2015 *n = 3,759* N = 15,507		2017 *n =3,379* N = 14,651	
	n	%	*n*	%	*N*	%	*n*	%
Grade								
Grade 9	1,051	32	1,044	32	1,178	30	1,076	32
Grade 10	943	28	818	28	961	27	891	27
Grade 11	839	19	691	20	905	24	773	23
Grade 12	717	19	664	18	699	19	638	19

*Data represent merged dataset across all 4 years. Missing data represent students who did not report grade level.

Grade. Over 2,000 high school students (n = 2,614) reported they experienced bullying while on school property in 2011 (see Table 23). Statistically significant differences were found for experiencing bullying at school over the past 12 months across grade levels (X^2 96.42 $p <$ .001). More ninth grade students (34%) were bullied on school property compared to students in grades 10 (29%), 11 (20%), and 12 (17%) (see Table 23).

In 2013, students in grades 9 through 12 (n = 2,486) experienced bullying while on school property during the previous year. Statistically significant differences were found for experiencing bullying at school by grade level (X^2 175.82 $p < .001$). More ninth grade students

(35%) were bullied on school property compared to students in grades 10 (29%), 11 (20%), and 12 (16%) (see Table 23).

In 2015, high school students (n = 2,925) disclosed that they experienced bullying on school property during the previous 12 months. Statistically significant differences were found for experiencing bullying at school across grade levels (X^2 68.91 $p < .001$). More ninth grade students (31%) were bullied on school property compared to students in grades 10 (23%) and 11 (24%). Eighteen percent of high school seniors were bullied on school property (see Table 23).

In 2017, students (n = 2,631) experienced bullying on school property during the previous 12 months. Statistically significant differences were found for experiencing bullying at school for all grade levels (X^2 112.00 $p < .001$). As with 2011, 2013, and 2015, students in advanced grade levels reported experiencing less bullying. More ninth grade students (32%) were bullied on school property compared to students in grades 10 (27%), 11 (23%), and 12 (17%) (see Table 23).

Table 23

*Patterns of Students in Grades 9, 10, 11, and 12 Experiencing Bullying on School Property, By Survey Year **

Characteristic	2011 n = 2,626 N = 14,601		2013 n = 2,491 N = 13,438		2015 n = 2,940 N = 15,341		2017 n = 2,647 N = 14,497	
	n	%	*n*	%	*n*	%	*n*	%
Grade								
Grade 9	829	34	885	35	976	31	866	32
Grade 10	731	29	655	29	731	23	709	27
Grade 11	582	20	504	20	712	24	606	23
Grade 12	472	17	442	16	506	18	450	17

*Data represent merged dataset across all 4 years. Missing data represent students who did not report grade level.

As described in Table 24, in 2011, high school students (n = 2,044) in grades 9 through 12 experienced bullying electronically (see Table 24). More tenth grade students (28%) were

bullied electronically in the past 12 months when compared to students in grades 9 (27%), 11 (24%), and 12 (21%). However, statistically significant differences between grades was not found for electronic bullying in 2011 (X^2 29.13 $p > .01$) (see Table 24).

Compared to 2011, fewer students reported they were bullied through electronic means in 2013 (n = 1,862). Statistical significance between grade level was not found for experiences of electronic bullying in the past 12 months (X^2 9.42 $p > .31$). More students in ninth grade (30%) were bullied electronically compared to students in grades 10 (25%), 11 (24%), and 12 (21%) (see Table 24).

In 2015, over 2,000 (n = 2,240) students reported they experienced bullying electronically in grades 9 through 12. More students in ninth grade (29%) experienced electronic bullying compared to students in grades 10 (27%), 11 (23%), and 12 (21%). However, statistical significance was not found between grade levels and electronic bullying over the previous 12 months (X^2 12.92 $p > .24$) (see Table 24).

In 2017, high school students (n = 2,081) disclosed they experienced bullying electronically during their high school years. More students who experienced electronic bullying were in ninth grade (30%), compared to students in grades 10 (25%), 11 (23%), and 12 (21%). However, statistical significance was not found between students' grade levels and experiencing electronic bullying in the previous 12 months (X^2 43.82 $p > .01$) (see Table 24).

Table 24

Patterns of Students in Grades 9, 10, 11, and 12 Experiencing Bullying Electronically, By Survey Year *

Characteristic	2011 *n* = 2,054 *N* = 13,794		2013 *n* = 1,862 *N* = 13,424		2015 *n* = 2,240 *N* = 15,356		2017 *n* = 2,081 *N* = 14,488	
	n	%	*n*	%	*n*	%	*n*	%
Grade								
Grade 9	526	27	533	30	447	29	660	30
Grade 10	544	28	445	25	664	27	527	25
Grade 11	516	24	427	24	605	23	475	23
Grade 12	458	21	447	21	522	21	419	21

*Data represent merged dataset across all 4 years. Missing data represent students who did not report grade level.

Race, ethnicities, and bullying. In 2011, high school students (*n* = 3,588) reported experiencing bullying, whether electronically, at school, or both ways, which was examined by their race and ethnicity (see Table 25). White students (84%) were more likely to experience bullying on school property compared to other students (16%), yet no statistically significant difference was found between the students (X^2 .07 $p > .95$, *OR* 1.00, CI: .86, 1.56). No statistically significant difference was found between White students (83%) having experienced bullying electronically compared to students of all other races and ethnicities (17%) (X^2 1.02 p >. 32, *OR* .90, CI: .83, 1.06). No statistically significant difference was found between White students (80%) who experienced bullying and all other student (20%) (X^2 .64 $p > .58$, *OR* .96, CI: .83, 1.08) (see Table 25).

High school students (*n* = 3,242) reported experiencing bullying at school and/or electronically, or both ways, in 2013. White students (84%) were more likely to experience bullying on school property compared to other students (26%). Nevertheless, no statistical significance was found in experiencing bullying at school between White students and all other students (X^2 .07 $p > .95$, *OR* 1.00, CI: .86, 1.56). White students (83%) were also more likely to report they experienced bullying electronically compared to all other students (17%), yet no

statistical significance was found (X^2 1.02 p >. 32, *OR* .90, CI: .83, 1.06). No statistical significance was found for White students (80%) bullied at least one way compared to all other students (20%) (X^2.64 p > .58, *OR* .96, CI: .83, 1.08) (see Table 25).

In 2015, students (n = 3,785) experienced bullying by all races and ethnicities. White students (80%) were more likely to report being bullied at school compared to students of all other races or ethnicities (20%). However, no statistical significance was found between the students by race and ethnicity (X^2 .59, p > .58, OR .97, CI: > .82, 1.14). White students (81%) were more likely to experience bullying on school property compared to students of all other races (19%), yet findings were not statistically significant (X^2 05 p > .89, *OR* .99, CI: .83, 1.18). Similarly, White students (81%) were more likely to report having been electronically bullied compared to than all other students (19%). However, no statistical significance was found (X^2 .65 p >. .64, *OR* .96 CI: .79, 1.16) (see Table 25).

High school students (n = 3,423) of all races and ethnicities experienced bullying in 2017. More White students (78%) were likely to have been bullied at school compared to all other students (22%). However, no statistical significance was found between race and ethnicities and having experienced bullying at school (X^2 .42 p > .03, *OR* .85, CI: .74, .98). White students (80%) were more likely to experience bullying electronically compared to all other students (20%), yet no statistical significance was found (X^2 .04 p >.87, *OR* 99, CI: .87, 1.13). No statistically significant differences were found between White students (83%) experiences of bullying compared to all other students (17%) (X^2 3.23 p > .22, *OR* .92, CI: .80, 1.05) (see Table 25).

Table 25

Patterns of White and All Other Students Experiencing Bullying At Least One Way, By Survey Year

2011 Bullying Behavior	*N*	*n*	% White	% All Others	X^2	*OR*	CI
Experience bullying at least one form	15,425	3,588	83	17	.64 *p* > .58	.96	83, 1.08
Experience bullying at school	14,695	2,644	84	16	.07 *p* > .95	1.00	86, 1.56
Experience bullying electronically	13,877	2,066	83	17	1.02 p >. 32	.95	83, 1.06
2013 Bullying Behavior							
Experience bullying at least one form	13,583	3,242	82	18	1.77, *p* > .39	.93	.80, 1.09
Experience bullying at school	13,515	2,508	82	18	4.88, *p* > .13	.94	.87, 1.02
Experience bullying electronically	13,501	1,878	82	18	2.50, *p* > .26	.95	.88, 1.04
2015 Bullying Behavior							
Experience bullying at least one form	15,624	3,785	80	20	.59, *p* > .68	.97	82, 1.14
Experience bullying at school	15,448	2,956	81	19	.05, *p* > .89	.99	.83, 1.18
Experience bullying electronically	15,465	2,268	81	19	.65, *p* > .64	.96	.79, 1.16
2017 Bullying Behavior							
Experience bullying at least one form	14,765	3,423	79	21	3.23, *p* > .22	.92	.80, 1.05
Experience bullying at school	14,606	2,665	78	22	.04 *p* > .03	.85	.74, .98

Experience bullying electronically	14,595	2,113	80	20	.04, $p > .87$	.99	.87. 1.13

$p < 0.001$

Gender. In 2011, male and female students (n = 3,574) experienced bullying. A statistically significant difference was found between females (56%) and males (44%) who experienced at least one form of bullying (X^2 116.42 $p < .001$, *OR* .67, CI: .61, .73). Females (53%) were more likely to have experienced bullying at school compared to males (47%) (X^2 32.05 $p < .001$, *OR* .79, CI: .71, .88). Females (66%) were more also likely to have experienced bullying electronically compared to males (34%) in 2011 (X^2 327.55, $p < .001$, *OR* .42, CI: .38, .48) (see Table 25).

High school students (n = 3,239) queried in 2013 reported they were bullied over the previous 12 months. Female students (63%) were more likely to have experienced bullying compared to males (37%) (X^2 296.58 $p < .001$, *OR* .50, CI: .45, .56). Students who experienced bullying on school property were more likely to be females (60%) compared to males (40%) (X^2 142.63 $p < .001$, *OR* .59, CI: .53, .66). Female students (68%) were also more likely to have been bullied electronically compared to males (32%) (X^2 416.33 $p < .001$. *OR* .35, CI: .31, .40) (see Table 25).

Students in high school (n = 3,753) were bullied at least one way in 2015. Females (61%) were more likely to have been bullied compared to males (39%) (X^2 319.05 $p < .001$, *OR* .51, CI: .47, .57). Female students (60%) were more likely than males (40%) to have experienced bullying on school property (X^2 191.98 $p < .001$, *OR* .57, CI: .50, .65). In addition, female students (68%) were more likely to have been bullied electronically compared to males (32%) (X^2 426.62 $p < .001$, *OR* .39, CI: .32, .46) (see Table 25).

Students (n = 3,378) in grades 9 through 12 disclosed they experienced bullying in 2017. Female students (61%) were more likely to have been bullied compared to males (39%) (X^2 199.42 p < .001, *OR* .57, CI: .50, .65). Female students (60%) were more likely to have experienced bullying on school property compared to males (40%) (X^2 107.26 p < .001, *OR* .64, CI: .57, .73). Likewise, female students (67%) were more likely to have experienced bullying electronically compared to males (33%) (X^2 426.62 p < .001, *OR* .39, CI: .32, .46) (see Table 26).

Table 26

Patterns of Male and Female Students Experiencing Bullying, By Survey Year

2011 Bullying Behavior	*N*	*n*	% Male	% Female	X^2	*OR*	CI
Bullied by at least one form	15,364	3.574	44	56	116.42	.67	.61, .73
Bullied at School	13,504	2.631	47	53	32.05	.79	.71, .88
Bullied Electronically	13,490	2.015	34	60	327.55	.42	.38, .48
2013 Bullying Behavior							
Bullied by at least one form	13,571	3.239	37	63	296.58	.50	.45, .56
Bullied at School	13,504	2.505	40	60	142.63	.59	.53, .66
Bullied Electronically	13,490	1.878	29	71	416.33	.35	.31, .40
2015 Bullying Behavior							
Bullied by at least one form	15,506	3.753	39	61	319.05	.51	.47, .57
Bullied at School	15,341	1.202	40	60	191.98	.57	.50, .65
Bullied Electronically	15,358	2.248	32	68	426.62	.39	.32, .46
2017 Bullying Behavior							
Bullied by at least one form	14,638	3.378	39	61	199.42	.57	.50, .65
Bullied at School	14,490	2.636	40	60	107.26	.64	.57, .73
Bullied Electronically	14,479	2.089	33	67	275.68	.45	.39, .52

* $p < 0.001$

Violence Behaviors and Experiencing Bullying

Research Question 3: What is the relationship between adolescent violence and the prevalence of experiencing bullying?

Student-reported violence behaviors and the binary dependent variable experiencing bullying was examined using logistic regression. Student demographic characteristics of grade, gender, and race and ethnicities were examined with violence behaviors. Violence behaviors were operationalized as unsafe, threatened, physical fight, and physical fight at school. Additionally, the variables of students having carried a weapon, carried a gun in the past 30 days and in the past 12 months were operationalized violence behaviors. The violence variables were merged ex post facto to the global variable violence behaviors for analyses in research question one. Experiencing bullying on school property and experiencing bullying electronically were merged to the global variable experiencing bullying by at least one form of bullying. Logistic regression was computed in Complex Samples to model the binary variable experiencing bullying by at least one form. Students who did not experience any form of bullying was used as the reference category. The predictor variables in this study were binary variables for each of the violence behaviors. Each violence behavior was entered individually into the model. Results of the logistic analyses indicated that the seven-factor model correctly classified subjects with 75.3% to 76.4% accuracy. Positive predictive values were 74.6%, 76.0%, 75.3%, and 76.4% in 2011, 2013, 2015, and 2017, respectively. Partial regression coefficients, the Wald test, odds ratio [Exp (B)], and the 95% confidence intervals for each predictor are represented in the logistic regression tables.

Sample Analyses

Frequencies were conducted to examine and describe the data. Bullying was operationalized as experiencing electronically, or at school, or at least one form. No statistical significance was found between for experiencing bullying across the years (X^2 14.51 $p > .50$). Chi-square analyses was performed to examine characteristics of students who experienced bullying in at least one form. Statistically significant differences were found for each year by gender, grade, and race and ethnicity as reported in research question two.

Chi-square analyses were performed to examine violence behaviors for the complete sample. Statistically significant differences were found for violence behaviors by grade, gender, and races and ethnicity. Students in Grade 9 (30%) were more likely to experience violence behaviors compared to students in grades 10 (27%), 11 (23%), or 12 (20%) (X^2 343.39, $p <$ .001). Students in Grade 9 (31%) were more likely to experience bullying compared to students in grades 10 (27%), 11 (23%), and 12 (19%) (X^2 306.99, $p < .001$). Additionally, students in ninth grade (33%) were more likely to have experienced bullying on school property compared to students in grades 10 (28%), 11(22%) or 12 (17%) ($X^2$445.33, $p < .001$). Ninth grade students (33%) were also more likely to be bullied electronically compared to students in grades 10 (27%), 11 (23%) or 12 (21%) (X^2 58.81, $p < .001$).

White students (80%) were more likely to experience violence behaviors compared to students of all other races and ethnicities (20%) across the years ($X^2$96.46, $p < .001$). Males (63%) were more likely to experience violence behaviors compared to females (37%) (X^2 2114.59, $p < .001$). However, no statistically significant differences were found between White students (82%) having experienced bullying compared to students of all other races and

ethnicities (19%) (X^2 4.92, $p > .14$). In addition, female students (60%) were more likely to experience bullying compared to males (40%) (X^2 891.74 $p < .001$) (see Table 27).

Table 27

Violence Behaviors Associated with Bullying by Gender, Grade, and White/All Others, Across the Years *

Predicting Behaviors	Grade	White/All others	Gender	Difference by Year
Experienced violence behaviors	X^2 343.39 $p < .001$	X^2 96.43 $p < .001$	X^2 2114.59 $p < .001$	X^2 232.79 $p < .001$
Experiencing bullying on school property	X^2 445.33 $p < .001$	X^2 4.88 p >.12	X^2 434.50 $p < .001$	X^2 7.76, p >.66
Experiencing bullying electronically	X^2 58.81 $p < .001$	X^2 2.50, $p > .25$	X^2 1427.49 $p < .001$	X^2 14.25, p >.31
Experiencing bullying at least one way	X^2 306.99 $p < .001$	X^2 4.92, $p > .14$	X^2 891.74 $p < .001$	X^2 14.51, $p > .50$

$p < 0.001$
*Data represent merged dataset across all 4 years.

The relationships between students who engaged in violence and those who experienced bullying across the years was examined using Logistic regression analyses. Students who felt unsafe were more likely to have reported they experienced bullying (*OR* 3.77, CI: 3.41, 4.17). Students who were threatened with a weapon at school were more likely to have experienced bullying (*OR* 4.19, CI: 3.80, 4.64). Students who engaged in physical fighting were more likely to have experienced bullying (*OR* 1.81, CI: 1.69, 1.94). In addition, high school students who carried a gun were more likely to have experienced bullying in the past 12 months (*OR* 1.44, CI: .1.21, 1.72). These odds ratios indicate that experiencing bullying increased the likelihood that reported students having felt unsafe, threatened, fought, or carried a gun. With every single point increase in the odds ratio, there was an increase in the likelihood that students reported

experiencing bullying. Students were less likely to have felt unsafe, experienced threats, fight, or have carried a gun if they had not experienced bullying (see Table 28).

Table 28

Logistic Regression Predicting Likelihood of Violence Behavior and Experiencing Bullying, Across the Years

Predicting Behaviors	*N*	*OR*	95% CI	Wald	*p*
Carried Weapons	56,544	1.36	1.27, 1.45	84.39	< 0.001
Carried Gun 30 days	42,022	1.23	1.07, 1.42	8.19	< 0.01
Carried Gun 12 months	58,519	1.44	1.21, 1.71	17.68	< 0.001
Felt Unsafe	58,895	3.77	3.41, 4.17	681.12	< 0.001
Threatened	57,016	4.19	1.69, 1.94	297.42	< 0.001
Physical Fight	58,192	1.81	1.69, 1.94	297.42	< 0.001
Physical Fight at School	56,544	2.12	1.94, 2.33	261.84	< 0.001

*Data represent merged dataset across all 4 years

Sub-Sample Analyses by Individual Years

Experiencing violence and bullying. The relationship between students who engaged in violence behaviors and experienced bullying were examined using logistic regression analyses. As described in Table 28, students with a lower perception of safety were more likely to have been bullied in 2011 (*OR* 2.22, CI: 1.87, 2.91). Students who have been threatened were also more likely to have experienced bullying (*OR* 3.02, CI: 2.47, 3.71). Physical fights were more common among students having experienced bullying (*OR* 1.27, CI: 1.17, 1.73). Students who carried a gun in the previous 30 days were more likely to have been bullied in the previous 12 months (*OR* .62, CI: .48, .83). These odds ratios indicate that students who felt unsafe, threatened, engaged in fighting, or carried a gun were more likely to have experienced bullying. For every single point increase in the odds ratio, there was an increase in the likelihood students

experienced bullying. Students who were felt safe, were not threatened, engaged in fighting or carrying a gun were less likely to report they had been bullied (see Table 28).

In 2013, students who felt unsafe were three times more likely to have been bullied (*OR* 3.19, CI: 2.54, 4.03). Physical altercations were more likely among students who reported experiencing bullying (*OR* 1.48, CI: 1.26, 1.74). In addition, high schoolers who had been threatened with a weapon at school were three times more likely to have experienced bullying (*OR* 3.23, CI: 2.64, 3.95). Students who carried a gun were more likely to have been bullied (*OR* .50, CI: .38, .66). These odds ratios indicate that a lower perception of safety, physical altercation, having carried weapons or guns increased the likelihood that students had experienced bullying. For every single point increase in the odds ratio, there was an increase in the likelihood that students reported experienced bullying. Students who were not did not report having felt unsafe or threatened, engaged in a fight, or have carried a gun were less likely to have been bullied (see Table 28).

High school students who felt unsafe were three times more likely to have experienced bullying in 2015 (*OR* 3.40 CI: 2.59, 4.47). Threatened students were also three times more likely to report having been bullied (*OR* 3.52, CI: 2.79, 4.44). Students who engaged in physical fighting were more likely to have reported experiencing bullying (*OR* 1.36, CI: 1.11, 1.67). The odds ratios indicate that feeling unsafe, threatened, or engaging in physical fights increased the likelihood of students reporting they were bullied. For every single point increase in the odds ratio, there was an increase in the likelihood students reported experiencing bullying. Odds ratios were not statistically significant for students having fought at school, or carried weapons and experiences of bullying (see Table 28).

Students who felt unsafe were more likely to report they experienced bullying in 2017 (*OR* 3.03 CI: 2.27, 4.06). Students threatened at school with a weapon were three times more likely to have experienced bullying (*OR* 3.18 CI: 2.42, 3.18). High schoolers who engaged in physical fighting (*OR* 1.36, CI: 1.11, 1.67), fought at school (*OR* 1.38, CI: 1.10, 1.71), or carried a gun (*OR* .61, CI: .48, .79) were more likely to have been bullied. These odds ratios indicate that lower perception of safety, threatened, engaged in fighting, or carried a gun increased the likelihood students experienced bullying. For every single point increase in the odds ratio, there was an increase in the likelihood students experienced bullying (see Table 29).

Table 29

Logistic Regressions Predicting Likelihood of Violence Behavior and Experiencing Bullying, By Survey Year

2011 Violence Behavior Predicting Bullying	*N*	*n*	*OR*	95% CI	Wald Statistic	*p*
Carried Weapons	56,544	15,036	.99	.87, 1.14	.01	< 0.001
Carried Gun 30 days	42,022	14,231	.62	.48, .83	12.90	< 0.001
Felt Unsafe	58,519	15,914	2.33	1.87, 2.91	57.46	< 0.001
Threatened	58,895	15,311	3.02	2.47, 3.71	114.53	< 0.001
Physical Fight	57,016	15,123	1.27	1.19, 1.46	11.95	< 0.001
Physical Fight at School	58,192	15,177	1.43	1.17, 1.73	12.90	< 0.001
2013 Violence Behavior Predicting Bullying						
Carried Weapons	56,544	13,265	1.06	.89, 1.25	.39	> 0.5
Carried Gun 30 days	42,022	13,270	.50	.38, .66	23.88	< 0.001
Felt Unsafe	58,519	13,557	3.19	2.54, 4.03	98.51	< 0.001
Threatened	58,895	13,553	3.23	2.64, 3.95	131.63	< 0.001
Physical Fight	57,016	13,449	1.48	1.26, 1.74	23.68	< 0.001
Physical Fight at School	58,192	13,365	.98	.78, 1.24	.03	>0.86
2015 Violence Behavior Predicting Bullying						
Carried Weapons	56,544	14,554	1.00	.80, 1.25	.001	>1.00
Carried Gun 30 days	42,022	14,520	1.00	.66, 1.49	.001	> 0.98
Felt Unsafe	58,519	15,559	3.40	2.59, 4.47	78.23	< 0.001
Threatened	58,895	15,312	3.52	2.79, 4.44	113.60	< 0.001
Physical Fight	57,016	14,550	1.36	1.11, 1.67	8.88	< .001
Physical Fight at School	58,192	15,129	1.20	.87, 1.62	1.41	>0.24
2017 Violence Behavior Predicting Bullying						
Carried Weapons	56,544	13,689	1.13	.96, 1.33	2.30	>0.14
Carried Gun 12 months	14,004	14,004	.61	.48, .79	15.97	< 0.001
Felt Unsafe	58,519	14,109	3.03	2.27, 4.06	59.75	< 0.001
Threatened	58,895	14,719	3.18	2.42, 4.19	73.14	< 0.001
Physical Fight	57,016	13,994	1.48	1.24, 1.76	20.92	< 0.001
Physical Fight at School	58,192	14,521	1.38	1.10, 1.71	8.78	> 0.01

Violence Behaviors and Risk for Self-Harm

Research Question 4: What is the relationship between adolescent risk for self-harm and the demonstration of violence (violence behavior)?

Student-reported violence behaviors and the binary dependent variable of risk for self-harm was examined by conducting a logistic regression analysis. Variables of sad, seriously considered suicide, suicide plan, and attempted suicide were merged and operationalized as risk for self-harm. Demonstration of violence was operationalized as violence behaviors. Violence behaviors examined were unsafe, threatened, physical fight, and physical fight at schools. Violence behaviors also included carried a weapon or carried a gun in the past 30 days or 12 months.

Logistic regressions were computed in Complex Samples to model the binary variable risk for self-harm. Students not reporting risk for self-harm behaviors was used as the reference category. The predictor variables in this analysis were the binary variables for violence behaviors. Each violence behavior was entered individually into the model. Results of the logistic analyses indicated that the seven-predictor model correctly classified subjects within 68.3% to 66.6% accuracy. Membership in the risk for self-harm group was predicted for each year. Positive predictive values in 2011 were 68.3%; 2013 the values were 68.3%, and in 2015 they were 66.8%, and 66.6% in 2017. Partial regression coefficients, the Wald test, odds ratio [Exp (B)], and the 95% confidence intervals for each predictor are represented on Tables 63 through 67.

Sample Analyses

To examine risk for self-harm by characteristics of grade, gender, and race and ethnicities frequencies were computed. Of the students who experienced risk for self-harm behaviors,

frequencies declined with advancing grade levels. For all years and each year, the frequency distributions of students with risk for self-harm-behaviors and experiences of bullying for gender, grades 9 through 12, and all race and ethnicities were calculated (see Table 30 and Table 31).

Table 30

Associations of Risk for Self-Harm by Gender, Grade, and White/All Others, Across the Years *

Predicting Behaviors	Grade	White/All Others	Gender	Difference by Year
Risk for Self-harm	X^2 35.05 p > .01	X^2 210.59 $p < .001$	X^2 1920.76 $p < .001$	X^2 9.69 p > .55

$p < 0.001$
*Data represent merged dataset across all 4 years.

Table 31

Frequencies of Students with Risk for Self-Harm Behaviors for Gender, Grade, and Race/Ethnicity, By Survey Year

Individual Characteristic	2011		2013		2015		2017	
Gender	*n* = 5,535 *N* = 15,346		*n* = 4,832 *N* = 13,571		*n* = 5645 *N* = 15506		*n* = 5345 *N* = 14,638	
	n	%	*n*	%	*n*	%	*n*	%
Male	2,222	42	1,856	37	2,065	38	1,909	36
Female	3,313	58	2,976	63	3,580	62	3,436	64
Grade	*n* = 5,527 *N* = 15,326		*n* = 4,809 *N* = 13,504		*n* = 5,651 *N* = 15,507		*n* = 5,367 *N* = 14,651	
	n	%	*n*	%	*n*	%	*n*	%
Grade 9								
Grade 10	1,367	26	1,140	26	1,386	25	1,372	27
Grade 11	1,517	24	1,166	25	1,470	25	1,337	27
Grade 12	1,280	22	1,183	22	1,296	23	1,261	23
Ethnicity	*n* = 5,558 *N* = 15,425		*n* = 4,836 *N* = 13,583		*n* = 4,836 *N* = 13,583		*n* = 5,697 *N* = 15,624	
	n	%	*n*	%	*n*	%	*n*	%
White	4,161	81	3,711	80	4,112	78	4,058	77
All Others	1,397	19	1,125	20	1,585	22	1,352	23

To examine the statistical significance of violence behaviors and the risk for self-harm, Chi-squared analyses was performed across the years of student data. Violence behaviors were statistically significant across the years (X^2 232.79, $p > .001$). Students who demonstrated at least one violence behavior (49%) were more likely to report risk for self-harm behaviors (X^2 2005.59, $p > .001$). To examine the student's risk for self-harm within grade levels, gender, and race and ethnicity, Chi-square analyses were performed. Across the 4 years, there were statistically significant differences between frequencies of students reporting risk for self-harm behaviors, and those not at risk for self-harm (X^2 9.69, $p < .001$). No statistically significant difference was found between the years for student reports of risk for self-harm (X^2 9.69, $p > .55$). Students in 9th grade (27%) were more likely than students in grades 10 (26%), 11 (25%), or 12 (23%) to demonstrate risk for self-harm behaviors (X^2 35.05 $p < .001$). White students (79 %) were more likely than students of all other races and ethnicities (21%) to report risk for self-harm behaviors (X^2 210.59 $p < .001$). Furthermore, more female students (62%) reported risk for self-harm behaviors compared to male students (38%) (X^2 1092.75 $p < .001$) (see Table 32).

Table 32

*Associations of Students at Risk for Self-harm by Grade, Gender, and Race and Ethnicity, Across the Years**

Behavior	Grade	White/All Others	Gender	Difference by Year
Risk Self-harm	X^2 35.05 $p < .001$	X^2 210.59 $p < .001$	X^2 1,092.75 $p < .001$	X^2 9.69 $p > .55$

$p < 0.001$

*Data represent merged dataset across all 4 years

Student-reported violence behaviors felt unsafe, threatened, fought, carried weapons and carried a gun, and the binary dependent variable risk for self-harm was examined using logistic regression. High school students who felt unsafe were four times more likely to report risk for

self-harm behaviors (*OR* 3.90 CI: 3.52, 4.33). Students who engaged in fighting were twice more likely to report risk for self-harm behaviors (*OR* 2.04, CI: 1.91, 2.18). Similarly, students who reported having engaged in physical altercations at school were twice as likely to report risk for self-harm behaviors (*OR* 2.02, CI: 1.85, 2.20). Students who had been threatened at school with a weapon were three times more likely to report risk for self-harm (*OR* 3.47, CI: 3.14, 3.83). Furthermore, students who reported having carried weapons such as a gun, club, or knife were more likely to report risk for self-harm behaviors across the 4 years (*OR* 1.56, CI: 1.47, 1.67). Students who carried a gun in the past 30 days were more likely to report risk for self-harm behaviors across 2011, 2013, and 2015 (*OR* 1.32, CI: 1.18, 1.38). Notably, having carried a gun in the past 12 months was not statistically significant across the years because this variable was only reported in 2017 (*OR* 1.50, $p < .01$, CI: 1.20, 1.88). These odds ratios indicate that students who felt unsafe, had been threatened, had fought, or carried weapons or a gun were at increased risk for self-harm. For every single point increase in the odds ratio, there was an increase in the likelihood students experienced risk for self-harm (see Table 63). Students who did not demonstrate violence behaviors were less likely to report risk for self-harm behaviors. To explore the relationships between violence behaviors and risk for self-harm, logistic regression analyses were computed for each year (see Table 33).

Table 33

Logistic Regressions Predicting Likelihood of Violence and Risk for Self-Harm Behavior, Across the Years *

Violence Behavior Predicting Risk for Self-harm Across the Years	*N*	*OR*	95% CI	Wald Statistic	*p*
Carried Weapons	56,545	1.55	1.47, 1.67	185.25	< 0.001
Carried Gun 30 days	42,021	1.32	1.18, 1.48	22.20	< 0.001
Carried Gun 12 months	58,519	1.50	1.20, 1.88	13.59	> .01
Felt Unsafe	58,895	3.90	3.52, 4.33	680.02	< 0.001
Threatened	57,016	3.47	3.14, 3.83	601.67	< 0.001
Physical Fight	58,192	2.04	1.91, 2.18	586.67	< 0.001
Physical Fight at School	56,545	2.02	1.85, 2.20	260.46	> 0.23

$p < 0.001$

Note. CI = confidence interval for odds ratio (OR).

*Data represent merged dataset across all 4 years.

Sub-Sample Analyses by Individual Years

Violence and risk for self-harm. Relationships between students who felt unsafe, were threatened, engaged in physical fights, carried weapons, carried guns, and risk for self-harm behaviors were examined using logistic regression. As described in Table 33, student who felt unsafe were three times more likely to report risk for self-harm behaviors in 2011 (*OR* 2.82, CI: 2.26, 3.51). Students threatened at school with a weapon were twice as likely to have reported at risk for self-harm behaviors (*OR* 2.45, CI: 2.01, 3.00). Physical altercations were more likely among students who reported risk for self-harm behaviors (*OR* 1.75, CI: 1.57, 1.94). However, student reports of fights at school and risk for self-harm was not statistically significant (*OR* 1.09, p > .23, CI: .99, 1.26). Students who had not carried a gun in the past 30 days were less likely to report risk for self-harm behaviors (*OR* .77, CI: .62, .97). Nevertheless, no statistical significance was found between students having carried weapons such as a gun, knife, or club and risk for self-harm behaviors (*OR* 1.09, *p* > 02, CI: .96, 1.23). These odds ratios indicate that students who felt unsafe, had been threatened, fought, or who carried a gun were more likely to

report risk for self-harm behaviors. For every single point increase in the odds ratio, there was an increase in the likelihood students experienced risk for self-harm behaviors (see Table 33). Students who did not demonstrate violence were less likely to report risk for self-harm behaviors.

High school students who felt unsafe were three times more likely to report risk for self-harm behaviors compared to their peers in 2013 (*OR* 3.24, CI: 2.59, 4.04). Threatened students were twice as likely to report risk for self-harm behaviors (*OR* 1.91, CI: 1.58, 2.30). Likewise, students who fought were twice as likely to have reported risk for self-harm behaviors (*OR* 1.88, 1.63, 2.17). Additionally, students who carried weapons, such as a gun, knife, or club, were more likely to report behaviors of self-harm risk (*OR* 1.32, CI: 1.12, 1.55). Students who did not report risk for self-harm behaviors were less likely to have carried a gun (*OR* .54, CI: .43, .68). These odds ratios indicate that students who felt unsafe, were threatened, had fought, carried weapons, or carried a gun were at more likely to report risk for self-harm behaviors. For every single point increase in the odds ratio, there was an increase in the likelihood students reported risk for self-harm behaviors (see Table 34). Students who did not report violence behaviors were less likely to experience risk for self-harm behaviors.

In 2015, students who felt unsafe were three times more likely to report risk for self-harm behaviors compared to their peers (*OR* 3.33, CI: 2.56, 4.32). Threatened students were twice as likely to have reported risk for self-harm behaviors (*OR* 1.87, CI: 1.45, 2.41). Similarly, students who engaged in physical fights were twice as likely to report risk for self- harm behaviors (*OR* 1.75, 1.45, 2.41). However, the odds ratios for students having fought at school was not statistically significant (*OR* .98, CI: .80, 1.18). Students who carried weapons, such as a gun, club, or knife, were more likely to have reported risk for self-harm behaviors (*OR* 1.37, CI: 1.15,

1.62). Students who were not at risk for self-harm were less likely to have carried a gun (*OR* .55, CI: .43, .70). These odds ratios indicate students who were threatened, felt unsafe, had fought, or carried weapons, including guns, were more likely to have reported risk for self-harm behaviors. For every single point increase in the odds ratio, there was an increase in the likelihood students experienced risk for self-harm (see Table 33). Students who did not report having felt unsafe, threatened, engaged in a fight, or have carried weapons or guns were less likely to have experienced risk for self-harm behaviors.

Students who felt unsafe were twice more likely to report risk for self-harm behaviors compared to non-at risk peers in 2017 (*OR* 2.60, CI: 2.01, 3.35). Threatened students were twice as likely to have reported risk for self-harm behaviors (*OR* 2.37, CI: 1.70, 3.31). Students who engaged in physical fights were also more likely to have reported risk for self-harm behaviors (*OR* 1.60, 1.35, 1.90). For every single point increase in the odds ratio, there was an increase in the likelihood students reported risk for self-harm behaviors. These odds ratios indicate students who experienced threats, felt unsafe, or engaged in fighting were more likely to report risk for self-harm behaviors. However, odds ratios were not statistically significant for student altercations at school, or for having carried a gun, club or knife and risk for self-harm behaviors. Students who did not report violence behaviors were less likely to report risk for self-harm (see Table 34).

Table 34

Logistic Regressions Predicting Likelihood of Violence and Risk for Self-Harm Behavior, By Survey Year

2011 Violence Behavior Predicting Risk for Self-Harm	*N*	*n*	*OR*	95% CI	Wald Statistic	*p*
Carried Weapons	56,545	15,037	1.09	0.96, 1.23	1.70	> 0.20
Carried Gun	42,021	14,231	0.77	0.62, 0.97	5.28	>.02
Felt Unsafe	58,519	15,294	2.82	2.26, 3.51	87.13	< 0.001
Threatened	58,895	15,311	2.45	2.01, 3.00	78.34	< 0.001
Physical Fight	57,016	15,123	1.75	1.57, 1.94	113.62	< 0.001
Physical Fight at School	58,192	15,177	1.09	0.99, 1.26	1.43	> .20
2013 Violence Behavior Predicting Risk for Self-Harm						
Carried Weapons	56,545	13,265	1.32	1.12, 1.55	11.57	< 0.001
Carried Gun	42,021	13,270	0.54	0.43, 0.68	27.50	< 0.001
Felt Unsafe	58,519	13,557	3.24	2.59, 4.04	109.33	< 0.001
Threatened	58,895	13,553	1.91	1.58, 2.30	46.81	< 0.001
Physical Fight	57,016	13,349	1.88	1.63, 2.17	75.30	< 0.001
Physical Fight at School	58,192	13,365	1.14	.90, 1.46	1.08	> .30
2015 Violence Behavior Predicting Risk for Self-Harm						
Carried Weapons	56,545	14,554	1.37	1.15, 1.62	13.26	< 0.001
Carried Gun	42,021	14,519	.55	.43, .70	22.65	< 0.001
Felt Unsafe	58,519	15,559	3.33	2.56, 4.32	82.67	< 0.001
Threatened	58,895	15,312	1.87	1.45, 2.41	23.78	< 0.001
Physical Fight	57,016	14,551	1.75	1.51, 2.03	55.46	< 0.001
Physical Fight at School	58,192	15,129	.98	.80, 1.18	.07	> .79
2017 Violence Behavior Predicting Risk for Self-Harm						
Carried Weapons	56,545	13,960	1.30	1.09, 1.54	9.16	> .01
Carried Gun	42,021	14,004	.76	.58, .99	4.56	*> .01
Felt Unsafe	58,519	14,109	2.60	2.01, 3.35	57.91	< 0.001
Threatened	58,895	14,719	2.37	1.70, 3.31	28.05	< 0.001
Physical Fight	57,016	13,994	1.60	1.35, 1.90	31.11	< 0.001
Physical Fight at School	58,192	14,521	.86	.69, 1.07	1.94	> .17

Risk for Self-Harm and Experiencing Bullying

Research Question 5: What is the relationship between adolescent risk for self-harm and the prevalence of experiencing bullying?

Student-reported risk for self-harm behaviors and the binary dependent variable bullying were examined using logistic regression. Variables for students feeling sad longer than two weeks, and having considered, planned, and attempted suicide were operationalized as risk for self-harm behaviors. Variables experiencing bullying on school property and experiencing bullying electronically were operationalized individually as different forms of bullying. Experiencing bullying on school property and experiencing bullying electronically were merged and operationalized as experiencing bullying by at least one form. Frequencies of risk for self-harm associated with forms of bullying were previously computed for each year (see research question two).

Sample Analyses

Risk for self-harm and experiencing bullying. Chi-square analyses were performed to examine differences in risk for self-harm behaviors across the years. Statistically significant differences were not found for risk for self-harm across the years (X^2 9.69, $p > .55$). Nor were statistically significant differences found for experiencing bullying on school property (X^2 7.58, p > .66), electronically (X^2 14.25, $p > .31$), or by at least one form (X^2 14.51, $p > .50$). Relationships between risk for self-harm and experiences of bullying were then examined using Chi-square analyses (see Table 35). Students (60%) who reported risk for self-harm behaviors were four times more likely to have experienced bullying by at least one form compared to their peers (40%) across the years (X^2 5179.52, $p < .001$, *OR* 3.98, CI: 3.72, 4.25). Comparatively, students (50%) who reported self-harm behaviors were over three times more likely to have been bullied

at school (X^2 3861.62, $p < .001$, *OR* 3.65, CI: 3.41, 3.91). Students (66%) who reported risk for self-harm behaviors were over four times more likely to have experienced bullying electronically (X^2 4357.42, $p < .001$, *OR* 4.64, CI: 4.31, 4.99) (see Table 35). These odds ratios indicate students who reported risk for self-harm behaviors were more likely to have experienced at least one or more forms of bullying compared to their peers across the years.

Table 35

Patterns of Risk for Self-Harm and Experiencing Bullying, Across the Years *^

Bullying Behavior	*N*	*n*	% Risk for Self-harm	% Not at Risk for Self-Harm	X^2	*OR*	95% CI
Bullied by at least one form	59,397	8,550	60	40	5.179.52<.001	3.98	3.72, 4.25
Bullied at School	58,264	6,616	60	40	3.861.62<.001	3.65	3.41, 3.91
Bullied Electronically	57,438	5,589	66	34	4.357.42<.001	4.64	4.31, 4.99

$p < .001$
CI = confidence interval for odds ratio (OR).
*Data represent merged dataset across all 4 years
^Out of N = 59,397 students, 14% (n = 8,550) experienced at least one form of bullying and risk for self-harm for all 4 years.

Sub-sample Analyses by Individual Years

Relationships between student reports of risk for self-harm behaviors and experiencing bullying were examined using Chi-square analyses. Statistically significant differences were found between students (n = 2,084) who reported risk for self-harm behaviors and experienced bullying in 2011 (X^2 1142.15 $p < .001$). As described in Table 36, students (56%) who reported risk for self-harm behaviors were over three times more likely to have experienced bullying by at least one form compared to their not at-risk peers (44%) (*OR* 3.54, CI: 3.17, 4.96). Students who reported risk for self-harm (44%) were three times more likely to report experiences of bullying (56%) (X^2 760.89 $p < .001$, *OR* 3.12, CI: 2.78, 3.46). Risk for self-harm behaviors leveraged a

greater likelihood of having experienced bullying. Students (64%) who experienced risk for self-harm behaviors were four times more likely to have been bullied electronically (X^2 1020.45, $p <$ .001, *OR* 4.35, CI: 3.86, 4.90) (see Table 36).

High school students (n = 1,957) reported risk for self-harm behaviors and at least one form of bullying in 2013 (see Table 35). Students (60%) who reported risk for self-harm behaviors were four times more likely to have experienced bullying by at least one form (40%) (X^2 1181.88 $p <$ .001, *OR* 3.97, CI: 3.54, 4.50). Comparatively, students (61%) who reported risk for self-harm behaviors were nearly four times more likely to have been bullied (X^2 936.16 $p <$ .001, *OR* 3.77, CI: 3.34, 4.26). Students (65%) who experienced risk for self-harm behaviors were four times more likely to have been bullied electronically (X^2 911.55 $p <$ .001, *OR* 4.33, CI: 3.85, 4.88) (see Table 36).

High school students (n = 2,352) reported risk for self-harm behaviors and experiences of bullying by at least one form in 2015. Students (60%) who reported risk for self-harm behaviors were four times more likely to have been bullied electronically, at school, or both ways (40%) (X^2 1367.19 $p <$ .001, *OR* 3.96, CI: 3.50, 4.49). Comparatively, students (60%) who experienced risk for self-harm behaviors were over three times more likely to have been bullied on school property (X^2 1037.34 p < .001, *OR* 3.65, CI: 4.27, 5.71). Students (60%) who reported risk for self-harm behaviors were five times more likely to have experienced bullying electronically (X^2 1269.78, p < .001, *OR* 4.93, CI: 4.27, 5.71) (see Table 36).

High school students (n = 2,157) at risk for self-harm were more likely to have experienced bullying compared to peers who did not report risk for self-harm behaviors in 2017. Students (64%) who reported risk for self-harm behaviors were over four times more likely to have been bullied by at least one form compared to their peers (36%) (X^2 1516.06 $p <$ .001, *OR*

4.61, CI: 3.97, 5.35). Students (64%) who experienced risk for self-harm behaviors were four times more likely to have been bullied on school property (X^2 1155.52 $p < .001$, *OR* 4.23, CI: 3.64, 4.91). Moreover, students (69%) at risk for self-harm were five times more likely to have been bullied electronically (X^2 1168.82 $p < .001$, *OR* 4.93, CI: 4.19, 5.93) (see Table 36). These odds ratios indicate students who reported risk for self-harm behaviors were more likely to have experienced bullying. Students who did not report risk for self-harm behaviors were less likely to have been bullied.

Table 36

Patterns of Risk for Self-Harm and Experiencing Bullying, By Survey Year

2011 Bullying Behavior	*N*	*n*	% Risk for Self-Harm	% Not Risk for Self-Harm	X^2	*OR*	95% CI
Bullied by at least one form	15,425	2,084	56	44	1,142.15 $p < 0.001$	3.54	3.17, 3.96
Bullied at school	14,695	1,525	56	44	760.89 $p < 0.001$	3.12	2.78, 3.49
Bullied electronically	13,877	1,346	64	36	1,020.56 $p < 0.001$	4.35	3.86, 4.90
2013 Bullying Behavior							
Bullied by at least one form	13,583	1,957	60	40	1,181.88 $p < 0.001$	3.97	3.54, 4.50
Bullied at school	13,515	1,553	61	39	936.16 $p < 0.001$	3.77	3.34, 4.26
Bullied electronically	13,501	1,225	65	35	911.55 $p < 0.001$	4.33	3.85, 4.88
2015 Bullying Behavior							
Bullied by at least one form	15,624	2,352	60	40	1,367.19 $p < 0.001$	3.96	3.50, 4.49
Bullied at school	15,448	1,847	60	40	1,037.34 $p < 0.001$	3.65	3.18, 4.19
Bullied electronically	15,465	1,573	60	40	1,269.78 $p < 0.001$	4.93	4.27, 5.71
2017 Bullying Behavior							
Bullied by at least one form	14,765	2,157	64	36	1,516.06 $p < 0.001$	4.61	3.97, 5.35
Bullied at school	14,606	1,691	64	36	1,155.52 $p < 0.001$	4.23	3.64, 4.91
Bullied electronically	14,595	1,445	69	31	1,168.82 $p < 0.001$	4.99	4.19, 5.93

$p < 0.001$

Note: CI = confidence interval for odds ratio *(OR)*

Chapter V: Discussion

An adaptation of the Social Ecological Model (SEM) served to guide this study addressing five research questions. Research questions focused on examining relationships between adolescent characteristics, violence behaviors, risk for self-harm, and experiencing bullying. Strength of relationships were measured using odds ratios. Statistically significant outcomes indicated a relationship between the variables and bullying was likely. Clinical significance of the findings will be discussed.

Discussion of Findings

Research Question 1: What is the relationship between adolescent characteristics and experiences of violence.

Examination of adolescent characteristics and violence behaviors found that there is a relationship between the variables and bullying. Adolescent experiences of violence did not change significantly from 2011 to 2017. Comparatively, Kann et al. (2018) conducted a secondary analysis of trends found in the CDC Youth Risk Behavior Surveys 1991 to 2017. No statistical changes in violence behaviors were found between 2015 and 2017. The Youth Risk Behavior Survey (YRBS) is designed to be a nationally representative sample of United States demographics (Brener et al., 2013). In the current study, 59,937 students from public and parochial schools in the United States reported their race and ethnicity. Overall student response rates for the national YRBS survey years 2011, 2013, 2015 and 2017 were greater than 60% (CDC, 2012; CDC, 2014; CDC, 2016a; & CDC 2018a). Therefore, the CDC weighted survey results based on sex, grade, and race and ethnicity. Weighting adjusts data for student nonresponse and oversampling of African American and Hispanic responses (Brener et al., 2013). Overall weights are scaled so the weighted counts of students equal the sample size and

projected proportions for each grade per survey year. Weighted data estimates are accurate within ± 5% at a 90% accuracy rate. The National Center for Education Statistics (NCES) projected 15.3 million students would attend grades 9 through 12 in the United States in 2019 (NCES, n.d.). Of the projected 50.8 million public school students in Kindergarten through twelfth grade, 54% are White students, and 46% are American Indian, Asian, African American, Hispanic, Pacific Islander, and students with two or more races. In the current study, 82% of the respondents were White, and 18% reported at least one other race and/or ethnicity. Therefore, it was appropriate to use the weighted sample to more accurately reflect the student population.

In the current study, violence behaviors were consistently associated with students who were in ninth grade, White, or male. Students in Grade 9 and Grade 10 were more likely to have reported they carried a gun in the 30 days prior to taking the survey. However, students who were White, male, and in the Grade 12 were more likely to have carried a gun in the past 12 months. Patterns of violence in the current study were similar to findings of a secondary analysis of 10-year trends found in the Health Behavior in School-Age Children surveys (Perlus, Brooks-Russell, Wang, & Iannotti, 2014). Students (n = 15,686) in Grade 6 through Grade 10 reported a decrease in fighting and increase in weapons carrying among White students. Although Perlus et al. included younger students in their sample, their findings were similar to those of the present study. Violent behaviors decreased as students aged in the current study. In a longitudinal study of adolescents (n = 620), investigators found gender differences in aggressive behaviors (Orpinas, McNicholas, & Nahapetyan, 2015). The investigators found that indirect aggression and peer aggression were often perpetrated by male students, and as students grew older the aggression decreased.

In the present study, White students in Grade 9 reported feeling more threatened. Males were more likely than females to report being threatened with violence, though female students were more likely to report feeling unsafe and subsequently miss days of school. These findings are consistent with a study of high school students (n = 585) conducted to identify relationships between student perception of safety and the school environment among high school students (Williams, Schneider, Wornell, & Langhinrichsen-Rohling, 2018). In the cross-sectional study, nearly a third of high school students (n = 158) reported feeling unsafe among students in ninth grade and females. However, student race was not significantly correlated with their perception of safety at school (Williams et al., 2018). Conversely, in the current study, White students were more likely to report feeling unsafe and having been threatened with a weapon. Findings of the present study are clinically significant because violence behaviors put students at risk for serious or grave injury. This study adds new knowledge of how violence behaviors are experienced by high school students. While there may be differences in grade, race, or gender, violence is a common concern for youth.

Research Question 2: What is the relationship between adolescent characteristics and the prevalence of bullying?

A relationship was found between adolescent's characteristics and experiencing bullying in the present study. Students who were females, White, and in Grade 9 were most likely to experience bullying. Bullying was reported to have been experienced either on school property or electronically. Similar patterns of bullying were identified in study of high school students (n = 7,137) conducted to examine relationships between demographic characteristics and bullying (Owusu, Hart, Oliver & Kang, 2012). In their cross-sectional study, the investigators found first year high school students (n = 738) were three times more likely to experience in-person or

electronic bullying than students in higher grade levels. Bullying experiences were also reported in a secondary analysis of a youth behavior survey (n = 7,182) conducted by Wang, Ionattie, and Nansel (2009). The researchers investigated the relationship between student demographics in Grade 6 through Grade 10 and bullying. Wang et al. found that students who were female, younger, or White were more likely to experience bullying. However, Silva, Pereira, Mendonca, Nunes, and Oliveria (2013) obtained different findings on bullying in their cross-sectional study of 387 students in Grade 2 through Grade 9. In this study, which included younger participants than the current study, fewer female students (n = 76; 39%) were bullied, compared to 101 boys (54%). Wang et al and Silva et al both reported male students were more likely to experience physical bullying. Owusu et al., Wang et al., and Silva et al. all found that female students were more likely to be bullied electronically. A qualitative study of students (n = 465) in Grade 7 through Grade 12 was conducted to compare demographics and bullying (e.g., electronic or face-to-face at school) (Lapidot-Lefler & Dolev-Cohen, 2014). Their study included students younger than the current study. However, no differences between grades or genders were found for cyberbullying, while males were more likely to experience face-to-face bullying. According to the researchers, face-to-face bullying carries over into the cyberbullying world, as the same perpetrators of school bullying attacked victims online. Across the research studies (Lapidot-Lefler & Doley-Cohen, 2014; Owusu et al., 2012; Silva et al., 2013; & Wang et al., 2009), students of either gender, any race, or any grade may fall victim to forms of bullying. In the current study, there was no statistical change in student characteristics and experiencing cyber bullying or face-to-face at school from year to year. The clinical significance of these findings was that violence and negative mental health have been associated with adolescent bullying.

Research Question 3: What is the relationship between adolescent violence and the prevalence of experiencing bullying?

In the current study, a relationship was found between the variables of violence behaviors and students experiencing bullying. Students who reported having been threatened with a weapon or felt unsafe were more likely to have experienced bullying. The findings are consistent with earlier research by Goldweber, Waasdorp and Bradshaw (2013), where students who felt unsafe also reported being bullied. In the Goldweber et al. study, an anonymous online bullying survey was administered to 2,509 high school students to assess the prevalence and characteristics of bullying. The investigators found that students who were more involved in bullying also perceived that they were at greater risk for being harmed.

Students who carried weapons are more likely to be involved in bullying, according to the findings of a meta-analysis conducted by van Geel and Tanilon (2014). In the meta-analysis, 45 studies were examined, involving 692,887 high school students. The adolescents who carried weapons were more likely to be involved in bullying. In fact, the investigators found that victims of bullying were twice as likely to have carried weapons compared to their non-bullied peers. Moreover, bullies were three times more likely to carry weapons, and victims of bullies were four times more likely to carry weapons compared to non-involved peers.

The Goldweber et al. (2013) and van Geel and Tanilon (2014) studies identified similar relationships found in the present study. Adolescent perceptions of being unsafe and violent behaviors have been associated with student involvement in bullying. Furthermore, carrying weapons was associated with experiencing bullying and may be viewed by the student as a means of protection.

Research Question 4: What is the relationship between adolescent risk for self-harm and demonstration of violence?

A relationship was found between adolescents' risk for self-harm and demonstration of violence in this study. Students in Grade 9 or who were White or female were more likely to report risk for self-harm behaviors. Students at risk for self-harm behaviors were significantly more likely to have been threatened with a weapon at school and to feel less safe. Participants were also more likely to have engaged in fighting and have carried weapons, including guns. Students who engaged behaviors that placed them at risk for self-harm were more likely to have carried a gun in the past month, with twelfth graders more likely to have carried a gun in the past year.

Previous research has demonstrated a relationship between aggression and self-harm, as found in the systematic review by O'Donnel, House and Waterman (2015). The investigators reviewed 123 studies on adolescent self-harm (intentional self-injury, depression, suicidal ideation) and aggressive behaviors (fighting, threats, and weapons). A significant correlation was found between student's aggression and self-harm in 52% of the studies (range r = .12 to .62), though mixed results were found in 39% of the publications. Further research indicates youths who carry weapons are at a greater risk of self-harm by committing suicide (Romero, Bauman, Ritter, & Anand, 2017). Romero et al. (2017) surveyed 2,677 adolescents to examine relationships between having carried a gun, suicide, and experiences of bullying. Investigators found youths who were female, an ethnic minority, or had carried a gun in the previous 30 days were more likely to have attempted suicide. In fact, students who had carried a gun in the past 30 days were four times more likely to attempt suicide. Contrary to the current study, self-harming behaviors were not associated with carrying weapons. O'Donnell et al (2015), Romero et al.

(2017) and the present study agreed that aggression levels were elevated in students with self-harm behaviors. These findings are clinically significant because perceptions of safety and experiences of having been threatened with weapons present early warning signs of self-harm and violence. Having access to lethal weapons makes it easier to harm one's self, including committing suicide (Romero et al., 2017).

Research Question 5: What is the relationship between adolescent risk for self-harm and the prevalence of experiencing bullying?

A relationship was found between student risk for self-harm behaviors and experiencing bullying in the present study. Similar patterns were found in medical records of youths (n = 5,429) screened for mental health concerns and bullying (Kodish, Herres, Shearer, Atte, Fein & Diamond, 2016). Controlling for depression, investigators found students with self-harming behaviors were likely to have experienced a form of bullying. In another cross-sectional investigation with 10- to 13-year-old adolescents (n = 661), Espelage and Holt (2012) identified a relationship between suicidal ideation and bullying. After controlling for depression, the researchers found 60% of bully-victims reported suicidal ideation. Similarly, Turner, Exum, Brame, and Holt (2013) administered a needs-assessment questionnaire to adolescents (n = 1,874) and found a relationship between suicidal ideation and experiencing bullying. Students (mean age 13.8 years) were more likely to consider suicide when they had experienced online or face-to-face bullying compared to non-involved peers. Adolescents in the present study provided similar feedback. Participants who reported self-harming behaviors were more likely to have experienced at least one form of bullying compared to non-bullied peers. The clinical significance of these studies (Espelage & Holt, 2012; Kodish et al., 2016; Turner et al., 2013) and the current study is concerning, as the evidence they provide is that the prevalence of

bullying continuing, while additional evidence indicates that adolescent suicide has increased in the past 10 year (Curtin et al., 2016).

Clinical Significance

Violence and self-harm were significantly associated with experiences of bullying during adolescence in the present study. Adolescent experiences of violence, peer isolation, and bullying are adverse childhood events that can predict negative mental health outcomes (Finkelhor, Shadduck, Turner, & Hamby, 2015), which is important to consider in the practice arena of healthcare. Finkelhor et al. (2015) conducted a cross-sectional study of adolescents' experiences with adverse childhood events. The teens (n = 1,949) completed a survey about childhood adversities and their health. Adolescents who reported depression and anxiety were likely to have experienced peer isolation or bullying. Similarly, in another cross-sectional study, youths (N = 136,549) in Grade 6, Grade 9, and Grade 12 self-reported a history of adversity and risky behaviors (Duke, Pettingell, McMorris, & Borrowsky, 2010). The researchers found that adverse childhood events were associated with interpersonal violence (carrying weapons and bullying) and self-directed violence, including suicidal ideation. Further research explored the relationship between violence, self-harm, and bullying in relationship to targeted school attacks (N = 41) between 2008-2017 in the United States (U.S. Secret Service National Threat Assessment Center [NTAC], 2019). The investigators found that attackers were typically male (n = 34, 83%), with an average age of 15 years (range 12 -18 years). Fire arms (n = 26, 61%) and bladed weapons (n = 16, 39%) were the primary weapons used in the school attacks. Firearms were brought from home in 76% of school attacks. Bladed weapons used in the attacks were acquired from home. Of the 35 attackers in the study, 19 (54%) had a history of mental health treatment, and 41% of the attackers (n = 17) were motived by a desire to commit suicide.

Alarmingly, 80% of student attackers (n = 28) had been bullied by others for weeks, months, or years, and often in front of their peers. (NTAC, 2019). Findings of the present study, Duke et al (2010), Finkelhor et al. (2015), and the NTAC (2019) suggest that bullying can have devastating consequences. The consequences of bullying are not limited to those who are bullied, but has the potential to trigger youth who were bullied to carry out unwarranted attacks on others. As demonstrated by the research findings reported here, bullying has the potential for many unforeseen consequences, which is detrimental to societal health and wellbeing. Therefore, prevention of bullying needs to be considered vital to societal health.

Implications for Nursing Practice

Promoting healthy, safe school environments void of bullying is within the school nurse scope of practice (National Association of School Nurses [NASN], 2019). Preventing student bullying requires school nurses (Olweus & Limber, 2010) to use a multidisciplinary team approach (Masielllo, 2014). Members of the multidisciplinary team must collaborate, beginning in preschool, to develop multifaceted and developmentally appropriate strategies, including disseminate anti-bullying messaging, to prevent bullying.

Significance to School Nursing

School nurses encounter victims of bullying on a daily basis, though frequently it is not reported or not effectively stopped (Salmeron, & Christian, 2016). Gini and Pozolli (2013) conducted a meta-analysis of 30 studies representing 219,560 students in Grade 2 through Grade 12 to examine the relationship between psychosomatic complaints and experiences of bullying. Youths who had been bullied were twice as likely to experience psychosomatic complaints compared to nonbullied peers. Students (n = 222) in Grade 3 through Grade 12 participated in a survey to examine relationships between perceived school climate, bullying, and psychosomatic

complaints (Perron, 2015). Perron (2015) found that students who experienced bullying sought care from the school nurse not for bullying, but for psychosomatic issues. Although the samples included students who were younger than the adolescents in the present study, their findings are significant for their description of help-seeking behaviors of bullying victims.

Further research of youths (n = 1,828) in Grade 9 through Grade 12 was conducted to determine whether involvement in bullying was associated with suicidal ideation (Hepburn, Azreal, Molnar, & Miller, 2011). Investigators found that, when controlling for age, race, and gender, involvement in bullying as victim, bully, or bully-victim increased the likelihood of suicidal attempt (n = 69). Given the associations between violence, self-harm, and the prevalence of bullying, it is clear that bullying is a significant public health problem encountered in schools. School nurses must be properly prepared to implement programs to prevent bullying across all grades, starting with the youngest students. An environment needs to be created where victims can safely disclose when experiences of bullying occur, with appropriate supports in place to intervene and create a safe learning environment (NASN, 2019).

School Nurse Relationships with Students

School nurses form supportive, therapeutic relationships with their students (Kvarme, Aabo, & Saetern, 2013). An exploratory study using individual and focus group interviews with 19 early adolescents (12 to 13 years old) explored how bullied students experience school nurse-led support groups. Students described the support groups as enabling them to have a growing sense of self-worth and form meaningful relationships where they were no longer bullied (Kvarme et al., 2013).

Students distressed by bullying will often seek help from trusted adults in schools (Mishna, Schwan, Lefebvre, Bhole, & Johnston, 2014). Mishna et al (2014) conducted a

longitudinal, mixed-methods study of 669 students in Grade 4 (n = 160, 24%), Grade 7 (n = 242, 36%), and Grade 10 (n = 267, 40%) to examine their self-efficacy in help-seeking behaviors. Overall, 18% (n = 122) were found to be in distress based on talks of self-harm, fire setting, or suicide. Thirty percent of distressed students were victims of school bullying, and 41% were victims of cyber bullying. No significant differences were found between grades. Investigators found victims of bullying were likely to feel distressed and want help from a trusted adult in the school setting. Researchers (Gini & Pozolli (2013); Perron (2015), Kvarma et al, (2013); and Mishna et al., 2014) suggest that victims' help seeking behaviors may lead students to seek help from the school nurse. School nurses should routinely ask students about their welfare when they present to the health room with problems, including bullying (National Academy of Sciences [NAS], 2016). As school nurses form trusting relationships with students (Kvarme et al., 2013), it is appropriate for school nurses to talk with students about experiences of bullying or refer students to other professionals for help (Perron, 2015). Bullying victims are part of a complex, interrelated system described as the Social Ecological Model, in which individuals interact with their environment in concentric, overlapping relationships (Bronfenbrenner, 1994). Therefore, collaboration between the individual, school personnel including nurses, peer groups, families, and societal systems is integral to stopping bullying.

Relationships within School Community and Systems

School nurses can participate in or take the lead on efforts to improve the school climate and prevent violence at the individual, school, and system-wide levels (Pigozi & Bartoli, 2016). In-depth interviews with 12 school nurses revealed they had sufficient knowledge to guide students who experience bullying. Investigators noted that school nurses need more time to connect with students in order to effectively address the issue of bullying. Pigozi and Bartoli's

(2016) findings were further supported by a longitudinal study conducted by Kim, Walsh, Pike and Thompson (2019). The researchers examined the relationships between adolescents (n = 93) in eighth, ninth, and tenth grades and school connectedness, suicidal ideation, and cyberbullying. The findings indicated that victimization by cyber bullying was associated with suicidal ideation. However, higher levels of school connectedness reduced the impact of cyber bullying on the adolescent's risk for suicide.

School Level Factors

School Connectedness

Recognizing the importance of connectedness, Basch (2011) further clarified the relationship between school connectedness and the school climate. In a review of literature, school connectedness was described as feelings that adults and peers care about them and their learning. Presence of school connectedness is known to contribute to a positive school climate (Basch, 2011). A longitudinal study conducted by Volungis (2016) found a relationship between school connectedness and violence. Students' perceived quality of their relationships with staff indicated how supported and safe the learners felt at school. Feelings of school connectedness were identified as mediating factors in the prevention of school violence (Volungis, 2016). Student involved support groups led by school nurses reported a sense of connection, being cared about, and feeling better about themselves (Kvarme et al., 2013), demonstrating how school nurses are well positioned to bolster school connectedness. Studies by Basch et al. (2011), Pigozi and Bartoli (2016), Kim et al. (2018), and Volungis (2016) illuminate the value of the school nurse relationship with students. School nurses enable connectedness and positive school climates by creating safe school environments, where students can talk freely and verbalize concerns about bullying (NASN, 2014).

School Climate

School climate refers to students' subjective experience of school life, reflecting norms, values, relationships, and the physical surroundings (Cohen, 2014). High school students' (n = 1,169) perception of school climate predicted levels of aggression in one quantitative study (Marsh, McGee, & Williams, 2014). Students with a favorable view of the school climate reported lower levels of aggression. Student perceptions of their school climate may have influenced YRBS findings from year to year in the present study.

Multidisciplinary Teams

Given the relationship between bullying and the school climate, policies that promote protective factors for students should be explored. Research has shown schools with anti-bullying platforms should establish a multidisciplinary team to guide and implement programs (Limber, 2010). Multidisciplinary teams often include collaborative relationships between school nurses and other school personnel (Taras, 2004), such as teachers, psychologists, and social workers. Each discipline brings unique insight to bullying prevention. In one quantitative study students (N = 7,318), perceptions of school climate and willingness to seek help from teachers were investigated (Eliot, Cornell, Gregolry, & Fan, 2010). An online climate survey was administered to ninth grade students in the classroom. Investigators found that students who perceived a positive school climate were more likely to seek help from teachers for threats of violence and bullying. Comparatively, a focus group design was used to investigate teachers' perception of bullying among elementary, middle, and high school students (Rosen, Scott, & DeOrnellas, 2017). Teachers (n = 35) felt seeking adult support for bullying may be an effective or ineffective response from the bullied student. Teachers feared the bully would retaliate against the victim. Perceptions of school nurses (n = 9) and school social workers (n = 7) were also

explored in focus groups (Beckman & Hagquist, 2015). Researchers found the school social workers felt experiences of bullying were influenced by students' social environment. School social workers advocated for a broader approach to preventative efforts in classrooms and with teachers and families. In contrast, school nurses focused on individual characteristics, conditions, and student factors that made them a target in the school environment. The school nurse role in bullying prevention was compared to school psychologists in a review of the literature (Kub & Feldman, 2015). School nurses' roles included identification and referral of students who experienced bullying, and providing staff, parent, and community education about bullying. Researchers found that school psychologists conducted bullying program evaluation, staff education, social skills programs, and student counseling. School nurses and psychologists collaborated with the school team and legislature to create prevention programs and policies. Like nurses and psychologists, school social workers are adept at creating positive interactions between students, support services, and parents (Hopson & Lawson, 2011). Social workers should have a lead role in coordinating multidisciplinary teams in schools that include parents. Furthermore, school systems should develop relationships with agencies that include medical and mental health professionals to help them plan and review intervention and prevention strategies (Taras, 2004). Beckman and Hagquist (2015), Eliot et al. (2010), Hopson and Lawson (2011), Kub and Feldman (2015), Limber (2010), and Rosen et al. (2017) demonstrated the strength of a multidisciplinary team approach for bullying prevention in the school context. The multidisciplinary teams integrate psychological, social, and medical disciplines with the social ecological model. Everyone has a role to play in the multidisciplinary approach coordinating bullying prevention, from the greater school context to the individual student.

Implications for Policy

Preventing bullying requires a concerted effort of effective public health policies (Hertz, Jones, Barrios, David-Ferdon, & Holt, 2015). The Social Ecological Model serves as a guiding light for the development of student policies to prevent bullying (CDC, 2015). Civility among all students should be modeled and supported at the school, district, state, and national levels. Primary prevention policies and targeted student interventions that prevent bullying should be developed and implemented across all grade levels. Policies and strategies that promote the anti-bullying message must consistently be reinforced across school and community partnerships (Olweus & Limber, 2010). Policies and community partnership efforts may be augmented to prevent bullying with access to federal funding.

Federal Policy

School districts can access federal funding to hire school nurses and other student support staff to facilitate safe learning environments for students (NASN, 2019). School nurses care for aggregate populations under the Americans with Disabilities Act (ADA) and 504 plans. Federal civil rights and antidiscrimination laws secure rights for this protected class of students (NAS, 2016). Actions and responsibilities of schools to secure rights for protected classes of students are described in federal legislation. Title II of the Americans with Disabilities Act, Title IX and Title VI legislation, and Section 504 of the Rehabilitation Act are among those laws most relevant to school nursing and prevention of bullying (NASN, 2019; U.S. Department of Education [DOE], 2015).

Application of Title I funding to school safety was described under the 2015 Every Student Success Act, known as ESSA (DOE, 2015). ESSA funding allows schools flexibility in how their Title I funds are spent. School programs that will best serve the needs of students can

be supported by Title I ESSA funding (NASN, 2019; DOE, 2015). Schools can develop a quality improvement plan for health services with this funding. The plan should include hiring more school nurses to engage in bullying prevention messaging and improve student safety in all schools (NASN, 2019). The Healthy People 2020 national healthcare plan (U.S. Department of Health & Human Services [USDHHS], 2019) called for a school-nurse-to-student ratio of 1:750 in elementary, middle, and high schools. Improving the nurse-to-student ratio in schools would enable nurses to be accessible to students in health rooms and social skills groups. Furthermore, additional school nurses would be available to participate in system-level bullying prevention efforts.

State Policy

Federal law and policy provide a framework for states to follow, but the United States does not have a comprehensive federal law on bullying that is applicable in all states (NAS, 2016). Under state law, schools are required to have anti-bullying policies in place, but management of bullying is not monitored by an outside entity (Trevaskis, 2014). Consequently, students may not be protected from the harmful effects of bullying by schools (Trevaskis, 2014). National Performance Measures are a systems-level benchmark by which state health departments can measure progress in bullying prevention (Lu & Allison, 2015). In 2014, participating health departments spent more than 60% of Maternal Child Health funds on prevention and national benchmark initiatives that included bullying prevention (Lu & Allison, 2015). The systems-level approach described by Trevakis (2014) and Lu and Allison (2015) strengthens the collaboration between health departments, school nurses, and school systems by funding bullying prevention.

School Policy

Professional development policies and plans for school nurses must include continuing education about bullying prevention. Title II federal funding is available for school nurses to engage in continuing education courses and conferences related to bullying (NASN, 2016; DOE, 2015). Continuing education policies advance school nurses' knowledge and preparation to lead the charge in the prevention of bullying. Title IV funding can provide the necessary underpinning for resources that improve school conditions for learning (American Institutes for Research, 2020). Such improvements promote positive mental health amongst youth to prevent violence and bullying (NASN, 2016; DOE, 2015).

School health data are another resource that schools can use to inform policy makers of the mental health concerns and aggressive behaviors among students (Basch, 2011). School nurses should collaborate with decision makers to identify school health data management strategies. Integration of data elements into an ongoing health surveillance system can be led by school nurses. Policy development based on health data can be used to coordinate activities that improve school climates (Basch, 2011). For example, health room data gathered by school nurses may provide an indirect measure of bullying (Perron, 2015). Tracking the frequency and reasons for student visits to the health room can alert providers that students may be experiencing bullying. School nurses should be contacted to assess students when the health data indicate they may be experiencing bullying.

Implications for Future Research

Individual Characteristics Research

Bullying was recently added to the list of potential adverse childhood events (Duke et al., 2010; Finkelhor et al., 2015). More research is needed to understand the influence of bullying on the dose-response adverse childhood events (ACES) model. Legal authorities would benefit from an understanding of precursors that lead to negative outcomes. Findings from such research can guide school nurses and educators in development of prevention models by describing the interplay between bullying and the ACES model. Practitioners providing care for students who have experienced bullying and other adverse events in childhood will benefit from targeted, upstream recommendations. An upstream approach to bullying prevention can be built on social marketing strategies described by Henley, Raffin, and Craemmer (2017). Upstream models would ensure that students have access to a safe and healthy school climate where bullying is not tolerated. Investments into public infrastructures facilitates such an environment (Henley et al., 2017).

Additional research is needed to understand relationships between characteristics of aggregate student populations and the current study variables. Prior research suggests adolescents who identified as lesbian, gay, bisexual, or questioning (LGBQ) were more likely to experience bullying compared to straight peers (Hillard, Love, Franks, Laris, & Coyle, 2014). Investigators held focus groups and administered questionnaires to 107 high school student participants of a Gay-Straight Alliance. Alarmingly, the researchers found 86% of LGBQ youths in the Gay-Straight Alliance had been bullied (Hillard et al., 2014). Questions related to sexual preference and orientation were added to the YRBS in 2015. Relationships between sexual

orientation and the current study variables should be examined to identify risk and protective factors for LGBQ students.

To assess characteristics of bullying in another aggregate student population, a longitudinal study was conducted to assess prevalence of bullying among students (N = 13,516) with disabilities (Blake, Lund, Zhou, Kwok, & Benz, 2012). Investigators found students with disabilities were 1.5 times more likely to have experienced bullying compared to peers without disabilities. Students with orthopedic impairments and emotional disabilities were among the most frequently bullied high school students (Blake et al., 2012). Students with special healthcare needs who have an Individual Education Plan (IEP) are a protected class under federal law (USDHHS, 2015). Therefore, bullying based on sex, disability, or race and ethnicity may be overlapping with harassment and therefore illegal. Bullying that rises to the level of illegal harassment must be investigated by school personnel. In the present study, YRBS data were silent on risk behaviors associated with emotional or cognitive disabilities. Research examining relationships between violence behaviors, risk for self-harm, and bullying among students with disabilities could be used to provide policy and intervention guidance to educators and health practitioners. In addition, research is needed to understand whether anti-bullying policies have been effective for students protected by civil rights laws (NAS, 2016). Such research will guide systems-level prevention efforts to ensure compliance with civil rights laws and protection of aggregate populations.

Unanticipated Environmental Changes

The CDC recommended closure of schools for extended periods of time in areas with community spread of the coronavirus (CDC, 2020). Many schools across the United States were closed for an extended period of time during the 2019 Coronavirus pandemic, effecting 45.1

million public school students (Education Week, 2020). The extent to which school closures will impact prevalence of physical and cyberbullying is unknown. Distance learning via the internet may increase students' risk for cyberbullying. Future YRBS survey results and studies will need to take this dramatic shift in the learning environment into consideration.

Theoretical Approach to School- and Systems-Level Research

Development. Monks and Smith (2006) examined perceptions of bullying across development from 4 years of age to 40 years (n = 219) using stick figure drawings with captions. Investigators found participants of all ages recognized physical bullying. Relational bullying was identified in the cartoon drawings by male and female students between the ages of 8 and 14, and less often by participants between 14 and 40 years of age. Changes in patterns of recognizing bullying between the ages of 4 and 40 years reflected developmental age and direct experiences with bullying (Monks & Smith, 2006).

In a study of 1,820 students, of which 894 were in ninth grade, investigators found victims between 11 and 14 years of age were more likely to view bullying as abusive (Naylor, Cowie, Cossi, De Bettencourt, & Lemme, 2006). Students described bullying as a direct form of violence and were less likely to identify power, intent, or social exclusion. Investigators concluded that complexity of thought and understanding bullying increased with developmental age (Naylor et al., 2006).

Although students in studies by Naylor et al (2006) and Monks and Smith (2006) were younger than the current study, their research indicates the influence of development on perception of bullying. Naylor et al (2006) and Monks and Smith (2006) contribute to understanding differences across the grades in the present study. Perceptions change with normal development and older students may not perceive some of the behaviors as bullying. Therefore,

it may not be appropriate to apply one definition of bullying to the developmental range from ninth grade through twelfth grade.

Social dominance theory. Results of the present study hint that adolescent social dominance theory may be a factor in bullying victimization (Pellegrini & Bartini, 2001). An observational study of fifth and sixth grade students (n = 292) was conducted in two waves to examine how boys use strategies to establish peer groups in times of developmental transition. Dominance was initially used to establish peer hierarchy and declined as students aged. As a form of social dominance, bullying decreased as social networks and peer groups were established over the course of the school year. Similarly, in the present study younger students entering high school years were more likely victims of bullying. As students increased in grade levels, the likelihood of being bullied decreased. However, the reasons adolescents experience bullying and by whom were not explored in this study. The current study did not describe whether bullying was perpetrated within or across gender, grade, or race and ethnicity.

Social Cognitive Theory. An example of learned behavior was described in one quantitative study (Wilson, Nettelbeck, & Bell, 2003). A cross-sectional study of middle school students (n = 333) found those who witnessed peers using violence showed higher levels of violence against others. Students described aggression as the most frequently used form of peer conflict resolution. Findings Pellegrini and Bartini (2001), Monks and Smith, (2006), Naylor et al (2006) and Wilson et al (2003) may explain the decline in reports of bullying as students age. Maturation, redefined social hierarchy, and learned pro-social behaviors may contribute to the decline of bullying with increasing age in the present study.

Diathesis-Stress Model. In a study of elementary and middle school students (n = 688), relationships between individual attributes and environmental stressors were explored (Shell,

Gazelle, & Faldowski, 2015). The purpose of their study was to explore how anxious students experience peer mistreatment before and after the environmental stress of transitioning to middle school. Investigators found that anxious youth experienced physical victimization and exclusion less often as peer relationships were renegotiated in middle school. Patterns of males experiencing anxiety in the school environment declined with advancing age, yet remained stable in females. Comparatively, the diathesis-stress model described the relationship between victimization and bullying perpetration within the social-ecological framework (Swearer & Hymel, 2015). These researchers posit that students with a predisposition to viewing the world as a threatening place may enact bullying behaviors as protective measures, thus becoming bully-victims. In the present study, the experiences of students who simultaneously hold bullying and victim roles were not described. However, a quantitative study, with a combined sample of 14,833 students in Grade 5 through Grade 9 (7,340 females and 7,493 males) was conducted in two waves (Solberg, Olweus, & Endresen, 2007). The purpose of the study was to examine the degree of overlap between perpetration and experiencing bullying. Investigators found that males (n = 91) comprised 71% of bully-victim (n = 269) students. Previous research indicates girls in Grade 5 through Grade 7 are primarily bullied by boys, and that boys are typically bullied by other boys (Olweus, 1991). Research is needed to investigate whether bully-victim behaviors found in elementary and middle school years carry into high school. This is a significant need given the patterns of violence, risk for self-harm, and unwavering prevalence of bullying. A better understanding of student roles in the bullying process can guide prevention policies for targeted actions.

Limitations of the Study

This was a descriptive study to disseminate information in a meaningful way and is not intended to imply causation. Several limitations of this study should be noted. The YRBS survey is self-reported student data. Student responses are subject to recall and social desirability bias. Data measuring student reports of having carried a weapon to school in the past 30 days did not merge properly and were excluded from the results. Oregon, Washington, Wyoming, and Minnesota do not participate in the Youth Risk Surveillance System Survey (CDC, 2019). Illinois, Michigan, Ohio, Tennessee, Georgia, and Alabama have underweighted state results (CDC, 2019a). Therefore, students who experienced violence, self-harm, or bullying may be underrepresented in this study. Results should be interpreted with caution.

It was not possible to discern whether acts of violence occurred within or across the population characteristics with the available data. Additionally, there was some overlap between descriptions of electronic bullying and bullying at school in the student surveys. In the current study, students may have experienced bullying electronically while on school property, though we were not able to identify that overlap with the data available. Additionally, crossover between variables measuring students who carried a weapon, such as a club, gun, or knife, and those who carried a gun may cause overrepresentation of weapons.

Conclusion

Experiences of bullying plague high school students in America. Present study findings have implications for school nurses, psychologists, social workers, teachers, administrators, health practitioners, and policy makers. Relationships between adolescent characteristics, violence and risk for self-harm, and bullying were examined in the context of the school setting. Population characteristics of adolescent students experiencing bullying and engaged in violence

or risk for self-harm behaviors were discussed in detail. The findings from this study suggest students who engaged in violence or reported risk for self-harm behaviors were likely to have experienced bullying. Characteristic differences among student subpopulations may indicate a need for targeted interventions. It is important to nurture systems- and school-level policy and strategies for early prevention and identification of bullying.

In conclusion, relationships were described that may serve as guidelines for prevention and early identification of students experiencing bullying. Overall, this study found that subpopulations experienced violence, self-harm behaviors, and experiences of bullying. Students who experience bullying should be identified, and bullying must be prevented across the school environment. Therefore, prevention efforts should follow the Social Ecological Model. Student characteristics and the school climate should be considered when prevention policies are developed and implemented. School nurses have unique relationships with students, providing a link between the school climate and student health policies. Students, school nurses, administrators, law makers, and health practitioners should consider findings of this study and the data-driven recommendations in their bullying prevention programs. More research is needed to understand multiple factors that influence victimization by bullying, such as crossing student characteristics. Future studies should explore experiences of LGBQ students, learners with disabilities, and the school nurse role in bullying prevention. Additional research is needed to evaluate efficacy and areas of improvement for current bullying prevention initiatives.

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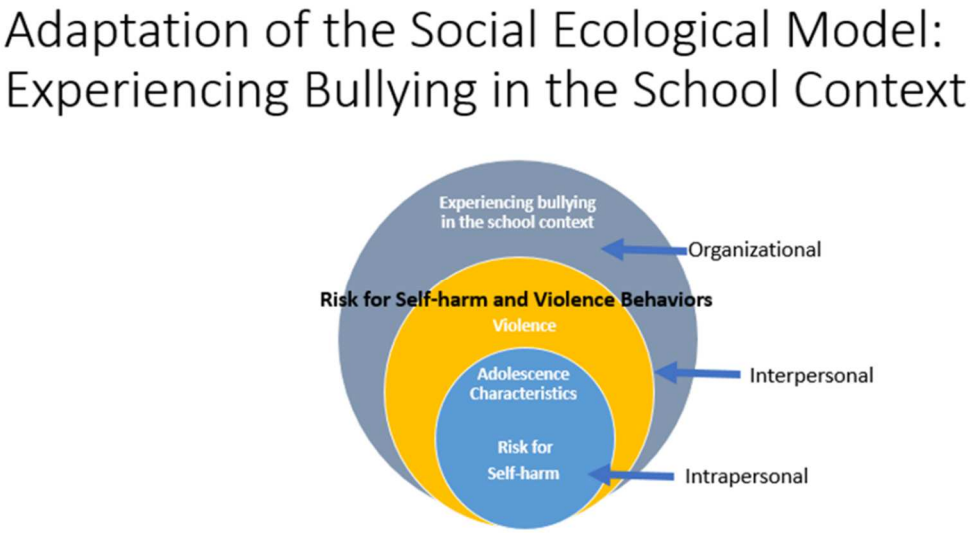
Appendix A

Social Ecological Model



Appendix B

Evidence Table

Author	Research Question or Purpose	Design Sample	Data Collection Strategies	Findings	S/L
Cuadrado-Gordillo, 2012	Purpose: explore similarities and differences in perceptions among students with different roles in bullying. Research question: Does the role the teenager played in bullying affect their perception of the phenomena?	Quantitative School chosen by stratified, multistage, proportional design, with clustering and random sampling of the group. Classes chosen by clustering within the secondary schools; in each of which a random selection was made of one class of each of the 4 years: 12 to 13 years,14 years, 15 years, and 16 years 24 schools N = 2,295 45.7 % female 12- to 16-year-olds (M = 13.8, SD = 1.4)	Questionnaire of 30 questions, combination of questions patterned after the Olweus Bully Victim Questionnaire students and UNICEF and Ombudsman. Bullying was operationalized by aggression, frequency, power, and harm. Responses were associated with intention to harm, imbalance of power, repetition, and social relationships. Students identified themselves as bully, victim, or witness and answered questions on perception.	17.6% identified as bullies, 18.8% identified as victims. Bullying as a form of social interaction and amusement in peer relationships explained 48.68% of the variance with a mean factor loading of 0.54 and internal reliability of α = 0.61. Intent to hurt explained 22.56% of the variance, with a mean loading of 0.52 and internal reliability of α = 0.69. Power imbalance explained 12.6% of the variance, with the highest mean factor loading (0.77) and internal reliability (α = 0.85).	+Sampling method to reduce bias +93.7% student participation rate +Statistically separated "pure bullies/victims" to show differences +Used consistent definition of bullying while combining questionnaires -Cross-sectional design does not show causality, not generalizable beyond sampled population -Effect size not reported
Esselmont, 2014	Purpose: Explore the link between bullying victimization, violence, and carrying a weapon. Examine if feeling safe at school mediated the effect of	Quantitative Secondary analysis of 2001-2002 U.S. Health Behavior in School-Aged Children (HBSC) survey. HBSC used a stratified, two-stage cluster sample	A self-report questionnaire administered by school representative. Bullying was described as negative actions on the part of another in an	13% were frequently bullied, 15% carried weapons. Overall levels of perceived school safety were high 3.67 (SD = 1.2). Carried a weapon -likely to have been victimized	+/-Large representative sample - +Cluster sampling included over-sampling and weighted analysis to allow control for effects of race/ethnicity on perception

	victimization of carrying a weapon. Examine male/female differences in the relationship between victimization, safety, and weapons. Research question: Are victims of bullying more likely to carry a weapon? Does feeling safe at school mediate the effect of victimization on carrying weapon? Are the mediating effects of student perceptions of safety the same for males and females?	design from public and private schools. School districts were selected in the first stage by random systematic sampling. Classes were selected in the second stage using simple random sampling from a sampling frame of classes. Nationally representative school-based survey of American children Grade 6 to Grade 10. Grade 6 was dropped to reduce elementary school bias. HBSC is conducted by the WHO. Two-stage cluster sample from public, private schools: stage one selected districts via random systematic sampling; stage two selected classes by simple random sampling frame of classes representing target grade/school. Black and Hispanic students were oversampled to improve model effects of race/ethnicity. *N* = 7,464 Mean age 14 years 46% male 75% non-Hispanic White	asymmetric power relationship. Actions are repeated over time, ranging from zero to several times per week. Bullying was operationalized as physical, verbal, gestures, and exclusion. Analysis reported using frequencies and odds ratios.	- have worse view of school safety - older (14.6 years of age), and non-Hispanic. Black Hispanics significantly more likely than Whites to carry weapon. Victimization is significant predictor of perceptions of safety for females and males. Bullying victimization leads to greater decrease than average of perceived safety for females. Males were 4.5 times more likely to carry weapon. Students one unit above the mean of perceived safety are 75% as likely to have carried a weapon. Statistically removing bullies from analysis decreased results to 9% of students carried a weapon. Age becomes a significant predictor. Increasing age leading to higher probability.	of safety and victimization - related violence +School response rate 73.2%, student response rate 81.9% +Statistically separated "pure bullies/victims" to show differences +Demonstrated relationship between victimization and perceived safety leading increased risk of carrying a weapon +Demonstrated race and gender differences in effects of victimization on perceptions of safety and effects of perceived safety on weapons carry -Administration procedure -Did not clarify forms or types of bullying -Did not measure frequency of weapons carry -Cross-sectional design does not show causality, not generalizable beyond sampled population

		16% non-Hispanic Black 9% Hispanic			
Fu et al., 2013	Purpose: Examine trends in bullying experiences among students in Grade 12 between 1999 and 2009. Explore the impact of demographics and social and economic characteristics on bullying. Hypothesis: Bullying victimization is more common and intense for students who are males or African Americans, come from rural areas, live in single parent or no-parent families, show lower academic performance, and weak religious identification.	Quantitative Secondary analysis of the Monitoring the Future (MTF) project, a nationally representative study of students in U.S. Schools Grade 12 students from 1989-2009 Threatened without injury $N = 44,159$ Threatened with weapon, $N = 44,095$ Injury with weapon, $N = 44,047$ Injury with a weapon, $N = 44,159$	Secondary analysis of MTF. Bullying victimization was defined as being exposed repeatedly and over time to the negative actions of another. Students were provided with the definitions of bullying and explanation of power imbalance. Bullying victimization was operationalized as exposure to violence and use of weapons resulting in injury. MTF was administered annually to students by school staff. Self-administered survey is machine readable. Examples of questions include substance abuse, religious orientation, school performance. Self-report. Analysis conducted using zero-inflated Poisson models. Results reported in frequencies increase/decrease.	Long-term trend shows overall risk of being bullied decreasing. Male/female differences: Rate of exposure decrease for males, no change for females. Rates threatened with weapon run parallel. Among males there is an inverse relationship: Injury with weapon increases as exposure to bullying decreases. Across all four types of bullying behaviors, males have higher risk of bullying victimization than females over the course of the study. Largest decease in male exposure to bullying was from 35% to 28.9% 1989-2009. African American students: injured with a weapon in 1990s, increases again 2001-2003, and since 2005. -increase in intensity: Larger intensity in being threatened without being injured as students have less exposure to same bullying behavior. Influence of relationships in environment: Students with weaker religious attachment,	+Trend study +/-Large representative sample -Risk Type I error +Distinguishes bullying from bullying intensity +Empirical evidence of increasing intensity of bullying +Identified trends in protective factors, association between religion and bullying; family and bullying +Studied influence of environment -Annual administration risk for testing bias -Bully/Victim data, total Male/Female data not provided -Focus on 12th grade yields conservative data, bullying has been shown to decrease as grades progress

				low religious attendance, and lower school performance were at higher risk of being bullied. Low maternal education was associated with threat or injury with weapon. Academic performance A- and above had less exposure to being bullied.	-Study focused on physical forms of bullying -Trend study using cross-sectional data, does not show causality, cannot be generalized
Grinshteyn & Yang, 2017	Purpose: Assess the association between experiencing electronic bullying in the past year and how often students have been absent in the last month due to feeling unsafe.	Quantitative Secondary analysis of 2013 YRBSS. *N* = 13,583 students Grades 9-12 from public and private schools in U.S. Cluster sample design, weighted analysis. School response rate 77%, student response rate 88%, overall response rate 66%, item response rate 99.8%.	Questionnaire administered in classroom by trained school district staff. Paper and pencil survey. Multivariate multinomial regression analysis. Weighted factors applied to each record. Primary question: During the past 30 days on how many days did not go to school because felt unsafe. Regressor of interest was electronically bullied. Also tested related covariates violence, threatened/injured with weapon, feeling sad, binge drinking.	Students missed days of school related to feeling unsafe. The relative risk for number of days varied with covariates. The relative risk for all covariates was significant.	±Large sample size, risk Type I error +YRBS sampling design, weighted analysis +Response rates +Isolation of truancy as a reality of being fearful per the question in the survey +Examines electronic bullying specifically/ only; reduces risk for multicollinearity between types of bullying -Assessed electronic bullying with absences due to feeing unsafe; some may be truant for other reason (i.e. victim is embarrassed) -Confounding variables (i.e. neighborhood level predictors) not accounted for

					-Cross-sectional data; does not show causality; cannot be generalized
Hellström et al., 2015	Purpose: Explore the adolescents' definitions of bullying. Gain deeper understanding of the culture and group process involved in bullying. Research question: How do adolescents define bullying?	Mixed methods, Quantitative Olweus Bully Victim questionnaire, followed by focus groups. Qualitative phenomenological - grounded theory. *N* = 128 participants completed a cross-sectional questionnaire as part of a larger school-based project. 60% female in Grades 7 and 9. *n* = 21 students participated in focus groups Grades 7 and 9 (8 female, 13 males).	Secondary analysis of The Preventative School project web-based questionnaire using open-ended questions on behaviors described in the Olweus Bully Victim Questionnaire (OBVA). Bullying was operationalized by repetition, intentional aggressive behaviors, harm, and power imbalance. Principal selected classes to participate in questionnaire. Researcher administered questionnaire and facilitated the focus groups. Students in schools completed opposite measures. School A Grade 7 completed questionnaire, while Grade 9 participated in focus group. School B Grade 7 participated in focus group, while Grade 9 completed questionnaire.	Adolescent view of bullying includes three subcategories. Could be repetitious or one time may be bullying. Gender difference -females have a more inclusive view.	+Mixed-method study +Qualitative focus groups added to gain understanding of the influence of teen culture and group process on adolescent definition/criterion for bullying +Inclusion criteria, examples of questions included questionnaire and focus group interview format and procedure as described -Two large schools specifically chosen to yield large sample; neither the schools nor participants were randomly selected (selection bias) -Did not separate traditional from cyberbullying (risk for measurement bias) -Questionnaire may restrict participants because examples were given (testing bias) -Participants' previous experiences and group dynamics were not known

			Focus groups separated male/female. Students were in same school, same year. Chi-square Grounded theory		or described may influence results -Quantitative analysis report per bar graph, numerical results not provided
Kim et al., 2018	Purpose: Examine to what extent sex modifies the strength of association between cyberbullying victimization and adolescents' emotional and behavioral problems. Compare the magnitude of associations between adolescents' emotional and behavioral problems and cyberbullying victimization compared to traditional forms of bullying.	Multilevel structural modeling approach with a representative adolescent sample 360 schools, stratification of 180 communities by median family income. Over-sampling of poor and wealthy neighborhoods. *N* = 360 *n* = 248 180 (72.6%) were elementary schools, 68 (27%) were secondary schools, majority were English speaking, 9 were French speaking schools. Cluster sampling, random sample of students within the schools in Grades 6-8. *N* = 50,495 *n* = 31,124 Response rate 61.6% Mean age 13.52 years ± 2.04, 48.1% male, 56.5% White,	Survey was comprised of a combination of questions from the Emotional Problems Scale for Depression and the Conduct Problems Scale for Students. Bullying was defined for students as intention to harm, imbalance of power, and repetition. Emotional problems were operationalized as depression and anxiety. Researchers conctroled for forms of traditional bullying: physical, verbal and social bullying. Students were administered paper and pencil questionnaires or secure internet-based technology surveys. Two measures: Emotional behavioral problems measured using 9 items from	Cyberbullying significantly contributes to emotional and behavioral problems in males and females. Standardized beta coefficients for contributing to emotional problems: Females significantly stronger compared to males. Cyberbullying contributes to behavioral problems males and females. Beta coefficient is significantly stronger for males. Beta coefficients were stronger for females for social bullying, emotional problems in females, verbal bullying, Beta coefficients for cyberbullying and social bullying were more strongly associated behavioral problems in males than females. Females: Cyberbullying had the strongest association with emotional problems and strongest association	+Sampling method, weighted analysis ±Large sample represents large portion of the population; is easier to achieve statistical significance because it might inflate statistical power analysis - Risk for Type I error +School participation rate was 68.9% with 248 of 360 schools participating with students in Grades 6-12 -Questionnaire is student self-report In past 6 months students have grown, matured, could have changed grades, participated in bullying prevention program (history bias, maturation bias) -Risk for Hawthorne effect Used global, single- item questions; may lead to risk for measurement sensitivity

		5.7% Black African Caribbean or Canadian American, 9.4% multiracial	Emotional Problems scale and Conduct Problems Scale Olweus definition of bullying and question on the Ontario Ministry of Ed Safe School survey.	with behavioral problems compared to verbal bullying. Males: social bullying had the strongest association with emotional problems compared to cyberbullying. Cyberbullying has the strongest association of behavioral problems compared to verbal.	-Cross-sectional data; does not show causality; cannot be generalized
Pontes et al., 2018	Overall Purpose: Investigate progress toward meeting the Healthy People 2020 objectives IVP:35 to reduce bullying victimization by 10% from 2009 to 2019. Examine trends over time in electronic bullying victimization by gender. Investigate the relationship by gender between race/ethnicity and bullying victimization. Examine whether trends over time in electronic bullying victimization rates vary by gender.	Quantitative Secondary analysis of Youth Risk Behavior Survey (YRBS) data Sampling design variables and sample weights are provided and need to be incorporated for estimation of representation. Four wave school survey: 2009, 2011, 2013, 2015. Since electronic bullying question was added in 2011 excluded data from 2009 YRBSS for all analysis that included electronic bullying. *N* = 61,042 *n* = 43,728 1,894 of multiple race 1,464 of Asian race	YRBS is self-administered paper and pencil survey. Included questions about school bullying, electronic bullying, and 80 other questions, including questions about violence, suicide, substance abuse, physical activity, and other health behaviors To estimate the prevalence of bullying, researchers assembled linear trend. Data set included data from the National YRBS conducted 2009, 2011, 2013, 2015. Excluded 2009 data pertaining to electronic bullying. Bullying was operationalized by imbalance of pwer, repetition, and harm.	No significant linear time trends in likelihood of bullying victimization at school or electronically for males/females. Decrease in males bullied at school. Significant increase in likelihood females bullied at school 2009-2015. No significant trends males/females electronic bullying 2011-2015. Likelihood of being bullied at school varied by race: highest for White students, lowest for Black students; highest for White females, lowest Black females; highest for White males, lowest for Black males. Electronic bullying followed same trend. White females more likely than males and all other races to report being electronically bullied. Percentage of high school males decreases over years and by grade. For females,	+Trend study +YRBS sample design, weighted analysis ±Large sample size Is easier to achieve statistical significance because it might inflate statistical power analysis -Risk for Type I error +Due to large sample size are able to estimate prevalence of student bullying victimization for smaller minority groups -YRBS is a self-report method; question asks if bullied in past 12 months as students grow and change grades (history bias, maturation bias, Hawthorn effect) -Definition or operationalization of

	Investigate the relationship between race/ethnicity and bullying victimization, and examine whether these relationships vary by gender.		Results reported as frequencies and odds ratios.	victimization increases over years, decreases by grade.	bullying not described beyond in the study YRBS -Used cross-sectional data; does not show causality, cannot be generalized beyond the study population
Rajan et al., 2015	Purpose: Describe the prevalence of aggressive and violent behaviors in the context of the school environment. Illustrate patterns during 2001-2011.	Secondary analysis of the YRBS between 2001 and 2011. Quantitative 3-stages cluster sample design generated a nationally representative sample of Grades 9-12 *N* = 84,734 Race/Ethnicity were collapsed to Black, White, Hispanic, Other races.	Study was based on the premise that violence disproportionally affects minorities. Collected biennially in public across the U.S. using validated items. Expanded definition of violence and aggression in the context of school environment. Violence and aggression in schools were operationalized by physical fighting, weapons carrying, threats, bullying, safety, and sexual assault. Items asked identically across all six of the time marks except bullying. Bullying on school property was added 2009. Electronic bullying was added 2011.	Rates of adolescents feeling unsafe in school environment, bringing weapons to school, engaging in fighting on school property. Hispanic adolescents and adolescents classified as Other have emerged as high-risk demographic subgroups during the time period. Peer victimization and sexual victimization continue to affect females disproportionately.	+Trend study +YRBS sample design, weighted analysis ±Large sample size. Is easier to achieve statistical significance because it might inflate statistical power analysis -Risk for Type I error +Defined aggression and violence to include overt violence (physical fighting, weapon carrying sexual assault), bullying (on school or electronic), perceived lack of safety (to/from/at school) ± Large sample size Is easier to achieve statistical significance because it might inflate statistical power analysis -Risk for Type I error

			Bullying was defined as per the YRBS. Data visualization in heat map. Statistical methods one-way ANOVA and post-hoc tests to identify difference in prevalence fluctuated significantly across all years. Results were reported using frequencies visualized using heat maps. Independent sample t-tests were utilized to compare prevalence of bullying among groups between 2009 and 2011.		+Due to large sample size are able to estimate prevalence of student bullying victimization for smaller minority groups -YRBS is a self-report method; question asks if bullied in past 12 months as students grow and change grades (history bias, maturation bias, Hawthorn effect) -Definition or operationalization of bullying not described in the study beyond YRBS -Cross-sectional data; does not show causality; cannot be generalized
Salmon et al., 2018	Purpose: Estimate the prevalence of nine types of bullying victimization among adolescents. Examine how these experiences vary according to gender and school grade.	Quantitative Sample obtained from the cross-sectional Youth Health Survey questionnaire *N* = 64,174 Grades 7-12 51.3% males 48.7% females All public, independent, Francophone, Colony, and First Nations schools invited. Independent	Nine-item questionnaire administered in the classroom every four years following census design. Survey is administered by trained classroom teachers. Bullying was operationalized by items researchers determined to be typical adolescent experiences. Types of bullying were measured as physical, use of weapons, ridicule, race/culture, sexual	Bullying victimization is prevalent among middle and high school adolescents. Includes traditional bullying, discriminatory harassment, and cybervictimization. 58.3% of males, 67.8% of females in Grades 7-12 were bullied in past 12 months. These rates are much higher than other estimates for Canada. Gender differences for victimization not found in the literature: victimization	+Sample design decreased bias, weighted analysis ± Large sample size Is easier to achieve statistical significance because it might inflate statistical power analysis - Risk for Type I error +Large sample size allowed estimates of specific examples of bullying +Response rate

		schools can opt out. 67% response rate. *N* = 95,659 *n* = 64,174 Grade distribution Grade 7: 18.1% Grade 8: 17.8% Grade 9: 18.1% Grade 10:16.5% Grade 11: 15.3% Grade 12: 14.2% 57.8% were from urban communities, 42.2% from rural communities in Canada. Youth Health Survey self-report paper and pencil survey in English and French	orientation/gender identity, and harassment about body share/size. Cyberbullying was measured by being bullied, asked for personal information, feeling unsafe while on the internet. Results reported as frequencies and adjusted odds ratio. Internal consistency Cronbach's alpha =.77. Inter-time correlations for then in victim experiences ranged from .14 to .44 and all were statistically significant $p < 0.001$.	disproportionally affects females. Females were more likely to report bullying based on body shape/size, sexual orientation, three types of cybervictimization, feeling unsafe when in contact online. Gender was not associated with race or culture-based harassment.	+/-Internal consistency reported, below .80 +/-Compares bullying across nine specific types of victimization /bullying domains as typical adolescent experiences -Self-report subject to recall (history bias, maturation bias) or students may self-report based on social desirability (Hawthorn effect) -Items to assess bully victimization not validated (potential for measurement error) -12-month time frame; students were asked to report current grade and past 12 month bullying experience; depending on the timing, the bullying could have occurred in past year previous grade (maturation bias) -YHS is cross-sectional data; does not show causality; cannot be generalized beyond population of the study
Sigurdson et al., 2014	Purpose: Examine associations between involvement in roles	Baseline data assessed in 1998 contributed to four waves:	Logistic regression and ANOVA	Increased risk for lower education as young adults	+Longitudinal prospective study with representative sample

	of bullying and health. Examine associations of bullying with education, employment, health, bodily pain, or substance abuse. Research question: What are the prospective associations between bullying involvement at 14-15 years of age and self-reported general health and psychosocial adjustment in young adulthood at age 26-27 years of age.	1998 *N* = 2,464 from two mid-Norway counties 1998 T1: Mean age 13.7 years 1999/2000 T2: Mean age 14.9 years T3: 18-19 years old 2012 T4: Mean age 27.2 years *N* = 1,266 Deaths *N* = 13	Youth Self Report (YRS) with questions added re: socioeconomic status, bullying. In adulthood Youth and Mental Health study questions. Added parenting, occupation, education, health outcomes Bullying was described as exposed repeatedly or over time to negative actions of more powerful peers. Bullying was operationalized as teasing, social exclusion, or physical assault. Results reported as Chi^2 and odds ratios.	compared to non-involved peer. Aggressive group higher risk of being unemployed. Victim and bully-victim group higher risk of poor general health, body pain. Victims and bullied have higher risk for illegal drug use	+SES +Good response rate a T1 and T2, modest at T4 +Large, heterogeneous sample even after attrition - Not a national representative sample -Measurement of aggression; did not measure of relational bullying, possible skew results to more males -Power criteria not expressed in survey -Self-report data bias (history, maturation, Hawthorn effect) -Did not consider confounding factors such as effect of learning disabilities on education attainment
Smalley et al., 2017	Purpose: To examine prevalence of 15 risky behaviors for bullied students in comparison to nonbullied peers within a large sample of middle and high school students.	Secondary analysis of 2013 Georgia Student Health Survey II. Convenience sample every public, select private schools Grades 6-12 *N* = 513,909 middle and high school students. Grades 9-12 *n* = 251,506	Questionnaire online, anonymous, completed in one hour. Bullying was operationalized as threats, teasing, or being picked on. Students were asked the number days bullied or threatened others in past 30 days	Chi-square test of independence was used to compare rates of engagement in 15 risky behaviors. Stratified analysis for separate examination of each school level. 19% of middle schoolers had been bullied.	± Large sample size Is easier to achieve statistical significance because it might inflate statistical power analysis - Risk for Type I error -Sampling method (selection bias)

		18% rural Parental consent to participate.	and number of days were bullied or threatened by others in past 30 days. Behavior risks were operationalized by alcohol, tobacco, and drug use, school absence and safety concern, and weapons at school. Repetition was measured as frequency in number of days in previous 30 days. Self-harm and suicidal ideation was operationalized by intentional harm or considering suicide in previous 12 months. Substance abuse and bullying were collapsed into binary variables for analysis. Results were reported using frequencies and odds ratios. Counties coded rural per national guidelines. Validity check question about use of fictitious drug to eliminate potentially false self-report.	10% of high school students had been bullied. Change the wording for the question and asking if have been picked on or teased: Results much higher. 36% middle schoolers, 25.2% high schoolers, 3.2% high school students were considering dropping out. Bullied students were more likely to participate in every risky behavior.	-Response rate not reported -Self-report -Risk for Hawthorn effect -Cross-sectional data; does not show causality; cannot be generalized
Thornberg et al., 2012	Purpose: Explore how teenagers explain why students bully in schools. Test male/female differences.	Mixed-methods study, quantitative/ qualitative - grounded theory in Swedish cities. 15-21 years old	Questionnaire administered in classroom by researchers.	Three categories of causes of bullying -bully attributing 80% -victim attributing 44% -social context attributing 19%.	+Procedure - researchers were present in the classroom and administered every survey/data collection

	Research questions: Are there differences in how older teenagers explain why bullying takes place at school? In adolescents, are there differences in explaining bullying due to gender?	(*M* = 16.9 years old *SD* = 1.00) adolescents in Sweden. Stratified sampling strategy represented students from lower-and middle-class families *N* = 250 *n* = 215 86% participation 115 females 100 males	Bullying was defined and operationalized by aggression, harm, repetition, and imbalance of power. Open-ended questions were used to ask students to account for causes of bullying. Analysis by Chi^2 testing and grounded theory analysis	Three subcategories/ causes attributed to bully: -psychosocial problems 56% -social positioning 41% -emotionally driven 21% Causes attributed to victim: -victim deviation 44% Causes attributed to social context -group pressure 12% -inviting school environment 5% -peer conflicts 4% Bullying attributed more often to individual causes than social context. Females provided more explanations of bullying and more likely to attribute causes to bully and victim. Males attribute bullying primarily to bully. Older adolescents attribute bullying to individual characteristics rather than social context	+Sample method represented several education programs in the upper secondary schools -Socio-economic and ethnic data not gathered Self-report - history bias, maturation, and Hawthorn effect -Cross-sectional data; does not show causality; cannot be generalized
Undheim & Sund, 2013	Purpose: Examine whether being bullied or showing aggressive behavior predicted suicidal ideation in a large representative sample over a 1-year period of time, controlling for depression and	Quantitative composite scale from Youth Self Report measured bullying behaviors toward others. Mood and Feelings Questionnaire measured depressive symptoms and suicidal ideation. Self-esteem subscale global self-worth was	Questionnaires Bullying was operationalized as being victimized repeatedly and over time by negative actions of powerful peers during previous six months.	Both bullied adolescents and adolescents who were aggressive toward others had significantly higher levels of suicidal ideation at age 14 than non-involved. Based on MFQ scores, females had higher ideation than males at each time	+Longitudinal study (6 years); low attrition +High response rate at each assessment point +Findings for predictors controlled for SES, gender, age, SES and depression levels

	gender in 12- to 15-year-old adolescents.	measured using the Self-Perception Profile for Adolescents. Mediating factors: differences between genders, prevalence of suicidal ideation between gruops, and the role of global self-worth. *N* = 2,464 Norwegian adolescents assessed at two points in time with identical questionnaires measuring passive and active suicidal thoughts (14 and 15 years of age). Longitudinal study in two counties in Norway between 1998 and 2000. The initial sample (Time 1) was 51% female with a mean age of 13.7 years (*SD* = 0.58). The second assessment was conducted one year later (Time 2). The mean age was 14.9 years (*SD* = 0.59). The bully-victim group was very small at both time points and excluded.	Students completed a socioeconomics scale, being bullied scale, and the youth self-report describing bullying behavior (YSR), and depressive symptoms and suicidal ideation were assessed with the MFQ 34-item questionnaire. The MFQ measures depressive symptoms with questions asking students to report feelings during the preceding two weeks. Self-esteem was measured by the revised Self-Perception Profile for Adolescents.	point (measured at 14 and 15 years of age). Aggressiveness toward others did not predict suicidal ideation. Both genders are at increased risk if bullied and additional risk if depressed.	+Reliable international measures per author's report -Measure of suicidal thoughts may be interpreted as signs of depression, but not suicidal ideation -Able to use questionnaire data only, limited to 1 year follow up -No control for behavior or conduct disorder

Phenomenon: Bullying

Program of Research: School- and Systems-level prevention and early identification of bullying

Population of Interest: School-age adolescent

Concepts: Adolescent characteristics, risk for self-harm, violence behaviors, school context, bullying

Articles identified in the search were evaluated for use in the review using Rodgers Guidelines for Research Critique (1997), PRISMA-P (Moher et al., 2015) and Evidence Hierarchy (Polit & Beck, 2012).

The purpose of this study is to examine relationships over time between adolescent characteristics, experiencing violence, risk for self-harm, and the prevalence of experiencing bullying. The study will address the following research questions:

RQ1: What is the relationship between adolescent characteristics and experiences of violence?

RQ2: What is the relationship between adolescence characteristics and the prevalence of experiencing bullying?

RQ3: What is the relationship between adolescent violence and the prevalence of experiencing bullying?

RQ4: What is the relationship between adolescent risk for self-harm and the demonstration of violence?

RQ5: What is the relationship between adolescent risk for self-harm and the prevalence of experiencing bullying?

Appendix C

Key Words and Terms

Key Word A-F	Key Word G-K	Key Word L-Q	Key Word R-Z
academic	Gay	loneliness	sexual minority
achievement,	gender	LGBQ	substance abuse
age	grades	marijuana	suicide
aggression	harm	mental health	target
adolescent	idea	minority*	victim
alcohol	ideation	male	victimization
bully*	individual characteristics	peer	view
bystander	ethnicity	peer abuse	youth
child*	gender	peer	
cyberbully		victimization	
depression		perception	
development		race	
drop out		sad*	
friend*		sex	
framework		theory	
female			

Appendix D

YRBS Methodology

The CDC utilizes a complex sampling frame for youth risk behavior surveillance (Brener et al., 2013). Students in Grade 9 through Grade 12 in U.S public, Catholic, and other private schools comprise the national YRBS target population (Brener et al., 2013). All 50 states and the District of Columbia are within the target population; U.S. territories are not (Brener et al., 2013).

Complex Sampling

The YRBS primary sampling units (PSU)s are derived from large-sized counties in the first sampling frame (Brener et al., 2013). Schools are sorted by metropolitan sizes greater or less than 500,000 people and rotated. New sub-PSUs are created from 16 strata categorized by metropolitan size. The 54 largest metropolitan areas are considered urban, all others are considered rural. School selection for PSUs is guided by probability proportional to school enrollment size (Brener et al., 2013). In the second sampling frame, schools are selected from a list of public and private PSUs and divided into groups. Schools with 25 or more students enrolled per grade are considered large schools. Schools with less than 25 students per grade are considered small schools. Schools are selected from PSUs with probability proportional to school enrollment size. Finally, one or two classes from Grade 9 through Grade 12 of each school are randomly selected in the third stage. All students in the sampled classes are eligible to participate (Brener et al., 2013).

Instrument

The national high school YRBS was designed as a one-time, biennial survey (Brener et al., 2013). The purpose of the survey is to describe and assess the prevalence of health risk

behaviors among youths. Trends in health risk are measured over time with the YRBS data (Brener et al., 2013). Developers reported reliability of the 1999 YRBS Kappa coefficients scores range from 23% to 90%, with a mean score of 61% (Brener et al., 2002). Unintentional injuries and violence category Kappa coefficient score mean was 59.9% (Brener et al., 2002).

YRBS Reliability and Validity

The YRBS reliability has been demonstrated by test-retest method (Brener et al., 1999, 2002, 2013). Questions pertaining to adolescence characteristics, risk for self-harm, and violence were added before 1997 (Brener et al., 2002; CDC, 2016b). One YRBS question was added to the survey in 2009 to identify students experiencing bullying on school property (CDC, 2016b). One YRBS question was added in 2011 to identify students experiencing bullying by electronic means (CDC, 2016b).

The 1992 YRBS survey included four of the five survey questions about physical fighting (Brener, Simon, Krug, & Lowly, 1999). The 1992 YRBS survey also included the questions about suicide attempt and gender. Threatened with a weapon and avoiding school for feeling unsafe were added in 1993 (Brener et al., 1999). Race was added in 1997, and ethnicity was added in 1994 (CDC, 2016b). No studies have been done to test validity on all six risk behaviors (Brener et al., 2013). In a review of the literature, Brener et al. (2003) assessed factors affecting validity of self-reported risk behaviors among adolescents. Brener et al. determined self-report of intentional and unintentional violence behaviors were affected by situational and cognitive factors. These factors did not threaten validity of the self-report (Brener et al. 2003).

Setting and Procedure

The national high school YRBS is conducted from February to May of each odd-numbered year (Brener et al., 2013). Under CDC oversight, contractors work with schools to

select classes for data collection, obtain parental permission, and train administrators. Active permission is obtained by 10% of schools before students can participate in the YRBS (Brener et al., 2013). Passive permission is used by approximately 90% of schools. Student participation in the paper/pencil survey is anonymous and voluntary. Surveys are administered in the classroom by trained data collectors. Data collectors remain in the classroom and collect critical information about the class, later used to weight data. Students complete the survey in approximately 40 minutes. Absent students may be allowed to make-up surveys administered by data collectors or school officials at a later data (Brener et al., 2013).

Data Quality

To ensure data quality, cleaning and editing is performed by the Survey Data Management System developed by the CDC (Brener et al., 2013). The YRBS data have been crosschecked and edited for inconsistent responses (CDC, 2012, 2014, 2016a, 2018a). Data deemed invalid were determined to be missing and removed (CDC, 2012, 2014, 2016a, 2018a). Reliability is further enhanced through statistical power (DeVellis, 2012). Statistical power was strengthened by combining samples to achieve a larger size (Kann et al., 2018), further enhancing reliability of the study.

The YRBS dataset is a nationally representative sample of students in Grade 9 through Grade 12 (Brener et al., 2013). A rigorous probability sampling model was followed (Brener et al., 2013). Methodology associated with sampling selections is described with each survey data user's guide (CDC, 2012, 2014, 2016a, 2018a).

Weighted Data

Survey years with response rates greater than 60% are weighted and nationally representative (Brener et al., 2013). The YRBS data are weighted for analysis based on student

sex, race, and grade to mirror the national population. Weighted estimates are representative of students in Grade 9 through Grade 12 who attend public and private schools in the United States. Survey years with response rates less than 60% are not weighted and represent only students participating in the survey (Brener et al., 2013). Individual YRBS data user guides include the sample description, school-level selection, class selection, and response rates for each survey year (CDC, 2012, 2014, 2016a, 2018a).

Data Analysis

Detailed information for data analysis is available in the YRBS Data User's Guide by year and 2017 YRBS Combined Datasets User's Guide (CDC, 2012, 2014, 2016a, 2018a, 2018b). Response rates for survey years 2011-2017 were greater than 60%. Therefore, weighted data will be used for survey years included in the analysis. Proportions of students in each grade match national population projections for each survey year (CDC, 2012, 2014, 2016a, 2018a). The YRBS data are accurate within ±5% and 95% confidence level for sex, grade by race/ethnicity, and grade by sex (Brener et al., 2013). Race and ethnicity subgroups are accurate within ± 5% at the 90% confidence level (Brener et al., 2013). Results of descriptive and regression analysis are disseminated in biennial YRBS reports published by the CDC.

Limitations

The YRBS is subject to limitations by virtue of using a self-report survey for data collection (Brener et al., 2013). Students were asked to report occurrences of being bullied over the past 12 months (CDC, 2017a). Self-report may be subject to recall bias (Polit & Beck, 2012). In a review of the literature, Brener et al. (2003) found behavioral self-reports were more likely to be accurate to time when the behavior was severe. Social desirability bias may have influenced student response in reaction to characteristics of the interviewer (Polit & Beck, 2012).

Since students were aware they were being observed they subject to the Hawthorn effect. The YRBS data are only generalizable to students in Grade 9 through Grade 12 attending public, parochial, and private schools in the United States (Brener et al., 2013). Data are not representative of all adolescents in the United States. Nor are the data representative of students in alternative education settings, or students in territories or other countries (Brener et al., 2013).

Appendix E

Qualifications

Dr. Julia Snethen is the PhD program director and full professor at the University of Wisconsin Milwaukee. Her research areas have focused on aspects of chronic conditions in children from the perspectives of mothers, fathers, children, and siblings. In recent years, her focus has been directed at the chronic condition of obesity and diabetes in children. She has a strong interest in stigma related to children with obesity. Dr. Snethen will be the principal investigator of record for this research study.

Terese Blakeslee is a PhD student in nursing at the University of Wisconsin Milwaukee. Her research focuses school- and system-level prevention of bullying and early intervention for the school-age population. She has been a nurse for 21 years, including 16 years in school nursing and five years in public health nursing. Currently, she is a nursing instructor at the University of Wisconsin Oshkosh. Her dissertation research will be conducted with guidance from an interdisciplinary committee of professors, chaired by her Major Professor, Dr. Julia Snethen.

Appendix F

2017 YRBS Survey

Form Approved
OMB No.: 0920-0493
Expiration Date: 11/30/2019

2017 National

Youth Risk Behavior Survey

This survey is about health behavior. It has been developed so you can tell us what you do that may affect your health. The information you give will be used to improve health education for young people like yourself.

DO NOT write your name on this survey. The answers you give will be kept private. No one will know what you write. Answer the questions based on what you really do.

Completing the survey is voluntary. Whether or not you answer the questions will not affect your grade in this class. If you are not comfortable answering a question, just leave it blank.

The questions that ask about your background will be used only to describe the types of students completing this survey. The information will not be used to find out your name. No names will ever be reported.

Make sure to read every question. Fill in the ovals completely. When you are finished, follow the instructions of the person giving you the survey.

Public reporting burden for this collection of information is estimated to average 45 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: CDC Reports Clearance Officer, 1600 Clifton Road, MS D-74, Atlanta, GA 30333, ATTN:PRA (0920-0493)

Thank you very much for your help.

Directions

- **Use a #2 pencil only.**
- **Make dark marks.**
- **Fill in a response like this: A B ● D.**
- **If you change your answer, erase your old answer completely.**

1. How old are you?
   A. 12 years old or younger
   B. 13 years old
   C. 14 years old
   D. 15 years old
   E. 16 years old
   F. 17 years old
   G. 18 years old or older

2. What is your sex?
   A. Female
   B. Male

3. In what grade are you?
   A. 9th grade
   B. 10th grade
   C. 11th grade
   D. 12th grade
   E. Ungraded or other grade

4. Are you Hispanic or Latino?
   A. Yes
   B. No

5. What is your race? **(Select one or more responses.)**
   A. American Indian or Alaska Native
   B. Asian
   C. Black or African American
   D. Native Hawaiian or Other Pacific Islander
   E. White

6. How tall are you without your shoes on?

Directions: Write your height in the shaded blank boxes. Fill in the matching oval below each number.

Example

Height	
Feet	**Inches**
5	***7***
③	⓪
④	①
●	②
⑥	③
⑦	④
	⑤
	⑥
	●
	⑧
	⑨
	⑩
	11

Height	
Feet	**Inches**
③	⓪
④	①
⑤	②
⑥	③
⑦	④
	⑤
	⑥
	⑦
	⑧
	⑨
	⑩
	11

7. How much do you weigh without your shoes on?

Directions: Write your weight in the shaded blank boxes. Fill in the matching oval below each number.

Example

Weight		
Pounds		
1	***5***	***2***
⓪	⓪	⓪
●	①	①
②	②	●
③	③	③
	④	④
	●	⑤
	⑥	⑥
	⑦	⑦
	⑧	⑧
	⑨	⑨

Weight		
Pounds		
⓪	⓪	⓪
①	①	①
②	②	②
③	③	③
	④	④
	⑤	⑤
	⑥	⑥
	⑦	⑦
	⑧	⑧
	⑨	⑨

The next 5 questions ask about safety.

8. How often do you wear a seat belt when **riding** in a car driven by someone else?
   A. Never
   B. Rarely
   C. Sometimes
   D. Most of the time
   E. Always

9. During the past 30 days, how many times did you **ride** in a car or other vehicle **driven by someone who had been drinking alcohol**?
   A. 0 times
   B. 1 time
   C. 2 or 3 times
   D. 4 or 5 times
   E. 6 or more times

10. During the past 30 days, how many times did you **drive** a car or other vehicle **when you had been drinking alcohol**?
   A. I did not drive a car or other vehicle during the past 30 days
   B. 0 times
   C. 1 time
   D. 2 or 3 times
   E. 4 or 5 times
   F. 6 or more times

11. During the past 30 days, how many times did you **drive** a car or other vehicle **when you had been using marijuana** (also called grass, pot, or weed)?
   A. I did not drive a car or other vehicle during the past 30 days
   B. 0 times
   C. 1 time
   D. 2 or 3 times
   E. 4 or 5 times
   F. 6 or more times

12. During the past 30 days, on how many days did you **text or e-mail** while **driving** a car or other vehicle?
   A. I did not drive a car or other vehicle during the past 30 days
   B. 0 days
   C. 1 or 2 days
   D. 3 to 5 days
   E. 6 to 9 days
   F. 10 to 19 days
   G. 20 to 29 days
   H. All 30 days

The next 11 questions ask about violence-related behaviors.

13. During the past 30 days, on how many days did you carry **a weapon** such as a gun, knife, or club?
    A. 0 days
    B. 1 day
    C. 2 or 3 days
    D. 4 or 5 days
    E. 6 or more days

14. During the past 30 days, on how many days did you carry **a weapon** such as a gun, knife, or club **on school property**?
    A. 0 days
    B. 1 day
    C. 2 or 3 days
    D. 4 or 5 days
    E. 6 or more days

15. **During the past 12 months**, on how many days did you carry a **gun**? (Do **not** count the days when you carried a gun only for hunting or for a sport, such as target shooting.)
    A. 0 days
    B. 1 day
    C. 2 or 3 days
    D. 4 or 5 days
    E. 6 or more days

16. During the past 30 days, on how many days did you **not** go to school because you felt you would be unsafe at school or on your way to or from school?
    A. 0 days
    B. 1 day
    C. 2 or 3 days
    D. 4 or 5 days
    E. 6 or more days

17. During the past 12 months, how many times has someone threatened or injured you with
a weapon such as a gun, knife, or club **on school property**?
    A. 0 times
    B. 1 time
    C. 2 or 3 times
    D. 4 or 5 times
    E. 6 or 7 times
    F. 8 or 9 times
    G. 10 or 11 times

H. 12 or more times

18. During the past 12 months, how many times were you in a **physical fight**?
    A. 0 times
    B. 1 time
    C. 2 or 3 times
    D. 4 or 5 times
    E. 6 or 7 times
    F. 8 or 9 times
    G. 10 or 11 times
    H. 12 or more times

19. During the past 12 months, how many times were you in a **physical fight on school property**?
    A. 0 times
    B. 1 time
    C. 2 or 3 times
    D. 4 or 5 times
    E. 6 or 7 times
    F. 8 or 9 times
    G. 10 or 11 times
    H. 12 or more times

20. Have you ever been physically forced to have sexual intercourse when you did not want to?
    A. Yes
    B. No

21. During the past 12 months, how many times did **anyone** force you to do sexual things that you did not want to do? (Count such things as kissing, touching, or being physically forced to have sexual intercourse.)
    A. 0 times
    B. 1 time
    C. 2 or 3 times
    D. 4 or 5 times
    E. 6 or more times

22. During the past 12 months, how many times did **someone you were dating or going out with** force you to do sexual things that you did not want to do? (Count such things as kissing, touching, or being physically forced to have sexual intercourse.)
    A. I did not date or go out with anyone during the past 12 months
    B. 0 times
    C. 1 time
    D. 2 or 3 times
    E. 4 or 5 times
    F. 6 or more times

23. During the past 12 months, how many times did **someone you were dating or going out with** physically hurt you on purpose? (Count such things as being hit, slammed into something, or injured with an object or weapon.)
    A. I did not date or go out with anyone during the past 12 months
    B. 0 times
    C. 1 time
    D. 2 or 3 times
    E. 4 or 5 times
    F. 6 or more times

The next 2 questions ask about bullying. Bullying is when 1 or more students tease, threaten, spread rumors about, hit, shove, or hurt another student over and over again. It is not bullying when 2 students of about the same strength or power argue or fight or tease each other in a friendly way.

24. During the past 12 months, have you ever been bullied **on school property**?
    A. Yes
    B. No

25. During the past 12 months, have you ever been **electronically** bullied? (Count being bullied through texting, Instagram, Facebook, or other social media.)
    A. Yes
    B. No

The next 5 questions ask about sad feelings and attempted suicide. Sometimes people feel so depressed about the future that they may consider attempting suicide, that is, taking some action to end their own life.

26. During the past 12 months, did you ever feel so sad or hopeless almost every day for **two weeks or more in a row** that you stopped doing some usual activities?
    A. Yes
    B. No

27. During the past 12 months, did you ever **seriously** consider attempting suicide?
    A. Yes
    B. No

28. During the past 12 months, did you make a plan about how you would attempt suicide?
    A. Yes
    B. No

29. During the past 12 months, how many times did you actually attempt suicide?
    A. 0 times
    B. 1 time
    C. 2 or 3 times
    D. 4 or 5 times
    E. 6 or more times

30. **If you attempted suicide** during the past 12 months, did any attempt result in an injury, poisoning, or overdose that had to be treated by a doctor or nurse?
    A. **I did not attempt suicide** during the past 12 months
    B. Yes
    C. No

The next 4 questions ask about cigarette smoking.

31. Have you ever tried cigarette smoking, even one or two puffs?
    A. Yes
    B. No

32. How old were you when you first tried cigarette smoking, even one or two puffs?
    A. I have never tried cigarette smoking, not even one or two puffs
    B. 8 years old or younger
    C. 9 or 10 years old
    D. 11 or 12 years old
    E. 13 or 14 years old
    F. 15 or 16 years old
    G. 17 years old or older

33. During the past 30 days, on how many days did you smoke cigarettes?
    A. 0 days
    B. 1 or 2 days
    C. 3 to 5 days
    D. 6 to 9 days
    E. 10 to 19 days
    F. 20 to 29 days
    G. All 30 days

34. During the past 30 days, on the days you smoked, how many cigarettes did you smoke **per day**?

A. I did not smoke cigarettes during the past 30 days
B. Less than 1 cigarette per day
C. 1 cigarette per day
D. 2 to 5 cigarettes per day
E. 6 to 10 cigarettes per day
F. 11 to 20 cigarettes per day
G. More than 20 cigarettes per day

The next 3 questions ask about electronic vapor products, such as blu, NJOY, Vuse, MarkTen, Logic, Vapin Plus, eGo, and Halo. Electronic vapor products include e- cigarettes, e-cigars, e-pipes, vape pipes, vaping pens, e-hookahs, and hookah pens.

35. Have you ever used an electronic vapor product?

A. Yes
B. No

36. During the past 30 days, on how many days did you use an electronic vapor product?

A. 0 days
B. 1 or 2 days
C. 3 to 5 days
D. 6 to 9 days
E. 10 to 19 days
F. 20 to 29 days
G. All 30 days

37. During the past 30 days, how did you **usually** get your own electronic vapor products? (Select only **one** response.)

A. I did not use any electronic vapor products during the past 30 days
B. I bought them in a store such as a convenience store, supermarket, discount store, gas station, or vape store
C. I got them on the Internet
D. I gave someone else money to buy them for me
E. I borrowed them from someone else
F. A person 18 years old or older gave them to me
G. I took them from a store or another person
H. I got them some other way

The next 3 questions ask about other tobacco products.

38. During the past 30 days, on how many days did you use **chewing tobacco, snuff, dip**, **snus, or dissolvable tobacco products**, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, Copenhagen, Camel Snus, Marlboro Snus, General Snus, Ariva, Stonewall, or Camel Orbs? (Do not count any electronic vapor products.)
    A. 0 days
    B. 1 or 2 days
    C. 3 to 5 days
    D. 6 to 9 days
    E. 10 to 19 days
    F. 20 to 29 days
    G. All 30 days

39. During the past 30 days, on how many days did you smoke **cigars, cigarillos, or little cigars**?
    A. 0 days
    B. 1 or 2 days
    C. 3 to 5 days
    D. 6 to 9 days
    E. 10 to 19 days
    F. 20 to 29 days
    G. All 30 days

40. During the past 12 months, did you ever try **to quit** using **all** tobacco products, including cigarettes, cigars, smokeless tobacco, shisha or hookah tobacco, and electronic vapor products?
    A. I did not use any tobacco products during the past 12 months
    B. Yes
    C. No

The next 4 questions ask about drinking alcohol. This includes drinking beer, wine, wine coolers, and liquor such as rum, gin, vodka, or whiskey. For these questions, drinking alcohol does not include drinking a few sips of wine for religious purposes.

41. During your life, on how many days have you had at least one drink of alcohol?
    A. 0 days
    B. 1 or 2 days
    C. 3 to 9 days
    D. 10 to 19 days
    E. 20 to 39 days
    F. 40 to 99 days
    G. 100 or more days

42. How old were you when you had your first drink of alcohol other than a few sips?
    A. I have never had a drink of alcohol other than a few sips
    B. 8 years old or younger
    C. 9 or 10 years old
    D. 11 or 12 years old
    E. 13 or 14 years old
    F. 15 or 16 years old
    G. 17 years old or older

43. During the past 30 days, on how many days did you have at least one drink of alcohol?
    A. 0 days
    B. 1 or 2 days
    C. 3 to 5 days
    D. 6 to 9 days
    E. 10 to 19 days
    F. 20 to 29 days
    G. All 30 days

44. During the past 30 days, how did you **usually** get the alcohol you drank?
    A. I did not drink alcohol during the past 30 days
    B. I bought it in a store such as a liquor store, convenience store, supermarket, discount store, or gas station
    C. I bought it at a restaurant, bar, or club
    D. I bought it at a public event such as a concert or sporting event
    E. I gave someone else money to buy it for me
    F. Someone gave it to me
    G. I took it from a store or family member
    H. I got it some other way

The next 2 questions ask about how many drinks of alcohol you have had in a row, that is, within a couple of hours. For the first question, the number of drinks you need to think about is different for female students and male students.

45. During the past 30 days, on how many days did you have **4** or more drinks of alcohol in a row (if you are **female**) or **5** or more drinks of alcohol in a row (if you are **male**)?
    A. 0 days
    B. 1 day
    C. 2 days
    D. 3 to 5 days
    E. 6 to 9 days
    F. 10 to 19 days
    G. 20 or more days

46. During the past 30 days, what is the largest number of alcoholic drinks you had in a row?
    A. I did not drink alcohol during the past 30 days
    B. 1 or 2 drinks
    C. 3 drinks
    D. 4 drinks
    E. 5 drinks
    F. 6 or 7 drinks
    G. 8 or 9 drinks
    H. 10 or more drinks

The next 3 questions ask about marijuana use. Marijuana also is called grass, pot, or weed.

47. During your life, how many times have you used marijuana?
    A. 0 times
    B. 1 or 2 times
    C. 3 to 9 times
    D. 10 to 19 times
    E. 20 to 39 times
    F. 40 to 99 times
    G. 100 or more times

48. How old were you when you tried marijuana for the first time?
    A. I have never tried marijuana
    B. 8 years old or younger
    C. 9 or 10 years old
    D. 11 or 12 years old
    E. 13 or 14 years old
    F. 15 or 16 years old
    G. 17 years old or older

49. During the past 30 days, how many times did you use marijuana?
    A. 0 times
    B. 1 or 2 times
    C. 3 to 9 times
    D. 10 to 19 times
    E. 20 to 39 times
    F. 40 or more times

The next 11 questions ask about other drugs.

50. During your life, how many times have you used **any** form of cocaine, including powder, crack, or freebase?
    A. 0 times
    B. 1 or 2 times
    C. 3 to 9 times
    D. 10 to 19 times
    E. 20 to 39 times
    F. 40 or more times

51. During your life, how many times have you sniffed glue, breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high?
    A. 0 times
    B. 1 or 2 times
    C. 3 to 9 times
    D. 10 to 19 times
    E. 20 to 39 times
    F. 40 or more times

52. During your life, how many times have you used **heroin** (also called smack, junk, or China White)?
    A. 0 times
    B. 1 or 2 times
    C. 3 to 9 times
    D. 10 to 19 times
    E. 20 to 39 times
    F. 40 or more times

53. During your life, how many times have you used **methamphetamines** (also called speed, crystal, crank, or ice)?
    A. 0 times
    B. 1 or 2 times
    C. 3 to 9 times
    D. 10 to 19 times
    E. 20 to 39 times
    F. 40 or more times

54. During your life, how many times have you used **ecstasy** (also called MDMA)?
    A. 0 times
    B. 1 or 2 times
    C. 3 to 9 times
    D. 10 to 19 times
    E. 20 to 39 times
    F. 40 or more times

55. During your life, how many times have you used **hallucinogenic drugs**, such as LSD, acid, PCP, angel dust, mescaline, or mushrooms?
A. 0 times
B. 1 or 2 times
C. 3 to 9 times
D. 10 to 19 times
E. 20 to 39 times
F. 40 or more times

56. During your life, how many times have you used **synthetic marijuana** (also called K2, Spice, fake weed, King Kong, Yucatan Fire, Skunk, or Moon Rocks)?
A. 0 times
B. 1 or 2 times
C. 3 to 9 times
D. 10 to 19 times
E. 20 to 39 times
F. 40 or more times

57. During your life, how many times have you taken **steroid pills or shots** without a doctor's prescription?
A. 0 times
B. 1 or 2 times
C. 3 to 9 times
D. 10 to 19 times
E. 20 to 39 times
F. 40 or more times

58. During your life, how many times have you taken **prescription pain medicine** without a doctor's prescription or differently than how a doctor told you to use it?(Count drugs such as codeine, Vicodin, OxyContin, Hydrocodone, and Percocet.)
A. 0 times
B. 1 or 2 times
C. 3 to 9 times
D. 10 to 19 times
E. 20 to 39 times
F. 40 or more times

59. During your life, how many times have you used a needle to inject any **illegal** drug into your body?
A. 0 times
B. 1 time
C. 2 or more times

60. During the past 12 months, has anyone offered, sold, or given you an illegal drug **on school property**?
    A. Yes
    B. No

The next 9 questions ask about sexual behavior.

61. Have you ever had sexual intercourse?
    A. Yes
    B. No

62. How old were you when you had sexual intercourse for the first time?
    A. I have never had sexual intercourse
    B. 11 years old or younger
    C. 12 years old
    D. 13 years old
    E. 14 years old
    F. 15 years old
    G. 16 years old
    H. 17 years old or older

63. During your life, with how many people have you had sexual intercourse?
    A. I have never had sexual intercourse
    B. 1 person
    C. 2 people
    D. 3 people
    E. 4 people
    F. 5 people
    G. 6 or more people

64. During the past 3 months, with how many people did you have sexual intercourse?
    A. I have never had sexual intercourse
    B. I have had sexual intercourse, but not during the past 3 months
    C. 1 person
    D. 2 people
    E. 3 people
    F. 4 people
    G. 5 people
    H. 6 or more people

65. Did you drink alcohol or use drugs before you had sexual intercourse the **last time**?
    A. I have never had sexual intercourse
    B. Yes
    C. No

66. The **last time** you had sexual intercourse, did you or your partner use a condom?
    A. I have never had sexual intercourse
    B. Yes
    C. No

67. The **last time** you had sexual intercourse, what **one** method did you or your partner use to **prevent pregnancy**? (Select only **one** response.)
    A. I have never had sexual intercourse
    B. No method was used to prevent pregnancy
    C. Birth control pills
    D. Condoms
    E. An IUD (such as Mirena or ParaGard) or implant (such as Implanon or Nexplanon)
    F. A shot (such as Depo-Provera), patch (such as Ortho Evra), or birth control ring (such as NuvaRing)
    G. Withdrawal or some other method
    H. Not sure

68. During your life, with whom have you had sexual contact?
    A. I have never had sexual contact
    B. Females
    C. Males
    D. Females and males

69. Which of the following best describes you?
    A. Heterosexual (straight)
    B. Gay or lesbian
    C. Bisexual
    D. Not sure

The next 2 questions ask about body weight.

70. How do **you** describe your weight?
    A. Very underweight
    B. Slightly underweight
    C. About the right weight
    D. Slightly overweight
    E. Very overweight

71. Which of the following are you trying to do about your weight?
    A. **Lose** weight
    B. **Gain** weight
    C. **Stay** the same weight
    D. I am **not trying to do anything** about my weight

The next 12 questions ask about food you ate or drank during the past 7 days. Think about all the meals and snacks you had from the time you got up until you went to bed. Be sure to include food you ate at home, at school, at restaurants, or anywhere else.

72. During the past 7 days, how many times did you drink **100% fruit juices** such as orange juice, apple juice, or grape juice? (Do **not** count punch, Kool-Aid, sports drinks, or other fruit-flavored drinks.)
    A. I did not drink 100% fruit juice during the past 7 days
    B. 1 to 3 times during the past 7 days
    C. 4 to 6 times during the past 7 days
    D. 1 time per day
    E. 2 times per day
    F. 3 times per day
    G. 4 or more times per day

73. During the past 7 days, how many times did you eat **fruit**? (Do **not** count fruit juice.)
    A. I did not eat fruit during the past 7 days
    B. 1 to 3 times during the past 7 days
    C. 4 to 6 times during the past 7 days
    D. 1 time per day
    E. 2 times per day
    F. 3 times per day
    G. 4 or more times per day

74. During the past 7 days, how many times did you eat **green salad**?
    A. I did not eat green salad during the past 7 days
    B. 1 to 3 times during the past 7 days
    C. 4 to 6 times during the past 7 days
    D. 1 time per day
    E. 2 times per day
    F. 3 times per day
    G. 4 or more times per day

75. During the past 7 days, how many times did you eat **potatoes**? (Do **not** count french fries, fried potatoes, or potato chips.)
    A. I did not eat potatoes during the past 7 days
    B. 1 to 3 times during the past 7 days
    C. 4 to 6 times during the past 7 days
    D. 1 time per day
    E. 2 times per day
    F. 3 times per day
    G. 4 or more times per day

76. During the past 7 days, how many times did you eat **carrots**?
   A. I did not eat carrots during the past 7 days
   B. 1 to 3 times during the past 7 days
   C. 4 to 6 times during the past 7 days
   D. 1 time per day
   E. 2 times per day
   F. 3 times per day
   G. 4 or more times per day

77. During the past 7 days, how many times did you eat **other vegetables**? (Do **not** count green salad, potatoes, or carrots.)
   A. I did not eat other vegetables during the past 7 days
   B. 1 to 3 times during the past 7 days
   C. 4 to 6 times during the past 7 days
   D. 1 time per day
   E. 2 times per day
   F. 3 times per day
   G. 4 or more times per day

78. During the past 7 days, how many times did you drink a **can, bottle, or glass of soda or pop**, such as Coke, Pepsi, or Sprite? (Do **not** count diet soda or diet pop.)
   A. I did not drink soda or pop during the past 7 days
   B. 1 to 3 times during the past 7 days
   C. 4 to 6 times during the past 7 days
   D. 1 time per day
   E. 2 times per day
   F. 3 times per day
   G. 4 or more times per day

79. During the past 7 days, how many times did you drink **a can, bottle, or glass of a sports drink** such as Gatorade or Powerade? (Do **not** count low-calorie sports drinks such as Propel or G2.)
   A. I did not drink sports drinks during the past 7 days
   B. 1 to 3 times during the past 7 days
   C. 4 to 6 times during the past 7 days
   D. 1 time per day
   E. 2 times per day
   F. 3 times per day
   G. 4 or more times per day

80. During the past 7 days, how many times did you drink **a bottle or glass of plain water**? (Count tap, bottled, and unflavored sparkling water.)
A. I did not drink water during the past 7 days
B. 1 to 3 times during the past 7 days
C. 4 to 6 times during the past 7 days
D. 1 time per day
E. 2 times per day
F. 3 times per day
G. 4 or more times per day

81. During the past 7 days, how many **glasses of milk** did you drink? (Count the milk you drank in a glass or cup, from a carton, or with cereal. Count the half pint of milk served at school as equal to one glass.)
A. I did not drink milk during the past 7 days
B. 1 to 3 glasses during the past 7 days
C. 4 to 6 glasses during the past 7 days
D. 1 glass per day
E. 2 glasses per day
F. 3 glasses per day
G. 4 or more glasses per day

82. During the past 7 days, on how many days did you eat **breakfast**?
A. 0 days
B. 1 day
C. 2 days
D. 3 days
E. 4 days
F. 5 days
G. 6 days
H. 7 days

83. Are there any foods that you have to avoid because eating the food could cause an allergic reaction, like skin rashes, swelling, itching, vomiting, coughing, or trouble breathing?
A. Yes
B. No
C. Not sure

The next 6 questions ask about physical activity.

84. During the past 7 days, on how many days were you physically active for a total of **at least 60 minutes per day**? (Add up all the time you spent in any kind of physical activity that increased your heart rate and made you breathe hard some of the time.)
    A. 0 days
    B. 1 day
    C. 2 days
    D. 3 days
    E. 4 days
    F. 5 days
    G. 6 days
    H. 7 days

85. During the past 7 days, on how many days did you do exercises to **strengthen or tone your muscles**, such as push-ups, sit-ups, or weight lifting?
    A. 0 days
    B. 1 day
    C. 2 days
    D. 3 days
    E. 4 days
    F. 5 days
    G. 6 days
    H. 7 days

86. On an average school day, how many hours do you watch TV?
    A. I do not watch TV on an average school day
    B. Less than 1 hour per day
    C. 1 hour per day
    D. 2 hours per day
    E. 3 hours per day
    F. 4 hours per day
    G. 5 or more hours per day

87. On an average school day, how many hours do you play video or computer games or use a computer for something that is not school work? (Count time spent on things such as Xbox, PlayStation, an iPad or other tablet, a smartphone, texting, YouTube, Instagram, Facebook, or other social media.)
    A. I do not play video or computer games or use a computer for something that is not school work
    B. Less than 1 hour per day
    C. 1 hour per day
    D. 2 hours per day
    E. 3 hours per day
    F. 4 hours per day
    G. 5 or more hours per day

88. In an average week when you are in school, on how many days do you go to physical education (PE) classes?
    A. 0 days
    B. 1 day
    C. 2 days
    D. 3 days
    E. 4 days
    F. 5 days

89. During the past 12 months, on how many sports teams did you play? (Count any teams run by your school or community groups.)
    A. 0 teams
    B. 1 team
    C. 2 teams
    D. 3 or more teams

The next question asks about concussions. A concussion is when a blow or jolt to the head causes problems such as headaches, dizziness, being dazed or confused, difficulty remembering or concentrating, vomiting, blurred vision, or being knocked out.

90. During the past 12 months, how many times did you have a concussion **from playing a sport or being physically active**?
    A. 0 times
    B. 1 time
    C. 2 times
    D. 3 times
    E. 4 or more times

The next 9 questions ask about other health-related topics.

91. Have you ever been tested for HIV, the virus that causes AIDS? (Do **not** count tests done if you donated blood.)
    A. Yes
    B. No
    C. Not sure

92. During the past 12 months, how many times did you use an indoor tanning device such as a sunlamp, sunbed, or tanning booth? (Do **not** count getting a spray-on tan.)
    A. 0 times
    B. 1 or 2 times
    C. 3 to 9 times
    D. 10 to 19 times
    E. 20 to 39 times
    F. 40 or more times

93. During the past 12 months, how many times have you had a sunburn? (Count the number of times even a small part of your skin turned red or hurt for 12 hours or more after being outside in the sun or after using a sunlamp or other indoor tanning device.)
    A. 0 times
    B. 1 time
    C. 2 times
    D. 3 times
    E. 4 times
    F. 5 or more times

94. When was the last time you saw a dentist for a check-up, exam, teeth cleaning, or other dental work?
    A. During the past 12 months
    B. Between 12 and 24 months ago
    C. More than 24 months ago
    D. Never
    E. Not sure

95. Has a doctor or nurse ever told you that you have asthma?
    A. Yes
    B. No
    C. Not sure

96. On an average school night, how many hours of sleep do you get?
   A. 4 or less hours
   B. 5 hours
   C. 6 hours
   D. 7 hours
   E. 8 hours
   F. 9 hours
   G. 10 or more hours

97. During the past 12 months, how would you describe your grades in school?
   A. Mostly A's
   B. Mostly B's
   C. Mostly C's
   D. Mostly D's
   E. Mostly F's
   F. None of these grades
   G. Not sure

98. Because of a physical, mental, or emotional problem, do you have serious difficulty concentrating, remembering, or making decisions?
   A. Yes
   B. No

99. How well do you speak English?
   A. Very well
   B. Well
   C. Not well
   D. Not at all

This is the end of the survey.
Thank you very much for your help.

Curriculum Vitae

Terese Blakeslee
Place of birth: Austin, MN

Education

MSN, University of Phoenix, October, 2008

Major: Nursing

BSN, University of Wisconsin-Oshkosh, December, 1994

Major: Nursing

ASD, University of Wisconsin-Fox Valley, 1992

Major: Science

Dissertation Title: Examining factors associated with experiencing bullying among adolescent subgroups.

Professional Experience

Year	Position
2/12 to present	Oshkosh Campus Coordinator BSN Completion Options
2/08 to present	Instructional Academic Staff, University of Wisconsin Oshkosh
8/00 to present	School Nurse, Appleton Area School District
1/96-8/00	Public Health Nurse, City of Appleton Health Department
1/95-1/96	Pediatric Staff Nurse, St. Elizabeth Hospital

Certifications

Year	Certification	Position
2016	Conflict Resolution	IAS/ Nursing Advisor
2008	Specialization Healthcare Education	IAS / Nursing Advisor

2000	Department of Public Instruction	School Nurse
1999-2005	Certified Breastfeeding Educator	Public Health Nurse

Current and Past Teaching Responsibilities

Course #	Title	Credits	Theory	Clinical
Current				
324	BSN@Home Orientation to Major	1	X	
448	BSN@Home Clinical Nursing Synthesis	4		X
454	BSN@Home Community Health Nursing	3	X	
Past				
418	Traditional Community Health Clinical	3		X
424	Traditional Care of Children and Adolescents	2	X	
418	Accel Community Health Clinical	3		X
419	Accel Clinical Nursing Synthesis Seminar	3		X
428	Accel Peds / Aging Clinical	3		X
438	BSN@Home Community Heath Clinical	3		X
444	BSN@Home Community Health	3	X	

Professional Development

Conferences Attended

Year	Conference
2019	Eta Pi Research Scholarship Day December 2019
2018	Wisconsin Association of School Nurses April 2018 Eta Pi Research Scholarship Day
2017	Wisconsin Association of School Nurses April 2017

	International Bullying Prevention Association November 2017
2016	Wisconsin Association of School Nurses April 2016
	MNRS March 2016
2015	Omaha System International Conference April 2015
2014	Wisconsin Association of School Nurses April 2014
	Wisconsin Public Health Nursing Conference August 2014
	Sigma Theta Tau International Leadership Conference September 2014
2013	Wisconsin Public Health Association Conference May 2013
2012	Wisconsin Association of School Nurses April 2012
	Wisconsin Public Health Association Conference May 2012
	Wisconsin Academic Practice Linkages August 2012
	Wisconsin Public Health Nursing Conference August 2012
2011	Interactive Learning: Creating Engagement and Accountability
	LEAP Public Health Conference January 2011
	E-Learning in Nursing: Design, Innovation, Delivery and Evaluation April 2011
	International Public Health Nursing Conference: Visibility and Voice in Public Health Nursing October 2011
	Sigma Theta Tau International Honor Society of Nursing
	41st Biennial Convention October 2011
2010	LEAP Public Health Conference January 2010
	NAPNAP Pediatric Nursing Conference April 2010
	LEAP Epidemiology 101 for PHNs June 2010
	LEAP Public Health Nursing Conference August 2010
	LEAP Social Media October 2010
2009	Medical College of Wisconsin Best Practices in Pediatrics March 2009

	Rutger's TECNE Conference April 2009
	LEAP Public Health Conference August 2009
2008	LEAP Public Health Conference January 2008
	Wisconsin Immunization Update September 2008

Continuing Education

Year	Activity
2019	Doctoral program UW Milwaukee College of Nursing
	CITI training UW Oshkosh, UW Milwaukee
2018	Doctoral program UW Milwaukee College of Nursing
	CITI training UW Oshkosh, UW Milwaukee
2017	Doctoral program UW Milwaukee College of Nursing
	Certification Conflict Resolution
2016	Doctoral program UW Milwaukee College of Nursing
2015	Doctoral program UW Milwaukee College of Nursing
	CITI training UW Oshkosh, UW Milwaukee
	Omaha System International Conference
2014	Current Issues in School Nursing - Viterbo University
	Medical Statistics - University of Missouri
2013	AACN Webinars
	Evidence Based Practice - University of North Carolina Continuing Education
	Wisconsin Public Health Association
	Mental Illness in Children and Adolescents - Viterbo University
	AHAQ

	Department of Public Instruction
2012	AACN Webinar
	WASN Conference
	PHN Conference
	WPHA Conference
2011	Interactive Learning: Creating Engagement and Accountability
	LEAP Public Health Conference
	E-Learning in Nursing: Design, Innovation, Delivery and Evaluation
	International Public Health Nursing Conference: Visibility and Voice in Public Health Nursing
	Sigma Theta Tau International Honor Society of Nursing
	41st Biennial Convention
	NACADA Academic Advising Webinars
	AACN Webinars
2010	LEAP Public Health Nurses Conferences
	National Association of Pediatric Nurse Practitioners
	LEAP Epidemiology 101 for PHNs
	Social Networking
	ANA Herbal Facts, Herbal Fallacies
	ANA Psychiatric Emergencies
	Simulation 101
	Nurses Day at the Capitol
	ANA Formula for Success: deliver enteral nutrition using best practices
2009	ANA Avoid the dangers of opioid therapy
	ANA Are we making progress against autism?
	ANA Community Acquired Pneumonia

Publications

Blakeslee, T.L., Eboh, W.O., Monsen, K.A., & Kvarme, L.G. (2016). Comparing school nurses; roles in supporting children who are bullied. *British Journal of School Nursing, 12(6),* 246-250.

Blakeslee, T.L, Kvarme, LG., Eboh, W.O., & Monsen, K.A. (2014). *Omaha System Minnesota Users Group. Data informed policy: The school nurse and bullying.* Retrieved from http://omahasystemmn.org/publications.php

Reviewer

Clark, M. J. (2015). *Population and community health nursing*. (6th ed.). Hobeken, New Jersey: Pearson Education

Clark, M. J. (2012). *Population and community health nursing*. (5th ed.). Hobeken, New Jersey: Pearson Education

Presentations

Year	
2017	Poster Presentation Blakeslee, T.L., Buseh, A.G., Hewitt, J.B. & Kelber, S.T. (2017, Nov.) *School nurse knowledge and perception of school-age bullying: a pilot study.* Poster presented at the International Bullying Association Conference in Nashville, TN.
2016	Poster Presentation Blakeslee, T.L. & Monsen, K.A. (2016, March). *School nurse perception of the Omaha System care plan for a student with diabetes.* Poster presented at the Midwest Nursing Research Conference in Milwaukee, WI.
2015	Speaker Presentation *Innovations in school nursing* Omaha System International Conference. Eagan.
2014	Speaker Presentation

Students and timelines and projects-oh my! Creating innovative learning experiences. Wisconsin Public Health Nursing conference. Stevens Point.

2011 Speaker Presentation

Advantages and pitfalls of high tech usage in a RN to BSN program. Wisconsin TECNE Conference. Green Bay.

Service to the College of Nursing

Year	Activity
2019	College of Nursing Bylaws Adhoc Committee
	College of Nursing appointment to University Committee: Evaluation Committee
	Sigma Theta Tau International Eta Pi Chapter Research Chair
	College of Nursing appointment to community board: Fox Valley Technical College Nursing Advisory Board
2018	College of Nursing Work-load Ad-Hoc Committee
	Sigma Theta Tau International Eta Pi Chapter Research Chair
	College of Nursing appointment to community board: Fox Valley Technical College Nursing Advisory Board
	College of Nursing appointment to University Committee: Lifelong Learning and Community Engagement Advisory Council
	College of Nursing appointment to University Committee: Evaluation Committee
2017	College of Nursing appointment to community board: Fox Valley Technical College Nursing Advisory Board
	College of Nursing appointment to University Committee: Lifelong Learning and Community Engagement Advisory Council
	College of Nursing appointment to University Committee: Evaluation Committee
2016	College of Nursing appointment to community board: Fox Valley Technical College Nursing Advisory Board

	College of Nursing appointment to University Committee: Lifelong Learning and Community Engagement Advisory Council
	College of Nursing appointment to University Committee: Evaluation Committee
2015	College of Nursing appointment to community board: Fox Valley Technical College Nursing Advisory Board
	College of Nursing appointment to University Committee: Lifelong Learning and Community Engagement Advisory Council
	College of Nursing appointment to University Committee: Evaluation Committee
	Sigma Theta Tau International Eta Pi Chapter Vice President and delegate
	Wisconsin Youth in Nursing (WYN) Instructor
	Mentor College of Nursing nurse educator
	Public Health Nursing chapter review
2014	College of Nursing appointment to community board: Fox Valley Technical College Nursing Advisory Board
	College of Nursing appointment to University Committee: Lifelong Learning and Community Engagement Advisory Council
	Sigma Theta Tau International Eta Pi Chapter Vice President and Electronic delegate
	College of Nursing appointment to University Committee: Evaluation Committee
	Wisconsin Youth in Nursing (WYN) Instructor
	Mentor College of Nursing nurse educator
	Assist in Undergraduate Program admission interview process, and traditional program community health learning modules
2013	College of Nursing appointment to community board: Fox Valley Technical College Nursing Advisory Board
	College of Nursing appointment to University Committee: Lifelong Learning and Community Engagement Advisory Council
	College of Nursing appointment to University Committee: Evaluation Committee
	College of Nursing appointment to Ad Hoc committees: USP and Student Grievance
	Sigma Theta Tau International Eta Pi Chapter Secretary and Electronic delegate
	Wisconsin Youth in Nursing (WYN) Instructor
	Mentor College of Nursing nurse educator

	Assist in Undergraduate Program admission interview process, poverty simulation
2012	College of Nursing Appointment to CNL committee
	College of Nursing Appointment to Evaluation committee
	Wisconsin Youth in Nursing (WYN) Instructor
	Sigma Theta Tau International Eta Pi Chapter Secretary and Electronic delegate
	Assistant to Community Health Theory Poverty Simulation and Elevator Speech
	Recognition Ceremony Accelerated Nursing Option
	Recruitment Fairs Northeast Wisconsin and Lakeshore regions
	NEWLEAP Co-chair
	BSN@Home course development and revision-Community Health Nursing and Chronic Care Management
2011	LEAP Faculty Development Planning Committee and Exercise Facilitator
	Sigma Theta Tau International Eta Pi Chapter Secretary and Convention Delegate
	Recruitment Fairs Green Bay and Fox Valley Regions
	Wisconsin Youth in Nursing Program Pediatric Nursing Instructor
	Traditional BSN option Admission Interviewer
	Traditional BSN option Poverty Simulation
	Traditional BSN option Elevator Speeches
	TECNE Scholar
	Recognition Ceremony Accelerated Nursing Option
	Networking seminar at Children's Hospital
2010	LEAP Faculty Development Planning Committee and Exercise Facilitator 2010 and 2011
	Recruitment Fairs Green Bay and Fox Valley Regions
	CON Panel member presenter to CESA 6 School Nurses
	WYN Program Pediatric Nursing Instructor
	Sigma Theta Tau International Eta Pi Chapter Secretary
	TECNE Scholar
	Nurses Day at the Capitol
	Recognition Ceremony Accelerated Nursing Option

	Networking at Children's Hospital
2009	WYN Program Pediatric Nursing Instructor
	Sigma Theta Tau International Eta Pi Chapter Secretary
	TECNE Scholar
	Nurses Day at the Capitol
	Recognition Ceremony 2009 Accel
	Nightingale Awards Dinner
	Networking at Children's Hospital
	WYN Program Pediatric Nursing Instructor
	Calumet County Board of Health Presenter
2008	Sigma Theta Tau International Eta Pi Chapter Secretary

Professional Nursing Affiliations

Year	Affiliation
2018	American and Wisconsin Nurses Association
	Wisconsin Public Health Association
	Sigma Theta Tau International
	National and Wisconsin Association of School Nurses
2017	American and Wisconsin Nurses Association
	Wisconsin Public Health Association
	Sigma Theta Tau International
	National and Wisconsin Association of School Nurses
2016	American and Wisconsin Nurses Association
	Wisconsin Public Health Association
	Sigma Theta Tau International
	National and Wisconsin Association of School Nurses

2015 American and Wisconsin Nurses Association
Wisconsin Public Health Association
Sigma Theta Tau International/Eta Pi Chapter Vice President
National and Wisconsin Association of School Nurses

2014 American and Wisconsin Nurses Association
Wisconsin Public Health Association
Sigma Theta Tau International/Eta Pi Chapter Vice President
National and Wisconsin Association of School Nurses

2013 American and Wisconsin Nurses Association
Wisconsin Public Health Association
Sigma Theta Tau International/Eta Pi Chapter Secretary
National and Wisconsin Association of School Nurses

2012 American and Wisconsin Nurses Association
Wisconsin Public Health Association
Sigma Theta Tau International/Eta Pi Chapter Secretary
National and Wisconsin Association of School Nurses

2011 Sigma Theta Tau International/Eta Pi Chapter Secretary
American and Wisconsin Nurses Association
Wisconsin Public Health Association
National and Wisconsin Association of School Nurses

2010 American and Wisconsin Nurses Association
Wisconsin Public Health Association
Sigma Theta Tau International/Eta Pi Chapter Secretary
National and Wisconsin Association of School Nurses
Society of Pediatric Nurses

2009 Sigma Theta Tau International/Eta Pi Chapter

	Society of Pediatric Nurses
	American and Wisconsin Nurses Association
	National and Wisconsin Association of School Nurses
2008	Sigma Theta Tau International/Eta Pi Chapter
	American and Wisconsin Association of Nurses
2000-07	American and Wisconsin Association of Nurses

Service to the Community

Year	Service
2018	Wisconsin Association of School Nurses annual conference planning committee
2017	Wisconsin Association of School Nurses annual conference planning committee
	Partnership for Informatics Nursing Education study with Minnesota State
	National Association of School Nursing data point research project
2016	Prevention school nursing data collection study with National Association of School Nurses and Centers for Disease Control and Prevention
	Junior Achievement
2015	Appleton Area School District School Nurse
2014	Appleton Area School District School Nurse
	Precept students in school nursing
	Response to Intervention infograph for school nursing
2013	Appleton Area School District School Nurse
	Co-authored social media policy for WPHA
	Wisconsin Public Health Association mentor

2012 Appleton Area School District School Nurse

2011 Appleton Area School District School Nurse
Breastfeeding Alliance of Northeast Wisconsin Community Member

2010 Appleton Area School District School Nurse
Breastfeeding Alliance of Northeast Wisconsin Community Member

2009 Appleton Area School District School Nurse
Breastfeeding Alliance of Northeast Wisconsin Community Member

2008 Appleton Area School District School Nurse
United Way Fox Cities School Based Mental Healthcare Access Project