Impact of substance use and overweight status on the relationship between domestic violence and bullying

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IMPACT OF SUBSTANCE USE AND OVERWEIGHT STATUS ON THE
RELATIONSHIP BETWEEN DOMESTIC VIOLENCE AND BULLYING

by

Marcie Fraser

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ABSTRACT

Objective

Domestic violence has been shown to increase the risk of bullying behavior among youth. Substance use and excess weight have also been linked to bullying behaviors. The purpose of this study was to determine what anti-bullying interventions have been implemented throughout the United States, and to identify the role of three risk factors (domestic violence, excessive weight or substance use) on bullying behaviors. For this study domestic violence will be defined as experiencing domestic violence or witnessing inter-parental domestic violence. A literature review (Study 1) was conducted to identify studies and summarize interventions aimed at reducing bullying behaviors among middle-school age youth. A secondary data analysis (Study 2) was done to explore the impact domestic violence has on bullying behavior among youth, and whether overweight status and substance use mediate or moderate that relationship.

Methods

Study 1 was a systematic review using methods similar to PRISMA guidelines. The review of studies identified interventions that aimed at reducing bullying behaviors among youth. A four stage screening process resulted in a sample of 13 eligible studies. Study 2 used data from the 2013 cross-sectional Health and Risk Behaviors of Massachusetts Youth Survey (MYHS). A sample of 3,366 students completed a self-report anonymous questionnaire on health behavior. The questionnaire included measures on bullying behavior, domestic violence, body mass index (BMI), and substance use.
Results

Study 1 found no interventions included the three risk factors of focus for this study (domestic violence, overweight status, and substance use). Studies examining psycho-social aspects of bullying (e.g. school climate, knowledge and awareness of bullying, communication) reported better outcomes compared to studies that measured direct forms of bullying (face-to face physical) or indirect forms of bullying (e.g., name calling, rumors outcomes). The results of the interventions were mixed, suggesting future work is needed. Results of Study 2 confirmed strong associations between domestic violence and bullying, as well as unique associations between domestic violence, substance use, and bullying. Substance use was found to be a statistically significant moderator of the relationship between domestic violence and bullying, however overweight status was not found to mediate or moderate that relationship.

Conclusions

Study 1 concluded that anti-bullying interventions are not consistent in design, methods or outcomes. More research is needed to identity which programs are most effective. Additionally, no studies were identified that included the three risk factors in this study (domestic violence, overweight status, and substance use). More research must be conducted on interventions that include these risk factors. Study 2 concluded that exposure to domestic violence is associated with both bullying and victimization. Substance use was found to act as a mediator and moderator of domestic violence and bullying behavior. Future interventions must consider substance use as a key risk factor as part of intervention design.
CHAPTER 1

INTRODUCTION

Aggression in childhood and adolescence has been the focus of many empirical investigations in the last several decades. According to new data from the U.S. Department of Education's National Center for Education Statistics (NCES), the reported prevalence of bullying among students ages 12 - 18 was 22 percent. Analysis conducted by the World Health Organization on 15,686 students (grades 6 through 10) in U.S. public and private schools found that almost 30 percent of the students reported moderate or frequent involvement in bullying as victims, perpetrators, or both. As a result, bullying has been identified as a significant problem that can affect the physical and psycho-social health of both those who are frequently bullied and those students who bully their peers. Given that researchers have found that bullying is most prevalent during middle school years, middle school students are the population of focus for this study.

Youth who are involved in bullying may be exposed to other forms of violence such as child maltreatment, abuse by adults, or as witnesses of domestic violence. From a social learning perspective, parent–child interactions and experiences within the family setting play a role in how children interact with peers. According to the Social Learning Theory, children learn by modeling the behavior of primary care givers. Bandura et al. found a strong connection between inter-parental relationships and the psycho-social development of a child. A child who witnesses or is a victim of parental violence is at risk for a myriad of psychological, physical, and social problems. If a child is in a home where domestic violence and/or abuse is present, the child is at greater risk of either becoming a bully or a bully victim.
It has also been established in the literature that substance use and excess weight are both more prevalent among youth who bully as well as those who are victimized. A number of cross sectional studies show that bullying (perpetration and victimization) is significantly related to drug use and alcohol use. A meta-analysis of 42 studies suggested nearly 41% of youth who bully reported using drugs; nearly 33% of children who were victims also reported using drugs.22

Research shows obesity is also a major concern among adolescents. Youth who are overweight are also at risk of bullying behavior.23 In 2012 more than one third of children and adolescents were overweight or obese.24 Children who are obese are almost twice as likely to be bullied than their peers who are not obese, regardless of sex, race, or socio-economic status.25 Teasing and bullying specifically about weight has negative physical, social and emotional health consequences.26

There are a number of important risk factors for bullying, but domestic violence, overweight status, and substance use are three of the most influential risk factors. Not only do they each negatively affect the psycho-social and physical health of youth apart from bullying, but they also increase the risk that youth will engage in bullying or being a victim of bullying. Thus, each one of these critical risk factors is a priority to focus on for further investigation. Domestic violence is identified as the main predictor of bullying because it has been shown to significantly increase the risk of bullying behaviors among youth, in particular with a youth becoming a victim of bullying. While some scholars have examined the relationship between domestic violence and bullying, this study moves the field forward to examine if other key risk factors influence that relationship. To date no studies have examined whether or not substance use or overweight status have an impact on the relationship between domestic violence and
bullying. It is hypothesized that these variables could impact this relationship because it is likely that if a child is exposed to domestic violence may use substances or overeat as a coping mechanism. Additionally, both risk factors (weight status and substance use) may impact the relationship between domestic violence and bullying in a way that has not been previously understood. Given both risk factors (overweight status, and substance use) are found to be significantly related with bullying on their own, there is potential for some type of interaction between the three (domestic violence, overweight status, and substance use). If a determination can be made as to whether or not overweight status or substance use impact the relationship between domestic violence and bullying, it will greatly assist in identifying children at greater risk for bullying behavior. The results of this study will help researchers make informed decisions regarding what future programs may look like that will be effective in addressing the needs of children who are at risk.

Given the importance if these risk factors, and the potential of interventions to reduce bullying behaviors, the goal of this study was to assess the literature on bullying interventions, and enhance the understanding of the relationship between domestic violence, overweight status, and substance use with bullying behaviors among youth. Achieving that goal was done by conducting two unique studies. Study 1 was a comprehensive literature review of anti-bullying interventions for middle school students implemented in the United States over the past ten years. The initial search was performed using four academic literature databases. Search strings with specific key terms that included bully, program, and curriculum, were used to identify appropriate studies. In the next stage of the review, studies that met inclusion criteria were collected and thoroughly analyzed. The characteristics of the interventions and outcomes were summarized. The results of the review provide a summary of significant information which will
help researchers and practitioners gain a clear picture of the characteristics and effectiveness of anti-bullying interventions. A consolidated list of interventions summarizing the effectiveness of existing programs and a description of common elements across interventions is a valuable resource that can be used to direct further researcher and the development of interventions.

Study 2 involved performing a secondary data analysis to evaluate the relationship among the three key risk factors and bullying. Additional analysis were conducted to determine whether or not overweight status or substance use mediate or moderated the relationship between domestic violence and bullying behavior. Findings from these analyses will provide unique information for future research. If relationships are found among the risk factors, researchers can be better informed as to what type of new interventions will better serve youth who have these risk factors.

The dissertation will provide a clearer understanding of what type of anti-bullying programs have been implemented for middle school students in the U.S., and will offer a better understanding of important risk factors for bullying in that age group. While there have been studies enhancing our understanding of bullying behavior among youth, this study will add significant information to existing literature. By providing an overview of anti-bullying programs, this dissertation can serve as a resource for researchers, practitioners and program personnel when identifying and selecting an intervention targeting middle-school age youth.
CHAPTER 2

BACKGROUND

Bullying behavior is a serious concern among youth, in particular middle school age students in the U.S. Schoolyard bullying is widely regarded as a serious personal, social and educational problem that affects a substantial portion of children.

The definition of bullying varies among researchers. The term “bullying” was originally coined by Daniel Olweus, a pioneering researcher on "bullying " and “peer victimization” and has been borrowed by many American researchers. Olweus identifies bullying in two categories, physical bullying and relational bullying. Physical bullying encompasses face-to face physical aggression (e.g. pushing, shoving, hitting, kicking or restraining another). Relational bullying is identified as teasing, taunting, threatening, calling names, or spreading of rumors. Some researchers define bullying behavior as a single incident, or multiple incidents which is preceded by personal aggression. These incidents are characterized by intentional and repetitive use of an imbalance of power against weaker victims who cannot easily defend themselves.

The World Health Organization defines bullying behaviors as, the use of physical and psychological force or power, threatened or actually, another person, or against a community, or group that either results in or has a high likelihood of resulting in injury, death, psychological harm, mal-development, or deprivation.

Bullying is broken up into three sub-categories: (1) victim, (2) bully (perpetrator), and (3) bully/victim (those who perpetrate aggressive behaviors and are victimized by others). According to the Centers for Disease Control and Prevention, most bullying incidents occur on
school grounds. The National Institutes of Health (NIH) estimates that in 2001, approximately 5.7 million American children grades 6th through 10th have experienced or witnessed bullying in their school.

Middle school students have the highest prevalence of bullying behaviors compared to elementary or high school age students. Early adolescence is a critical period where youth explore their new social roles and pursue status among their peer groups, which can motivate aggressive behavior. Researchers have found that bullying in all three subgroups (bully, victim, bully/victim) increases during middle school years and decreases during high school years. Overall, one percent to twelve percent of middle school students reported both bullying others and being a victim of bullying.

**Negative Outcomes of Bullying Behavior**

The negative effects of bullying are well documented in the scientific literature. Bullying is associated with harm and distress not only to children who are victimized, but also to children who bully others. Children who are either victims or bullies are faced with emotional, social, physical, and academic problems that can persist into adolescence and beyond. While the three subgroups (bully, victim, and bully/victim) are at risk for negative social and emotional outcomes, the bully/victim group shows the most emotional suffering among the three groups. When compared to the bully group, the bully/victim group has a lower self-esteem and shows a higher level of callousness.

Longitudinal data shows that victims of bullying suffer negative psychological distress and maladjustment disorders, anxiety, suicidal ideation, and thoughts of self-harm. Youth who are victimized also report low levels of self-esteem, compared to non-
bullied youth.\textsuperscript{59,60} Victims of bullying report more loneliness and greater school avoidance as well.\textsuperscript{56} One study that looked at 3,530 middle school age students found that victims and bully-victims were more likely to report feeling that they didn’t belong in school, which led to school avoidances, and subsequent poor academic performance.\textsuperscript{55}

Although victims are clearly at risk for short and long-term maladjustment problems, \textit{bullies} are also vulnerable to a number of negative outcomes. Children who bully other children are at an increased risk of exhibiting externalizing behaviors such as: aggression, delinquency, a lower level of school belonging,\textsuperscript{61} substance abuse, violence, and decreased academic performance.\textsuperscript{36,62,40} Bullies learn to enjoy exercising power and influence over victims.\textsuperscript{63} Bullies are unable to interact with others cohesively,\textsuperscript{64} and also fail to develop empathy for others.\textsuperscript{65,16} Bullies learn to become empowered over others in an unhealthy manner which impairs their ability to function in social settings as adults. Because of this, bullying may lead children to a path of delinquency and criminality.\textsuperscript{66} Furthermore, those children who demonstrate aggression in childhood are more likely to engage in such behaviors as: domestic violence, criminality, and substance abuse as adults.\textsuperscript{67,66,68,69} Olweus found that school age children who bully were more likely to be convicted of crimes in adulthood.\textsuperscript{37}

In addition to negative mental health and behavioral outcomes, the physical health of both victims and bullies is negatively impacted.\textsuperscript{70,71,9} Both groups report suffering more headaches and stomachaches compared to children who are not involved in bullying behavior.\textsuperscript{72} Takizawa et al. reports that children who are bullies in childhood have an increased risk of obesity in adulthood.\textsuperscript{73}.

Given the multitude of negative and enduring consequences associated with bullying victimization and perpetration in childhood and adolescence, a greater understanding of the risk
and protective factors for bullying is needed in an effort to successfully reduce bullying behaviors among youth.

**Theories**

Risk and protective factors for bullying can be examined through the lens of two key theories, Social Learning Theory and the Ecological Model.

**Social Learning Theory**

There have been many theories that have helped explain bullying behavior among youth, such as, the Cycle of Violence Theory as well as Cognitive Behavioral Theory. One of the most commonly used theories is Social Learning Theory. Throughout the literature, Social Learning Theory (SLT) has been used to explain aggressive behaviors and is often applied to the study of bullying. The behavior of a child who repeatedly witnesses aggressive acts by individuals such as their parent, peers, and siblings, is likely to be influenced. Children’s family experiences and parenting behavior can shape a child’s capacity to communicate, adapt, and cope within interpersonal relationships. A parent’s inability to manage conflict with others can impact on a child’s own coping mechanisms. According to Bandura, individuals learn not only through direct instruction but also by observing others’ behaviors and the consequences that follow. If parents believe that violence is an acceptable method of interaction, those beliefs, or cognitions, will increase the likelihood that a child will also find violence as an acceptable method of resolving conflict and model that behavior. Through observational learning and reinforcement, SLT helps explain how youth learn to bully or become a victim of bullying and is used to guide this study.
Ecological Model

Although not a theory per se, the Ecological Model can also be used to help us understand the various levels of influence that can impact bullying. Bronfenbrenner states that human behavior cannot be understood without taking into consideration the social contexts in which a person interacts. Incidents of bullying and victimization do not occur in isolation and do not occur solely between a bully and a victim. In fact, bullying incidents are complicated social exchanges among individuals, peer groups, and their broader social environment. The Ecological Model (EM) outlines behavior as the function of an individual’s interactions with his or her environment (see Figure 1). There are four levels of the EM which is conceptualized as concentric circles beginning with the center and working outward. Each level of the model influences the next. The center of the framework encompasses the individual, i.e. the child or adolescent. Individual factors that may influence a child’s behavior include gender, ethnicity, personality and, behavior traits.

The next level of the EM is relationship; family and others living in the home. According to the literature, youth who are exposed to domestic violence in the home (witnessing it or being a victim of it) are at an increased risk for bullying behaviors (victim, bully or a bully/victim). Research suggests primary caregivers have the most influence over adolescent behavior. The family level is of particular interest given the focus of this dissertation. The next level is the community level which encompasses schools, peers, community members and neighborhoods. A high crime area that is perceived as ‘unsafe’ has been shown to be a risk factor for bullying behavior. The outer level of the EM is society, which encompasses broad societal factors that include social and cultural norms, policies and laws. Policies and laws can raise awareness within a community and support a sense of intolerance for bullying behavior. Cultures with
societal norms that are more tolerant of violence among adults may impact bullying behavior among youth as well.\textsuperscript{15,81}

\textit{Figure 2.1. The Ecological Model (CDC)}

\begin{center}
\begin{tikzpicture}
\node (society) at (0,0) {Society};
\node (community) at (0,-7) {Community};
\node (relationship) at (0,-14) {Relationship};
\node (individual) at (0,-21) {Individual};
\end{tikzpicture}
\end{center}

**Protective Factors**

Protective factors that can influence bullying behaviors (for both the bully and victim) exist on multiple levels of the Ecological Model (EM).\textsuperscript{15} Various characteristics of a child’s individual belief system such as attitude and knowledge can impact behavior. Other influential factors that impact behavior are attitudes and beliefs held by people within their school and community. The following section explains the factors within each level of the EM and how each factor protects youth against bullying behavior.

\textit{Individual level}
Personal characteristics of the child can act as a protective factor in bullying behavior for bullies, victims, and bully/victims. A growing amount of research finds resilient children are less at risk of being victimized or becoming a bully. Resiliency (the ability to accept and overcome challenging or adverse circumstances) is a fundamental and natural characteristic which is essential to healthy development, i.e. improving self-esteem and confidence.\textsuperscript{82,83} Children who score high on a scale measuring resilience had a lower risk of being victimized.\textsuperscript{84} Researchers believe resilient children also develop coping mechanisms that buffer them against bullying behavior.\textsuperscript{85}

A child’s ability to demonstrate good reasoning skills and use decision making strategies to cope with aggressive acts serves as a protective factor for victimization.\textsuperscript{13,86,87} Bijttebbier et. al. found that bully victims who used internalizing coping strategies (e.g. avoiding facing the problems or remaining passive) experienced fewer incidents of victimization.\textsuperscript{88} In a longitudinal study by Smith et al., children who felt they had someone to talk to (friend or family member) were less apt to be victimized by other youth. Research has demonstrated youth who have a positive outlook for the future (future orientation) avoid engaging in aggressive or bullying behavior.\textsuperscript{89} Future orientation has been described as an individual’s thoughts, plans, motivations, hope and feelings about his or her future.\textsuperscript{90,91} A study by Stoddard et al. shows that future expectations are associated with less relational bullying in both males and females, with less physical bullying especially in females.\textsuperscript{92}

**Interpersonal level**

Strong family relationships have been shown to be an essential component in the development of protective factors against bullying behavior. Supportive relationships with
primary caregivers act as a proactive factor against bullying behaviors, for both bullying and victimization.

Parents are a primary influence on a child’s behavior. Parental involvement,\textsuperscript{95} emotional support from parents,\textsuperscript{62,94} growing up in a two parent family, and having a positive role model\textsuperscript{95} have also been identified as protective factors against both bullying and victimization. Children who report maternal\textsuperscript{96,97} and peer warmth\textsuperscript{16,98} experience fewer victimization incidents. Supportive relationships between a child and primary caregivers have also been shown to reduce a child’s risk of bullying behavior.\textsuperscript{99} Children and adolescents who have supportive relationships were more likely to develop self-confidence in school and were less likely to be involved in bullying behavior.\textsuperscript{100} Children who have caregivers who are nurturing and empower a child’s efforts to cope with hardships are at a lower risk of bullying as well.\textsuperscript{101}

\textit{Community level}

Individuals who establish connections within society such as schools, churches or community organizations are less prone to wrongdoing and more likely to internalize norms of appropriate conduct and experience fewer bullying incidents.\textsuperscript{102} Although bullying most commonly takes place in school settings,\textsuperscript{103} the school is embedded within the neighborhood context and neighborhood factors can influence the school environment.\textsuperscript{81,104,105}

In recent years, researchers have begun to examine the relationship between positive characteristics of neighborhoods and bullying and aggressive behaviors. According to a number of studies the absence of community crime and the presence of good housing quality acted as protective factors against externalizing behaviors, defined as aggression toward others.\textsuperscript{106,107,108} Lenzi et al. found that adolescents who perceived greater opportunities in their neighborhood (employment) were more likely to demonstrate social competence, i.e. a child’s ability to
problem solve and manage anger effectively.\textsuperscript{109,110} Children who live in communities where there is high social cohesion are less likely to be bullied. Social cohesion relates to the members of a group who share emotional and behavioral characteristics with one another and with the group as a whole.\textsuperscript{75,106,108,107}

School environments have been the center of considerable debate. Questions have emerged regarding whether or not the school environment is a protective factor against bullying behaviors (being a bully, or being a victim of bullying). Early research focused on tangible physical aspects of the school environment, including teacher-student ratio and population size.\textsuperscript{111,112,84} Smaller school size\textsuperscript{96} and positive class climate\textsuperscript{113} are associated with less bullying behavior.\textsuperscript{102}

Kasen et al. found students who attended schools with high rates of teacher to student ratio experienced fewer bullying incidents. Students from well-organized and harmonious schools reported a decrease in conflict and conduct problems (aggressive behaviors).\textsuperscript{114} Relationship between school connectedness (e.g., sense of belonging in school) and bullying behavior has also been examined.\textsuperscript{55,115,116}

Peers, development are emphasized during adolescence.\textsuperscript{29} Emerging research shows that children who report having peers who offer support, model prosocial and caring attitudes experience fewer incidents of bullying behaviors.\textsuperscript{117} Peer acceptance is recognized as a protective factor against peer victimization, as noted by Demaray et al., who found that youth with low levels of peer acceptance and social support are at increased risk of bullying victimization.\textsuperscript{118} Quality friendships are major factors that can serve as effective buffers against peer victimization.\textsuperscript{119,120,121} The presence of peers that share similar attitudes about bullying (e.g.,
attitudes and beliefs that bullying should not be tolerated), have been shown to reduce a child’s risk of being bullied.122

**Society level**

A number of states are actively implementing various anti-bullying strategies including the implementation of anti-bullying policies. There are 49 states that have anti-bullying laws in practice. Despite the universal policies there has been very little examination of their effect on reducing bullying. According to a literature review of anti-bully laws and policies, Limber at el. reported that "the question of whether state laws can provide a useful vehicle for reducing bullying behavior among children, remains unanswered"123 (p446). This still holds true for more than a decade after the review was published. To date, no evidence-based research has demonstrated the effectiveness of anti-bullying laws.

**Risk Factors**

As with protective factors, there are also a number of risk factors that contribute to bullying behavior among youth and can be explained using the framework of the EM. According to this model, risk factors for bullying behavior do not reside solely within the youth who bullies or who is victimized, but can include social entities such as, peer groups, the classroom, the school, the family, the broader community and society.15,28

While the three subgroups of bullying behavior (bully, victim and bully/victim) have specific risk factors, there is some overlap in each subgroup.79,28,124,125 Key risk factors identified in the literature for all three groups are listed below, organized by the EM level. Three key
factors related to this dissertation, domestic violence, overweight status, and substance use, are highlighted where discussed.

**Individual level**

Certain individual characteristics can increase a child’s risk of being bullied or a being a victim of bullying. Socio-demographic characteristics such as age, gender, and ethnicity are frequently examined predictors of bullying behavior among youth. Sex is by far the most analyzed variable in the literature with respect to involvement in bullying. The literature supports the *type* of bullying is different between males and females. According to many researchers, ethnicity plays a factor in bullying behavior.

The presence of certain emotional, behavioral or physical traits have been found to be risk factors for bullying. Examining factors at the individual level can help us better understand bullying behavior among youth.

**The Bully**

Age is a determining factor among youth. Middle-school age children have the highest prevalence rates of bullying, compared to elementary and high school youth.\(^{31}\) Youth who exhibit externalizing and disruptive behaviors such as impulsiveness,\(^{61,30,126}\) anger, or hyper-activity, are more at risk of becoming bullies.\(^{31}\) A study performed by Sutton et al. found that youth who score high on IQ test are more at risk of bullying other students. It is thought that intelligent youth who are also socially skilled become more manipulative among peers.\(^{127}\) Many researcher support weight status is significantly related to a youth’s risk of bullying behaviors.\(^{23}\) Children who are overweight or obese have been shown to bully peers.\(^{30,128,129,130}\) Ethnicity has also been associated with youth
who bully others. In fact, The National Center for Education Statistics (2016) reported multi-racial youth had the highest rate of bullying others (25.2%), followed by Whites (non-Hispanics) (23.7%), Blacks (non-Hispanics) (20.3%), and Hispanics (19.2%). Other studies have found Black and Hispanic youths, compared to White youths, had a greater likelihood of being a bully.\textsuperscript{131,132} Risky behaviors such as alcohol and substance use is seen among youth who bully.\textsuperscript{133,134} 

*The Victim*

Evidence-based clearly supports gender differences are seen among youth who are victimized. Researchers agree compared to males, females have higher rates of victimization.\textsuperscript{135,136} Ethnicity plays a significant role in students being victimized; many researchers have concluded minority students where classrooms are ethnically diverse are at a much higher risk of being victimized.\textsuperscript{137} Behavioral traits such as a lack of self-control also increases a youths’ risk of being victimized.\textsuperscript{138} Youth who appear vulnerable, shy and weak are more prone to victimization.\textsuperscript{30} Intelligence has also been found to be associated with victimization. Peterson et al. found in a sample of 432 intellectually gifted 8\textsuperscript{th} graders in 11 American schools, 67% of youth had experienced name calling primarily due to their intellectual ability.\textsuperscript{139} Lower levels of intelligence have also been shown to increase the risk of victimization among youth. Spriggs et al. performed a longitudinal study over 13 years of 90,000 youth and found a robust association between lower intelligence and an increased risk of victimization.\textsuperscript{40} Youth who received mental health services in school, or diagnosed with depression were more likely to be victimized.\textsuperscript{140} Youth with disabilities are at a much higher risk of being bullied than
youth without disabilities. Youth who use illicit drugs and alcohol have an increased risk of being victimized.

The Bully/Victim

Physical characteristics that “stand out” or appear “different” place youth at risk of being bullied or victimized. Physical traits including height (too tall or too short), weight (too thin or too heavy), hair, dress style or disability place youth at greater risk of being victimized. In addition to ethnicity playing a role in increasing a youths risk of victimization, it also plays a role in youth who are bully/victims. A number of studies report bullying is more prevalent across ethnic groups. Bullying others was found to be greater in classrooms that are more ethnically diverse. Sexual orientation and religion have been linked to an increased risk of being both bullied and victimized. A number of studies have shown self-control, ADHD, anger, and psychopathic personality traits increase the odds of being a victim and a bully.

Overweight status has been found to be significantly related to bullying behaviors (bullying and victim). Given its prevalence and significance in the bullying literature, it is one of the three key factors in this dissertation. Obesity rates among youth ages 12-19 continue to rise, placing more youth at risk of experiencing bullying behavior (being a bully or a victim). Childhood obesity has more than quadrupled in adolescents in the past 30 years and the percentage of adolescents aged 12–19 years who were obese has increased from 5% to nearly 21%, in the years 1999-2010. In 2012, more than one third of children and adolescents were
overweight or obese.\textsuperscript{24} Obesity is defined as having excess body fat with a BMI more than 35\%.\textsuperscript{149} Overweight is defined as having excess body weight with a BMI of more than 25\%.\textsuperscript{135}

**The Bully**

Limited research shows that children who are obese are at higher risk of becoming a bully. Janssen et al. examined the associations between bullying behaviors with overweight and obesity status in 5,749 boys and girls, ages 11–16. The study showed that overweight and obese 15- to 16-year-olds were more likely to perpetrate bullying than their normal-weight classmates. Associations were seen for relational (boys only) and overt (both genders) forms of bully-perpetrating.\textsuperscript{128} A study by Griffiths et al. found that, compared to average weight boys, obese boys were 1.66 times more likely to physically bully others.\textsuperscript{150}

**The Victim**

Many studies have found that overweight adolescents are more commonly targets of bullying than their normal weight peers.\textsuperscript{130,150,151,152,153,154} Children who are obese are two times more likely to be bullied than their peers who are not obese, regardless of sex, race, or socioeconomic status.\textsuperscript{155} Compared to boys who were normal weight (11.4\%) 14\% of overweight boys were victims of bullying. Compared to normal weight girls (10.7\%), nearly 15\% overweight girls were victims of bullying (Janssen). Hayden et al. concluded, compared to normal weight girls, 70\% of overweight girls reported being victims of bullying behavior (Hayden). Additionally, overweight children have not found to be
victimized more often, they have been found to be victimized more viciously and intensely then their non-overweight peers.\textsuperscript{130,155}

\textit{The Bully/Victim}

Few studies have examined the relationship between overweight status and being both a bully and victim. Espelage et al. suggests that children who are bullied because of their weight respond with aggression and bullying behaviors toward other peers.\textsuperscript{31,156} Janssen et al. found nearly 5\% of boys were who over weight reported being both a victim and a bully, compared to just under 4\% of normal weight boys. Overweight girls, compared to non-overweight girls reported being both a bully and victim of bullying (3.9\%, 2.9\%, respectively).\textsuperscript{129}

In addition to overweight status, \textbf{substance use} has been linked with bullying behavior. Early adolescence is a key developmental period for initiation into substance use.\textsuperscript{43,157} Alcohol and substance use is the third leading cause of morbidity and mortality among youth in the United States.\textsuperscript{153,158} In 2013 the Monitoring the Future Survey reported that 28\% of 8th graders had tried alcohol and 10\% drank during the past month.\textsuperscript{159} In a nationwide survey of middle school youth, 66\% of students had at least one drink of alcohol at least one day during their life. Nearly 42\% of students had used marijuana one or more times during their life. Nearly 6\% of teens have used cocaine and 2.2\% have used heroin one or more times in their life.\textsuperscript{43} Given the high prevalence of substance use in teens and its significant relationship with bullying, it was chosen as a key risk factor of study for this dissertation.
**The Bully**

Evidence has shown that substance use is linked to bullying behaviors among youth. When comparing bullies to non-bullies, 40.88% of bullies used drugs (alcohol, cannabis, cocaine and inhalants) compared to 19.71% of non-bullies. The results of a systematic review and meta-analysis of 42 cross-sectional studies suggests a very strong relationship between substance use and bullying.22

**The Victim**

Findings by Thompson et al. suggest alcohol160 and substance use initiation among adolescents appear to be related to bully victimization.53,69,161,162 Research has found 33.69% of youths who were victimized used drugs, compared to 22.1%, compared to youth who did not use drugs.22 A study by Tharp-Taylor et al. found a strong association between victimization and substance use. Researchers followed youth ages 11–14 years for one year and found that girls that were bullied were 4 times more likely to use marijuana and nearly three and a half times more likely to use alcohol. Boys who were bullied were nearly 12 times more likely to use marijuana and four times more likely to use alcohol.163

**The Bully/Victim**

Many studies suggest there is a very strong relationship between drug use and the risk of being both a bully and victim.62,69,163 Most studies find youth who bullied others and have also been victimized, are more prone to excessive substance and alcohol use.34,37, 164 A great deal of research argues that drug use may function as a coping mechanism against
the experience of stressful events, including school bullying and peer victimization. Since bullying is characterized by repeated aggressive acts over time against less powerful (physically or emotionally) individuals, it is possible that bullies and victims of bullying engage in substance use as a (maladaptive) way of coping with their negative school experiences. 22,165,166

**Interpersonal level**

The interpersonal level is especially important given the theoretical support that behavior can be learned by observing others. As noted above, Social Learning Theory has been used to explain aggressive behaviors76,14 and helps explain how individuals learn to bully via observational learning and reinforcement. According to Bandura, individuals learn not only through direct instruction, but also by observing other’s behaviors and the consequences that follow.14 The behavior of a child who repeatedly witnesses (or is a victim of) aggressive acts by others (parents, peers and, siblings), is likely to be influenced.76,14,77 Thus, on the relationship level, there are many opportunities for youth to observe aggressive role models. Domestic violence and child maltreatment are two key risk factors that are discussed in detail below.

**Parents** act as role models for their children and serve as a primary source of interpersonal influence. Early childhood is a time when children are highly attached to their parents and model behavioral patterns of their parents.167 SLT has provided the basis for studies of how displays of aggressiveness and parent behavior can serve as a model for children who engage in bullying behaviors. 76,168,169

**Parenting style** is the emotional climate in which parents raise their children.170 There are several dimensions of parenting styles that can influence a child’s social and emotional
growth which include: parental support, involvement, warmth, approval, control, monitoring and harsh punishment. Parenting styles have been related to both bullying and victimization.

**The Bully**

Factors such as negative adult influences, lack of parental involvement, and lack of parental support have been found to increase bullying perpetration. Children exposed to harsh or aggressive child-rearing practices (e.g., corporal punishment) and inconsistent parental discipline strategies are also at a higher risk of becoming a bully. Children who bully their peers are more likely to come from families with child rearing practices that are authoritarian in nature, harsh or punitive. According to Geogiou et al., youth who have poor relationships with caregivers develop behavioral problems such as aggression and bullying others in schools. Youth who do not have quality attachment to caregivers are also at an increased risk of bullying others.

**The Victim**

A number of researchers report that children who are victimized present a somewhat similar profile to bullies. Those proposing similar profiles point out children who are victimized by peers come from homes where primary care givers use controlling, dominating disciplinary styles with high levels of hostility and rejection. Studies have shown that boys who have overprotective mothers are at a higher risk of being victimized by peers and girls are likely to be victims if they do not have a connection to the mother. Youth with poor relationships with caregivers are likely to develop poor social skills, which can result in peer conflicts, peer rejection and victimization.
studies have found contradictory results. A number of studies find youth who have parents who use controlling or dominating parenting styles are not at risk for being victimized.\textsuperscript{96,173,181}

\textit{The Bully/Victim}

Very few studies have examined the relationship between parenting style and bully/victims. Compared to bullies, Bowers et al. reported bully/victims were less likely to have a father at home and had difficult relationships with their parents\textsuperscript{96} Bully/victims reported the lowest monitoring and warmth by parents and had the highest overprotective and neglecting parents, indicating inconsistent discipline/monitoring practices.\textsuperscript{182} According to a study by Rigby et al., bully/victims reported the poorest family functioning.\textsuperscript{183} Lereya et al. reported bully/victims were more likely to be exposed to negative parenting behavior including abuse and neglect and maladaptive parenting.\textsuperscript{184}

\textit{Community level}

Studies examining the relationship between neighborhood context and bullying behaviors have been contradictory. While a few studies have found a strong relationship between neighborhood and bullying behavior, others have not.

\textit{The Bully}

Adolescents who perceived their neighborhood as unsafe were more likely to perpetrate bullying in school compared to adolescents with fewer perceived neighborhood safety concerns.\textsuperscript{5,185,178,186} Children whose mothers reported having problems with neighbors
(e.g., arguments with neighbors, loud parties at neighbors’ houses and noisy neighbors) were more likely to be involved in bullying at school. Research suggests physical aggression is more prevalent in neighborhoods with higher levels of poverty. On the contrary, other studies have found no relationship between neighborhood low socio-economic status and bullying behavior. Jennings et al found that in urban neighborhoods, problems such as violence, drug and substance use/abuse, and lack of police supervision significantly predicted physical aggression. Similar studies found that employment, income, and percentages of single male and female-headed households influenced the development of aggressive behavior in urban neighborhoods.

A school’s environment has been shown to influence a child’s behavior. School safety and school environment, in relation to bullying behavior, has received a substantial amount of research attention. Bullying behaviors are more prevalent in schools where a tolerance for bullying is accepted. When peers and teachers support peer directed aggression, aggressive children feel empowered and bully behavior increases. Studies consistently report that schools with lower levels of adult monitoring show an increase in the frequency of bullying. Attending larger and/or schools that lack cohesion among school personnel increase the risk of youth bullying other youth. Schools that have vast racial diversity place youth at a higher risk of bullying others. The relationship between bullying behavior and school connectedness (e.g., sense of belonging in school) has also been examined. Youth who feel disconnected to their school are likely to engage in bullying and peer aggression.
The Victim

Neighborhoods that have been vandalized, represented by graffiti and property damage, were not significantly associated with bullying but violence in the neighborhood (measured by reports of witnessing a bullying event in the previous month), was significantly associated with bullying. A study by Beaver et al. shows that youth who are at risk of being victimized are found to reside in crime-ridden neighborhoods and live near areas within drug cultures. Youth with lower levels of school connectedness were significantly more likely to be involved in bullying and victimization. Salmivalli et al. reports that the classroom has partial responsibility for the degree of peer to peer aggression. Salmivallis’ study shows that the response of peers within a classroom is to blame for encouraging bullying behaviors. If peers encourage a child to bully others bullying behaviors are reinforced. Adolescents who attend schools where negative interactions (conflicts) persist over time are at an increased risk for aggression toward other youth. Research has shown the school environment impacts a child’s risk of victimization. A number of studies agree that youth who are victimized have been found to be generally unpopular and more likely to belong to a rejected peer-group. It has also been found that poor teacher-student relationships (categorized as having negative qualities) within the classroom increase the likelihood of a child being bullied. Another study found that negative school climate was significantly and positively associated with victimization among girls only.
The Bully/Victim

After a thorough search of the literature no studies were found examining bully/victim status and risk factors at this level.

Society level

The harmful consequences of bullying behavior have become apparent and as a result many states are adopting new laws. Schools are also developing new programs and policies to protect students from harm. The goal of anti-bullying laws and policies that aim at preventing or reducing bullying find programs as the widely used, Zero-Tolerance, to be ineffective. In fact, they may drain resources that could otherwise be used on evidence-based policies. A lack of effective laws and policies may also be creating an environment which sees bullying behavior on the increase. Additional research is needed to identify and implement specific laws and policies that are effectively reducing the risk of bullying behavior.

Societal factors and social norms can influence whether violence or aggression is encouraged or inhibited within communities. Political leaders who do not support anti-bullying campaigns may send a message to the community that these behaviors are permitted. Studies have shown a lack of funds or support for police and security presence decreases a sense of safety within the community and increases the prevalence of bullying behaviors (all three subgroups). Other factors such as social and cultural norms increase the risk of bullying behaviors. Societal norms that promote male dominance over women, and parental dominance over children have been shown to increase bullying behaviors. Cultural norms that endorse violence as an acceptable method to resolve conflicts also have been found to increase the prevalence of bullying behaviors. Relatively few scholars in the U.S. have found a link between
violent, aggressive behavior, or bullying with and cultural norms. Sociological theorists assert that schools with norms that tolerate racism, inequality, and oppression among students increase bullying among youth. Most of the research on societal and cultural norms has been performed outside of the U.S. The main finding concerning risk factors related to social norms is that poor economic and social policies that maintain socioeconomic inequalities between people can increase the risk of bullying behaviors within a community.

Empirical research on bullying and parental childrearing practices support the basic view that violence at home begets violence at school. However, there is less consensus as to the family factors that render some children victims, bullies or bully/victims and others not.

Studies have found that children who are exposed to domestic violence experience a range of negative outcomes. The SLT has provided the basis for studies of how displays of aggressiveness and parental behavior can serve as a model for children who engage in bullying behaviors. Given the significance of domestic violence on bullying (becoming a bully or victim), this is a key factor under study for this dissertation. Within the context of family violence there are various factors to consider when examining a child’s risk of bullying behavior. Two specific factors, child maltreatment and a child witnessing inter-parental violence, will be closely examined for this dissertation. Since the family environment is the primary source of influence on a child’s behavior, children who are maltreated themselves and children who witness violence between caregivers learn that violence is a normal expected part of life.

The World Health Organization defines child maltreatment as: the abuse and neglect that occurs to children under 18 years of age. It includes all types of physical and emotional maltreatment, abuse, neglect, negligence and commercial or other exploitation, which results in actual or potential harm to the child’s health.
**The Bully**

Although little research has examined bullying per se in maltreated children, many studies have shown youth who have been maltreated exhibit high levels of aggression. It has been reported that maltreated children are more verbally and physically aggressive, and peers see them as more likely to be mean and to pick fights.\textsuperscript{21,181,215,216} Maltreated children also display more antisocial (aggression, argumentative) behaviors and fewer prosocial acts (kindness). Studies have shown children who were maltreated lack regard for the rights and feelings of others, increasing their risk of becoming a bully.\textsuperscript{217,218}

**The Victim**

Children who experience high levels of hostility, hitting, verbal discipline, and shouting from a caretaker have an increased risk of peer victimization at school.\textsuperscript{18,19,21,181,184,219} Studies have found an association between negative family interactions\textsuperscript{40} (including child maltreatment) and bullying victimization.\textsuperscript{19,181} Maltreated children may feel powerless, as they are unable to protect themselves from harm’s way.\textsuperscript{220} A number of studies have found girls who were abused are more submissive and possible targets of bullying at school.\textsuperscript{30,132,221}

**The Bully/Victim**

Few studies have examined maltreatment and the risk of becoming a bully/victim. One study reported bully/victims are more likely to come from abusive.\textsuperscript{222} Other studies have reported youth who experience caregivers who are over controlling are more likely to become a bully/victim.\textsuperscript{34}
Witnessing inter-parental violence, where one or more caregivers are physically or emotionally violent toward each other, can adversely affect the children. Inter-parental violence is described as psychological, sexual or physical harm by a current or former spouse or partner. Violence is often measured as the presence of any behavior such as hitting, choking, or sexual violence. Psychological harm can include verbal aggression and controlling behavior in threats of violence. Few scholars have shed light on witnessing violence between parents at home as a risk factor for peer conflicts, such as aggression and bullying among youth.

Parents who believe that violence is an acceptable method of interaction for resolving conflict can pass that belief to family members. A child with parents who believe violence is an acceptable method of resolving conflict will model that behavior.

The Bully

Few studies have been conducted in the U.S. on bullying and inter-parental violence among adolescents. Results of a meta-analysis of 32 studies found a significant relationship between exposure to domestic violence and externalizing symptoms. Baldry et al. performed a study showing a strong association between inter-parental violence and bullying. Reports of a cross-sectional analysis with a sample of 1,059 Italian elementary and middle school students showed when girls were exposed to a mother's violence against the father, they were most likely to bully others, compared to girls who had not been exposed to any inter-parental violence, independent of age, and child abuse by the father. Boys who were exposed to inter-parental violence were more likely to
exhibit bullying behavior, compared to the control group made up of boys who were not exposed to inter-parental violence.  

*The Victim*

According to the literature, girls who witness inter-parental violence have an increased risk of being victimized at school. A number of studies show children who have seen their mother as a victim of inter-parental violence, are more likely to be victimized themselves by peers.  

*The Bully/Victim*

Few studies have examined the bully/victim subgroup. A number of studies have shown that youth who witness inter-parental violence at home are likely to engage in bullying as well as become bullies. One study have reported contradictory results and have not found a relationship between youth being exposed to inter-parental violence and becoming a bully/victim.  

While families are important influences on youth, peers also play a key role in an adolescent’s life. Students learn to interact and forge relationships with peers but for some students who become involved with the dynamics of bullying by their peers, their lives are negatively impacted. Consistent with SLT, behavioral observations made outside of the home also can influence a child’s behavior. Adolescence is a period where youth seek peer support, autonomy and develop friendships. During this process negative peer relationships and lack of peer support are significant risk factors for bullying behavior.
The Bully

Youth who socialize with aggressive peers are more likely to bully others compared to youths who do not associate with aggressive peers. Students’ social environments may also reinforce bullying behavior as students attempt to establish a higher social status among peers. Children who have long-standing conflicts with peers are at an increased risk of becoming bullies.

The Victim

Youth who are rejected by peer groups, do not have a best friend, and hang out with criminal friends are at an increased risk of being victimized. Additionally, youth who have low levels of peer acceptance and social support are also at an increased risk of being victimized.

The Bully/Victim

No studies performed in the U.S. have examined peers and the risk of bullying behavior among the bully/victim subgroup.

The interaction of key factors

As described above, studies show exposure to risk factors such as poor family relationships, domestic violence, substance use and individual characteristics (e.g., weight status, ethnicity, poverty status) increases the risk of a child becoming a bully, a victim, or both. Protective factors such as positive adult mentors, positive peer supports and resiliency can reduce a child’s risk of suffering negative outcomes of bullying. Given that substance use, overweight
status, and domestic violence are all key risk factors as described above, this dissertation seeks to better understand how these risk factors interact with each other to lead to bullying behaviors. Current literature shows domestic violence, weight status, and substance use are related to bullying behaviors. A main focus of this study is to determine if the relationship between domestic violence and bullying is impacted by one or both of these two key risk factors. If the relationship is made stronger (or the direction of the relationship changes) when either or both of the two key risk factors are present, then the relationship has been moderated. If the relationship can be explained when either or both of the two key risk factors are present, then the relationship has been mediated. A number of studies have looked at potential mediators and moderators of the relationship between child maltreatment and bullying perpetration and victimization. Hong et al. conducted a study of mediating and moderating factors of the relationship between domestic violence and bullying. They concluded that depression, anger, gender, and social deficits acted as mediators of the association between domestic violence and bullying. They also found that the quality of parent–child relationships, peer relationships, and teacher relationships acted as moderators of that association. However, to date, no studies have examined substance use or obesity as potential mediators or moderators of the association between domestic violence and bullying, despite their strong associations of each factor with both bullying and domestic violence. This dissertation seeks to address this gap.

Interventions

In order to reduce bullying behaviors among youth, interventions must address both risk and protective factors. Within the last two decades a great deal of research has been conducted
on the effectiveness of anti-bullying programs. Nearly all of the interventions emphasize school participation among students, few studies involve teachers, bystanders or family members. Despite efforts to establish effective anti-bullying programs in schools, the evaluation and the effectiveness of these programs are still unclear. In the past two decades much of the research on bullying interventions has been conducted outside of the U.S. in countries such as Finland, Italy and Australia. This dissertation focuses on those interventions conducted in the U.S. among middle-school age youth.

A majority of interventions performed in the U.S. have been targeted to the school level. Most recent studies, including a limited number of meta-analyses at the school level, have evaluated anti-bullying prevention programs with mixed results. According to the literature, the most frequently studied program is a school-based program called the Whole-school Multidisciplinary Approach, developed by Finland researcher Dan Olweus. The Whole School Approach is a comprehensive, multi-level strategy that targets bullies, victims, bystanders, families and the community. The Whole-school Multidisciplinary Intervention has been duplicated several times throughout the world. Whole School Programs have been reported to be more effective than Curriculum-based Interventions (taught in the classroom) or Community-based programs, however the results are mixed; some programs even negatively impacted bullying behaviors. Very few of these studies reported significant reductions in bullying behavior, and some results even yielded an increase in bullying behavior.

Ttofi et al. conducted a systematic review and meta-analyses examining the effectiveness of 44 anti-bullying programs targeting elementary-age students. The study was conducted from 1983 to May 2009. Researchers reported, overall, that school-based anti-bullying programs were
effective. On average, bullying decreased by 20–23% and victimization decreased by 17–20%. More intensive programs were reported to be more effective, as were programs including parent meetings, firm disciplinary methods, and improved playground supervision. Ferguson et al. performed a meta-analytic review of 42 anti-bullying programs. Study results suggest anti-bullying programs produce little discernible effect on youth participants. However, these reviews have many limitations. For decades there researchers have not agreed on the definitions of ‘bullying’. The lack of a standardized definition of bullying makes it difficult to compare results across all studies. Many studies also have failed to conduct longitudinal studies making it impossible to determine causality. Examining whether not interventions have included three key risk factors (domestic violence, overweight status or substance use) will provide important information for researchers and practitioners in the field. In order to provide an update on the effectiveness of interventions and identify gaps in the literature, a systematic review of interventions is essential.

**Research Questions**

The focus of this study is on the relationship between domestic violence and bullying. One of the goals of this study, using the SLT as the guiding framework, is to confirm prior research that domestic violence (witnessing inter-parental violence or experiencing maltreatment from a caregiver) impacts bullying behavior. There are a number of important risk factors for bullying, but witnessing domestic violence (or being a victim of domestic violence), overweight status, and substance use are three of the most influential risk factors. Not only do they each negatively affect the psycho-social and physical health of youth apart from bullying, but they also increase the risk that youth will engage in bullying or being a victim of bullying. Examining
these risk factors and the potential relationships among these risk factors will greatly assist in identifying children at greater risk for bullying behavior.

This study is the first to examine whether or not the three key risk factors (domestic violence, overweight status and substance use) are related to bullying behavior. No studies to date, have examined if overweight status and substance use mediates or modifies the relationship between domestic violence and bullying. The three key risk factors (domestic violence, overweight status and substance use) have all been individually linked to bullying behavior (bully, victim, and bully/victim). It is also not clear whether these key risk factors have been addressed or examined in anti-bullying programs.

The first part of this study is a comprehensive literature review examining current anti-bullying interventions (Questions 1a-1b following). The review will also determine whether intervention studies have addressed the three key risk factors of interest, domestic violence, overweight status or substance use.

**Aim 1:** Conduct a review of bullying interventions that have been published in the academic literature.

Question 1a. What are the characteristics of bullying intervention programs published in the literature?

Question 1b. Have existing programs addressed domestic violence, substance use, and/or overweight?

The second set of questions for this study address the risk of bullying behavior in the presence of domestic violence, substance use or overweight (Questions 2a-1c following). While
there have been a number of studies examining risk factors associated with bullying, no research has addressed youth being exposed to domestic violence with obesity and substance abuse as potential moderators of that relationship.

**Aim 2:** Confirm known risk factors for bullying in the Health and Risk Behaviors of Massachusetts Youth Survey data (MYHS).

Question 2a. Does a middle school student who is exposed to domestic violence (as a witness or a victim) have an increased risk of becoming a victim, a bully or a bully/victim?

Question 2b. Does a middle school student who uses drugs (alcohol, marijuana, and/or other illicit drugs) have an increased risk of becoming a victim, a bully or a bully/victim?

Question 2c. Does a middle school student who is overweight or obese have an increased risk of becoming a victim, a bully or a bully/victim?

The third set of questions for this study will be assessing the mediating and moderating roles of two known risk factors (substance use and overweight status) on the relationship between domestic violence and bullying (Questions 3a-3b following).

**Aim 3:** Assess the mediating and moderating roles of two known risk factors (substance use and overweight status) on the relationship between domestic violence and bullying.

3a. Does adolescent substance use moderate or mediate the relationship between exposure to domestic violence and bullying?
3b. Does adolescent weight status obesity moderate or mediate the relationship between exposure to domestic violence and bullying?

**Conclusions**

Identifying risk factors that place youth at risk for bullying behaviors is critical for the health and well-being of a child’s future. Existing literature suggests exposure to domestic violence, overweight status and substance use are associated with bullying. It is plausible then to suspect that weight status or substance use may at least partly explain the relation between domestic violence and bullying, or that the presence of overweight and/or substance use may reduce or strengthen this relation. If weight status or substance use is identified as having a moderating or mediating role in the relationship between domestic violence and bullying, it could help build a framework for future interventions. Middle-school age is a time for great influence from family and peers. Identifying and implementing successful programs that can prevent or reduce bullying behaviors among that age group is essential in protecting the social and emotional welfare of youth. A thorough review of the literature review can help identify interventions that can reduce bullying behaviors and prevent a child from the negative impacts of bullying.
CHAPTER 3

Bullying Interventions among Middle-school Students in the United States:
A Systematic Review

ABSTRACT

Bullying is a universal problem affecting the emotional, social and physical well-being of school-age children. Risk factors of bullying such as domestic violence, overweight status and substance use have been well-documented in the literature, however no studies were found to include any of these factors. The goal of this study is to identify eligible studies that examined anti-bullying interventions and to determine whether or not the intervention was effective in reducing or preventing bullying among middle-school age youth. Guidelines for this review were based on those set forth by PRISMA. Using several electronic databases (Education Full, Medline Full, Psychology and Behavioral Sciences Collection and Sociological Abstracts), peer reviewed studies published from years 2006-2016 were identified. The program characteristics, effectiveness, and the setting in which the intervention was delivered have been summarized. Studies were evaluated to determine whether or not the aforementioned risk factors were included in the intervention. Initially 2,138 articles were detected that met the inclusion criteria. A final sample of 13 studies was identified and analyzed. The review finds evidence that the outcomes of interventions are mixed. Nearly half (53%) of the studies reported positive outcomes, 25% reported no change, and 22% reported negative outcomes. It’s important to note many of the positive effects were not equal among gender, grade or ethnicity. The likelihood of program success is enhanced when broader populations are included in the study, as caregivers. Only one study included parents in their intervention. Most (92%) of the studies failed to expand sample populations beyond the students. No studies in this review included the three key risk factors of focus in the intervention (e.g., domestic violence, overweight status or substance use).

INTRODUCTION

Bullying behavior is a widespread problem among middle-school age students in the U.S as it affects a substantial portion of youth. Youth who are involved in bullying (as a victim or as a bully) suffer significant negative consequences. Children who experience bullying are also at risk of psychological and social problems. Negative outcomes such as depression, anxiety and suicidal thoughts are linked to bullying behavior among youth.
Over the past two decades numerous anti-bullying interventions have been implemented throughout the world, but the effectiveness of these programs are unclear. A meta-analysis by of 44 studies found school based anti-bullying programs are effective in reducing the prevalence of bullying. A meta-analysis of 42 studies performed concluded the overall effectiveness of the programs were mixed. Various types of programs were identified in both studies. Two distinct intervention programs were identified (Whole-school based and Curriculum based programs), to date no one intervention has proved to be more effective. Literature suggests anti-bullying interventions have produced some significant results but the effects are not long term. While these prior studies have provided important results, an updated review is needed because studies within the last ten year reflect current cultural and social changes that may not be accounted for in prior reviews. Also, bullying is most prevalent among middle-school age students. Many studies have performed research targeting middle-school age students. Identifying and understanding programs targeting this age group is essential.

In addition, there are key risk factors linked with bullying that may be important to address in bullying interventions. According to the social learning theory children learn by observing others. Domestic violence is a known risk factor for bullying behavior among youth, for both becoming a bully and becoming a victim of bullying. Breaking the cycle of violence can be done with interventions studies that expand beyond the school setting into homes.

Overweight and obesity have also been significantly related to bullying behaviors, they often bear the brunt of bullying behaviors. Youth who are overweight or obese make up of nearly one third of the population in the U.S. Excess weight affects children’s physical and emotional health. Anti-bullying programs could potentially include overweight status as part of their intervention. Programs that identify how excess weight influences a youths’ risk of being
bullied, or being a victim of bullying, will be useful in reducing overweight children from the perils of bullying.

Substance use is also an important risk factor for bullying behaviors. Middle-school is a time period in which youth begin to experiment with drugs and alcohol. Literature suggests youth who are bullied are more apt to use drugs. Anti-bullying programs that target youth who are at risk of using substances may result in preventing bullying behavior from happening. Studies that examine elementary students before the initiation of substance use could provide essential information for development of future anti-bullying programs.

Clearly, existing research has shown there are direct relationships between these key risk factors and witnessing domestic violence, over weight status, and substance use with bullying behaviors. Despite these findings, it is unclear whether these factors have been the focus of any bullying interventions. This review seeks to add to the literature by thoroughly examining whether or not domestic violence, weight status, or substance use have been addressed in anti-bullying interventions.

The objective of this review was to examine and summarize anti-bullying programs targeting middle-school age students in the U.S. In order to reduce bullying behaviors among youth, it is essential to know what type of programs have been studied and examine if they were effective. Gathering important information about anti-bullying programs will provide practitioners and researchers a clearer picture of what future programs should look like. Anti-bullying interventions can be implemented in a number of settings (e.g., school, home, community). Summarizing in what setting the program was implemented, and whether or not it was effective, will help determine recommendations for future programs. Another main focus of
this review is to identify if the three key risk factors (domestic violence, weight status, and substance use) are included in their intervention and if so, summarize their outcomes.

METHODS

For this study, a systematic review based on guidelines similar to the PRISMA guidelines, was used. This process identifies different stages of a systematic review using a flow chart. Studies are identified, included and excluded, leading to a final sample of eligible studies. A multi-stage process was used to: (1) identify articles on anti-bullying interventions; (2) screen abstracts for eligibility; (3) screen full text papers for study inclusion; and (4) extract data from the final sample of articles.

Search Strategy

In stage 1, four databases, Education Full, Medline Full, Psychology and Behavioral Sciences Collection and Sociological Abstracts, were selected to search for articles from a variety of disciplines. The databases chosen encompass disciplines that focus on the sociological, educational and psychological fields, which are most likely to include studies that examine issues associated with bullying behavior (e.g. social, psychological and educational aspects). The search terms used in each database included: the general subject ‘bully’ combined with AND (intervention OR program OR education OR curriculum). The search was limited to articles published in English. In an effort to obtain current research, the year of publication was restricted to 2006 to 2016. Studies conducted more than a decade ago may not reflect current changes in psycho-social dynamics of families, communities or school environments. Additionally, studies performed within the last decade provide relevant information based on the most recent findings.
Search information is outlined in Table 1. The table includes the database, the field searched, the search strings, limits used for the search, and the number of articles obtained from the search. After the four databases were searched, a total of 2,138 articles were found. After screening for duplicates (n = 493), a total of 1,645 abstracts remained.

**Screen for eligibility**

In stage two, the 1,645 abstracts were screened for eligibility. Inclusion criteria included: studies that took place in the U.S. and focused on middle school-age youth in any setting. Studies that included elementary or high school students were included only if middle school-age students were the focus of the study. Articles were excluded if they were not a research article published in a peer-reviewed journal (e.g. literature review, commentary, and dissertation) or the study was not conducted in the U.S. Studies performed in other countries may not share similar cultural or demographic characteristics found in the U.S. and therefore not be effective. The definition of bullying specifically refers to overt (direct physical contact) or covert (rumors, name calling) behaviors. Violence and cyber-bullying do not meet the definition of bullying used in this review, thus studies measuring violence or cyber-bullying were excluded. Studies that targeted specific populations (e.g. juvenile delinquents, LGBT or mentally disabled populations) were not included in this review because interventions that focus on specific groups may be designed differently and may not be generalizable to broader populations.

Once the screening process was completed using the above inclusion/exclusion criteria, 1,605 studies were removed, resulting in a final number of 40 studies eligible for full text review. The majority of articles were excluded at this stage because the target population focused on elementary-age students as opposed to middle-school students. A number of additional studies
were excluded because they were performed outside of the U.S. The final sample of 40 eligible studies was moved forward to the next stage (full text review).

**Full text review**

In stage 3 of the screening process, 40 abstracts that appeared to meet inclusion criteria were moved to full text for review. The inclusion/exclusion criteria for the full text review were the same used in stage 2. The full article was obtained and after the full text review was completed, an additional 31 articles were excluded. The 31 studies were excluded based on the following criteria: The study did not implement an intervention (e.g. statistical analysis or report) \( (n = 16) \), age of the study population was not middle school-age students \( (n = 6) \), studies that focused on a specific population such as psychiatric patients, juvenile delinquents, LGBT \( (n = 4) \), or not a research article \( (n = 4) \), not conducted in the U.S. The final sample of eligible studies was 9. To confirm multiple papers did not report on the same data from the same study, the final sample \( (n = 9) \) was again reviewed.

To identify any missed eligible articles, a review was conducted on the reference lists of the final sample of articles. An additional 4 studies, not found in the four databases, were gleaned from the reference section of eligible articles, leading to a final sample of 13 studies. A summary of the selection process is provided in a PRISMA flow diagram in Appendix A.

**Data extraction**

In stage 4, data extraction was performed using a code sheet with a check list where descriptive information was summarized on each of the 13 eligible studies (Appendix B, Data Extraction Instrument). One code sheet was completed for each study. Descriptive information collected included: study authors, date, sample characteristics (number of participants, age/grade), measure type, research design, controlled variables, dependent variable(s) examined,
and primary outcomes. The level in which the intervention was implemented (e.g. school, home based, or community level) was also extracted. Additionally, the description of the program and whether it examined or focused on the key factors (domestic violence, obesity or substance use) was collected.

Data analysis

The information abstracted from the studies were categorized. A brief summary of the characteristics of the intervention and the study designs was collected. The results and level on which the intervention was implemented was also summarized.

RESULTS

The electronic search yielded 13 articles that evaluated bullying prevention programs and met review inclusion criteria. Anti-bullying programs varied on design, methods, type and level of the intervention. Of the 13 studies, 8 used a pretest/posttest control group design, five of which randomized the assignments of the groups. All of the studies included students in their sample and a few included teachers; one study included caregivers. Many of the studies analyzed both types outcomes related to bullying; direct (face-to-face bullying) or indirect (rumors).

The interventions in this review focused on reducing bullying behaviors among middle-school age youth. They assessed the effectiveness of interventions by measuring direct outcomes (face-to-face bullying), indirect outcomes (relational: rumors, name calling) or psycho-social outcomes (communication among students, perceived school climate, trust in self and others, knowledge and awareness of bullying, classroom safety, and bystanders taking action). Three
types of interventions were used: Curriculum-based, Whole-School Multidisciplinary and an Adventure-based intervention.

**Curriculum-based Intervention** Five studies in this review implemented a curriculum-based intervention. Curriculum-based interventions take place within the classroom. Using lesson plans, teachers combine educational elements that focus on anti-bullying into the school curricula. The program utilizes academic texts relating to the specific focus of the intervention. A summary of the studies utilizing the curriculum-based intervention can be seen in Table 3.2.

Growing Interpersonal Relationships through Learning and Systemic Supports (GIRLSS) is a curriculum-based intervention implemented by Splett et al. The goal of the intervention was to reduce relational aggression among female adolescents. The intervention included both students and caregivers. The students participated in one (70 minute) group session per week for 10 weeks. Each session focused on a specific topic taught through the use of interactive discussions, media-based examples, role-plays, journaling, and weekly goal setting. Caregivers participated in two workshops and biweekly phone consultations. The workshops included lectures; interactive process discussions; media-examples; self-evaluation of knowledge, beliefs and disciplinary responses; and role-plays. The sample size was 34 (females, ages 12-15).

Nese et al. implemented a curriculum-based intervention called Positive Behavior Support: Expect Respect. The goal of the program was to teach students how to effectively manage non-respectful behavior, and how to involve bystanders and adult support. Over a six month period the students attended 3 (1-hr) lessons learning how to discriminate “respectful” versus “non-respectful” behavior. The intervention included small group discussions and text books. The sample size was 23 students (6th to 8th grades).
In 2013, Espelage et al. implemented a curriculum-based intervention program called the Second Step: Student Success Through Prevention (SS-SSTP). The goal of the intervention was to increase empathy, communication, and problem-solving skills among youth. The students received 15 educational lessons about bullying. The lessons were highly interactive, incorporating small group discussions and activities. The sample size was 3,316 (6th grade).

In 2015, Espelage et al. continued work based on the earlier SS-SSTP program. The same authors performed a clinical trial of Second Step program for a second year, while also expanding the elements of the intervention. Teachers implemented an additional 13 lessons created by the original researchers. The sessions focused on social emotional learning skills (e.g., empathy, problem-solving).

Bell et al. implemented a curriculum-based intervention called the Bully Busters Program. Researchers used a psychoeducational format which encompassed educational activities, group counseling and support groups. The goal of the program was to increase knowledge, self-efficacy and skills relating to bullying behaviors among teachers. Throughout the school year teachers attended seven monthly psychoeducationally based support groups. The program used a series of educational lectures with active learning and role-playing. The teachers were taught how to identify bullying behavior and how to intervene when bullying incidents occur. Sample size was 488 students (6th to 8th grader), and 52 teachers.

**Whole-School Multidisciplinary Intervention** Seven studies implemented a whole-school multidisciplinary intervention (Table 3.3). The whole-school multidisciplinary approach encompasses not only the students but school personnel, parents and the community. Five of the seven studies implemented a whole-school multidisciplinary intervention based on a popular program called the Olweus Bully Prevention Program. The OBPP was created in Finland by
Dan Olweus. The Olweus Bullying Prevention Program is a multi-level, multi-component program designed to reduce and prevent school bullying in elementary and middle schools. Goals of the OBPP program include: increasing awareness and knowledge about bullying, involving teachers and parents in preventing bullying, developing clear rules against bullying and providing support and protection to victims. The program includes school level, classroom level, and individual level components. The school level components consist of an assessment of the nature and prevalence of bullying in the school, the formation of a committee to coordinate the prevention program, and development of a system ensuring adult supervision of students outside of the classroom. Classroom components include: defining and enforcing rules against bullying, discussions and activities to reinforce anti-bullying values, discussion regarding norms and active parental involvement within the program.

**Olweus Bullying Prevention Programs: OBPP** Black et al. implemented a four year observational study utilizing components of the OBPP. Core components of the program included posting of school-wide anti-bullying rules, a bullying awareness day, increased supervision, involvement of parents, adoption of a working system of positive and negative consequences. Program activities included various interactive board games and relay races. The goal of the program was to reduce the prevalence of bullying behaviors among students. The sample size was 820 students (K through 8th grade), and 120 teachers.

Bowllan et al. implemented a one year intervention utilizing components of the OBPP. Core components of the program included bi-monthly staff meetings, on-site consultation for teachers, teacher support, posting of anti-bullying rules in all classrooms, increase supervision in all areas, and the promotion of positive reinforcement for pro-social behavior. The goal of the
program was to increase the sense of safety among students. The sample size was 270 students in an urban Catholic school (7th to 8th grade), and 17 teachers.

Bauer et al. implemented a two year intervention based on the OBPP. The program components included posters of school rules against bullying, regular staff meetings discussing problematic issues with bullying, classroom discussions and activities.262 Parents were supplied with informational packets about bullying behavior. Elements of the program also included community meetings to raise awareness of the OBPP program and development. The goal of the program was to raise awareness of bullying behavior, and to teach student skills to manage bullying and how to foster empathy for others. The sample size was 6,518 students (6th to 8th grade). Schroeder et al. implemented a 2 year program based on the OBPP. Program components included training school staff, posting school rules against bullying in all classroom and hallways, classroom discussions, role playing, and enforcement of school rules against bullying. Support for victims of bullying and counseling for parents was offered. Community meetings discussing the OBPP procedures and progress were also conducted. The goal of the program was to increase students’ perception of adult responsiveness to bullying incidents. The sample size was 9,899 students (6th to 8th grade).

Baly et al. implemented a program that included a video. Students watched a 6.3 minute educational video entitled, *Bullying or Not?*263 The informational video distinguished bullying from other forms of peer conflict. The goal of the program was to help students gain a better understanding of bullying. The program was delivered only during class time. Students watched the video and were given surveys right before and after the video. The sample size was 1,283 students (6th to 8th grade).
**Non-Olweus Bullying Prevention Programs** Researchers Evers et al. and Migliacco did not base their interventions on the OBPP. Evers et al. implemented a one year program utilizing a Transtheoretical model. The Transtheoretical model of behavior change assesses an individual’s readiness to act on new healthier behavior. Through a process of strategies the individual is guided through the stages of change; to action to maintenance. This anti-bullying program aimed to change a number of psych-social aspects. The intervention consisted of three (30 minute) computer sessions during the school year for students. Students learned about bullying through an interactive computer program. A 10-page manual was provided to staff and parents that included optional activities. The goal of the program was to help individuals progress into particular stages of change that would in the future reduce bullying behaviors. The sample size was 1,237 students (6th to 8th grade).

Migliaccio et al. implemented a one day anti-bullying intervention using a video-discussion model. The program was designed to help individual teachers start the discussion about bullying with their students. After the students watched an anti-bullying video, teachers facilitated a classroom discussion that lasted 30-40 minutes. The goal of this program was to increase awareness of bullying behaviors and to facilitate student participation in identifying response strategies for victims and bystanders. The sample size was 26 students (4th to 6th grade).

**Adventure-based Interventions** Adventure-based interventions are programs that incorporate challenging activities to increase problem solving skills and self-confidence. Adventure-based challenges are coined “experiential education” which is learning by doing with reflection. Such programs are designed to promote change at the individual level. A number of researchers who have implemented adventure-based interventions reported improved self-confidence and improved peer relations.
Examples of adventure-based interventions include a program called Adventures in a Caring Community and Track-N-Trail (YMCA). The ACC is an experiential learning program that encompasses ropes courses and zip-lines to increase students’ resiliency as well as promote life skills. The YMCA uses the Track-N-Trail anti-bullying program which includes a high ropes course, a giant swing, a climbing tower, and a free standing zip line. Youth are presented with a series of challenges that enable participants to create trust within a group and focus on positive communication. Both of these programs aim at increasing self-esteem, improve peer relationships and reduce bullying among youth. These programs were not included in this review because they were not evaluated.

Battey et al. was the only published study included in this review that implemented an adventure-based intervention. The Bully Prevention Challenge Course (BPCCC) used personal risk, both physical and emotional, to push students past what is comfortable. The one day program utilized the theories of experiential education and adventure-based learning to teach students how to communicate among each other, and learn how to work together when faced with physical challenges (ropes course). During the one day program, activities were set up to metaphorically represent a type of bullying behavior or a means to combat bullying behaviors. Following the activities students attended group discussion to discuss feelings and emotions and how their behaviors relate to being a bully, victim, or bystander. The curriculum is divided into four progressive sections of get-to-know you types of games, problem-solving cooperative games and ropes course elements. The sample size was 249 students (7th grade) and 3 school personnel (Table 3.4).
Effectiveness of interventions evaluated

Interventions measure various types of outcomes, i.e. direct bullying, indirect bullying and aspects categorized as psycho-social. Direct bullying refers to face-to-face physical bullying (e.g., kicking, pushing). Indirect bullying encompasses relational bullying (e.g., rumors, name calling). Psycho-social outcomes are related to thoughts and feelings (e.g. fear or insecurity, a sense of safety in school climate, communication among students, and trust in self and others).

Direct and indirect outcomes

A number of studies reported that the intervention had positive outcomes. One of the largest and longest, randomized study was conducted by Espelage et al.\(^{260}\) This study concluded the intervention had significant positive effects on bullying behavior. The results show a decrease in relational bullying by 56%, and students were 42% less likely to self-report physically bullying others. Noteworthy is this study was a continued evaluation on the same population in 2013 by the original authors; the findings support previous conclusions from the 2013 study. Another large, non-randomized study by Bauer et al. reported a 37% decrease in relational and physical victimization reports among White students only, relative to other White students in comparison schools.

Baly at al. found a 68% reduction in reports of physical bullying and a 54% reduction in physical victimization reports, both results were among boys only (no change was reported in girls). Evers al. also found positive results; a 20% reduction in physical bullying by reported by both male and female students. Two non-randomized studies reported positive outcomes, however, effects were not the same among males and females. A study by Bowllan et al. reported a 34% reduction in relational bullying reports and a 32% reduction in physical bullying among 7\(^{th}\) grade girls only (no change was found among 7\(^{th}\) grade boys). Nese et al. reported a
slight reduction in verbal bullying behavior. Due to the size of the population and the non-randomization of the study designs, these results may be considered unreliable. Two of the four studies that included teachers also reported positive outcomes. Black et al. reported a 45% reduction in teacher reports of bullying incidents. A randomized study by Splett et al. reported teachers witnessed a significant reduction in relational bullying among students.

Four studies had the opposite effect and an increase of negative behaviors were reported. The largest study in the review by Schroder et al. concluded that students witnessed a 10% decline in teachers doing nothing to help students who were involved in bullying behavior. Bowllan et al. found a 25% increase in victimization reports among girls only; no change among boys. Bowllan also reported a 20% increase in physical bullying among 8th grade girls only, and found teachers reported a 17.8% increase in student reports of being bullied. Another study by Black at al. reported a 1% increase in reports of victimization, and a 5% increase in reports of being physically bullied.

Four studies found no changes in bullying behavior. Two studies from Epselage et al, and Schroder et al. found no change in relational bullying or peer victimization. A smaller study by Black et al, both reported no reduction in physical bullying behavior.

*Psycho-social and cognitive outcomes*

Studies that measured psycho-social aspects had mixed results. Twenty five percent of the studies reported positive outcomes pertaining to psycho-social aspects. The largest study in this review by Schroeder et al. used a randomized study design. Students reported a 5% increase in taking action to help victims, and a decrease in students bullying other students. A study conducted by Bauer et al. suggested that students reported they were more likely to feel sorry for, want to help victims, and students reported they were more likely to perceive bystanders taking
action to help in a bullying incident. In a randomized study, Evers et al reported a 13% increase in the likelihood of bystanders taking action to help a victim. Migliaccio et al. reported an increase in knowledge and awareness of bullying behaviors among students. The smallest study, (non-randomized) by Battey et al., found that students reported an increase in communication among each other, improved trust in self and others, and a greater awareness of behaviors that can lead to bullying.

A number of studies showed no change in social climate or school safety. Espelage et al. and Black et al. both reported no reduction in relational bullying. A study by Nese et al. found students reported no change in school climate and no change in bystanders taking action to help victims. Evers et al. concluded similar findings; no change in school climate or witnessing bullying of incidents. Bell et al. concluded that teachers reported no change in students’ awareness of bullying behavior or in the school environment. Battey et al. concluded teachers reported no changes in student reports of degree of communication (among students), level of trust (in self) or in the level of understanding bullying behaviors.

**Teachers**

Teachers spend a considerable amount of time interfacing with students and play an important role in peer development and behavior. One study included teachers in their sample, reported a positive outcome. A study by Bell et al. concluded that the intervention increased teacher’s sense of self efficacy when it came to their ability to effectively manage bullying behaviors among students.
Key Risk Factors: Domestic violence, overweight and substance use

Bullying is one of the most threatening behaviors affecting the mental and physical health of our children. According to existing literature, children who have been exposed to domestic violence, are overweight, or use substances, are at an increased risk of being bullied or becoming a victim of bullying. One of the main goals of this literature review was to identify whether or not the aforementioned risk factors have been included in any of the anti-bullying interventions. After examining the studies in this review, none were found to address or examine, any of these three key risk factors. A brief outline and the level of intervention can be seen in table 3.5.

DISCUSSION

This review provides an overview of anti-bullying programs implemented in the U.S. among middle school students within the last ten years. The studies reviewed had great variability in program design, implementation, sample size, length of intervention, and outcome measurements. The majority of studies had small sample sizes. External validity is at risk with smaller studies and the outcomes may not be generalizable to larger populations. Still, the review of the 13 identified studies found evidence that school-based anti-bullying programs can lead to positive effects on bullying behavior.

A number of anti-bullying intervention designs were identified: Curriculum-based, Whole-school Multidisciplinary, and an Adventure-based intervention; all were implemented within the school setting. The results of this review failed to determine which type of intervention was most effective. Future studies should consider expanding the study population and move beyond the school into the home of a child. Researchers may also want to consider
including caregivers in their population. Only one study in the review included parents and the outcomes were positive; a reduction in relational victimization was reported.

Studies examined bullying perpetration, victimization and a combination of psycho-social aspects. While the results of the interventions did show positive outcomes, the results were mixed. Nearly 53 percent of the outcomes reported in the studies showed positive impacts of the intervention (a reduction in bullying and victimization reports, as well as improvements in various psycho-social aspects). Twenty-three percent of the outcomes had negative effects; an increase in physical bullying and victimization as well as worsening of psycho-social aspects were found. The remaining twenty three percent of the outcomes showed no change in behaviors.

The results of the studies may have been influenced by a number of factors; many of the studies has small sample sizes and the length of the programs were limited. While many studies implemented the program for one year, others programs were implemented in much shorter time frames. While most of the studies measured bullying and victimization (physical and relational), the definition of each was standardized across all studies making it difficult to compare studies.

All of the programs included students in their population, while a quarter of the programs included teachers. The majority of the programs that used teachers in their study population reported no change in bullying behaviors or an increase of negative behaviors. The poor outcomes may be due to lack of adherence or insufficient training among teachers. Motivation and interest may also differ among teaching staff, potentially impacting the delivery and integrity of the program. Future programs should consider the importance of providing thorough training for school personnel and providing support to ensure the integrity of the programs are upheld.

The review identified important gaps in anti-bullying interventions. Existing literature suggests a child who has supportive and positive relationships with caregivers or a trusted adult
serves as protective factors against bullying, yet only one study included parents in their sample population. Splett et al. found a significant reduction in relational bullying among students. Existing literature supports comprehensive strategies that encompass the caregiver, school, and community members yield positive outcomes. It is imperative for future studies to consider including caregivers who are supportive or trusted adults in interventions. Future studies must branch out and include key individuals who influence children’s such as caregivers in their study.

A significant gap in the literature review was uncovered. Existing literature supports the 3 key risk factors (domestic violence, overweight status, and substance use) are strong predictors of bullying behaviors in school. Despite this evidence, the studies in this review failed to address the relationship between these determinants and bullying behavior.

**Limitations**

This review has several limitations. The majority of studies from the initial search were excluded because they were conducted outside of the U.S., potentially excluding some relevant studies performed in other countries. The search was limited to four academic databases and while they are comprehensive, additional relevant studies may have been missed. The search was limited to articles in English potentially excluding strong studies in other languages. Grey literature such as dissertations, non-peer reviewed studies were also were excluded, potentially missing studies that could provide important information regarding anti-bullying programs. Studies that targeted specific populations such as juvenile delinquents, LGBT, or the mentally disabled populations were excluded. Excluding specific populations may leave a number of key
intervention studies out of the review. Future reviews can be improved by adding more databases to expand across other disciplines.

In conclusion, this review summarized anti-bullying interventions over the last decade. While the studies in this review did report positive effects, nearly half of the studies reported no change, or showed negative impacts on bullying behavior. This literature review identified gaps in interventions studied for middle school students that will give researchers a clearer picture of what needs to be addressed in future studies. In order to protect and improve the well-being of youth, it is essential that interventions address factors that have been found to be important predictors of bullying, such as domestic violence, overweight status, and substance use.
### Table 3.1. Search strategy

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<tr>
<th>Database</th>
<th>Field</th>
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<th>Limits</th>
<th>Number of articles</th>
</tr>
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<tr>
<td><strong>Education Source</strong></td>
<td>Abstract</td>
<td>bully* AND (intervention OR program OR education OR curriculum)</td>
<td>2006-2016 (Publication date) Academic journal (Publication type) Article (Document type) English (Language) Peer-reviewed</td>
<td>894</td>
</tr>
<tr>
<td><strong>Medline Full</strong></td>
<td>Abstract</td>
<td>bully* AND (intervention OR program OR education OR curriculum)</td>
<td>2006-2016 (Publication date) Academic journal (Publication type) Article (Document type) English (Language) (no peer review filter available)</td>
<td>639</td>
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<tr>
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<td>Abstract</td>
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<td>2006-2016 (Publication date) Academic journal (Publication type) Article (Document type) English (Language) Peer-reviewed</td>
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</tr>
<tr>
<td><strong>Sociological Abstracts</strong></td>
<td>Abstract</td>
<td>bully* AND (intervention OR program OR education OR curriculum)</td>
<td>2006-2016 (Publication date) Scholarly journals (Publication type) Journal article (Document type) English (Language) Peer-reviewed</td>
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Table 3.2. Description of Studies: Curriculum-based Interventions

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<tr>
<th>Author</th>
<th>Sample Size</th>
<th>Grade level or age</th>
<th>Measure type</th>
<th>Analytical Methods</th>
<th>Dependent Variable</th>
<th>Outcome</th>
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</thead>
<tbody>
<tr>
<td>Espelage et al. 2015</td>
<td>Students n = 3,658, Schools n = 36</td>
<td>6th, 7th</td>
<td>Students: self-report</td>
<td>This study used a randomized, pretest/posttest design for a period of two years, the model controlled for gender, ethnicity, age, mothers education</td>
<td>Reports of: relational bullying, victimization bullying perpetration</td>
<td>Students reported a decrease in relational victimization (-56%)&lt;br&gt;Students reported no significant changes in physical victimization or bullying perpetration</td>
</tr>
<tr>
<td>Espelage et al. 2013</td>
<td>Students n = 3616, Schools n = 36</td>
<td>6th</td>
<td>Students: self-report</td>
<td>This study used a randomized, pretest/posttest design for one year and controlled for gender, ethnicity, age, mothers education, free or reduced lunch</td>
<td>Reports of: physical and relational bullying,</td>
<td>Students reports of physical and relational bullying reduced by 42%&lt;br&gt;No sig. effects reported in bullying perpetration or victimization</td>
</tr>
<tr>
<td>Nese et al. 2014</td>
<td>Students n = 24, Schools n = 3</td>
<td>6th, 8th</td>
<td>Students: self-report</td>
<td>This study use a non-randomized, pretest/posttest design for six months and controlled for gender and ethnicity</td>
<td>Reports of: bullying, changes in school climate, change in bystander involvement</td>
<td>Students reported a reduction of verbal bullying or physical aggression&lt;br&gt;Students reported no changes in bystander involvement or school climate</td>
</tr>
<tr>
<td>Splett et al. 2013</td>
<td>Female students that were relationally aggressive n = 62, Parents n = 27</td>
<td>6th, 8th</td>
<td>Teachers and school counselors: self-report</td>
<td>This study used a randomized, pretest/posttest design for ten weeks and controlled for grade in school</td>
<td>Reports of: relational bullying</td>
<td>Teachers and school counselors saw a sig. reduction in relational bullying</td>
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<td>Bell et al. 2010</td>
<td>Teacher n = 52 primary</td>
<td>6th, 8th</td>
<td>Teachers self-report</td>
<td>This study used a non-randomized,</td>
<td>Reports of: classroom climate,</td>
<td>Students reported no sig.</td>
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<td>Study Population</td>
<td>Pretest/Posttest Design for One Year</td>
<td>Victimization, School Safety, Teacher Self-Efficacy</td>
<td>Change in Perceptions of Classroom Climate, Levels of Victimization and School Safety Problems</td>
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<tr>
<td>Students n = 488</td>
<td></td>
<td></td>
<td>Teachers reported no sig. change in awareness of bullying behaviors in the school environment or in perceptions of classroom climate</td>
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<td><em>Secondary Study Population</em></td>
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<td>Teachers reported sig. higher sense of efficacy as it relates to effective behavioral outcomes</td>
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<tr>
<td>Study</td>
<td>Year</td>
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<td>Grade Range</td>
<td>Students:</td>
<td>Method of Study</td>
<td>Reports of:</td>
</tr>
<tr>
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</tr>
<tr>
<td>Migliaccio et al. 2013</td>
<td></td>
<td>Students n = 26</td>
<td>4th-6th</td>
<td>self-report</td>
<td>This study used a non-randomized pretest/post design for one day</td>
<td>Reports of: knowledge and awareness about bullying, attitudes about victims, knowledge of managing bullying</td>
</tr>
<tr>
<td>Bauer et al. 2007</td>
<td></td>
<td>Students n = 6,518</td>
<td>6th-8th</td>
<td>self-report</td>
<td>This study used a non-randomized pretest/posttest design for two years and controlled for gender, ethnicity, age, grade level and academic grade</td>
<td>Reports of: relational bullying and physical victimization and level of attitudes/perceptions toward bullying</td>
</tr>
<tr>
<td>Schroeder 2012</td>
<td></td>
<td>Students n = 9899</td>
<td>6th-8th</td>
<td>self-report</td>
<td>This study used a non-randomized, pretest/posttest design for two years and controlled for gender</td>
<td>Reports of: bullying or victimization, students perception of teachers’ response to bullying, student helping other victims</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Schools n = 13</td>
<td></td>
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</table>

61
<table>
<thead>
<tr>
<th>Study</th>
<th>Students</th>
<th>Year</th>
<th>Teachers</th>
<th>Methodology</th>
<th>Reports of Bullying of Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowllan 2011</td>
<td>Students: self-report, Teachers: self-report</td>
<td>7th-8th</td>
<td>n = 270, n = 17</td>
<td>This study used a non-randomized, pretest/postest design for one year and controlled for gender, grade</td>
<td>Girls reported a significant decrease in relational bullying (−34%, 7th graders only)</td>
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<td></td>
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<td>Girls reported sig. decrease in physical bullying (−31%, 7th graders only)</td>
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<td>Girls reported sig. increase in victimization (+25%, 8th graders only)</td>
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<td>Girls reported sig. increase physically bullying (+20%, 8th grade only)</td>
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<td>Girls reported sig. decrease in reports of being relationally bullied (−35%)</td>
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<tr>
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<td></td>
<td>Boys reported an increase in observing the number of teachers trying to intervene, among boys only (+15.4%)</td>
</tr>
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<td></td>
<td>Teachers reported a 17.8% increase in bullying reports</td>
</tr>
<tr>
<td>Baly et al. 2007</td>
<td>Students: self-report</td>
<td>6th-8th</td>
<td>n = 1,283</td>
<td>This study used randomized pretest/posttest, for one year and controlled for gender, grade</td>
<td>Girls reported less relational bullying (−32%)</td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>Girls reported no change in physical bullying</td>
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<td></td>
<td>Boys reported a sig. reduction in physical bullying victimization (−54%)</td>
</tr>
<tr>
<td>Study</td>
<td>Students</td>
<td>Schools</td>
<td>Students:</td>
<td>Teachers:</td>
<td>Reports of:</td>
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<tr>
<td>Evers et al. 2007</td>
<td>Students n = 1,237</td>
<td>Schools n = 12</td>
<td>Students: self-report</td>
<td>Teachers: self-report</td>
<td>bullying, victimization, witnessing of bullying incidents</td>
</tr>
<tr>
<td></td>
<td>6th-8th</td>
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</tr>
<tr>
<td>Black et al. 2007</td>
<td>Students n = 820</td>
<td>Schools n = 6</td>
<td>Teachers n = 120</td>
<td>K-8th</td>
<td>Students: self-report</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td></td>
<td>This study used a non-randomized design for four years and controlled for grade in school</td>
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</tbody>
</table>
Table 3.4. Description of Studies: Adventure-based Intervention

<table>
<thead>
<tr>
<th>Battey et al. 2013</th>
<th>School personnel = 3 *primary study population Students n = 249 *secondary study population</th>
<th>7th School personnel self-report: Students: self-report</th>
<th>This study used non-randomized design for one day</th>
<th>Reports of: victimization, degree of communication (among students), level of trust, level of understanding of bullying behavior</th>
<th>Teacher reported no sig. changes in any area Students reported an increase in communication among each other, improved trust in self and others, greater awareness of behaviors that can lead to bullying</th>
</tr>
</thead>
</table>


### Table 3.5. Intervention Level and Key Risk Factors

<table>
<thead>
<tr>
<th>Author</th>
<th>Program</th>
<th>Level of Intervention</th>
<th>Domestic Violence</th>
<th>Obesity</th>
<th>Substance Use</th>
<th>Description of program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Espelage et al. 2015</td>
<td>SS-SSTP: Second Step: Student Success Through Prevention</td>
<td>School</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>(An expanded version of Espelage et al. 2013) 2 year intervention addresses interpersonal conflict to reduce aggression</td>
</tr>
<tr>
<td>Espelage et al. 2013</td>
<td>Second Step: Student Success Through Prevention Program</td>
<td>School</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Fifteen week program, in-class bully prevention education program incorporating small group discussions and activities. The program focused on social emotional learning skills, including empathy, communication, bully prevention, and problem-solving skills</td>
</tr>
<tr>
<td>Nese et al. 2014</td>
<td>Expect Respect</td>
<td>School</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Six month program Education program designed to teach students how to identify and manage bullying</td>
</tr>
<tr>
<td>Splett et al. 2013</td>
<td>GIRLSS: Growing Interpersonal Relationships through Learning and Systematic Supports</td>
<td>School</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Ten week educational program implementing group activities, group counseling for females. Caregivers were given support via phone consults</td>
</tr>
<tr>
<td>Bell et al. 2010</td>
<td>Bully Busters</td>
<td>School</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>One year psycho-educational program utilizing OBPP (Olweus Bully Prevention Program) providing support groups for teachers.</td>
</tr>
<tr>
<td>Migliaccio et al. 2013</td>
<td>Anti-bullying video</td>
<td>School</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>One day educational program utilizing video and groups discussions</td>
</tr>
<tr>
<td>Bauer et al. 2007</td>
<td>Bully Prevention Challenge</td>
<td>School</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Two year educational program utilizing OBPP addressing bullying and victimization</td>
</tr>
<tr>
<td>Schroeder 2012</td>
<td>PA CARES: Respect</td>
<td>School and community</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Two year program using OBPP</td>
</tr>
<tr>
<td>Authors</td>
<td>Program Name</td>
<td>Setting</td>
<td>Duration</td>
<td>Platform</td>
<td>Description</td>
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<td>-----------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Bowllan et al. 2011</td>
<td>Olweus Bully Prevention Challenge</td>
<td>School and community</td>
<td>NA</td>
<td>NA</td>
<td>One year educational program</td>
<td></td>
</tr>
<tr>
<td>Baly et al. 2007</td>
<td>Video: Bullying or Not</td>
<td>School</td>
<td>NA</td>
<td>NA</td>
<td>One year educational program using OBPP, students were taught the difference between bullying and conflict</td>
<td></td>
</tr>
<tr>
<td>Evers et al. 2007</td>
<td>Build Respect, Stop Bullying</td>
<td>Community and school</td>
<td>NA</td>
<td>NA</td>
<td>One year computer based intervention aimed at changing behavior</td>
<td></td>
</tr>
<tr>
<td>Black et al. 2007</td>
<td>Olweus Bullying Prevention Program</td>
<td>School</td>
<td>NA</td>
<td>NA</td>
<td>A four year program using Olweus Bullying Prevention Program OBPP</td>
<td></td>
</tr>
<tr>
<td>Battey et al. 2013</td>
<td>Bully Prevention Challenge Course</td>
<td>School</td>
<td>NA</td>
<td>NA</td>
<td>One day adventure-based program utilizing a challenge ropes course to address bully behaviors</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 4

The Impact Domestic Violence, Overweight and Substance Use have on Bullying Behavior among Middle-school Students in Massachusetts

ABSTRACT

A growing body of work has shown that youth who are exposed to domestic violence are at higher risk of both bullying victimization and perpetration. The literature also supports risk factors: substance use and overweight status, are both linked to bullying behaviors however. The current study assessed whether exposure to domestic violence was associated with being a bully, or a victim of bullying, among middle school students in Massachusetts. In addition, this study examined whether or not overweight or substance use modified or mediated that relationship. Secondary data analysis was performed using cross-sectional data from the 2013 Health and Risk Behaviors of Massachusetts Youth Survey (MYHS). Among 3,661 students in grades 6-8 exposure to domestic violence in the past year was strongly associated with reporting having bullied someone in the past year (OR = 3.50, 95% CI = 2.62, 4.69) and with reporting having been a victim of bullying in the past year (OR = 2.89, 95% CI = 2.35, 3.56), after adjusting for demographic characteristics. Seventy-one percent of the effect of domestic violence on bullying was mediated through substance use (Sobel z = 5.87, p<.05), whereas 38% of the effect of domestic violence on being a victim was mediated through substance use (Sobel z = 0.880, p<.05). There was also a significant interaction between domestic violence and substance use in predicting bullying (p = 0.012), such that domestic violence was strongly associated with bullying among those who had not used alcohol or drugs in the past year (OR = 3.61, 95% CI = 2.54, 5.12) but was not associated with bullying among those who reported past-month substance use (OR = 1.52, 95% CI = 0.85, 2.75). Overweight was not found to mediate or moderate the relationship between domestic violence and bullying behavior. The findings in this study conclude more research must be performed examining the link between key risk factors and bullying, in particular substance use.

INTRODUCTION

Many studies have examined risk and protective factors associated with bullying behavior. Based on the Ecological Model, bullying behaviors do not reside solely with the child who bullies or who is a victim of bullying. Bullying unfolds in the social context of family and peer groups, in the classroom, the school, and the broader community. Protective factors, as well
as risk factors, are found within each context, and each factor influences behavior. The family context has been identified to have the most influential impact upon a child’s behavior.\textsuperscript{29} Existing literature supports a child’s relationships with caregivers act as a protective factor, or a risk factor for bullying. A child who has positive relationships with caregivers is less at risk of being involved in bullying behaviors.\textsuperscript{121} Conversely, a child who lives in a home where there are no close relationships, or perhaps the child is exposed to domestic violence, will be at greater risk of bullying behaviors. According to the Social Learning Theory, children learn by observation.\textsuperscript{76} Children who witness domestic violence are more likely to model that behavior. Examining the effects domestic violence has on children, and subsequent bullying behaviors it is essential to the health and wellbeing of children.

Youth who are overweight are bullied twice as much as youth who are not overweight,\textsuperscript{23} this creates a significant public health problem since nearly one third of youth in the U.S. are overweight.\textsuperscript{43} Examining how weight status and bullying behaviors are associated will help identify what types of programs are needed to address this target population. Existing literature also suggests that youth who use substances are at risk of bullying others, as well as being a victim of bullying.\textsuperscript{255} Additionally, research has shown youth who are bullied are also at an increased risk of using substances.\textsuperscript{53}

Despite the literature, no studies have been conducted examining the relationship between the aforementioned risk factors and the impact they may have on bullying in combination. This secondary analysis further examines how various relationships among domestic violence, weight status, and substance use impact bullying behavior (becoming a bully or becoming a victim of bullying). This study also examines the potential mediating and moderating effects of overweight status and substance use on the relationship between domestic
violence and bullying. As the prevalence of bullying is highest among middle-school age youth, the sample used for this analysis is comprised of students of that age group. To the extent that a significant influence of overweight status and substance use on the relation between domestic violence and bullying can be established, then it may be inferred that early anti-bullying interventions addressing these risk factors be viewed as necessary.

METHODS

Secondary data analysis was performed using cross-sectional data from the 2013 Health and Risk Behaviors of Massachusetts Youth Survey (MYHS). This study used a non-randomized sample of middle-school age youth who attended public schools in Massachusetts. Since 2007 the Department of Elementary and Secondary Education (ESE), in cooperation with the Massachusetts Department of Health and the Centers for Disease Control and Prevention (CDC), has conducted the YHS every other year. The anonymous survey asks about risk behaviors in those areas most closely associated with morbidity and mortality: tobacco use, alcohol and other drug use, fighting, obesity, behaviors related to domestic violence and bullying.

Study population and measures. A two-stage sampling method was used to produce representative samples of students in grades 6–8. All public schools having at least one of grades 6 through 8 were eligible to participate. In the first stage, schools were selected with a probability proportional to school enrollment size. In the second stage, classes of a required subject or required period were selected randomly. The survey was conducted by specially trained staff at the University of Massachusetts Center for Survey Research between the months of January and May of 2013. The survey was conducted during classroom time. Teachers were not present.
Of the one hundred and sixteen middle schools that were asked to participate, 87 agreed (75% participation rate). The study population consists of 3,666 middle school students (1,787 females (48.8%) and 1,831 males (51.2%). The sample was ethnically diverse: 77.3% White (non-Hispanic), 8.2% Black or African American (non-Hispanic), 16.3% Hispanic or Latino, 4.1% Asian or Pacific Islander, and 4.1% other or multiple ethnicity. The response rate was 90.6%.

**Sample weights** The results in this study were weighted to adjust for nonresponse and for the distribution of students by grade, sex and race/ethnicity in order to be representative of Massachusetts middle school students as a whole. Weights for the sample include three components: (1) school-level non-response adjustment, which accounts for non-participation of eligible schools within strata defined by school enrollment size (i.e., small, medium, and large) by up-weighting students in participating schools; (2) student non-response adjustment, which up-weights participating students to account for non-participation by students in each included class; and (3) post stratification adjustment, which makes the weighted sample similar to the larger population of Massachusetts middle school students in terms of several demographic factors, including grade, gender and race/ethnicity. These weights are included on the YHS data file and can be interpreted as the number of students represented by each completed questionnaire.

**Ethical Considerations** Permission to use this data for the proposed study was granted by the Office for Nutrition, Health and Safety Programs and the ESE. Upon being granted approval to use the data, an application was submitted to the University at Albany’s Institutional Review Board (IRB) and was approved on June 6, 2016. This study is exempt from review because secondary data is being used. All data were de-identified placing none of the subjects at risk.
Measures

**Dependent variables** There are two dependent variables matching the research questions related to bullying status. One is bullying behavior, assessed with the question: “In the past 12 months did you bully or push anyone?”, with the response options ‘yes’ or ‘no’. The second is victim of bullying, which was assessed with the question: “During the last 12 months how many times were you bullied at school? Being bullied includes being repeatedly teased, threatened, hit, kicked, or excluded by another student or group.” Responses were dichotomized into no victimization (0 times) vs. any victimization (1 or more times).

**Independent variables** The independent variable of interest reflects exposure to domestic violence. Two items were combined into one dichotomous variable: witnessing domestic violence and being a victim of maltreatment by a caregiver. Witnessing domestic violence was assessed by this question: “Over the past 12 months have you witnessed violence in your family?”, with response options ‘yes’ or ‘no’. The second item (victim of maltreatment) was assessed using this question: “Over the past 12 months, were you physically hurt by someone in your family?”, with response options ‘yes’ or ‘no’. Students who responded yes to either question were identified as having been exposed to domestic violence, whereas those responding no to both questions were classified as not having been exposed to domestic violence.

**Moderator/Mediators**

**Substance Use** The use of drugs or alcohol was measured by combining two questions into one dichotomous variable. Current drug use was assessed with a question asking about any use of marijuana, inhalants, cocaine, heroin, ecstasy, steroids, narcotics, amphetamines/methamphetamines, Ritalin, steroids, over-the-counter medicine, or drugs from
prescriptions that were not your own in the past 30 days, with response options ‘yes’ or ‘no’.

Current alcohol use was assessed with a question asking whether the student had drank any alcohol, including beer, wine, wine coolers, hard lemonade, hard cider and rum, gin, vodka, or whisky in the last 30 days, with response options ‘yes’ or ‘no’. Both questions regarding substance use and alcohol use was then combined into one dichotomous variable: have you used drugs or alcohol in the last 30 days?, with response options ‘yes’ or ‘no’.

**Overweight** All study participants were asked to indicate how tall they are and how much they weighed without their shoes on. This information was then used to calculate BMI. Overweight is defined as having a BMI greater than or equal to 25. Extreme values were set to missing.

**Control variable** In order to examine the relationship between domestic violence and bullying, and to avoid any effect of confounding variables, the following variables were included as potential control variables: age (categorized as 11 years, 12 years, 13 years, and 14, and 15 and older, gender (male or female), race/ethnicity (categorized as White non-Hispanic, Black non-Hispanic, Hispanic, and other including Asian/Pacific Islander, those reporting multiple races, and those reporting ‘other’ race), and grade in school.

**Statistical analysis**

Statistical analyses included descriptive analysis, bivariate analysis, multivariate analysis, and tests of the modification and mediation models. Analyses are described below by aim.

**Aim 2:** To confirm known risk factors for bullying in the MYHS data.

To confirm the associations between the independent variables (domestic violence, overweight and substance use) with bullying, bivariate analyses were conducted using weighted
samples. The adjusted F statistic was used to test for independence. In SPSS the adjusted F statistic is a variation of the second order Rao-Scott adjusted Chi-square statistic. A single logistic regression was run for each independent variable for two outcomes (victim, bully, bully). A multivariable analysis was then conducted for each independent variable and for each of the two outcomes (bully, victim), adjusting for potential confounders (sex, age, grade level, race).

**Aim 3:** Assess the mediating and moderating roles of two known risk factors (substance use and overweight status) on the relationship between domestic violence and bullying.

**Moderation** To determine if substance use (Figure 4.1) or overweight (Figure 4.2) modifies the relationship between domestic violence and bullying behavior, logistic regression was used, with an interaction term for domestic violence and the potential moderator (e.g., domestic violence * substance use) added to the models. To determine whether moderation was present, the statistical significance of the interaction term was assessed; if the coefficient associated with the interaction term was statistically significant (p-value < 0.05), we concluded that the variable in question was a moderator of the relation between domestic violence and bullying. Stratified logistic regression was then conducted to assess the relationship between domestic violence and bullying separately among individuals, for example, who have used substances and those who have not. This procedure was repeated with overweight status as the potential moderator, and with each outcome (bully and victim).

**Mediation** To determine if the association between domestic violence and bullying can be at least partly explained by overweight or substance use, overweight and substance use were examined as potential mediators. First, a test was run to determine if there is an association between exposure to domestic violence and substance use with a logistic regression analysis (Figure 4.3: see pathway P1). The total association between exposure to domestic violence and
bullying was then examined, again using logistic regression with only domestic violence and control variables (Figure 4.3: see pathway P2). Finally, a test was run to determine if the association between domestic violence and bullying is at least partly explained by an indirect effect of substance use, by adding substance use as a covariate in the logistic regression analysis. To assess whether substance use is a mediator, change in the coefficient for domestic violence was examined when adding substance use as a covariate in the model (Figure 4.3: see pathways P2 and P3). These same procedures were used with overweight as the potential mediator (Figure 4.4). Finally, all of these procedures were repeated with victim as the dependent variable.

To calculate path coefficients, three logistic regressions were run; (1) substance use was regressed on domestic violence and control variables; (2) the bullying outcome was regressed on domestic violence and control variables; (3) the bullying outcome was regressed on domestic violence, substance use, and control variables. To standardize the coefficients, they were multiplied by the ratio of the standard deviation of the predictor variable to the standard deviation of the outcome variable. To compensate for the change in metrics across the three analyses, some standard deviations were corrected according to the approach outlined by MacKinnon et al. To formally determine if the mediation effect is significant, the Sobel test was performed. The Sobel test is a specialized t-test that can determine if the relationship between the independent variable (domestic violence) and dependent variable (bullying) is significantly reduced after including the mediator variables (substance use and overweight). If the p-value associated with the Sobel test statistic is <0.05, mediation is present. The Sobel test also provides information on what percentage of the variance in the dependent variable was explained by the mediator. This procedure was repeated substituting overweight as the potential mediator and with bullying victimization as an outcome.
**Missingness** There were 5 students with grade level information reported as “ungraded or other” (0.1%). These 5 students were dropped from analyses, leaving a final sample size of 3,661. Available case analyses were conducted, using all available data for each bivariate and multivariable analysis. Missing data was minimal on most measures of interest (e.g., domestic violence 3.5%, substance use 3.9%, bullying others 7.7%, victim 1.3%, ethnicity 6.7%, and 0.3% for grade level). BMI had highest number of missing cases (22%). The missing cases in this category were due to (1) students not reporting height or weight information, or (2) extreme values for BMI having been set to missing by the original researchers before releasing the data.

**RESULTS**

**Descriptive analysis**

Sociodemographic characteristics of the sample and key variables in the study are included in Table 4.1 Based on self-report, there were about equal number of females (48.9%, n = 1,787) and males (51.1%, n = 1,831). Most of the students were ages 12 (32.1%, n = 1,204) and 13 (34.1%, 1,243), followed by youth age 11 (14.8%, n = 537), and age 14 (17.8%, n = 632). There were only 42 students 15 or older (1.3%), so the age 14 and 15 categories were combined. One third of the youth were 6th graders (1,209), one third were 7th graders (1280, and one third were 8th graders (1161). The sample was ethnically diverse. The majority of the sample was White (non-Hispanic) (67.3 %), followed by Hispanic/Latino, (16.2%), other race (8.2%) and African American (non-Hispanic) (8.2%).

About 10% of youth in the sample was classified as overweight. Fifteen percent of the youth reported experiencing domestic violence in the 12 months prior to the survey, and 8.4% reported using drugs or consuming alcohol in the 30 days before the survey. Eight percent of the
youth reported bullying others and 36% reported being bullied in the 12 months before the survey.

**Bivariate Analyses**

Table 4.2 provides information on the relationship among control variables (sex, race, age, and grade) using an adjusted Chi-square. Results indicate that of the six pairs of control variables, four pairs had significant associations. Of these four pairs, the magnitude of the first three was small and therefore multi-collinearity was not an issue. However, the association between grade and age was strong and leads to a substantial risk of multi-collinearity. Age was therefore dropped from the multivariate analysis. This follows standard practices in research on bullying and also makes intuitive sense that grade is likely a better indicator of maturational age in contrast to chronological age.

Table 4.3 presents the estimated associations between the control variables with both the predictor and dependent variables. Sex was significantly related to substance use, being a bully and being a victim. Race was significantly related to domestic violence, being overweight, substance use and being a bully. Grade was significantly related to being overweight, substance use and being a bully.

Table 4.4 displays the adjusted Chi-square among predictor variables and dependent variables. The key variables of interest had significant associations with each other. Significant relationships were found among all the predictor and dependent variables.

Bivariate associations between covariates of interest and domestic violence are presented in Table 4.5. Of the control variables, only ethnicity had a significant relationship with domestic violence. Blacks (non-Hispanic) and Latinos/Hispanics had higher percentages of experiencing domestic violence, followed by the other race group and Whites (non-Hispanic). Both
overweight and substance use had significant relationships with experiencing domestic violence. Youth who were overweight and youth who used substances were more likely to experience domestic violence than those who were not overweight and did not use substances, respectively. Being a bully and being a victim were significantly related to experiencing domestic violence. Youth who were a bully or a victim were more likely to report having experienced domestic violence.

All control variables (sex, race, grade,) and predictor variables (overweight, substance use and domestic violence) had significant relationships with being a bully in the past 12 months (Table 4.6). In particular, greater proportions of males than females reported being a bully. Hispanic/Latinos had the highest proportion of bullies, followed by Blacks (non-Hispanic), multi-racial, and Whites (non-Hispanic). Youth in 8th grade had the highest proportion of bullies, followed by 7th and 6th graders. Just under one fifth of youth who experienced domestic violence reported bullying compared to 6.1% of those who did not experience domestic violence. About a quarter of youth (29.6%) who used substances also reported being a bully, compared to 6.2% of youth who did not use substances. About 15% of youth who were overweight were also bullies, compared to 7.2% of those not overweight.

The proportion of youth who reported being a victim of bullying among those who have experienced domestic violence was almost twice that of youth who have not (57.5% vs. 32.2%) (Table 4.6). The only control variable that had a significant relationship with being a victim was sex. A greater proportion of females than males were victims. Youth who were overweight had a higher prevalence of being a victim compared to youth who were not overweight. Just over one half of youth who used substances were victims of bullying, compared to about one third of
youth who did not use substances. Two thirds of youth who were bullies were also victims, while among those who were not bullies, about one third were victims of bullying.

Tests of Hypotheses for Aim 2

Results of logistic regression models predicting bullying behavior in the 12 months prior to the survey are presented in Table 4.7, including odds ratios (ORs) and 95% confidence intervals (CIs). Separate models were run for each of the three main risk factors of interest (exposure to domestic violence, substance use, and overweight status), and results are presented from both simple logistic regression models and multivariable logistic regression models. The odds of bullying someone are 3.69 (95% CI 2.80-4.48) times higher for youth who experienced domestic violence compared to youth with no exposure to domestic violence; after adjusting for the control variables, this association was reduced to 3.50 (95% CI 2.62-4.69). The odds of bullying someone are 6.14 (95% CI 4.56-8.28) times higher for youth who used alcohol or drugs compared to youth who did not use drugs or alcohol; after adjusting for the control variables, this association was reduced to 5.36 (95% CI 3.87-7.43). The odds of bullying someone are 2.34 (95% CI 1.63-3.37) times higher for youth who are overweight compared to youth who are not overweight; after adjusting for control variables, this association did not change 1.43 (96% CI 1.11-1.84).

Domestic violence also has a significant relationship with being a victim of bullying in this sample (Table 4.8); youth who experienced domestic violence had just under 3 times the odds of being a victim compared to those with no exposure to domestic violence (adjusted OR \([aOR] = 2.89, 95\% \text{ CI } 2.35-3.56\)). Youth who use substances also have a significant relationship with being a victim of bullying; youth who used substances had just over 2 times the odds of
being a victim compared to youth who did not use substances (adjusted OR [aOR 2.19, 95% CI 1.70-2.84). Being overweight also has a relationship with being a victim of bullying; youth who were overweight were nearly one and a half times the odds of being victimized compared to youth who were not overweight (95% CI 1.43 1.11-1.84).

**Tests of Hypotheses for Aim 3**

*Moderation of the relation between domestic violence and bullying.* Table 4.9 presents the results of multiple logistic regression models predicting bullying behavior, including substance use and overweight status as potential moderators, respectively. There was a significant interaction between domestic violence and substance use in predicting bullying (p = 0.012), such that the relation between domestic violence and bullying was very strong among youth who reported not using alcohol or drugs in the past 30 days (OR = 3.61, 95% CI = 2.54-5.12) but not statistically significant among those who did report using alcohol or drugs in the past 30 days (OR = 1.52, 95% CI = 0.85-2.75). There was no significant interaction between domestic violence and overweight status in predicting bullying in the past 12 months (p = 0.546).

Table 4.10 presents the results of multiple logistic regression models predicting victim status, including substance use and overweight as potential moderators. No significant moderation of the relation between domestic violence and bullying victim status was observed by either substance use (p = 0.682) or overweight (p = 0.385).

*Mediation of the relation between domestic violence and bullying* In evaluating potential mediation of the relation between domestic violence and bullying (both as a bully and victim) by substance use and overweight status, we first assessed the relation between domestic
violence and each of these risk factors. As noted previously above, domestic violence was associated with both substance use and overweight status.

Table 4.11 presents results of multiple logistic regression models predicting having bullied someone in the past 12 months, with and without adjustment for substance use and overweight status in separate models. As noted previously, domestic violence was strongly associated with the risk of bullying someone in the past 12 months (Table 4.11, Model 1; OR = 3.50, 95% CI = 2.62 – 4.69). When adjusting for substance use (Table 4.11, Model 2), this association is substantially reduced (OR = 2.87, 95% CI = 2.09-3.93). Seventy-one percent of the estimated effect of domestic violence on bullying is mediated through substance use (Sobel z = 5.87, p<0.05) (Figure 4.5). However, adjusting for obesity (Table 4.11, Model 3) does not substantially impact the estimated effect of domestic violence on bullying (Figure 4.6), with only 19% of the estimated effect mediated through overweight (Sobel z = 1.611, p>0.05) (Figure 4.8).

Table 4.12 presents results of multiple logistic regression models predicting having been a victim of bullying in the past 12 months, with and without adjustment for substance use and overweight status in separate models. As previously noted, domestic violence was strongly associated with the risk of being a victim of bullying in the past 12 months (Table 4.12, Model 1; OR = 2.89, CI = 2.35 - 3.56). When adjusting for substance use, this association is reduced somewhat (OR = 2.77, CI = 2.24 – 3.42). Thirty eight percent of the estimated effect of domestic violence on being a victim was mediated through substance use (Table 4.12, Model 2) (Sobel z = 3.71, p<.05) (Figure 4.7). However, adjusting for obesity (Table 4.12, Model 3) does not substantially impact the estimated effect of domestic violence on being a victim with only 11% of the estimated effect mediated through overweight (Sobel = 1.42, p>0.05) (Figure 4.8).
DISCUSSION

One objective of this study was to confirm the associations between domestic violence, overweight status and substance use with bullying (as a bully or as a victim). This study found significant relationships between domestic violence and bullying. The likelihood of bullying someone are nearly three and a half times higher for youth who experienced domestic violence compared to youth with no exposure to domestic violence (after adjusting for the control variables). Domestic violence also has a significant relationship with being a victim of bullying. Youth in this sample who experienced domestic violence were just under three times more likely to be a victim compared to those with no exposure to domestic violence. The results in this study confirms similar findings of other studies. Baldry et al. found youth who witnessed domestic violence were nearly three times as likely to engage in bullying behaviors compared to youth who were not exposed to domestic violence.227

In addition, there are significant relationships between substance use as well as being overweight with bullying. Youth in the study who reported using substances had a higher rate of bullying others. The likelihood of bullying someone are nearly 6% times higher for youth who used alcohol or drugs compared to youth who did not use drugs or alcohol.259 Additionally, youth who reported using substances were nearly twice as likely to report being a victim, compared youth who didn’t use substances and is similar to results of a study done by Valdebenito et al.22

Additionally, this study confirms overweight status is related to bullying behavior. Youth who were overweight were nearly twice as likely to bullying others, compared to youth who were not overweight, similar to the results in a study by Janssen.23 This study also found overweight status has a relationship with being a victim of bullying. Youth who were overweight
were nearly one and a half times as likely to be victimized compared to youth who were not overweight.

One of the key objectives of this study was to assess the mediating and moderating roles of substance use and being overweight on the relationship between domestic violence and bullying. The findings in this study conclude substance use acts as both a mediator and moderator of the relationship between being domestic violence and bullying. Substance use moderated the relationship between domestic violence and being a bully by decreasing its likelihood. In addition, substance use mediated the relationship between domestic violence and bullying as well as between domestic violence and being a victim. Based on the results, one could speculate that a youth who is subjected to domestic violence may use substances to manage subsequent emotional pain. If the substance that is used is a depressant, the youth may be less able to defend themselves and become a victim of bullying. In an effort to understand or further explain this relationship, additional research is warranted.

This study found that overweight status did not mediate or moderate the relationship between domestic violence and bullying behavior. However, bias may have impacted the results. BMI was calculated by weight and height reported by the students. Self-reports on height and weight are subject to bias due to social desirability. Additionally, extreme values in the BMI category and were set to ‘missing’ by the original researchers, decreasing the ability to assess the impact of high BMI on the relationship between domestic violence and bullying. One may speculate if the missing cases were included in the study, the results may be different and overweight status may, in fact, be a mediator or moderator of the relationship between domestic violence and bullying.
No other studies in the published literature have examined overweight status or substance use as mediators or moderators in the relationship between experiencing domestic violence and bullying behaviors. Consequently, this study provides the first step toward understanding the impact substance use has on the relationship between domestic violence and bullying behaviors.

**Limitations**

The proposed study has several limitations. The study results may not be generalizable to other populations; the data is representative of 6th through 8th grade public school students in Massachusetts. Home-schooled students, private school students, or youth enrolled in alternative education settings are not represented in the study. Students with severe disabilities may not have been represented in the survey, as the students were required to fill out the survey by themselves. The sample was also limited to students present on the day of survey administration. Students who are often absent from school may be under-represented and may have different health and risk behaviors than students who are nearly always present.

Although the sample included 87 middle schools across the state, no differences were observed by region, urban/rural classification, or student enrollment between schools that chose to participate and those that declined.

The data used was based on self-report from students. Self-report data are subject to bias since students may answer questions based on what they think survey administrators will want to hear or to impress their peers. Students may also have had trouble remembering events that happened to them during their lives. Questions relating to sensitive topics such as domestic violence and weight may be underestimated since kids may not want to report it. Relying on self-report data can lead to misclassification within the data set. Also, the sample had a high
percentage of missing data in the category of weight, a key factor in this study; 22% of the cases were missing (n = 807).

The data presented in this report is cross-sectional and therefore no inferences about causality should be made. It is impossible to discern whether other childhood factors temporally preceded school bullying. Additionally, childhood exposure to domestic violence was assessed retrospectively and is subject to potential errors and bias in recall, therefore causality cannot be ensured. Study participants were asked to report on both bullying and domestic violence in the past 12 months, so it is also not possible to ensure that exposure to domestic violence preceded bullying. Furthermore, since the reporting of domestic violence was specific to the past 12 months, we are not able to capture the potential effects of exposure to domestic violence earlier in life.

Conclusions

Bullying behavior is pervasive among youth throughout the U.S. Youth who are bullied or who are victims of bullying, are at risk of a myriad of negative consequences. This study clearly identifies the links between domestic violence, overweight status and substance use with bullying behaviors among youth. Certainly the key risk factors of this study have been proven to be important, however longitudinal studies will be needed to examine causality. Future research can also evaluate additional risk factors not included in this study. Despite these limitations, this study provides new evidence supporting the strong association between domestic violence and bullying behavior with substance use as both a mediator and moderator of that relationship, thereby setting the ground work for future research to help create effective interventions.
Figure 4.1. Moderation of the relation between domestic violence and bullying by substance use

Figure 4.2. Moderation of the relation between domestic violence and bullying by overweight

Figure 4.3. Mediation of the relation between domestic violence and bullying by substance use
Figure 4.4. Mediation of the relation between domestic violence and bullying by overweight

Exposure: DV → Overweight → Bully
Table 4.1 Socio-demographic characteristics, obesity, substance use, domestic violence, and bullying experience of middle school-age students, 2012-2013 (n = 3,661)

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<th>n</th>
<th>Weighted %</th>
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</thead>
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<td>8.2</td>
</tr>
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<td></td>
</tr>
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<td>14.8</td>
</tr>
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<td>1204</td>
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<tr>
<td>No</td>
<td>2295</td>
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</table>

* Domestic violence includes reporting witnessing violence in one’s family or being physically hurt by someone in one’s family in the past 12 months.

**Drugs assessed included marijuana, inhalants, cocaine, heroin, amphetamines/methamphetamines, ecstasy, narcotics, Ritalin, steroids, over-the-counter medicine, and/or drugs from prescriptions. Alcohol use includes drinking beer, wine, wine coolers, hard lemonade, hard cider and rum, gin, vodka, and/or whisky.
Table 4.2 Associations between Control Variables

<table>
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<tr>
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<th>Sex adj $x^2$</th>
<th>p-value</th>
<th>Race adj $x^2$</th>
<th>p-value</th>
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</tr>
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<td>2.169</td>
<td>0.023</td>
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Table 4.3 Associations of Control Variables with Predictor and Dependent Variables

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<th>Substance Use</th>
<th>Bully</th>
<th>Victim</th>
</tr>
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<td>adj. $x^2$</td>
<td>p-value</td>
<td>adj. $x^2$</td>
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<td>4.66</td>
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Table 4.4 Associations between Predictor Variables and Dependent Variables

<table>
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<th>Substance Use</th>
<th>Overweight</th>
<th>Bully</th>
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</thead>
<tbody>
<tr>
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<td>adj. $x^2$</td>
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Table 4.5 Bivariate associations between Covariates and Domestic Violence in the past 12 months

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<th>p-value</th>
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Table 4.6 Bivariate associations between covariates and bullied someone in past 12 months

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<tr>
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<td>14.9</td>
<td>--</td>
</tr>
<tr>
<td>No</td>
<td>4.1</td>
<td>--</td>
</tr>
<tr>
<td>Bullied someone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>No</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 4.7 Results of logistic regression models predicting having bullied someone in the past 12 months

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unadjusted</th>
<th>Adjusted*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
<td>95% CI</td>
</tr>
<tr>
<td>Domestic violence in past 12 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1.00</td>
<td>(ref)</td>
</tr>
<tr>
<td>Yes</td>
<td>3.69</td>
<td>(2.80-4.84)</td>
</tr>
<tr>
<td>Used alcohol or drugs in past 30 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1.00</td>
<td>(ref)</td>
</tr>
<tr>
<td>Yes</td>
<td>6.14</td>
<td>(4.56-8.28)</td>
</tr>
<tr>
<td>Overweight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1.00</td>
<td>(ref)</td>
</tr>
<tr>
<td>Yes</td>
<td>2.34</td>
<td>(1.63-3.37)</td>
</tr>
</tbody>
</table>

* Adjusted models also controlled for sex, race/ethnicity, and grade level.

### Table 4.8 Results of logistic regression models predicting having been a victim of bullying in the past 12 months

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unadjusted</th>
<th>Adjusted*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
<td>95% CI</td>
</tr>
<tr>
<td>Domestic violence in past 12 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1.00</td>
<td>(ref)</td>
</tr>
<tr>
<td>Yes</td>
<td>2.85</td>
<td>(2.34-3.46)</td>
</tr>
<tr>
<td>Used alcohol or drugs in past 30 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1.00</td>
<td>(ref)</td>
</tr>
<tr>
<td>Yes</td>
<td>2.10</td>
<td>(1.64-2.69)</td>
</tr>
<tr>
<td>Overweight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1.00</td>
<td>(ref)</td>
</tr>
<tr>
<td>Yes</td>
<td>1.43</td>
<td>(1.12-1.83)</td>
</tr>
</tbody>
</table>

* Adjusted models also controlled for sex, race/ethnicity, and grade level.
Table 4.9 Results of logistic regression models predicting having bullied someone in the past 12 months, including substance use and overweight as potential moderators

<table>
<thead>
<tr>
<th>Variable</th>
<th>Substance use as moderator</th>
<th></th>
<th></th>
<th>Overweight as moderator</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>OR</td>
<td>(95% CI)</td>
<td>p-value</td>
<td>b</td>
<td>OR</td>
</tr>
<tr>
<td>Sex</td>
<td>Male</td>
<td>0.000</td>
<td>1.00</td>
<td>&lt;0.001</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>-</td>
<td>0.59</td>
<td>(0.44-0.78)</td>
<td>-0.543</td>
<td>0.58</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>White (non-Hispanic)</td>
<td>0.000</td>
<td>1.00</td>
<td>0.105</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>Black (non-Hispanic)</td>
<td>0.273</td>
<td>1.32</td>
<td>(0.74-2.33)</td>
<td>0.089</td>
<td>1.09</td>
</tr>
<tr>
<td></td>
<td>Latino/Hispanic</td>
<td>0.426</td>
<td>1.53</td>
<td>(1.08-2.17)</td>
<td>0.507</td>
<td>1.66</td>
</tr>
<tr>
<td></td>
<td>Multi-racial</td>
<td>0.172</td>
<td>1.19</td>
<td>(0.76-1.86)</td>
<td>0.039</td>
<td>1.04</td>
</tr>
<tr>
<td>Grade</td>
<td>6</td>
<td>0.000</td>
<td>1.00</td>
<td>0.081</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>0.116</td>
<td>1.12</td>
<td>(0.78-1.61)</td>
<td>0.216</td>
<td>1.24</td>
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<tr>
<td></td>
<td>8</td>
<td>0.367</td>
<td>1.45</td>
<td>(1.02-1.05)</td>
<td>0.676</td>
<td>1.97</td>
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<tr>
<td>Domestic Violence</td>
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<td>0.000</td>
<td>1.00</td>
<td>&lt;0.001</td>
<td>0.000</td>
<td>1.00</td>
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<td></td>
<td>Yes</td>
<td>1.285</td>
<td>3.62</td>
<td>(2.55-5.13)</td>
<td>1.336</td>
<td>3.81</td>
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<tr>
<td>Substance use</td>
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<td>0.000</td>
<td>1.00</td>
<td>&lt;0.001</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>1.851</td>
<td>6.37</td>
<td>(4.25-9.54)</td>
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<td>Domestic violence *</td>
<td>substance use</td>
<td>-</td>
<td>0.422</td>
<td>(0.22-0.83)</td>
<td>0.012</td>
<td>--</td>
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<td></td>
<td>0.862</td>
<td></td>
<td></td>
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<tr>
<td>Overweight</td>
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<td>--</td>
<td>--</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>0.802</td>
<td>2.23</td>
</tr>
<tr>
<td>Domestic violence *</td>
<td>over weight</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>-0.265</td>
<td>0.767</td>
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</table>
Table 4.10 Results of logistic regression models predicting having been a victim of bullying in the past 12 months, including substance use and overweight as potential moderators

<table>
<thead>
<tr>
<th>Variable</th>
<th>Substrate use as moderator</th>
<th>Overweight as moderator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>OR</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Female</td>
<td>-0.591</td>
<td>1.81</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White (non-Hispanic)</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Black (non-Hispanic)</td>
<td>-0.192</td>
<td>0.825</td>
</tr>
<tr>
<td>Latino/Hispanic</td>
<td>-0.102</td>
<td>0.903</td>
</tr>
<tr>
<td>Multi-racial</td>
<td>0.055</td>
<td>1.06</td>
</tr>
<tr>
<td>Grade</td>
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<td></td>
</tr>
<tr>
<td>6</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td>7</td>
<td>0.152</td>
<td>1.17</td>
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<tr>
<td>8</td>
<td>0.092</td>
<td>1.10</td>
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<td>Domestic Violence</td>
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<tr>
<td>No</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Yes</td>
<td>1.034</td>
<td>2.81</td>
</tr>
<tr>
<td>Substance use</td>
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<tr>
<td>No</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Yes</td>
<td>0.620</td>
<td>1.86</td>
</tr>
<tr>
<td>Domestic violence</td>
<td>-0.127</td>
<td>0.88</td>
</tr>
<tr>
<td>* substance use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overweight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Yes</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Domestic violence</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>* overweight</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4.11. Results of multiple logistic regression models predicting bullying someone in the past 12 months, with and without adjustment for potential mediators

<table>
<thead>
<tr>
<th>Model</th>
<th>OR</th>
<th>(95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1: Domestic violence, adjusted for control variables only</td>
<td>3.50</td>
<td>(2.62-4.67)</td>
</tr>
<tr>
<td>Model 2: Domestic violence, adj. for control variables + substance use</td>
<td>2.87</td>
<td>(2.09-3.93)</td>
</tr>
<tr>
<td>Model 3: Domestic violence, adj. for control variables + overweight</td>
<td>3.62</td>
<td>(2.61-5.02)</td>
</tr>
</tbody>
</table>

Table 4.12. Results of multiple logistic regression models predicting having been a victim of bullying in the past 12 months, with and without adjustment for potential mediators

<table>
<thead>
<tr>
<th>Model</th>
<th>OR</th>
<th>(95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1: Domestic violence, adjusted for control variables only</td>
<td>2.89</td>
<td>(2.35-3.56)</td>
</tr>
<tr>
<td>Model 2: Domestic violence, adj. for control variables + substance use</td>
<td>2.77</td>
<td>(2.24-3.42)</td>
</tr>
<tr>
<td>Model 3: Domestic violence, adj. for control variables + overweight</td>
<td>2.77</td>
<td>(2.19-3.51)</td>
</tr>
</tbody>
</table>
Figure 4.5. Domestic violence with substance use on bully

![Diagram](image1)

*P<.05

Figure 4.6. Domestic violence with overweight on bully

![Diagram](image2)

Figure 4.7. Domestic violence with substance use on victim

![Diagram](image3)
Figure 4.8. Domestic violence with overweight on victim

Domestic violence $\rightarrow$ Overweight $\rightarrow$ Victim

0.429

0.848*

0.222*
CHAPTER 5

DISCUSSION

Bullying behavior is a serious public health issue with significant negative consequences. Bullying affects children’s emotional, social and physical well-being. Bullying behavior does not occur solely within the child but is influenced by multiple social and ecological contexts including peer, family, school, and the community. Within each of these contexts, there are various factors that protect a child from, and/or place a child at risk for bullying behaviors. Being bullied, or being a victim of bullying has significant negative consequences that can last into adulthood. To preserve the welfare of adolescents a collaborative effort is necessary to design and implement effective anti-bullying programs.

Over the last decade a number of school-based anti-bullying programs have been studied. A review of existing anti-bullying programs is critical to help researchers and practitioners make informed decisions for future programs. The results of the literature review found that while anti-bullying interventions have been proven to be effective in reducing bullying behaviors in some cases, just as many have proven to worsen bullying behaviors or have no effect. Of the 13 studies reviewed, 53 percent of the outcomes showed positive impacts of the intervention (a reduction in bullying and victimization reports, as well as improvements in various psycho-social aspects). The remaining studies showed an increase in negative behaviors or no change in behaviors. Twenty-three percent of the outcomes measured had negative effects (an increase in physical bullying and victimization as well as worsening of psycho-social aspects), and 25 percent of the studies reported no change in any of the outcomes.
Evidence-based literature shows that risk factors such as domestic violence, weight status, and substance use are linked to bullying behaviors. Despite this, none of the risk factors were addressed or examined in any interventions identified in this review. Summarizing information about the interventions provides a resource that will help practitioners and researchers make informed decisions when designing new anti-bullying interventions.

The results of the secondary analysis concluded there are significant relationships among the aforementioned risk factors and bullying behaviors. The findings of this study clearly demonstrated that domestic violence (witnessing it or being a victim of it), substance abuse, and overweight status have an impact on bullying (both perpetration and being victimized) and must be recognized as critical factors which need to be further examined. Bullying impacts the welfare of our children and by identifying these significant relationships among the risk factors associations, researchers can better predict which factors are critical to consider and what type of programs will reduce bullying behavior.

**Implications for Practitioners**

Children who are bullied suffer significant negative consequences, some that last a lifetime. Based on the Ecological Model, risk and protective factors of bullying behaviors occur within multiple contexts; individual, interpersonal, community and societal. It is imperative public health officials examine how factors from each of the levels act as protective or risk factors among youth who are exposed to bullying behaviors. Collaboration between disciplines such as social services and educational systems can help guide researchers in the direction needed to create and implement effective programs.
All three of the risk factors concern sensitive issues. Reporting on such matters such as domestic violence exposure can be a struggle for children. Because middle-school youth spend most of their time in the school setting it is imperative that school officials provide support and referral services for those may be experiencing domestic violence at home. Additionally, addressing risky behaviors such as substance use among middle-school age youth can be a challenge. Drug and alcohol services should be engaged with the school personnel to determine what type of services may be helpful for youth who may be using substances.

**Research implications**

While school-based programs have had positive impacts on bullying behavior among youth, researchers must also consider examining the environment in which a child lives. A child’s home, which is the likely where domestic violence is witnessed, must be considered a critical factor in the welfare of a child. Future studies must expand beyond the school and into a child’s home environment. Implementing effective programs that target domestic violence in the home can be challenging, however the challenges must be overcome; a child’s future welfare is at stake.

Given the result of the two studies, it is essential that public health services target families, schools and primary care providers. Screening and detection of domestic violence exposure, substance abuse, overweight status, bullying and victimization should take place earlier in a child’s life.

Bullying behavior is more prevalent among children who are overweight or use substances. A child who faces weight issues or, is at risk of using substances could benefit from preventative counseling and health-risk screening. Studies engaging primary care doctors where
youth undergo routine physical checkups may prove beneficial in early detection of weight issues and substance use.

Despite limited research on the connections between domestic violence, overweight status, and substance use with bullying, study 2 provides enough support for important associations to continue further research. While this study has uncovered unique findings, it lacks the ability to disentangle the effects of age and time-related variables. Longitudinal studies following students beginning in elementary school throughout high school, will allow researchers gain a better understanding of how certain behaviors unfold.

Identifying more reliable measurement tools for a number of variables will reduce bias and produce more reliable data. In the MYHS sample, many students’ weight information was set to ‘missing’ because of extreme values, potentially losing information on individuals who were truly overweight. Self-report on sensitive matters such as height and weight are subject to social desirability bias. Directly measuring physical height and weight will likely be a better representation of a child’s BMI. Additionally, a child who is exposed to domestic violence may not want to report it and therefore impact the data. Future studies assessing a child’s exposure to domestic violence should consider implementing an evidence- based measurement tool. The Child Exposure to Domestic Violence Scale \(^{278}\) has been identified as an effective method in measuring exposure to domestic violence and may provide more accurate data.

**Conclusions**

In conclusion, this study confirms substance use, overweight status and domestic violence play a significant role in bullying behavior among youth, yet have not been addressed by existing interventions for middle school students. A significant and unique finding in this
study established substance use as a mediator and a moderator on the relationship between domestic violence exposure and bullying behavior, both as a bully and as a victim of bullying.

Results of these two studies also provide essential information that can be used in designing effective intervention programs that tackle bullying behaviors among children. Findings support the importance of identifying and addressing factors that can protect youth from bullying behaviors or place them at risk. This study provides new information that can be used to create and implement effective anti-bullying interventions, sparing our youth from the negative consequences of bullying.
APPENDICES

Appendix A: PRISMA Diagram

Records identified through database searching (n = 2,138)
  *Education Source (n = 894)
  *Medline Full (n = 639)
  *Sociological Abstracts (n = 245)
  *Psychology and Behavioral Sciences (n = 360)

Duplicates removed (n = 493)

Abstracts screened after duplicates removed (n = 1,645)

Studies excluded (n = 1,605)

Full-text articles assessed for eligibility (n = 40)

Studies included (n = 9)

Reasons for exclusions:
  *Not research (n = 4)
  *Not in U.S. (n = 1)
  *Not middle school age (n = 6)
  *Focused on specific population (e.g., juvenile offenders, LGBT) (n = 4)
  *Not an intervention (n = 16)

Additional records identified through references (n = 4)

Studies included in final sample (n = 13)
Appendix B: Data Extraction Instrument

1. What is the study design? (select one)
   - [ ] Cohort
   - [ ] Case Control
   - [ ] Cross-sectional
   - [ ] Randomized Control Trial
   - [ ] Double-Blind
   - [ ] Non-randomized Control Trial
   - [ ] Other ________________
   - [ ] Not Stated/ Not sure

2. What is the primary type(s) of data collected? (check all that apply)
   - [ ] Qualitative
   - [ ] Quantitative
   - [ ] Mixed methods (both)
   - [ ] Not sure

- **Qualitative** = focus groups, interviews
- **Quantitative** survey, height and weight measurement, observational data which a sampling scheme and when the collection of data is in the form of counts or presence of a behavior, quantitative content analysis
- **Note observational data** can be qualitative or quantitative. Qualitative data = behaviors are video recorded and then later coded using a coding guide. Quantitative data = a sampling plan is used (e.g., record every 5 minutes) and behaviors are recorded in a quantitative manner (e.g., presence or absence of a behavior).
- **At times an article will state that parents were interviewed face-to-face but they are not referring to an in depth or semi-structured interview, rather they are referring to the fact that they administered the surveys to parents. This can be judged by looking at the specific measures collected. If it is a qualitative study, an interview guide will be utilized and not quantitative measures will be collected.
3. Did the study involve? (check all that apply)
   - [ ] Primary data collection (collected directly from participants for this study)
   - [ ] Secondary data analysis
   - [ ] Analysis of medical records
   - [ ] Other

4. Did the study address (check all they apply)
   - [ ] Domestic violence
   - [ ] Obesity
   - [ ] Substance use

5. What academic grade did the study include? (check all that apply)
   - [ ] Elementary
   - [ ] Middle school
   - [ ] High school

6. Where was the location of the study?
   - [ ] School
   - [ ] Community
   - [ ] Home setting
   - [ ] Medical setting
   - [ ] Other ______________________________

7. How many schools? ________

8. Who provided the child level data? (check all that apply)
   - [ ] Child
   - [ ] Parent
☐ Both child and parent
☐ Teacher
☐ Community member
☐ Medical Provider
☐ Other _____

1. How was the data collected? (check all that apply)
   ☐ In-person interviews
   ☐ Phone interviews
   ☐ Online survey
   ☐ In-person survey
   ☐ Phone survey
   ☐ Focus group
   ☐ Medical records
   ☐ Secondary data analysis
   ☐ Other ____________________
REFERENCES


46. Eslea M, Rees J. At what age are children most likely to be bullied at school? *Aggress Behav*. 2001;27:419-429.


125. Garbarino J, DeLara E. And words can hurt forever: How to protect adolescents from bullying, harassment, and emotional violence. 2002.


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