

ABSTRACT

Title of Dissertation: The Protective Behaviors of Student Victims:
Responses to Direct and Indirect Bullying

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Most research on school bullying has focused on its prevalence, characteristics of bullies and victims, and programmatic responses undertaken by schools to prevent or reduce bullying. Few studies have investigated victims' responses to bullying at school. While the public, national media, and recent studies implicate bullying as a factor in cases of school violence, little research to date examines the self-protective behaviors of bullying victims. This raises the question; do victims of bullying take measures to protect themselves, despite the fact that these measures may endanger other students at school or school climate? Are they more likely to adopt these behaviors when they perceive that their school is not a capable guardian from such victimization? And finally, do their choices of protective behaviors vary by the type of bullying they endure? The purpose of this dissertation is to examine self-protective behaviors exhibited by victims bullying. Findings indicate that student victims of bullying were more likely than non-bullied students to adopt self-protective behaviors that further endanger school safety and school climate. Specifically, controlling for relevant student and school characteristics, bullied students were three times more likely to carry a weapon to school, to engage in fighting behaviors, and to avoid certain places at school, and were six times more

likely to be truant from a school activity. No support for an interaction between measures of school guardianship and student protective behaviors was found, meaning that student perceptions of school security or rule enforcement did not play a role in bullied students' decisions to engage in avoidance, truancy, weapon carrying, or fighting. In addition, the adoption of these behaviors did not differ by the type of bullying, direct or indirect, endured by the victim. Theoretical and policy implications are discussed.

THE PROTECTIVE BEHAVIORS OF STUDENT VICTIMS:
RESPONSES TO DIRECT AND INDIRECT BULLYING

By

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Dedication

For my husband, John, who patiently gave me the time and encouragement to make this dissertation happen; for my parents, who have believed in and supported me; and for the rest of my family and friends who listened, laughed, teased, and cheered for me as I toiled away.

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Chapter 1: Introduction

Most individuals in the United States are familiar with the concept of bullying. However, ask each to define bullying and you will end up with a broad array of examples and meanings varying from the cliché lunch-money bandit to the more sensational female teenage bullies known as “queen bees,” who have recently enjoyed the media spotlight (Wiseman 2002). Not surprisingly, academic research on bullying and specification of the different types of bullying is as diverse as layman’s concepts of the phenomenon. Most academic studies to date focus on either documentation of bullying behavior (e.g. Perry, Kusel, and Perry 1998, Hoover and Hazler 1991, and Nansel, Overpeck, Pilla, Ruan, Simons-Morton and Scheidt 2003), the programmatic responses undertaken by schools to end the behavior, or the evaluation of these programmatic responses (e.g. Limber 2004, Horne, Orpinas, Newman-Carlson, and Bartolomucci 2004, Gottfredson 2001). Further, in the media and select studies, bullying victimization has been identified as potential risk factor for extreme acts of school violence. For example, a recent study of school shootings (Leary, Kowalski, Smith, and Phillips 2003) found that 12 of 15 incidents that occurred between January, 1995 and March, 2001 involved shooters who were the victims of malicious teasing or bullying at school, among other factors. A report issued by the United States Secret Service in 2002 concluded that over 70 percent of school shootings between the years 1971 and 2000 were perpetrated by students who were classified as chronically bullied.

A Gallup Poll conducted after the tragedy in Columbine, Colorado in 2001 showed that over 60 percent of those polled believed bullying to be an extremely important or very important cause of school shootings (Gallup 2001). This popular

conception of the relationship between bullying and school violence along with the research cited above raises some pertinent research questions for those interested in school safety. Do bullying victims take measures to protect themselves? Does the school play any role in whether or not these protective behaviors are adopted, despite the reality that these behaviors have the potential to endanger others at school or diminish school climate? Finally, do their choices of protective behaviors vary by the type of bullying endured?

According to current conceptualizations, bullying is defined as repeated and intentional harm doing, inflicted on another, in a relationship characterized by an imbalance of power. The purpose of this dissertation is to explore the self-protective behaviors of victims of bullying. The focus will be on behaviors that can be considered protective and may further erode school safety and school climate. The behaviors considered here include weapon carrying, fighting, avoiding specific locations in school, and truancy. This dissertation also attempts to determine the role, if any, that student perceptions of school guardianship play in the adoption of these protective behaviors. It is suggested that when students' perceive their schools to be ineffective guardians, they will be more likely to adopt self-protective measures against bullying victimization than rely on their schools to intervene. Measures of school guardianship include student perceptions of school rule enforcement and security. In addition, bullying can be typified in two ways: direct and indirect. Direct bullying involves open and physical attacks on the victim while indirect bullying can take the form of social isolation or exclusion from groups (Olweus 1993). It is the assertion of this dissertation

that the type of bullying experienced by students will influence the types of behavior they exhibit.

School bullying made its venture into the research world with the 1978 publication of *Aggression in the schools: Bullies and whipping boys* by Scandinavian researcher, Dan Olweus. Since that time, research on bullying has spread to other western European countries, Australia, Japan, and the United States (Smith, Morita, Junger-Tas, Olweus, Catalano, and Slee 1999). To date, however, there is no universally accepted definition of bullying. Olweus (1993, p. 9-10) suggests a student is being bullied when three criteria are met, that is; (1) bullying is aggressive behavior or intentional harmdoing (2) which is carried out repeatedly and over time (3) in an interpersonal relationship characterized by an imbalance of power. Bullying does not occur in the occasional act of aggression and does not include friendly teasing (where there is no intent to harm).

In addition, the literature that attempts to define bullying suggests it can take several forms including overt and covert actions. Olweus draws the distinction between “direct bullying” or open and physical attacks on the victim, and “indirect bullying” in the form of social isolation and exclusion from groups, and argues that these types of bullying are important when understanding and defining bullying. While these labels of direct and indirect have since been detailed and redefined in the bullying literature (Feshbach 1969, Crick and Grotpeter 1995, Cairns, Cairns, Neckerman, Ferguson, and Garipey 1989), they still serve an important purpose in characterizing the types of bullying a victim may experience and are consequently examined in this dissertation.

As for the prevalence of bullying behavior, estimates are similarly diverse. The percentage of school students reported to be victims of bullying range from 10 percent to 90 percent in the United States (Perry et al. 1988, Hoover et al. 1992). Nansel, et al. (2001) found that nearly 30 percent of students reported being involved in bullying during their current school term. In their 1998 survey of students in grades 6 through 10, Nansel and her colleagues found that 13 percent of students reported bullying others, 11 percent reported being the victim of bullying, and 6 percent reported involvement as both a bully and a victim. This translates into almost 4 million perpetrators and 3 million victims of student bullying in this country in 1998. Most recently, DeVoe and Kaffenberger (2005) found that 14 percent of students ages 12 through 18 reported being victims of bullying at school in the 2001 School Crime Supplement. Three percent had reported being the victim of direct or physical bullying—that someone had picked on them a lot or tried to make them do something they did not want to do. Seven percent reported only indirect or emotional bullying—that other students had rejected them or excluded them from activities.

The empirical study of bullying victims has primarily been concerned with their negative emotional consequences (Hawker and Boulton 2000) or on emotional coping responses (Kristensen and Smith 2003), while few studies examine the behavioral or protective responses of bullying victims. Coping responses most often employed by bullying victims include ignoring the bully, telling the bully to stop, asking an adult for help, or fighting back (Smith, Shu and Madsen 2001). Depression, low self-esteem, and high levels of anxiety are reported by most victims of bullying, both in the short-

and long-term after the bullying event (Seals and Young 2003, Juvonen, Graham, and Schuster 2003).

When behavioral responses are exhibited by victims, they most often take the form of avoidance, impaired social functioning, or self-imposed injury. Again, few studies have examined the use of strategies that are self-protective in nature and fewer have been able to establish relationships beyond temporal. Smokowski and Kopasz (2005) reviewed the literature related to victim behaviors and found that victims of bullying often report chronic absenteeism, poor grades, increased social apprehension, loneliness, feelings of abandonment, and suicide ideation (p. 104). At its worst, research suggests victims may turn to behaviors that victimize the entire school. For example, Anderson and colleagues recently found that the perpetrators of school shootings in the United States were twice as likely as the victims to have been bullied by peers at school (Anderson, Kaufman, Simon, Barrios, Paulozzi, and Ryan 2001). A 2002 U.S. Secret Service analysis of targeted school violence found that 71 percent of school shootings (between 1974 and 2000) were perpetrated by students who reported being chronically bullied (Vossekuil, Fein, Reddy, Borum, and Modzeleski 2002).

In one of the few studies of students' use of protective behaviors in the university setting, Tewksbury and Mustaine examined the factors related to college students' use of self-protective devices (such as guns, knives, mace, clubs or body alarms). They found that college students' use of self-protective devices was related to lifestyle characteristics such as employment status, mode of transportation, frequency of associations with strangers, living in disordered neighborhoods, crack use, and perceptions of the safety of their homes (2003). Further, when examining the ways

potential victims guard themselves against crime, Tewsbury and Mustaine found that such lifestyle characteristics outweighed the importance of demographics and perceptions of crime in determining the use of self-protective measures.

In Nansel, Overpeck, Haynie, Ruan, and Scheidt's (2003) analysis of data from U.S. students in grades 6 through 10, the researchers found that both bullies and victims were more likely to carry weapons, engage in fighting behavior and to be injured in a fight. Specifically, youth who were bullied both at and away from school were three times more likely to carry a weapon. Weapon carrying in general and weapon carrying at school were associated with bullying victimization at school as well. Those most likely to carry a weapon were those identified by Nansel et al. as bully-victims, or those individuals who were bullied and also reported bullying others. Nansel et al. concludes that there are consistent relationships between bullying and violent behavior.

Similarly, this dissertation seeks to examine the self-protective behaviors adopted by victims bullying in elementary and secondary schools in the United States. Further, this dissertation examines whether self-protection is more likely when a school is perceived to be an incapable guardian, as indicated by student perceptions of security measures and rule enforcement. Finally, whether the adoption of these behaviors varies by type of bullying victimization endured, direct or indirect, is explored. A few areas of criminological study are used to guide the research questions; they include self-help ideology and routine activity theory.

While Miethe (1995) summarizes the primary types of behavior a crime victim might employ, including avoidance, self-protection, and enacting lifestyle changes, few criminological theories speculate as to why victims adopt self-protective behaviors.

Logical justifications for victim self-protective behavior can be based on the propositions of self-help ideology and routine activity theory as well as the potential impact of student perceptions of school guardianship; under which victims might be more likely to adopt self-protective measures.

Self-help ideology suggests that a possible impetus for self-protection is the perception that formal legal mechanisms of social control are ineffective. Black's (1980) description of self-help ideology informs this investigation by suggesting that victims will be more likely to adopt self-protective measures when the only form of social control, the school, is not perceived by the bullying victim to be effective. Measures of the school's effectiveness at guarding students against victimization, and more specifically, bullying are measured here by the presence of school security measures and perceived rule effectiveness and enforcement. This rationale for self-guardianship, and its increased likelihood in the absence of formal guardianship is also supported by routine activity theory and models of target selection.

Routine activity theory suggests that crime results when a motivated offender, desirable target, and lack of capable guardian converge in place and time (Cohen and Felson 1979). Further, routine activity theory specifies conditions under which a target may be more desirable than others. Specifically, offenders may consider the value of the target, the ease of the offense, the visibility or convenience of the crime as well as access.

Drawing from such specifications of target selection, one can infer that victims may try to manipulate any one of these characteristics of desirability or convenience in trying to reduce their likelihood of victimization. In this dissertation it is suggested

victims may try to reduce their potential “yield” as a crime victim by increasing the risk associated with the bullying act (through weapon carrying or fighting) or by decreasing their potential exposure and accessibility to the bully (through avoidance or truancy).

Finally, both routine activity theory and self-help ideology refer to the context of victimization. The context of interest here is the school setting. Bullying can be considered as an interaction between the student and the contexts or systems of which the student is a part (Swearer and Espelage 2004). It is inferred in both theories that when formal institutional social control, if adopting Black’s nomenclature, or school guardianship, if adopting the tripartite requirements of routine activity theory, is diminished or ineffective, self-protective strategies will be employed in order to decrease the likelihood of a crime event. The self-protective strategies under investigation here include avoidance behaviors, truancy, weapon-carrying and fighting. Consistent with routine activity theory, a victim might avoid certain areas of school in order to minimize their potential contact with a bully. Similarly, truancy limits both exposure and accessibility—essentially rendering the bully incapable of targeting a victim who is not present at school. Target selection processes within routine activity theory also suggests that a student who fights back or carries a weapon may be perceived as higher risk or well-guarded, and thus a less attractive victim. Finally, self-help ideology suggests victims choose strategies of self-protection when they do not perceive the formal mechanisms to control crime (measured in this case by the presence of school security measures and rule enforcement) as effective. Similarly, explanations of victim self-protective behavior based in routine activity theory would suggest that

when a victim perceived a lack of formal (school-level) guardianship, he might employ self-guardianship measures.

It is argued here that the effectiveness of formal institutional control/guardianship is communicated to students by two specific indicators, school rule clarity, communication, and consistency of enforcement, and security measures such as security guards, hallway monitors, etc. Evidence supporting these measures as indicators of school guardianship is detailed in the literature review.

Finally, it is proposed that self-protective strategies adopted by victim may not only vary by victim characteristic, but also by the type of bullying they endure. As Hunter and Boyle suggest, “different types of bullying may themselves influence the way in which victims react” (2002, p. 324). Victims of indirect, or emotional bullying, may similarly choose less direct forms of self-protection, such as avoidance or truancy, while victims of direct physical bullying may escalate their protective behaviors and engage in fights and weapon-carrying. This dissertation argues that indirectly bullied students would adopt avoidance or truancy behaviors in order to self-protect, rather than more physical means of retaliation. In contrast, physically bullied victims may be more likely to adopt more assertive responses, such as weapon carrying or fighting. Justification for this proposed relationship can also be found in the following literature on gender, victim characteristics, and bullying victimization.

In the current investigation, bullying reported by students ages 12 through 18 in the 2003 School Crime Supplement to the National Crime Victimization Survey is examined as it relates to victim behaviors such as weapon carrying, fighting, avoidance behaviors, and truancy. Further analysis examines whether students’ perceptions of

their school's effectiveness at rule communication, consistency, and enforcement as well as presence of security measures conditions such victim behaviors. It is hypothesized that students who are bullied will be more likely than their non-bullied counterparts to use defensive or self-protective behaviors. It is also hypothesized that the use of such protective behaviors will vary according to students' perceptions of guardianship at their schools, as measured by rule enforcement and security measures and that those who are directly bullied will respond with different mechanisms than students who are victims of indirect bullying. Victims of direct and indirect bullying are also compared to students who were victims of both forms of bullying victimization.

Chapter Two presents a review of the literature relevant to these hypotheses and Chapter Three provides information on the dataset, measures, and statistical analysis to be used in this research. Chapter Four presents the results of the statistical analysis while Chapter Five presents a discussion of conclusions, limitations of the findings, and implications for theory and policy makers.

Chapter 2: Literature Review

Bullying research has its roots in large-scale studies conducted by Dan Olweus and his colleagues in Scandinavian countries beginning in the 1970s (Olweus 1978, 1979). From Olweus' first book *Aggression in the schools: Bullies and whipping boys* (1978), a wealth of international research followed, from Norway, Sweden, and Finland to Japan and England. While these international studies have led the way for American researchers, Swearer and Espelage (2004) argue that international data on school bullying cannot be neatly fit to the unique context of the United States' school system. Further, it has taken a few tragic incidents including suicides and homicides at school and the media attention that followed to prompt systematic bullying research in the United States.

Stein (2001) articulates the differences that should be considered when examining international research on bullying. First, many of the countries that have examined bullying in detail have populations that are not as heterogeneous as that of the United States. Second, crime and violence in general are much less of a problem in other countries than in the U.S., such that meanings or interpretations of this research may not be directly translatable into policy or programs directed at U.S. schools and youth. Further, the education system in the U.S. is dynamic and locally controlled, unlike national systems implemented in other countries across the world, presenting a unique context for identifying, addressing, and preventing bullying behavior. There is a clear need then, for further research on bullying in the U.S. using nationally-representative data to investigate both its prevalence and correlates.

This chapter will begin by detailing the literature regarding the definition of bullying, the prevalence of bullying in the United States, characteristics of bullying victims, and associated consequences of such victimization. It will be shown that bullying has been linked to serious negative psychological, social, and behavioral outcomes for its victims. In addition, elements of criminological study will be reviewed that provide a rationale for the adoption of victim self-protective behaviors, as proposed in the first two hypotheses. These include self-help ideology and routine activity theory. To provide additional justification for the second hypothesis, a discussion of the role of school security and school rules as indicators of school guardianship is provided. The chapter will then conclude with a review the literature on the different types of victims and how these typologies may influence protective behaviors, as explored in the final hypothesis.

What is bullying? Definitions and concepts

To date, there is no universally accepted definition of bullying. Not surprisingly, the definitions and concepts for bullying research are largely based on Olweus' work. In his most recent conceptualization, Olweus suggests a student is being bullied when "he or she is exposed repeatedly, over time, to negative actions on the part of one or more other students" (1993 p. 9). He goes on to clarify that a negative action occurs when someone intentionally inflicts injury or discomfort on another. This injury or discomfort can be the result of words (verbal abuse), such as taunting, teasing or threatening, or physical contact such as hitting, pushing, kicking or punching. It is also possible to carry out negative actions without the use of words or contact through facial expressions, gestures, or social exclusion from a group.

Other critical elements to Olweus' definition include the concept of repeated behavior occurring over time, such that a single incident or occasional slight can not be considered bullying. Also stressed by Olweus is the concept of "power." Bullying also requires an imbalance in strength among the parties involved. This imbalance can be achieved through psychological power (such as popularity or perceived intellectual power), physical strength, or sheer numbers (three students vs. one student).

Rigby (2002) offers a more general definition of bullying as a "systematic abuse of power." Smokowski and Kopasz (2005) assert that regardless of the semantics of a definition, bullying is "marked by intense intimidation that creates a pattern of humiliation, abuse, and fear for the victim." The focus of this dissertation is school bullying, and more specifically, student bullying. While there exists teacher-pupil bullying (Terry 1998) and teacher-teacher bullying (also known as workplace bullying), the focus here is on student victims.

It is also noteworthy that several considerations have been made in the analysis in order to guard against the inclusion of victimizations that are not strictly bullying. To clarify, bullying represents a specific segment of behaviors on a spectrum of aggressive behaviors. At the lower end, these aggressive behaviors may simply include rudeness, friendly teasing, or bad-manners, while at the upper end, these aggressive behaviors may be criminally prosecutable. To guard against the generalization of lower end aggression as bullying behavior, this dissertation is dependent upon the international, collaborative effort of Smith et al. (2002), detailed below, who found that students in their 8-year-old sample were able to differentiate friendly teasing and non-aggressive behavior from aggressive behavior that included specific acts of bullying,

regardless of country of origin. Further, the ability to differentiate between different types of aggression (including physical aggression, physical bullying, verbal aggression, and social exclusion) shown in various cartoons was exhibited by members of their 14-year-old sample. Since this dissertation relies on a sample of 12 through 18 year-olds, the misspecification of rude or noxious behavior as bullying should be negligible. At the other end of the spectrum, more violent bullying may be reported also as a criminal victimization. To guard against this misspecification, criminal victimization is included as a control variable in the analysis. More detail on these criminal victimization variables are provided in the methodology chapter, Chapter Three.

The prevalence of bullying

International estimates of bullying vary greatly among countries, with anywhere from 10 to 90 percent of students reporting bullying at school (Smith et al. 1999). In an early study of bullying in the United States, Perry et al. (1988) reported that approximately 10 percent of 3rd - through 6th-grade students in a middle-class community reported chronic victimization. Hoover et al. (1992) found that 88 percent of students in Midwestern towns reported that they had observed bullying and 77 percent reported being the victim of bullying over their years in school. Limber et al. (1997) reported that almost a quarter of 4th- through 6th -graders reported bullying another student in the 3 months prior to the study.

In one of the only national surveys of bullying in the United States, Nansel et al. (2001), found that nearly 30 percent of students reported being involved in bullying during the current term as either victim or bully. Using data collected as part of a 1998

World Health Organization survey of students in grades 6 through 10, Nansel et al. found that 13 percent of students in grades 6 through 10 reported bullying others, 11 percent reported being the victim of bullying, and 6 percent reported involvement as both a bully and victim. This translates into almost 4 million perpetrators and 3 million victims of student bullying in the U.S. in 1998. As reported from the 2001 School Crime Supplement data collection, among students aged 12 through 18, DeVoe and Kaffenberger (2005) found that approximately 14 percent of students reported that they were victims of bullying at school. Three percent of sampled students reported direct bullying—that someone had picked on them a lot or tried to make them do something they did not want to do, and 7 percent reported indirect bullying—that other students had rejected them or excluded them from activities.

The Nansel study found that middle school (6th through 8th grade) students were more likely to report bullying than high school students and boys were more likely to be involved in bullying than girls. Hispanic students reported higher involvement in bullying others and Black students were less likely to report falling victim to bullying. Bullying did not vary by urbanicity, except that fewer suburban youth reported being perpetrators and more rural youth reported ever being bullied when compared to youth in other areas.

DeVoe and Kaffenberger (2005) similarly found an inverse relationship between the total percentage of students who reported bullying and grade level. Specifically, 24 percent of 6th-graders reported being bullied at school, compared to 7 percent of 12th-graders. The younger students were also more likely than the older students to report both direct and indirect bullying. No differences were reported

between boys and girls reports of bullying, direct or indirect. When looking at victims of both types, however, boys were more likely to report being victims of both direct and indirect bullying (5 percent of boys vs. 4 percent of girls). White students were more likely than Black students and students of other, non-Hispanic races to be bullied (15 percent of White students vs. 12 percent of Black students and 11 percent of students of other, non-Hispanic races). When looking at direct and indirect bullying behaviors, White and Black students (7 percent each) reported more indirect bullying than Hispanics (4 percent). In addition, residential urbanicity and household income were not related to student reports of bullying in the DeVoe and Kaffenberger analysis of the 2001 SCS data.

Olweus' (1993) research in Norway and Sweden also suggests that bullying declines as grade level increases. Whether, however, this inverse relationship is a true finding or an artifact of the adoption of more covert forms of bullying as students age has not yet been determined (Salmiavalli 2002). Olweus has also confirmed that boys are more often victims and in particular, more often perpetrators, of bullying than girls (1993, p. 19). Olweus also found that urbanicity is not a factor in student reports of bullying in Scandanavian countries. Further, Olweus' research suggests that class and school size do not play a role in the prevalence of bullying at school.

Characterizing victims

There is general agreement that bullying victims share many characteristics with victims of juvenile crime. Moreover, there are well-documented consequences of falling victim to bullying behavior. This section will provide a summary of the

characteristics of victims in schools and examine the literature related to the consequences of being the victim of bullying at school.

Who are the victims of bullying?

Perry, Williard, and Perry (1990) articulated the importance of identifying the traits of bullied children. The researchers acknowledged that it is often a small, select group of individuals who are consistently victimized. These victims often exhibit similar behavior qualities such as being socially isolated, having low self-esteem, having reaction patterns that are rewarding to aggressors, and being physically weak. Research related to such victim characteristics is detailed below.

Victims of bullying have few friends. Eslea and his colleagues (2003) used data from nine surveys in seven countries to examine friendships among victims of bullying. Data were collected from students in China, England, Ireland, Italy, Japan, Portugal, and Spain on measures of the student's enjoyment of playtime, isolation at playtime, having friends, and feeling well-liked. A summary of the findings states that "victims were significantly worse off [than bullies and neutrals] on all the measures in all the samples where a difference was found" (p. 78). In a comparison study of victims and non-victims of school violence, Furlong and Chung (1995) found that victims were more likely to be male, to perceive school as unsafe, to be distrustful of the school, and to have poorer social support networks with peers and teachers. Perry et al. (1988) also found that victimized students were not likely to be accepted by peers and were more likely to be rejected by other students. The researchers found that a small group of children is consistently victimized by peers. Their longitudinal study of children found that about 10 percent of children were chronically victimized and that these children

were more likely to be rejected by peers. The authors conclude with the suggestion that the propensity to be victimized is stable by middle school. The research of Perry et al. (1990) demonstrated that victims' peers were less empathetic and devalued victims' discomfort more than that of other peers, making it more unlikely that the peers would intervene or see the victimization as problematic.

Pellegrini, Bartini, and Brooks (1999) found that victims were not only less likely to have friends and be unpopular, but also suggest that friend groups serve as a protective factor against victimization. Hodges and Perry (1996) also found an interaction between victimization and peers, showing that peers may be a protective factor against bullying. Their study of students in grades 3 through 7 found that individual behavioral problems were more strongly related to victimization when the children had few friends or when those friends had similar behavioral problems, and were thus unable to serve as a protective mechanism against bullies. Interestingly, Perren and Hornung (2005) found that Swedish victims of bullying were also likely to report impaired peer relations than non-victims, whereas bullies were more likely to report impaired familial relations.

Victims of bullying also have poor social skills. Fox and Boulton (2005) examined self-, peer-, and teacher-report data from 330 students between 9 and 11 years old. Results showed that the social skills of victims were lacking when compared to non-victims. Specifically, results showed that victims exhibited "passive" social skill problems such as being non-assertive, responding to attackers with signs of distress, and being withdrawn or solitary in their behavior. In addition, the teacher-report data showed that victims were also described as "provocative," exhibiting

behaviors such as responding aggressively and annoying or provoking other children. Juvonen et al. (2003) examined self-, peer-, and teacher- reports of psychological and social adjustment problems among approximately 2,000 minority 6th-grade students in low socio-economic urban communities. Results showed that victims were more likely to self-report loneliness and their peers and teachers were more likely to report that the victim had low-social status and decreased popularity when compared to non-victims.

Whether a precursor or consequence of bullying, Olweus suggests low self-esteem is typical of victims of bullying (1993). Kokkinos and Panayiotou (2004) assumed a psychological approach when examining the predictive behaviors of bullies, victims, and bully/victims. Victim data showed they suffer from low self-esteem. In 1988, Egan and Perry examined the relationship between bullying and self-esteem in a longitudinal study of 200 U.S. youth. Analysis of questionnaires on self-worth from 189 students in grades 3 through 7 was conducted and results pre- and post-victimization were examined. Findings show low self-worth is present in victims before and after the victimization.

It is well documented that victims also have reaction patterns including crying behaviors and withdrawal that are often rewarding to bullies. Further, aggressive and non-aggressive victims may respond differently to bullying. Victims are typically characterized in two ways: passive or aggressive (Olweus 1993). Passive or submissive victims react to bullying in ways that are rewarding to the bully, such as by crying or withdrawal. Their behavior signals to others that they are insecure and will not retaliate if victimized. Aggressive or provocative victims, on the other hand, often behave in ways that cause irritation or stress to their peers.

In 1993, Schwartz, Dodge, and Coie found that children who were chronically victimized showed nonassertive reaction patterns. That is, the data provided evidence that submissiveness was consistently a characteristic of victims in boys' play groups. In Finland, Salmivalli, Kaukiainen, and Lagerspetz (1996) found that teenage female victims who were helpless and counter aggressive and males who were counter aggressive were more likely to be bullied. Alternatively, bullying seemed to stop or decrease in frequency for females who were not considered helpless and for males who were not identified as counter aggressive. The authors concluded that 13-year old Finnish students saw nonchalance as the most constructive type of response to bullying.

Wilton, Craig, and Pepler (2000) suggest that victims of bullying lack essential skills necessary for regulating emotions. The study describes passive victims as withdrawn, avoidant, and ineffectual at conflict resolution. Aggressive victims are antagonistic and often counter attack against bullies. Aggressive victims also are disruptive, argumentative, and attempt to enter unwelcoming peer groups. These styles and skills have serious implications for initial and continued victimization by bullies.

Contrary research shows that victims are not shown to be different from non-bullied students on all counts. Warden and Mackinnon (2003) investigated the link between bullies and victims and their social behavior, socio-metric status, ability to empathize and problem solve. They found that while victims were not as popular as non-victims, they were similar to non-bullied students in measures of empathy and problem solving.

Finally, bullying has been linked to stature and physical presence. Olweus (1978) found that male victims of bullying were often much smaller in stature and were

physically weaker than bullies. Janssen, Craig, Boyce, and Pickett (2004) also found a link between obesity and bullying, with students with a body-mass-index score indicating obesity were significantly more likely to report being the victim of both relational and physical bullying than non-obese children. In sum, victims are characterized by *anxious and submissive reaction patterns combined (in the case of boys) with physical weakness* (Olweus 1993, p. 32).

What are the consequences of being a victim?

Victims respond in a variety of different ways to their experience with criminal victimization. As discussed by Miethe (1995) there are three general categories of individual reactive behaviors to crime victimization. The first includes avoidance behavior. As suggested by Miethe, “one of the most basic responses to crime and fear of it is to avoid particular places at particular times and to avoid particular types of individuals” (1995, p. 21). While avoidance behavior involves withdrawal and the reduction of the likelihood of a criminal act, some crime victims take protective actions should victimization occur again. That is, they adopt various target-hardening and situational crime prevention measures, such as owning weapons or taking self-defense courses. The final reactive behavior described by Miethe involves changes in lifestyle, specifically, the “who, what, when, and where of everyday life” (Miethe 1995, p. 25). Changes in the types of activities engaged in, where they are located, and who they are with may change subtly in response to victimization. Such lifestyle adjustments may be incremental, such as taking a different route to a destination, or drastic, such as a change in workplace or residence.

Much of the research that examines the consequences of being victimized by bullies focuses on the various emotional and physical coping strategies employed by victims. Other literature focuses specifically on the negative emotional outcomes (such as depression, anxiety, and low self-esteem) that result from bullying victimization as well as behavioral reactions to bullying such as truancy and avoidance behaviors, suicide, and revenge or retaliation. This section will conclude with a review of the literature on the reactive behaviors of bullying victims. The bulk of the research included here is cross-sectional in nature, that is, it is difficult to determine whether the consequences and coping strategies discussed preceded, co-occurred, or followed the bullying victimization. Where temporal ordering is controlled, methodologies are discussed accordingly, however only one study (Olweus 1993) attempts to statistically control for variables that may introduce a spurious association between coping strategies and bullying. That is, while temporal or cross-sectional relationships are well-established in this research, the causal link between bullying and these behaviors is still uncertain.

The psychological literature on victims' coping mechanisms is best summarized by Kochenderfer and Ladd, who in 1997 used a longitudinal design to examine the coping strategies of kindergarten victims of bullying in the U.S. They found that five- and six-year old children who were perceived by their peers to fight back or walk away in response to provocation were more likely to be bullied than those children who were perceived to have a friend help them or to tell a teacher when they were bullied.

Smith et al. (2001) used cross-sectional data from Britain to determine the most commonly identified coping strategies of 10- to 14-year old victims. The most

commonly reported strategies (in order of prevalence) included ignoring the bully, telling the bully to stop, asking an adult for help, and fighting back. The least-used strategies were running away, asking friends for help, and crying. Students who coped by crying, running away, or asking for help, were shown to be bullied more often than those victims who used the other strategies.

Olafsen and Viemero (2000) and Bijttebeir and Vertommen (1998) not only examined 10- to 12-year olds' and 9- to 13-year olds' response strategies to bullying, respectively, but they also examined the types of bullying. Specifically, Olafsen and Viermero found that female victims of indirect bullying when compared with victims of direct bullying relied on more self destructive coping strategies (such as smoking cigarettes, thinking about suicide, hurting oneself, and doing something dangerous). Bijttebeir and Vertommen found that male victims of direct and indirect bullying, as well as female victims of direct bullying were more likely than their non-bullied counterparts to internalize as a coping strategy. Kristensen and Smith (2003), however, found no interaction between victim/bully status and coping style. In their Danish study of children ages 10-15, the authors concluded that children are not bullied because of their coping styles.

Research has also examined the short- and long-term emotional consequences of bullying victimization, such as low self-esteem, depression, and anxiety. Rigby (2003) reviewed the literature related to diminished psychological well-being and bullying. He described several studies with varying methods that similarly suggest anxiety, depression, and emotional distress are significantly related to bullying victimization. In sum, Rigby highlights the conclusion of Bond et al. (2001) that “a

history of victimization is a strong predictor of the onset of self-reported symptoms of anxiety or depression and remains so after adjustment for other measures of social relations” (Bond, Carlin, Thomas, Ruin, and Patton 2001, p. 483).

Seals and Young (2003) investigated the relationship between bullying and depression and self-esteem in a sample of 7th- and 8th-grade public school students. Using survey questionnaires that investigated roles in bullying (victim, bully, or prosocial), self-esteem, and depression, the researchers found that the three groups did not vary in their levels of self-esteem. On the depression measures, however, both bullies and victims had higher depression scores than their pro-social counterparts. These findings confirmed the earlier works of Slee (1995) and Duncan (1999) who found that victims were more likely to experience depression than bullies and non-victims and were slightly more likely to experience depression than bullies themselves.

Juvonen et al. (2003) examined self-, peer-, and teacher- reports of psychological and social adjustment problems among approximately 2,000 minority 6th grade students in low socio-economic urban communities. Results showed that victims were more likely to self-report depression and social anxiety and victims’ peers and teachers were more likely to report the victim exhibited school avoidance behaviors, conduct problems, and school disengagement when compared to both victims and non-victims. Junvonen, Nishina, and Graham (2000) examined a group of 12- to 15-year old students in the United States who were identified as stable victims, new victims, old victims, and stable non-victims of bullying. The researchers found that stable victims and new victims scored higher on measures of loneliness, self-worth, and depression than did old victims and stable non-victims. Smith, Talamelli, Cowie, Naylor, and

Chauhan (2004) similarly investigated the circumstances associated with entering and escaping victim-status in a group of 13- to 16-year old students in the United Kingdom. Continuing victims in this sample were found to dislike school when compared to others and to miss school more often.

Egan and Perry (1998) examined the relationship between bullying and self-esteem in a longitudinal study of 200 U.S. youth. Analysis of questionnaires on self-worth from 189 students in grades 3 through 7 was conducted and results pre- and post-victimization were examined. Findings show that low self-worth was both a precursor and a consequence to being victimized. Rigby and Slee (2001) also found that victims of bullying in Australian secondary schools often reported unhappiness at school, but not a particular dislike of school. Olweus (1992, as cited in Rigby 2003) found in a small study (n=15) of Norwegian students that he could trace, through advanced statistical methods, that loss of self-esteem was a byproduct of victimization at school. In contrast, Salmon, James, and Smith (1998) examined the relationship between victimization and self-esteem in British children aged 12 to 17 and found no relationship between low-self esteem and victimization. The multivariate analysis suggests that low self-esteem may not be the direct result of bullying, but may be a byproduct of anxiety and/or depression.

Baldry (2004) examined the impact of specific types of bullying (direct and indirect) on the mental and physical health of Italian youth aged 11 to 15. Using a self-administered questionnaire, findings show that being the victim of indirect bullying was a strong predictor for social withdrawal, somatic complaints and anxiety and depression. Direct bullying predicted somatic complaints, anxiety, and depression—both of these

findings were particularly more likely in girls. In a study of almost 5,000 children ages 9 through 13 in the Netherlands, Van der Wal, de Wit, and Hirasing, examined the likelihood of depression and suicide ideation among victims of direct and indirect bullying (van der Wal, de Wit, and Hirasing 2003). Both outcomes were significantly more likely among victims, while victims of indirect bullying, regardless of gender, were the most likely group to be depressed and think of suicide. Controlling for demographic variables, the results held for females only. Kim, Koh, and Leventhal (2005) found similar results in a study of Japanese middle-school students. They reported that students who were involved in bullying as both victims and perpetrators were more likely to report suicide ideation as well as actual suicidal (self-injurious) behaviors. The victim-only participants were also more likely to report suicide ideation, but the results were not significant.

Kumpulainen, Rasanen, and Puura (2002) found that attention-deficit disorder was common among victims and that 10 percent of victims had been diagnosed with depressive disorder. Tritt and Duncan (1997) asked 200 undergraduate students to complete questionnaires related to past bullying victimization and current psychosocial function. Results indicated that student victims were more likely to report loneliness than those who were not victimized as children. Gilmartin's (1987) results from a retrospective study of 400 men in the U.S. suggested that victimization was significantly associated with shyness and fear of intimacy, precluding these child victims from healthy adult relationships. This finding was later confirmed by Rigby in an Australian study (2003).

Avoidance and escape behaviors are often reported by victims of bullying. One third of continuing victims in one study reported being truant from school because of bullying (Smith et al. 2004). Smokowski and Kopasz (2005) review the literature related to truancy and avoidance of victims and suggest that “victims of bullying often suffer from one or more of the following: chronic absenteeism, reduced academic performance, increased apprehension, loneliness, feelings of abandonment, and suicidal ideation (p. 104). Foltz-Gray (1996) found that 7 percent of 8th-grade students in the U.S. stayed home from school at least one day a month because of bullying. Berthold and Hoover (2000) also report that 4th through 6th grade victims were more likely to report a desire to stay home from school in order to guarantee their physical safety from bullies. Buhs and Ladd’s (2001) longitudinal study of Kindergarten children showed that rejected children identified at Time 1 were more likely to experience negative peer treatment, more likely to show decreases in classroom participation, and more likely to report loneliness, to express a desire to avoid school, and to perform less well on achievement measures at Time 2. The consequence of this type of reaction to bullying on a student’s likelihood of academic success is understandable. Students cannot learn in an environment in which they are threatened or forced to avoid because of fearfulness. Academic success and favorable attitudes toward school have been shown to be compromised among victims of bullying (Eisenberg, Neumark-Sztainer, and Perry 2003).

Salmiavalli, Karhunen, and Lagerspetz (1996) studied victim responses of Finnish students ages 12 to 13. Using peer- and self-evaluations, victims were found to react in three general ways: to be nonchalant and ignore the bullying, to be helpless, or

to be counter aggressive. The type of response adopted for each identified victim was largely congruent among individual and peer reports. Children perceived that bullying often stopped or diminished when girls were not helpless and when boys were nonchalant and did not counter aggress against the bully.

Taken to an extreme, these psychological stressors can ultimately lead to suicide ideation or the act of suicide. Carney (2000) suggests that when victims internalize bullying for long periods of time, suicide may seem like to only option. Much of the funding for bullying research in Norway was spawned as a result of three teenage boys committing suicide as a result of being severely bullied by peers in 1982 (Olweus 1993). Marr and Field (2001, as cited in Rigby 2003) present numerous case studies in which a student's suicide is the result of relentless bullying, as evidenced by suicide notes. Kaltiala-Heino and her colleagues (1999) compared the likelihood of depression and suicide ideation among bullies, victims, and bully/victims. They found bully/victims to be at highest risk for both outcomes and victims to be at the second highest risk for depression and least likely group to report suicide ideation.

Tragically, bullying can also jeopardize the safety of an entire school campus. Being bullied by others, or being perceived as a victim has consistently been linked with weapon carrying and other violent behavior. Wilcox and Clayton (2001) examined individual- and school-based predictors of weapon carrying and found that the likelihood of weapon carrying is affected not only by individuals, but also by the schools they attend. When looking at individual characteristics alone, results indicate that fear was not a specific predictor of weapon-carrying, but being threatened at school and having property stolen both significantly predicted 6th- through 12th-grade students'

likelihood of weapon carrying. In a study of gun ownership conducted by researchers in 2000, 36 percent of Southern students reported owning one or more guns (Cunningham, Henggeler, Limber, Melton, and Nation 2000). While the results from the this study to do not show a link between bullying victimization and gun ownership, of the pistol or handgun owners, 27 percent of sampled elementary or middle school students reported their reason for handgun ownership as: “in order to feel safe.”

Analysis of World Health Organization data from U.S. students in grades 6 through 10, showed that both bullies and victims were more likely to carry weapons, engage in fighting behavior and to be injured in a fight (Nansel et al. 2003). Specifically, youth who were bullied both at and away from school were three times more likely to carry a weapon. Weapon carrying in general and weapon carrying on school property were associated with school bullying victimization as well. Those most likely to carry a weapon were those identified by Nansel as bully-victims, or those individuals who were bullied and also reported bullying others. Nansel concludes that there are consistent relationships between bullying and violent behavior such as weapon carrying and fighting.

Studies by Durant, Getts, Cadenhead, Emans and Wood (1995) found that weapon carrying is more likely among youth who perceive a high level of crime in their neighborhoods, exposure to violence, fear, and previous victimization. May (1999) assessed the fear of criminal victimization on student weapon carrying while controlling for other theoretical variables of interest, including measures of social bonding and differential association. His results show that when controlling for bonding and learning variables, fear of victimization was still significantly related to

student weapon carrying. The application of such study to the school setting and the consideration of bullying as an additional variable of interest is certainly justified by these investigations.

While not specific to bullying victimization, Tewksbury and Mustaine (2003) examined the self-reported protective behaviors of college students during the first 3 weeks of a school term. The representative sample reported using a variety of self-protective measures against criminal victimization including: guns, mace, clubs, body alarms, and knives. The researchers found that only two demographic characteristics, living in rural areas and employment status, were predictive of the use of self-protective measures. More importantly, lifestyle measures such as whether they walk to leisure activities, association with strangers, disorderly neighborhoods, crack use, and perceptions of safety were predictive of individuals' use of self-protection. The researchers concluded that individual efforts at "guardianship" through self-protective behaviors are closely correlated with variables measuring proximity and exposure to offenders—tying together the three central tenets of routine activity theory, to be discussed later.

An examination of school shootings in the United States shows that the perpetrators were twice as likely as the victims to have been bullied by peers at school (Anderson et al. 2001). For example, a recent study of school shootings (Leary et al. 2003) found that 12 of 15 incidents that occurred between January, 1995 and March, 2001 involved shooters who were the victims of malicious teasing or bullying at school, among other factors. Results show that "acute or chronic rejection—in the form of ostracism, bullying, and/or romantic rejection—was present in all but two of the

incidents” (p.202). A 2002 U.S. Secret Service analysis of targeted school violence found that 71 percent of school shootings (between 1974 and 2000) were perpetrated by students who reported being chronically bullied (Vossekuil et al. 2002). In general, however, victims have average or below-average levels of criminal behavior as adults (Olweus 1993). And, on the contrary, Olafsen and Viemero (2000) found no differences between boy victims, bullies, and nonvictims in their likelihood to resort to aggression or self-destruction in response to bullying. Girl victims of indirect bullying were more likely to use “self-destructive” strategies, such as smoking cigarettes, thinking about suicide, hurting themselves, or doing something dangerous when compared to victims of direct bullying.

Hypothesis One

Based on the above literature, one could rightly speculate that student victims of bullying may be more likely to exhibit specific types of behaviors than non-bullied students. Certainly, behaviors that can be justified as self-protective would be more likely among bullied students, despite the fact that these behaviors may further endanger school climate or safety. Hypothesis One of this dissertation suggests:

Student victims of bullying are more likely than non-bullied students to use protective behaviors such as weapon carrying, fighting, avoidance, and truancy.

The following literature will provide additional rationale for the adoption of behaviors that are self-protective in nature and explore the relationship between these behaviors and the formal mechanisms of social control and/or guardianship proposed in Hypothesis Two.

Foundations in criminology

Little criminological theory explicitly articulates either the rationale or the role of victims' self-protective behavior in criminal acts. As is suggested by Tark and Kleck (2004), while theoretical guidance offers some rationale for self-protective behavior, only lifestyle/exposure (Hindelang, Gottfredson, and Garafalo 1978) theory articulates risk factors for criminal victimization as well as behaviors that may exacerbate or coincide with victimization (including self-protection). One can additionally infer both the impetus and the impact of victim's self-protective behavior on bullying from other foundations in criminological study. These include both self-help ideology (Black 1980) and routine activity theory (Cohen and Felson (1979). Self-help ideology explains victim behavior from a legal perspective; that is, when the victim perceives the formal social control mechanisms of crime to be absent or ineffective, he takes defensive measures into his own hands. Routine activity theory explains victim self-protective behavior from an offender's perspective; that is, the theory provides possible reasons and strategies a victim might use to make himself less desirable target to the offender and also instructs the readers as to the role that guardianship might play in the decision to self-protect.

Self-help ideology and victim behavior

One foundation for victim behavior lies in the concept of self-help. Criminologists (Smith and Uchida 1988, Reiss and Bordua 1967, and McDowall and Loftin 1985) have used self-help as the justification for individual measures that persons take to guard themselves against crime. The concept originally was proposed by Donald Black (1980) as a nonlegal form of social control that varies inversely with

the amount of legal or governmental social control. That is, Black suggests, as individual perceptions of formal control by the government decline, individual likelihood to self-help, or self-protect, will increase. Black points out that evidence of self-help is highest within simple societies and decreases within formalized societies that have systems of law and formal institutions of social control (Smith and Uchida 1988, p. 94).

Drawing on examples from tribal societies and those of vigilante groups in the American South, Black suggests that self-help is method of conflict management used when no formal mechanism of governmental social control is in place (Black 1980). When specifically used by victims, self-help is often employed to handle or deter potential offenders when the police or legal officials are either not present or perceived to be ineffective. Black explores the cycle of violence in his examination of self-help by suggesting that self-protection is employed in societies where formal mechanisms are perceived to be weak and that perception is further weakened as violence results from acts of self-help.

While Black explores macro-level strategies of self help in his discussion of the concept, including depolicing, changes in physical design, and the use of communication technologies, micro-level efforts to self-help are also apparent. As Black and Baumgartner state "...virtually all citizens—those of all sexes, ages, ethnicities, occupations, and other categories—serve as mediators for others and undertake social control on their own behalf. They emerge from throughout the population, make their contribution to social order, and fade back again" (1980, p. 207).

Applications of the concept of self-help have primarily focused on weapon carrying behaviors, and specifically, resulted in empirical studies of gun ownership. A review of these studies is detailed below. However, as suggested by Miethe, other methods of protective behavior that could be employed by victims, such as avoidance behaviors or lifestyle changes (1995), could be considered within the self-help framework.

In an empirical investigation that mirrors the concept of self-help, McDowall and Loftin (1985) examined time series data from Detroit from 1951 to 1977. Using measures of demographics, number of police officers, and the issuance of handgun licenses, the authors found that when confidence and police and sheer police force was diminished, the number of handguns purchased increased. They refer to the confidence in police and the number of police perceived as “collective security.” Similar to Black, McDowall and Loftin proposed and confirmed that as collective security weakened, their measure of individual security, handgun ownership, increased. Similarly, during their time series analysis, when measures of collective security increased, applications for handgun ownership declined.

Finally, Smith and Uchida’s empirical study of gun ownership as a method of self-help showed that the selected self-help strategy, gun purchase, varied with gender, prior household victimization, and perceived ineffectiveness of formal social institutions of social control, namely, the police. Using interview data from a sample of 9,000 households, Smith and Uchida examined the relationship among demographic, fear, and measures of police confidence and gun purchases made explicitly for self-protection. Their findings supported a self-help model, with weapon purchases for the

purpose of protection being twice as likely in households that rated police services as very poor, compared to those that rated police services as outstanding or good.

Routine activity and target selection theories

Routine activity theory compliments criminological study in that it is not a theory of offending, rather it is primarily a theory of criminal victimization. It is a useful way to think about crime because it assumes that motivated offenders are always present and that they commit their crimes under certain conditions that are favorable. These conditions include the presence of a suitable target (human victim or property) and the absence of capable informal or formal guardianship. These three elements: offender, victim, and absence of guardianship; and their convergence in place and time are the necessary conditions under which crime is likely to occur (Cohen and Felson 1979).

It would follow that routine activity theorists view schools as an expected location for criminal behavior. Schools, by their nature, promote the close proximity of the victim to large numbers of the most delinquent segment of motivated offenders (teenage males), within close proximity to many desirable targets (electronics, cash, clothing, etc.) and vary in their level of guardianship (Gottfredson 2001, p. 3).

Routine activity theory

In 1979, Lawrence Cohen and Marcus Felson articulated a “routine activity theory” of crime events. Crime, according to the researchers, occurs within “the spatial and temporal structure of routine legal activities” (p. 589). It is within the legitimate activities of life; such as employment, the acquisition of food and shelter, social and sexual outlets, learning, and child-bearing; that individuals make themselves available

as targets of crime to motivated offenders. When target and offender converge, a final element determines whether or not a crime will occur: the presence of capable guardians. While formal guardianship, such as police presence, is self-explanatory, Cohen and Felson also state the guardianship by other ordinary citizens by one another and property “is one of the most neglected elements in sociological research on crime.”

Routine activity theory is typically employed to explain changes in aggregate crime rates. Specifically, most investigations examine the relationship between nonhousehold activities and victimization at the aggregate level. In their investigation, Cohen and Felson (1979) hypothesized that changes in daily activities related to work, school, and leisure, changed dramatically since World War II, resulting in the increased likelihood of convergence between the three elements. Their data on post-war trends examines the relationship between crime rates and household characteristics, including husband/wife families and whether the female head of household was employed. Results supported the theory, but the researchers acknowledge the limitations in their measurement of the concepts as well as the absence of a measure for motivated offenders.

Felson and Cohen (1980) examined the relationship between burglary rates and household composition. Messner and Blau (1987) applied a routine activities approach to explain variations between macro level indicators of leisure activities and crime rates. The researchers suggest that leisure activities structure the opportunity for criminal victimization and their results supported their claim. Leisure activities were found to positively influence crime rates while household activities, such as watching television, were negatively associated with crime. Miethe, Hughes and McDowall

(1991) found support for the theory in their examination of variations crime rates in almost 600 cities from 1960 to 1980, based on measures of guardianship, nonhousehold activity, and target attractiveness.

Using data from a telephone victimization survey, Kennedy and Forde (1990) found that victimization varies not only by demographic variables, but also by the extent to which individuals stay at home or go out at night to bars, work, or school. They conclude that the routine activity of leaving home at night results in decreased guardianship over self and their property. Miethe, Stafford, and Sloane (1990) explored the concept of “passive” and “active” lifestyles in their study of lifestyles and victimization. Specifically, they found that “changes in lifestyles which signal greater target visibility or exposure to motivated offenders (greater daytime and nighttime activity outside the home) and reduced guardianship (decreases in the number of household members) are generally associated with increased risks of both types of victimization. In addition, persons who maintained high levels of nighttime activity outside of the household were more likely to be victims of crime [across measurement intervals]” (p. 357). However, they also found that behaviors used to increase personal guardianship did not reduce victimization risk.

While routine activity theory has received empirical support, the theory does have limitations. First, the theory is one of victimization. That is, it does not offer any thought as to why offenders exist or are motivated, it only assumes this as given. Second, it does not explore why guardianship varies (at the informal/individual or formal/institutional) level, it only offers the insight that if such guardianship is absent, crime will occur. Third, tests of the empirical validity of the theory are often

incomplete. With few exceptions (e.g. Stahura and Sloan 1988), tests of the theory often omit at least one of the three measures of motivated offenders, suitable targets, or capable guardians (Sherman, Gartin, and Buerger 1989).

Finally, it should be noted that the routine activity approach proposes a theory of victimization, suggesting the lack of guardianship that predisposes a criminal event, not victim behavior. This requires the reader of this dissertation to make some logical assumptions based on the theory and apply them to victim behavior. While the application of routine activity theory to victim behavior has certainly been suggested in other works (e.g. Tark and Kleck 2004, Tewksbury and Mustaine 2003), the proposed connection between the guardianship concept in routine activity theory and its suggested impact on victim behavior, or self-guardianship, has not yet been articulated in any theory.

Target-selection processes

While routine activity theory helps to explain macro-level differences in victimization—such as crime rates and the likely demographic composition of victims—its authors have only recently articulated the selection of particular targets in particular contexts. As Meier and Meithe (1993) point out, routine activity theory originally assumed the presence of a motivated offender and often explains crime only in terms of the presence of “restraints [such as the presence of a capable guardian or an unsuitable target]—that either inhibit, or are perceived to inhibit, the successful completion of direct contact predatory crime” (Cohen and Land 1987, p. 51).

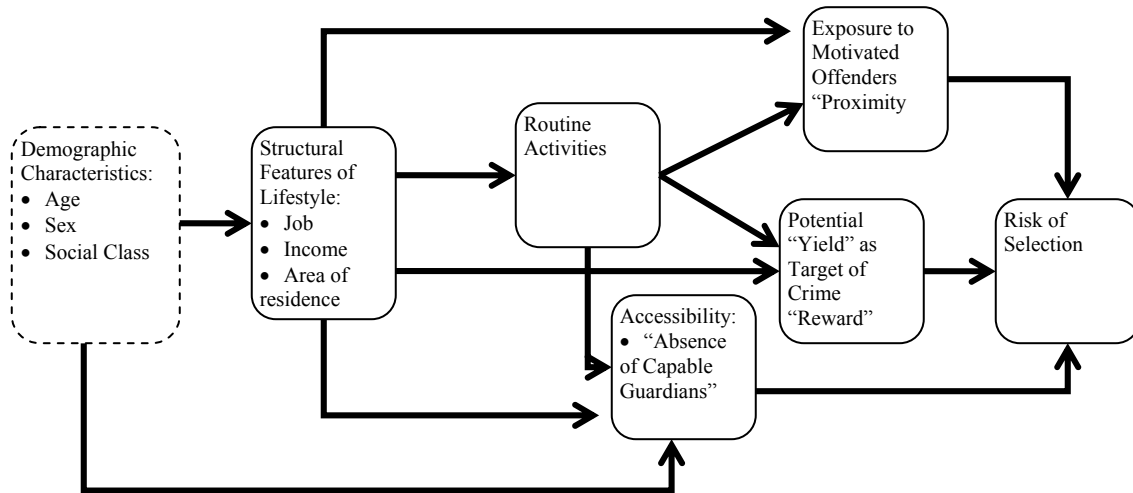
More recently, Felson and Clarke, described four primary components that may influence the risk of a target being victimized (1998). To describe these components, they adopted the acronym: VIVA, which stands for value, inertia, visibility, and access.

Value, indicates the significance of the target to the offender and inertia implies the weight of the item, or ease of attack. Visibility refers to the exposure of the target to the offender while access refers to its convenience to the offender. Further, it is assumed that offenders are assumed to be rational in their decision-making. Cornish and Clarke (1987) suggest that offenders are more likely to commit a crime when a target is accessible, vulnerable, and attractive. They suggest that crimes are the result of an offender's careful calculation of risk vs. reward. In fact, interviews with offenders show that residential burglars carefully weigh the ratio of risk to reward when deciding to offend (Decker, Wright, and Logie 1993).

When applying the VIVA model to bullying, one can infer victim behaviors that may decrease their desirability as targets or victims. Specifically, as implied in the hypotheses of this dissertation, students may try to decrease their perceived "value" by increasing the risk associated with their victimization, through weapon carrying or fighting. In addition, students might make themselves less visible to the bully by avoiding specific places at school or make themselves entirely inaccessible by skipping class, extra-curriculars, or being altogether truant.

In 1987, Hough developed a detailed framework of factors involved in target selection. Hough asserts [as shown in Figure 2], "if members of one group are selected as crime targets more frequently than another, they must meet at least one of three conditions: they must be exposed more frequently to motivated offenders (proximity), be more attractive as targets in that they afford a better 'yield' to the offender (reward), or be more attractive in that they are more accessible or less defended against victimization" (Hough 1987, p. 359).

Figure 2. A Target-selection Model. Adapted from Hough (1987).



Again, this model of target-selection is presented as the theoretical foundation of victim protective behaviors. It must be inferred that victims acknowledge that they cannot eliminate the presence of motivated offenders, or bullies, at their assigned school. As a result, if they perceive that their capable guardians are ineffective or absent, they will either try to decrease their potential “yield” as a crime victim by increasing the risk associated with their own victimization (through weapon carrying or fighting), or decrease their potential exposure to the motivated offender through avoidance and truancy.

While Hough’s target-selection process does integrate the specific elements of routine activities, structural choice, and rationale choice philosophies, the process, as articulated, does have limitations. Specifically, the model does not specify which aspect (proximity, reward, or guardianship) is most essential to crime prevention. The model also does not consider the specific between- and within-crime differences

associated with target selection. This means that offenders of different types of crimes (e.g. property vs. violent) as well as different types of offenders (e.g. seasoned vs. novice) may weigh each of these elements differently.

Hypothesis Two

The second hypothesis under investigation suggests bullying victims are more likely to exhibit self-protective behaviors in schools where they perceive that their school either can not or will not protect them. The protective behaviors include weapon-carrying, fighting, avoidance, and truancy. It should be noted that the research question posed here suggests that these self-protective strategies will be employed more often in circumstances where school-level strategies are not perceived to be present or effective. The perception of school guardianship, according to this dissertation, is indicated by the presence of security measures and the student's perceptions that the school effectively communicates and enforces its rules.

The application of Black's self-help model and routine activity/target selection theories to the school setting is one logical foundation for the proposed research problem: when the formal mechanism of social control or guardianship, the school, is perceived to be ineffective, the likelihood of self-help or self-guardianship behaviors, including weapon carrying, fighting, avoidance and truancy, will increase.

Based on these theories the following hypothesis is proposed:

Student victim protective behaviors from bullying will be higher in those schools that are perceived to be ineffective guardians (as measured by unfavorable perceptions of school rules and little reported security presence) than in schools perceived to be effective guardians.

Through its discussion of routine activity theory, target-selection principles, and the relationship between such opportunity theory and school context, the following

section will firmly establish the role of the school as “guardian” (or in Black’s model, a mechanism of formal social control) in preventing student victimization. Security measures, school rule communication, and school rule enforcement are suggested to be the primary indicators of effective guardianship. Literature on the concept of “schools as contexts” as well as findings on the effectiveness of specific guardianship measures follows. It is also proposed that guardianship, at the school level, can be observed in both interpersonal and physical measures. Interpersonal, or social, guardianship involves the density of friendship networks at school as well as the presence of school security or hallway monitors. Physical measures of guardianship include target-hardening devices, such as metal detectors, locked doors, metal detectors, etc.

Schools as contexts

United States schools are largely a safe haven for students. As DeVoe and her colleagues report, half as many students reported a violent victimization at school than away from school during the previous 6 months (0.6 percent vs. 1.2 percent). In 2003, 6 percent of students ages 12–18 reported that they had been afraid of attack at school or on the way to and from school during the previous 6 months (DeVoe et al. 2005). When considering a specific aspect of school disorder, such as bullying, one must consider the role assumed by the school. Though these numbers for criminal victimization may seem small and bullying may be perceived as a “growing pain” of childhood, any disorder in school may inhibit learning and create interpersonal problems for those involved. In addition, minor forms of aggressive behavior can escalate (Garofalo, Siegel, & Laub 1987) and schools that do not effectively counteract this progression may create an environment in which misbehavior and even violence is

normatively acceptable (Goldstein, Harootunian, & Conoley 1994). It follows, then, that we must acknowledge the role of the school environment in episodes of school bullying. Bullying can be considered as an interaction between the student and the contexts or systems of which the student is a part (Swearer and Espelage 2004). In fact, there are a number of school-level factors that play a role in bullying (Payne and Gottfredson 2004).

Most bullying research finds an inverse relationship between bullying and grade level. That is, as students age from middle to secondary school, the likelihood of bullying decreases (Olweus 1993, Pelligrini and Bartini 2001). Using data from the 2001 School Crime Supplement to the National Victimization Survey, DeVoe and Kaffenberger found that 24 percent of 6th-grade students reported bullying at school, compared to 7 percent of 12th-grade students. The same data showed no significant differences between the socioeconomic status of victims or among urban, suburban, and rural students. That is, rates of bullying were the same regardless of students' household income or students' urban status in the 2001 School Crime Supplement (DeVoe and Kaffenberger 2005). On the contrary, Whitney and Smith (1993) found that when looking at school urbanicity and socioeconomic status, schools located in urban, disadvantaged areas with lower average household income reported more bullying. When looking at class and school size, findings are mixed. Some studies have found no relationship between bullying and class or school size (Olweus 1991, Whitney and Smith 1993), while others have found students in larger schools and classes report more bullying (Winters 1997, Stewart 2003).

While individual and school demographic characteristics often predispose bullying victimization, additional school-level factors play a role such as school culture and climate. MacKlem (2003) defines school culture as the “unwritten expectations that develop over time. It also involves the opinions that members of the culture develop and the way that problems are solved. It includes all of the rules that tell members of the system how to behave and interact with one another. School culture includes...the stories that are shared which communicate the values of the school” (p. 26). School climate includes disciplinary policies, implementation of the policies, the physical buildings and grounds, support services and morale. As MacKlem points out, each of these play a role in promoting or inhibiting bullying in a school.

Schools as guardians

A major component of victimization theories involves the ability of persons or objects to prevent crime. Guardianship can be measured in either social or physical terms. Social guardianship, as discussed by Meier and Meithe (1993), includes the presence or threat of other people who may intervene in a crime. Social guardianship has been defined in terms of household density, friendship networks, or house-sitters. Physical guardianship involves target-hardening activities such as locks, gates, and alarm systems, as well as participation in collective activities such as neighborhood watch systems. Black’s work discussed above suggests that when formal institutional control (hereafter called “guardianship”) is low, individuals resort to a form of self-help in which they adopt their own self-precautions against crime.

As summarized by Spano and Nagy (2005), “Garofalo, Siegel, and Laub (1987) suggest that guardianship is extremely relevant for adolescent victimization since (1)

parents and school officials have a more direct guardianship role given that adolescents require at least periodic supervision; (2) it is likely that the school-related victimizations described in their study could have been prevented if a capable adult guardian were present, and (3) the conflicts described in their study (and categorized as acts of victimization) would have been less likely to escalate if an adult were present” (p. 418)

Literature on the element of guardianship in victimization is ample but mixed. Several studies have reported that social and physical guardianship reduces victimization rates (Miethe and Meier 1993, Rosenbaum 1987) while other studies found no such relationship (Skogan and Maxfield, 1981). Even within a single study, researchers have reported that physical and social guardianship have differential effects, and that these effects may vary by type of crime. Winchester and Jackson (1982), for example, found that house location (isolation) was key to burglary prevention, regardless of target-hardening efforts and Miethe and Meier (1994) found little evidence for the deterrent effect of physical or social guardianship on individuals' risk of assault and robbery. With regard to burglary, some deterrent effects were found. Further, Miethe and Meier reported, contrary to expectations, that higher levels of social guardianship were related to higher risks of property victimization.

However, Mayhew (1984) argues that the use of cross-sectional designs has contributed to inconsistent findings due to a “victimization effect.” Specifically, victims may take precautions as a result of being victimized, rather than to guard themselves against victimization. Cross-sectional designs may not be measuring the

relationship between precautionary behavior and victimization, but rather are measuring the relationship between victimization and subsequent reactionary behavior.

It is the assertion of this dissertation that school culture and climate communicate “capable guardianship” to bullying victims and offenders. Further, such guardianship is displayed to students by the effective communication of policies as well as hard security measures put in place to deter misconduct. The following sections will review the literature related to these two indicators of capable guardianship: school rules and security measures. The effectiveness of each at limiting and preventing delinquency and/or bullying will be discussed.

Social guardianship at school: School rules

The communication, belief, consistency, and enforcement of school rules are an important component of delinquency prevention in schools. Duke (1989) performed a review of 45 studies from the perspective of the “school organization” literature. In his review, Duke found that school disorder was associated with teacher-determined, rather than school-determined rules. Confusion over school policies and student uncertainty regarding these policies was also related to student victimization and student behavior was negatively related to teacher expectations and norms for discipline. Duke concluded that discipline problems could be reduced by clarifying the rules, the consequences for breaking the rules, and making administering consistent disciplinary practices so that confusion is minimized.

Wayson and Lasley (1984) presented findings from a qualitative study conducted by the Phi Delta Kappa Commission on Discipline in which the researchers identified five characteristics present in schools with well-disciplined students using the schools’ demographic and programmatic characteristics. One of the characteristics

included clear formal and informal school rules. Purkey and Smith recognized the importance of school culture and maximizing education in their 1983 research. The authors used the results from their investigation to posit variables that define school culture and climate, one of those variables was school norms and rules (Purkey and Smith 1983).

Gary and Denise Gottfredson were the first researchers to specifically investigate the role of school rules in victimization. Using data from the 1975 Safe Schools Study, they found that student perceptions of rule fairness and clarity were both associated with school disorder (Gottfredson and Gottfredson 1985). The study also measured characteristics of the community and school from the perspective of students, teachers, and principals. Student demographic data and community characteristics were also included. Controlling for all variables, teacher victimization was related to student reports of school rule enforcement. Specifically, when students reported that rule enforcement was not firm and unclear, teacher victimization was more likely to occur. When looking at student victimization, students in both junior and senior high schools were more likely to report victimization in schools where students perceived rule ambiguity and unfairness (Gottfredson and Gottfredson 1985, Gottfredson 2001). More recently, Gottfredson, Gottfredson, Payne and Gottfredson (2005) found that measures of strong discipline management were related to lower levels of student delinquency and victimization. Two of these measures, the fairness and clarity of school rules were found to be significantly and substantially related to school disorder when controlling for other variables, including grade level, size and urbanicity, percent male population, and concentrated-poverty measures.

While these cross-sectional findings for a consistent relationship between school rule communication and criminal victimization may seem straightforward, one must acknowledge that student perceptions of school rules as being consistently fair, communicated, and enforced may also be colored by victimization experience itself. That is, because non-objective measures of school rule clarity, fairness, and enforcement were used, the finding that a relationship exists between the two may not reflect schools' actual rule practices, but a skewed perception of them based on prior victimization. Caution is warranted in interpreting the literature reviewed and the findings to be presented in the Discussion chapter of this dissertation.

Physical guardianship at school: Security measures

Another aspect of school control that can be managed by schools is the implementation of security measures. Although the likelihood of being the student victim of a homicide on a school campus very rare (less than 1 in 1 million in the 2001-2002 school year, DeVoe et al. 2005), schools have been pressured to implement extreme measures in response to a few highly publicized incidents.

Various security efforts have been adopted by schools in order to demonstrate schools' readiness and interest in the prevention and reduction of school crime (Juvonen 2001). Green (1999) asserts that school security measures are necessary to deter, detect, delay and react to school disorder. In addition, such measures can be symbolic, in that they demonstrate that school is a safe place for students to learn (Schreck and Miller 2003). Lawrence (1998) states that while countless school districts have spent hundreds of thousands of dollars on security, little is known about their impact on school crime and violence. While some security measures remain

controversial as to their effectiveness and possibly their result in increased levels of fear (Schreck and Miller 2003), others are based in logical necessity. This section will review the prevalence of specific security measures (relevant to this dissertation) in schools and, when available, discuss any literature related to the effectiveness of the measures.

Prevalence of the measures have been taken from the 2000 School Survey on Crime and Safety (SSOCS) conducted by the U.S. Department of Education's National Center for Education Statistics in the 1999-2000 school year and reported by DeVoe et al. (2005) and Miller (2003). The SSOCS survey asked a nationally representative sample of elementary, middle, and high school principals about policies and practices related to school crime and safety. One part of the survey asked specifically about security measures employed in schools. The measures discussed here will include: security guards, hallway supervision, metal detectors, locked entrances and exits, visitor sign-in, locker checks, student identification, security cameras, and a written student code of conduct. Where possible, comparable estimates from the Gottfredson's National Study of Delinquency Prevention in Schools will also be provided (2001). While Garcia (2003) also provides results from a small sample of school security administrators in her 2003 article, the results presented in that article are not representative (primarily from urban schools with large student populations and large district coverage) across the United States and are asked only of schools that have a person in the position of "school security administrator."

Security guards and staff hallway monitors are essential to providing adequate adult supervision at school. As Stephens suggests, in his guidelines for safe school

planning, “young people need continuous responsible supervision” (1998, p. 281). In their 1997-1998 National Study of Delinquency Prevention in Schools (NSDPS), Gottfredson and Gottfredson (2001) reported 35 percent of schools employed security personnel. Further, Miller (2003) found that schools who reported the regular use of law enforcement or security officers were less likely to experience a violent or serious violent incident than those schools that did not use such personnel. In addition, Olweus (1993) reported significantly less bullying in schools with high “teacher density.” That is, the greater number of teachers actively supervising during break times, the lower the level of bully/victim problems.

However, bullying is unique in that it is often covert and not obvious to bystanders, teachers, or security personnel. In addition, several researchers have found that teachers and school counselors often respond inadequately to bullying by failing to recognize the event (Hazler, Miller, Carney, and Green 2001) or by failing to intervene (Olweus 1994, Craig and Pepler 1997). The less obvious types of bullying, such as social exclusion, rumor spreading and name-calling are often not recognized as bullying and go uninterrupted (Hazler et al. 2001, Boulton 1996). Yoon (2004) found that three individual teacher characteristics predicted whether teachers intervened in bullying situations; these included empathy, self-efficacy, and perceived seriousness.

Stephens also suggests that campus access should be controlled at all times and access to buildings and grounds should be limited and supervised on a regular basis (Stephens 1998). In the 1999-2000 school year, 75 percent of school principals reported that they locked or monitored access to school buildings during school hours (DeVoe et al. 2005). In addition, Stephens suggests the use of uniform visitor

screening procedures such as direction to the school's main office and required sign in. This practice of visitor sign-in was reported by 97 percent of schools in the United States in the 1999-2000 school year (DeVoe et al. 2005). Results from the NSDPS report that 85 percent of their sample of principals reported a formal written policy about visitor sign-in in 1997-1998 (Gottfredson and Gottfredson 2001).

Routine locker checks and visible student identification badges are also suggested components in the supervision and management of student behavior. Stephens (1998) suggests that locker policies should clearly articulate that lockers belong to the school and that they can be searched regularly. Efforts to reduce weapons and contraband at school often integrate random locker searches as a strategy (Office of Juvenile Justice and Delinquency Prevention 1989). Thirty-nine percent of school principals in the NSDPS reported using locker searches (Gottfredson and Gottfredson 2001). Further, being able to distinguish students from nonstudents and to control and manage campus activities can be greatly facilitated through the use of student identification badges (Stephens 1998). In the 1999-2000 school year, 12 percent of schools reported random locker sweeps and 4 percent of schools in the U.S. reported a requirement that students wear visible identification at all times.

While metal detectors and security cameras are not specifically mentioned in Stephens' safe school plan, they are respectively instrumental at limiting opportunities for contraband and increasing supervision. In the 1999-2000 school year, 1 percent of schools (2 percent of middle and 3 percent of secondary schools) reported the daily use of metal detectors on their students and 19 percent reported the use of security cameras

(DeVoe et al. 2005). In the 1997-1998 NSDPS, 10 percent of schools reported the use of metal detectors.

School rules and regulations cannot be enforced without being communicated in writing. In the 1999-2000 school year, 93 percent of school principals reported the distribution of written school rules to students, and 92 percent reported distribution to parents. NSDPS principals reported comprehensive distribution of the disciplinary policy to teachers (99 percent), students (96 percent), and parents (96 percent) (Gottfredson and Gottfredson 2001).

Brown (2005) surveyed 230 high school students about various security measures used at their schools. Findings show that most students believed that security officers kept their school safe, but there was no consensus about the need for more security officers. No relationship was found between perceived safety and the presence of metal detectors or surveillance cameras at school. When looking at the presence of drugs and weapons, the presence of security measures showed no effect.

Another unintended consequence of security measures may be an increase in student fear. As Schreck and Miller (2003) suggest, school security techniques may actually increase student fear of crime due to the perception that these security measures violate human civility. Using data from the 1993 National Household Survey, however, findings show when predicting the likelihood of student worry about multiple types of (or more intense) victimization, significant effects were found for rule fairness, locked doors, restroom limits and drug education. That is, the presence of unfair rules, locked doors, restroom limits, supervised hallways, and drug education classes significantly predicted student worry about multiple types of victimization.

While limitations in the study did exist, including the measurement of some variables and limited response rates, contrary research has been presented by Phaneuf (2006) who found that school security measures had no impact on student fear or student bonding to school.

Types of bullying: Direct and indirect bullying victimization

Moving forward, one must also recognize that bullying in schools varies according to the specific behaviors included, how it is interpreted by the victim, in addition to the context of the school in which the bullying takes place. While it is not always a crime, bullying is one part of a broad spectrum of aggression that includes, but is not limited to, violent and criminal behaviors. Acknowledging this early in his research, Olweus refined his definition of bullying to include two specific subtypes of bullying: direct and indirect bullying (1993). Direct (overt) bullying involves relatively open and physical attacks on the victim and indirect (covert) bullying includes less visible types of bullying such as social isolation and intentional exclusion from activities.

Smith, Cowie, Olafsson, and Liefhoghe (2002) examined the different types of bullying internationally by examining meanings attributed to cartoons given by 8- and 14-year old students in fourteen different countries. By presenting cartoons showing various situations of bullying to students, the researchers identified six different clusters of bullying: bullying (of all kinds), verbal plus physical bullying, verbal bullying, social exclusion, physical aggression, and mainly physical aggression. While the younger students did not differentiate as extensively as the older students, findings show that 8 year olds were still able to contrast physical aggression, bullying, and

verbal aggression, however these differences were not statistically significant until 14 years of age. In a smaller, qualitative study of 40 students, Khosropour and Walsh found that each student in their investigation distinguished between verbal and physical aggression. Girls were more likely to report indirect forms of bullying such as name calling, or rumor-spreading (Khosropour and Walsh 2001). Acknowledging the distinction between these different types of bullying and the subsequent evolution of Olweus' concepts cannot be separated from a discussion of the roles of gender and development in bullying behaviors.

In general, males are more likely to engage in aggressive acts than girls (Coie and Dodge 1998). Further, it is asserted as a fact of criminal behavior that males are more likely to engage in crime and delinquency than females (Braithwaite 1989). Meta analyses and literature reviews support the idea that males are the more aggressive gender and most often use physical forms of violence (Coie and Dodge 1998). Gender differences in aggressive behavior begin to emerge in preschool and continue to become more disparate through adolescence. This difference is found across cultures, across social classes, and across families. These findings have consistently been interpreted as a lack of aggression in girls' interactions (Crick and Grotpeter 1995). Recently, however, Crick and Grotpeter suggested that if the definition of aggression included less physical forms of aggression, the gender gap would become less clear. As a result, a body of literature has emerged that reconceptualizes types of aggression as well as its motivations. Espelage, Mebane, and Swearer (2004) suggest that this feminist perspective on aggression has lead researchers to examine whether there are

forms of aggression that may be more typically employed by females, and thus equally as prevalent, as those used by males.

Some researchers, however, suggest that Olweus' term "indirect aggression" does not encompass the range of behaviors that can be included in social relationships and sufficiently distinguish male and female aggression. In the early 1970s, Feshbach and colleagues (1969) researched behaviors such as ignoring, avoiding, and excluding others from social activities. Their definition included confrontational aggression in the sense that the offender implements the aggressive activity but does not physically engage the victim. In 1988, Lagerspetz, Björkqvist and Peltonen refined the definition of indirect aggression to include behaviors where the aggressor was not identifiable and the aggression was implemented via a third party, including behaviors such as gossiping and social alienation. Österman, Björkqvist, Kirsti, and Lagerspetz (1998) more broadly defined indirect aggression as "social manipulation, attacking the target in circuitous ways."

In 1995, Crick and Grotpeter coined the term "relational aggression" to refer to types of aggression that are relevant to females including social isolation, ignoring, withdrawing friendship, or gossiping. The offender in relational aggression could be known or unknown. Crick and Grotpeter suggest that findings to date showing that boys are more aggressive than females are not due to gender, rather, they are due to the way we define aggression. In addition to the "gendered" nature of this form of aggression, one must also acknowledge the changing nature of aggression in children over time.

In longitudinal research on the development of aggression, the Cairns' and their colleagues note that the nature and utility of aggression shifts from childhood to adolescence, with males continuing to engage in physical and direct confrontation and females increasingly displaying acts of social ostracism and social aggression as they mature from childhood to adolescence (Cairns et al. 1989). Xie et al. suggest the use of the term social aggression to encompass behaviors that involve the social community, such as gossiping, social exclusion, and social alienation (Xie, Swift, Cairns, and Cairns 2002). In other research, the term "social aggression" has also been used to include behaviors directed toward damaging a person's self-esteem or social status (Underwood, Galen and Paquette 2001).

Relational aggression is also not exclusively the tool of female aggression. Scheithauer (2002, as cited in Smith 2004) found that gender differences in the use of relational aggression change with age. Young children (ages 7 and below) show differences in their use of types of aggression, but by middle childhood (ages 8 through 12) these gender differences are negligible, suggesting that boys may learn to use these more skillful forms of aggression as they age. In the teen years, however, the gender difference emerges again, suggesting that the sexes begin to refine their use of aggression specifically to their gendered peer groups.

Although terms for such indirect/social/relational bullying vary in their definitions, assessments, and uses, they share many characteristics. As Espelage et al. (2004, p. 23) discuss, "each of these terms is used to describe behaviors that are *social* in nature; they involve damaging the victim's relationships and do not include the use of direct, overt aggression (such as fighting or verbal threats)." Björkqvist (2001) also

argues that it is imprecise to refer to such behavior as social aggression because all aggression is by necessity social.

Aggression research further distinguishes between proactive and reactive aggression. Coie, Dodge, Terry, and Wright (1991) differentiates between the purposes of aggressive behavior, suggesting that the development of aggression may differ based on its objective. Reactive aggression includes aggression in response to a situation whereas instrumental aggression is used in order to obtain a goal. Instrumental aggression has also been delineated into proactive instrumental aggression, in which the goal is nonsocial (e.g. an object), and proactive bullying aggression, in which the goal is to intimidate and dominate a peer (Harachi, Catalano, and Hawkins 1999).

In conclusion, despite their varied nature, most definitions of bullying include the concepts of physical and relational aggression, and include a “systematic, ongoing set of behaviors instigated by an individual or group of individuals who are attempting to gain power, prestige, or goods; in addition, tactics might also be directed at the threat of withdrawal of a friendship” (Espelage and Swearer 2003, p. 368). Although it is acknowledged that the terms discussed above have unique strengths and weaknesses, for the remainder of this dissertation, I have chosen to adopt Olweus’ original nomenclature of “direct” and “indirect” bullying.

As Hunter and Boyle also suggest, “different types of bullying may themselves influence the way in which victims react” (2002, pp. 324). As discussed above, students may be victims of physical or emotional bullying, or both. It is the assertion of this dissertation that when victims are subjected to less physical forms of bullying, such as social exclusion or gossip, it may be less clear to them how they should respond,

especially if these victims have few social associations through which they could enact retaliation or seek support. It would follow that these indirectly bullied students would adopt avoidance or truancy behaviors, rather than more physical means of retaliation. In contrast, physically bullied victims may be more likely to adopt more assertive responses, such as weapon carrying or fighting.

Hypothesis Three

As is suggested by the literature (Feshbach et al. 1969, Lagerspetz et al. 1988, Crick and Grotpeter 1995, Osterman et al. 1998), if the nature of aggression is gendered, with boys using more physical means than girls, it is not inconceivable that protective behaviors might develop along the same gender lines, with girls adopting the less physical types of behaviors examined here. Further, Coie et al. (1991) discuss the differences in the purpose of aggression as reactive and proactive, where reactive behaviors might be more responsive (such as in the case of avoidance or truancy) and proactive behaviors may be employed to intimidate a peer against further domination (for instance, weapon carrying and fighting). Finally, when discussing the characteristics of victims, the literature concludes that bullying victims have poor social skills that often result in reactive behaviors that are either rewarding (such as crying or withdrawing) or provoking to bullies (with aggressive responses). Olweus (1993) additionally describes victims as either passive or aggressive. Hawker and Boulton (2001) found that victims of emotional and relational bullying often have anxious or withdrawal reactions to bullying but such reactions are not typical of physically bullied victims. It can be argued that each protective behavior assumed by victims is

differently rewarding to bullies and may provoke further victimization (Schwartz et al 1993, Salmivalli et al. 1996, Wilton et al. 2000).

In conclusion, the following hypothesis is put forth:

Student victim protective behaviors from bullying will vary by the type of bullying victimization. Specifically, it is proposed that indirectly bullied students will adopt the less aggressive forms of protective behaviors, such as avoidance and truancy, while the directly bullied students will adopt the more aggressive forms of protective behaviors, including weapon carrying and fighting.

Research questions

Hunter and Boyle (2002) assert that since Olweus' studies began, the academic studies of bullying have gone in two disparate directions: the documentation of the problem of bullying (e.g. Perry et al. 1998, Hoover and Hazler 1991, and Nansel et al. 2001) and the evaluation of bullying prevention or intervention programs (e.g. Limber 2004, Horne et al. 2004). Most victim research has focused on the characteristics of victims that attract bullies or the emotional consequences of falling victim to bullying, as discussed above. Few studies, to date, have focused on the reactions or protective behaviors of victims to bullying. In addition, those studies that examine victim reaction often focus on psychological coping strategies rather than behavioral strategies to reduce the likelihood of victimization.

The purpose of this dissertation is to explore the self-protective behaviors of victims that may further endanger school safety and school climate. Further, this dissertation attempts to examine the role of the school in an individual's likelihood to adopt these self-protective measures and to explore the role, if any, the type of victimization endured plays in the type of behavior assumed. That is, do victims of bullying take measures to protect themselves, despite the fact that these measures may

endanger other students at school or school climate? Are they more likely to adopt these behaviors when they perceive that their school is not a capable guardian from such victimization? And finally, do their choices of protective behaviors vary by the type of bullying they endure?

Chapter 3: Methodology

The following chapter discusses the methodology of this research. The chapter first describes the dataset used in this analysis and its limitations, unit and item response rates for the data, and then a description of the sample and procedures for variance estimation are provided. The theoretical constructs under investigation are then identified and operationalized. Lastly, the plan for analysis is presented.

Data

The 2003 School Crime Supplement (SCS) to the National Crime Victimization Survey (NCVS) data are used in this analysis. The principal research instrument, the NCVS, is the nation's primary source of information on crime victimization and victims of crime. It is administered annually for the U.S. Bureau of Justice Statistics (BJS), Office of Justice Programs, U.S. Department of Justice by the U.S. Census Bureau (Census). Initiated in 1972 and redesigned in 1992, the NCVS collects detailed information on the frequency and nature of the crimes of rape, sexual assault, robbery, aggravated and simple assault, theft, household burglary, and motor vehicle theft experienced by Americans and their households each year. The strength of the survey is that it measures crimes reported as well as not reported to police.

The 2003 NCVS sample consists of about 63,124 households selected using a stratified multistage cluster design. Within each sampled household, Census Bureau personnel interviewed all household members ages 12 and older to determine whether they had been victimized by the measured crimes during the 6 months preceding the interview. These interviews are conducted via computer-assisted telephone interview,

or in the case of first-time interviews, paper and pencil questionnaires completed by Census personnel.

About 87,422 persons ages 12 and older are interviewed each 6 months. Households remain in the sample for 3½ years and are interviewed 7 times at 6-month intervals. The initial interview at each sample unit is used only to bound future interviews to establish a time frame to avoid duplication of crimes uncovered in these subsequent interviews. After their seventh interview, households are replaced by new sample households.

Created as a supplement to the NCVS and co-designed by the U.S. Department of Education, National Center for Education Statistics (NCES) and BJS, the School Crime Supplement survey was conducted in 1989, 1995, 1999, 2001, and 2003 to collect additional information about school-related victimizations on a national level. This dissertation uses data from the 2003 collection only. The survey instrument for the 2003 SCS is located in the Appendix and the data are available online from the Inter-university Consortium for Political and Social Research (ICPSR) (<http://www.icpsr.umich.edu/>).

The survey was designed to assist policymakers as well as academic researchers and practitioners so that they can make informed decisions concerning crime in schools. The SCS asks students a number of key questions about their experiences with and perceptions of crime and violence that occurred inside their school, on school grounds, on a school bus, or on the way to or from school. Additional questions not included in the NCVS were also added to the SCS, such as those concerning security measures used by the school, students' participation in after school activities, students'

perceptions of school rules, the presence of weapons and street gangs in school, the presence of hate-related words and graffiti in school, student reports of bullying and reports of rejection at school, the availability of drugs and alcohol in school, as well as attitudinal questions relating to fear of victimization and avoidance behavior at school.

In all SCS survey years, the SCS was conducted for a 6-month period from January through June in all households selected for the NCVS. Within these households, the eligible respondents for the SCS were those household members who had attended school at any time during the 6 months preceding the interview, and were enrolled in grades 6 through 12 in a school that would help them advance toward eventually receiving a high school diploma. The age range of students covered in this dissertation is 12 through 18 years of age. Eligible respondents were asked the supplemental questions in the SCS only after completing their entire NCVS interview. Of the 12,176 NCVS respondents eligible for the SCS supplement, 70 percent (8,479 respondents) completed the SCS interview. The remaining 30 percent were noninterviews. The data were not weighted to reflect national student populations and subsequently findings reported herein simply reflect those from the sample of students selected by the larger NCVS methodology. Sample size is sufficient for testing the relationships proposed in the formal hypotheses and discussed further in the analysis plan.

Limitations of the data

Readers should note that there are several limitations to using data from the School Crime Supplement. Many of these are drawn from Cantor and Lynch's work on the larger National Crime Victimization Survey (Cantor and Lynch 2000). First, the

data are collected at the cross-sectional level. That is, the data are collected and referenced for one point in time, meaning that one cannot infer process, causality, or temporal ordering when examining results from the SCS. While the language used in this dissertation refers to “defensive” or “protective” behaviors and implies that they are exercised in response to victimization, readers should note that this investigation only examines relationships among variables at one point in time. These analyses are intended to serve as a launching point for more detailed investigation of the causal processes involved, data permitting.

Second, it is necessary to articulate the relationship between the research questions under investigation and the elements of routine activity theory serving as its partial platform. Most research on self-protective behavior uses the NCVS to examine *outcomes* of crime events in light of various self-protective behaviors. Unfortunately, the SCS dataset does not contain NCVS variables on self-protection and further, these protective behaviors are particular to incidents of criminal, not bullying, victimization. Readers should further note that the research questions here relate to whether self-protective strategies are employed by bullying victims, not necessarily their whether they are effective. In fact, because of the cross-sectional nature of the data, their effectiveness or use temporally in relation to victimization can only be a point of speculation. To counter this criticism, one must also acknowledge that questionnaire wording (detailed in the Appendix) does indicate that the behaviors are exercised due to fear or harm. For example, students are asked if they carried a weapon to school “for protection” or if they avoided specific areas of school because they were afraid “someone would attack or harm” them there.

Third, readers should also note that data are collected from the teenage student and members of the student's household. No information for this analysis was collected from the students' schools or from several students within a single school. As a result, this analysis relies on student reports of school characteristics as well as perceptions of school climate. It is necessary for readers to acknowledge that student perceptions of school climate which are often variable within schools may be further confounded by individual-level characteristics, including bullying victimization itself. Ideally, measures related to school characteristics would be derived from all student reports or from a school administrator, however, the SCS is limited to a single student. On the other hand, this limitation can also be interpreted as strength since these variables represent the student's interpretation of his or her surroundings that may influence his guardianship behaviors, which are of primary interest to this investigation. This single student perspective implicates the measures of security practices, school rules, school sector, and highest/lowest grades in a student's school used in this analysis.¹

Fourth, 14 percent of the SCS interviews are first-time interviews, or interviews with respondents who are new to the panel. Because these interviews are unbounded, there is a chance that events preceding the desired 6-month reference period would be included. To the extent they are, this would result in over-reporting. For example, in the first, or unbounded interview, a respondent may telescope or mistakenly report bullying that happened 1 year ago and not within the requested past 6 months. To clarify, the

¹ Readers should note, however, for each SCS survey The Department of the Census uniquely coded and verified each school name provided by SCS respondents; but for purposes of student and school confidentiality, this variable was stripped from the public use data file. Future methodological researchers using the SCS should consider making comparisons between characteristics reported by the U.S. Department of Education for each school and its student-reported characteristics.

NCVS is a sample of households that remain in the sample for 3 ½ years. As a new household is selected respondents in the home are given a “bounding” interview that is used as a reference point for subsequent interviews, this is implemented as a technique to reduce telescoping. These “unbounded” first household interviews are discarded by the larger NCVS. However, within the 3 ½ years the selected household is interviewed, different families may move in and out of the residence, meaning that while a household has a first “bounding” interview, a new family’s first interview in that housing unit (that occurs during the household’s 2nd through 7th possible interview) is included in estimates. As investigated by Addington (2005), NCVS interviewees may report more criminal victimization due to either telescoping or their status as victim and consequential likelihood to move from residence to residence.

Using linked, longitudinal data from the 1995, 1999, and 2001 SCS Addington found differences in the effects of bounding and mobility by type of victimization (2005). For victims of property victimization, bounding had a significant effect on victimization. That is, bounded respondents were 65% less likely to report property victimization than unbounded respondents. No effect was found for victims of property victimization. However, victims of violent crimes were more likely to move into the household. Movers were 1.5 times more likely to report a violent victimization than non-movers. Addington concludes that mobility and bounding should be included as variables of interest by researchers of violent and property victimization, respectively.² The inclusion of these unbounded interviews should be considered when interpreting findings presented at the end of this dissertation.

² Analyses show that only 14 percent of respondent interviews are initial interviews (unbounded) in the 2003 SCS.

Fifth, the larger NCVS uses sets of characteristics to classify events as criminal whereas the SCS often relies on the respondent to self-determine a condition, such as bullying. This allows for the victim to use his or her own interpretation or conceptions to define a situation, when the same situation may not have been labeled bullying by a bystander or the offender.

Sixth, victim surveys emphasize events as incidents at one point in time (Cantor and Lynch 2000). Reality tells us that victims can often live in a state of bullying victimization where they are threatened or victimized regularly. While the NCVS does allow for such series to be flagged for criminal victimizations, the serial flag is not available for bullying. Seventh, respondent recall of victimization events may be inaccurate. People may forget the event entirely or recall the characteristics of the event inaccurately. This would lead to an underestimation of the event. Finally, respondents included in this analysis are those who reported attendance at school during the six months prior to the survey. Therefore, students who have dropped out of school or have been perpetually truant (as a potential result of bullying) are not included in the analysis and consequently, the reactive behavior of truancy may be underestimated. In addition, the student from whom the data rely are aged 12 to 18 years old. As discussed in the literature review, bullying is most often experienced by younger students, meaning that this sample may not capture the full extent of bullying in schools.

Unit and item response rates

Unit response rates indicate how many sampled units have completed interviews. Because interviews with students could only be completed after households

had responded to the NCVS, the unit completion rate for the SCS reflects both the household interview completion rate and the student interview completion rate. A total of 8,479 students participated in the 2003 SCS. In the 2003 SCS, the household completion rate was 92 percent and the student completion rate was 70 percent. Thus, the overall unweighted SCS response rate (calculated by multiplying the household completion rate by the student completion rate) was 64 percent. Though a 64 percent response rate falls below the threshold of acceptability established by most federal agencies, the response rates among 12 to 18 year olds to federal surveys has been declining since 2001.³ This negatively effects the student completion rate because fewer students completed the larger NCVS instrument and subsequently were never eligible for the SCS.

The rate at which the respondents provide a valid response to a given item on the 2003 SCS survey instrument is referred to as its item response rate. Item response rates for items used in this report were generally high. All items were answered by over 95 percent of all eligible respondents, with the exception of the household income question. No explicit imputation procedure was used to correct for item nonresponse. However, restricting the analysis to provided responses (or excluding missing data from the analysis) and ignoring the missing responses is an implicit form of imputation, and assumes that the missing responses are completely random and represent a subsample of the full sample. Further, Allison (2002) suggests that if the percentage of item data missing is low (a few percent of missing cases) one can conduct complete case analysis, that is, analyze only those cases for which all data are available, with no

³ To exemplify, the household completion rate for the most recent SCS administration (2005) was 92% and the student completion rate was 62%, for an overall SCS response rate of 56% (U.S. Department of Justice, Bureau of Justice Statistics 2005).

concern for error. Because each variable of interest meets this criteria, missing cases were deleted listwise.

However, income and income-related questions typically have relatively low response rates compared to other items due to their sensitive nature. The income items in the NCVS were asked of adults in the households, not the 12- to 18-year-old students, and the information was available for approximately 83 percent of all SCS respondents (78 percent of all households) in 2003. Due to the extent of the missing data for this variable, those with missing income data were retained and included as their own response category across all SCS respondents. Upon final analysis, it was determined that the income variable can be excluded entirely.

Sample

Table One shows the characteristics of SCS students in 2003. The SCS sample used in this analysis was limited to include youth ages 12 through 18 who had attended school at any time during the 6 months preceding the interview, and were enrolled in grades 6 through 12 in a school that would help them advance toward eventually receiving a high school diploma. Based on these requirements, the final number of students included in this analysis was 7,521. In the sample, each age category for students between 12 and 17 accounted for between 13 and 17 percent of the sample and 18-year olds accounted for 7 percent. Males accounted for 51 percent of the sample and females 49 percent. Sixty one percent of the sample was White, non-Hispanic, 14 percent was Black, non-Hispanic, 19 percent was of Hispanic origin and 6 percent of

the sample was of Other,⁴ non-Hispanic race/ethnicities. Nine percent of the sample were 6th graders; 7th, 8th, and 9th graders accounted for 17 percent of the sample each; 15 percent were in 10th grade, 13 percent were in 11th grade and 12 percent were 12th graders. Household income ranged from less than \$7,500 per year for 3 percent of the sample to over \$75,000 per year for 25 percent of the sample. Twenty-nine percent of the sample lived in urban locations, 58 percent lived in suburban locations and 13 percent in rural areas.

⁴ Other, non-Hispanic respondents include Asians, Pacific Islanders, and American Indians (including Alaska Natives).

Table One: Population Totals for Selected Student Characteristics.

| Student characteristics | Number | Percent |
|-----------------------------------|---------------|----------------|
| Total | 7,521 | 100 |
| Student age | | |
| 12 | 1,148 | 15.3 |
| 13 | 1,266 | 16.8 |
| 14 | 1,253 | 16.7 |
| 15 | 1,169 | 15.5 |
| 16 | 1,128 | 15.0 |
| 17 | 1,003 | 13.3 |
| 18 | 554 | 7.4 |
| Student sex | | |
| Male | 3,854 | 51.2 |
| Female | 3,667 | 48.8 |
| Student race/ethnicity | | |
| White, non-Hispanic | 4,595 | 61.1 |
| Black, non-Hispanic | 1,037 | 13.8 |
| Hispanic | 1,410 | 18.7 |
| Other, non-Hispanic | 479 | 6.4 |
| Student grade | | |
| Sixth | 696 | 9.3 |
| Seventh | 1,256 | 16.7 |
| Eighth | 1,268 | 16.9 |
| Ninth | 1,242 | 16.5 |
| Tenth | 1,147 | 15.3 |
| Eleventh | 1,011 | 13.4 |
| Twelfth | 901 | 12.0 |
| Student household income | | |
| Less than \$7,500 | 188 | 2.5 |
| \$7,500-14,999 | 446 | 5.9 |
| \$15,000-24,999 | 752 | 10.0 |
| \$25,000-34,999 | 741 | 9.9 |
| \$35,000-49,999 | 1,008 | 13.4 |
| \$50,000-74,999 | 1,258 | 16.7 |
| \$75,000 or more | 1,873 | 24.9 |
| Missing data* | 1,255 | 16.7 |
| Student place of residence | | |
| Urban | 2,190 | 29.1 |
| Suburban | 4,351 | 57.9 |
| Rural | 980 | 13.0 |

Variance estimation

The 2003 NCVS is based on a complex survey design of housing units in the United States, including homes and living quarters. Living quarters include group homes such as dormitories and rooming houses but do not include correctional facilities, other persons who are institutionalized, or military installations. Persons selected from those housing units include U.S. citizens who live in the United States. Once selected for the NCVS, the sampled housing unit remains in the sample for seven interviews, taking place each six months over the course of 3 ½ years. Within each sampled household, Census Bureau personnel conduct an initial in-person interview of all household members ages 12 and older to determine whether they had been victimized by the measured crimes during the 6 months preceding the interview. Subsequent interviews are conducted via telephone. The following process, based on the Bureau of Justice Statistics' documentation of their methodology (<http://www.ojp.usdoj.gov/bjs/abstract/cvusst.htm>), details the stratified, multistage cluster sampling techniques to determine the housing units and resultant individuals included in the survey.

Stratification involves the division of a population into subpopulations, or layers called strata. In the first stage of the NCVS design, the primary sampling units (PSUs) are selected. These PSUs consist of counties, groups of counties, or large cities with adjacent communities (known as metropolitan statistical areas, MSAs). Any PSU with a population of 550,000 or more is selected for the sample and considered self-representing. There are 93 self-representing PSU's in the NCVS sample. Remaining PSUs are non-self-representing and are combined into strata based on geographic,

demographic and crime data from the Uniform Crime Reports. One non-self-representing PSU from each of those strata is selected to represent all of the non-self-representing PSUs within that stratum. In the 2003 NCVS, there are 110 non-self-representing PSUs.

In the second stage, each PSU is divided into four smaller sampling frames (unit, area, permit, and group quarters). From each of these frames, approximately four housing units are selected. The unit and group quarter frames are drawn from the 1990 Census. Data for the permit frame are drawn from building permit data available in building permit offices. This frame is used to augment the sample in order to account for housing units constructed after the 1990 decennial Census. Finally, the area frame uses sample blocks from the 1990 Census, and addresses are sampled from those. At each stage, the selection was done proportionate to population size in order to create a self-weighting sample.

In a review of the use of variance estimation by Wilson (1989), he points out that attention to variance estimation was largely ignored by researchers until the 1940s. In 1947, Marks pointed out to the research community that standard errors constructed under the assumption of a simple random sample underestimated true standard errors of complex samples by a factor of three. Accordingly, because the NCVS employs such a complex sampling design, it requires a variance estimate technique that mathematically accounts for the stratification and clustering approach used. Specifically, variances for totals must be calculated at each level of stratification and clustering and then be recombined according to the survey design. The variance estimate must also consider any poststratification and nonresponse adjustments (Lohr 1999).

As discussed by Woodruff (1971), the Taylor method of approximation has been used to successfully calculate variances in complex survey designs. To estimate the statistics and associated variance presented in Chapter Four, the Taylor series approximation method is used. As one would expect, crime does not necessarily follow linear form and Taylor's theorem from calculus allows analysts to smooth, or linearize, such a nonlinear function of population totals (Lohr 1999). The principle of the approximation is that it estimates the variance of a function of several variables using the variance of a linear substitute. Taylor's method allows one to calculate a "linearization estimator" that can calculate the variance of nonlinear functions. The calculation of this estimator considers the means or totals of variables measured in the sample and the partial derivatives of the approximated constants, based on the estimated linear tangent line to the nonlinear function. The result is the calculation of a variance statistic that can take into account the stratification and clustering approach as well as the nonresponse adjustments used by the NCVS.

The advantage to using Taylor's method is that it is a well developed and often utilized technique, it has good showing when tested against other methods of standard error calculation (Woodruff and Causey 1976), and that readily available software can easily be used to calculate the variance estimates for such nonlinear functions (Lohr 1999). The disadvantage of such a method is that other methods may be preferable when sample size is not sufficient, though no limit for optimal minimum sample size has been established.⁵ Analyses presented here will rely on STATA software and the use of variables providing information on the pseudostratum and strata as well as the

⁵ Using the Current Population Survey, Frankel (1971) showed sufficient variance estimation with samples ranging from .4 to 1.8 percent of the total population. The NCVS sampled .6 percent of households in the United States in 2003.

computation for standard error. These are labeled PSEUDO-STRATUM CODE and STANDARD ERROR COMPUTATION CODE on the dataset, respectively.

Identification and operationalization of theoretical constructs⁶

The variables used in this analysis are identified and defined in this section.

Table Two presents the correlation coefficients and descriptive statistics for the bullying and dependent variables to be included in the multivariate analysis.

Table Two: Bivariate Correlations and Descriptive Statistics for the Dependent Variables Included in the Analysis (Listwise N=7,153), Unweighted.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------------------------------|-------|-------|-------|-------|-------|--------|-------|-------|
| 1. Bullied <i>P value</i> | 1.000 | | | | | | | |
| 2. Direct | 0.720 | 1.000 | | | | | | |
| 3. Indirect | 0.843 | 0.414 | 1.000 | | | | | |
| 4. Both types | 0.518 | 0.716 | 0.614 | 1.000 | | | | |
| 5. Avoidance | 0.226 | 0.221 | 0.202 | 0.210 | 1.000 | | | |
| 6. Truancy | 0.193 | 0.225 | 0.170 | 0.227 | 0.291 | 1.000 | | |
| 7. Weapon carrying | 0.039 | 0.033 | 0.034 | 0.028 | 0.018 | -0.004 | 1.000 | |
| 8. Fighting | 0.173 | 0.182 | 0.131 | 0.145 | 0.104 | 0.075 | 0.037 | 1.000 |
| N (unweighted) | 7477 | 7488 | 7478 | 7477 | 7442 | 7427 | 7521 | 7486 |
| Range | 0-1 | 0-1 | 0-1 | 0-1 | 0-1 | 0-1 | 0-1 | 0-1 |
| Mean | 0.128 | 0.072 | 0.095 | 0.039 | 0.058 | 0.019 | 0.012 | 0.058 |
| SD (linearized) | 0.004 | 0.003 | 0.004 | 0.002 | 0.003 | 0.002 | 0.002 | 0.003 |

Positive coefficients <.019 and negative coefficients >-.019 are significant at the p<.05 level.

† Recoded as dummy variable for analysis.

Bullying variables

Bullying is most often defined as the repeated exposure of an individual to negative actions, over time, on the part of one or more other students (Olweus 1993).

⁶ All descriptive statistics cited in this section were computed using unweighted data.

The negative actions are carried out with intent and can include an array of behaviors including, for example, pushing, shoving, threatening, spreading rumors, or facial expressions. Bullying is most often subset into two main categories of behaviors: direct and indirect. Direct (overt) bullying involves relatively open and physical attacks on the victim and indirect (covert) bullying includes less visible types of bullying such as social isolation and intentional exclusion from activities.

Bullied

Students responding to the 2003 School Crime Supplement to the National Crime Victimization Survey were asked two questions about bullying. First they were asked “During the last 6 months, have you been bullied at school? That is, has anyone picked on you a lot or tried to make you do things you didn’t want to do like give them money?” They were then asked “During the last 6 months, have you often felt rejected by other students at school? For example, have you felt rejected because other students have made fun of you, called you names, or excluded you from activities?” If respondents answered affirmatively (coded as 1) to either the first (bullied) question or the second (rejection) question they were included in the “Bullied” category. Those who answered negatively were coded as 0.

Direct

Olweus (1993) notes that bullying most typically takes two forms, one of which is termed “direct” physical or overt aggressive behavior in which the victim is openly attacked. For the purposes of this analysis, students who responded affirmatively to the first (bullied) question were considered bullied “directly.”

Indirect

The second form of bullying is “indirect” bullying, which involves more passive aggressive techniques taking the form of name calling and intentional exclusion from

activities. For the purposes of this analysis, students who responded affirmatively to the second (rejection) question were considered bullied “indirectly.”

Both direct and indirect

This category includes students who answered affirmatively to both the direct and indirect bullying question. Readers should be aware that though this category may imply that students in this category are bullied *more*, this is not true. Rather they are bullied in varying ways, with bullies using both direct and indirect techniques on the victims.

Individual-level dichotomous guardianship behavior variables

Individual weapon carrying

Respondents were asked several questions about weapons at school. The items of interest in this dissertation stated, “Some people bring guns, knives, or objects that can be used as weapons to school for protection. During the last 6 months, that is, since _____^{1st}, 2002, did YOU ever bring the following to school or onto school grounds? A gun? A knife brought as a weapon? Some other weapon?” Due to the small sample size of respondents answering “Yes” to each of these questions about guns, knives, and other weapons (0.2, 0.9, and 0.3 percent answered “Yes,” respectively), this variable was constructed to measure the affirmative responses of students to any of these measures (for a total of 1.1 percent of the sample responding that they had brought any weapon to school in the last 6 months). “Yes” responses were coded as 1 and “No” responses were coded as 0.

Individual fighting

Respondents were asked “During the last 6 months, have you been in one or more physical fights at school?” Response categories included Yes (1) or No (0).

Approximately 5.8 percent of respondents reported engaging in a fight on school property in the 6 months prior to the survey.

Individual avoidance behaviors

Respondents were also asked, “During the last 6 months, that is, since _____ 1st, 2002, did you STAY AWAY from any of the following places because you thought someone might attack or harm you there?” Places included: the shortest route to school, the entrance into the school, any hallways or stairs in the school, parts of the school cafeteria, any school restrooms, other places inside the school building, school parking lot, and other places on school grounds. Response categories included Yes or No. Due to the small number of students who reported “Yes” to each of these measures (ranging from 1.3 to 2.4 percent). These items were collapsed into a single dichotomous variable, indicating that the student either 1) avoided one or more places at school, or 0) avoided no places at school.

Approximately 5.8 percent of students reported that they avoided one or more places on school grounds.

Individual truancy

Respondents were also asked whether they had been entirely truant from extra-curricular activities, classes, or school because they were fearful that someone would attack or harm them. Question wording was as follows for each of the three items: “Did you AVOID any extra-curricular activities/AVOID any classes/stay home from school because you thought someone might attack or harm you at school, or going to or from school?” Response categories included Yes or No. Few students reported “Yes” to each of these truancy measures (1.0, 0.6, and 0.7 percent, respectively), so the items were combined into a dichotomous measure where 0 indicated the student did not skip

any activities due to fear, and 1 indicated the student skipped one or more activities due to fear. Almost 2 percent (1.9 percent) of students reported being truant from school or a school activity.

School-level guardianship behavior variables

School security

Mechanisms of school guardianship were measured using two broad categories. The first category includes nine measures related to the presence of security measures and procedures and the second category includes five measures of students' perceptions of the communication, consistency, and enforcement of school rules.

The first category of items that examine security measures are located under the stem question "Does your school take any measures to make sure students are safe?" These include: Security guards and/or assigned police officers? Other school staff or other adults supervising the hallway? Metal detectors? Locked entrance or exit doors during the day? A requirement that visitors sign in? Locker checks? A requirement that students wear badges or picture identification? One or more security cameras to monitor the school? A code of student conduct, that is, a set of written rules or guidelines that the school provides you?" Response options included Yes (coded as 1), No (coded as 0), or Don't Know (also coded as 0).

Correlation matrices and an initial principal components factor analysis revealed two factors that could be divided into "hard" and "soft" security measures. Theoretically, this distinction is consistent with school safety literature that discusses the essential subject areas of a safe school plan. These include those that affect the: physical environment, social environment, cultural environment, economic

environment, personal characteristics of individual students and staff members, and the local political atmosphere (Stephens 1998). Hard measures such as security guards, metal detectors, a requirement that ID badges be carried, and surveillance equipment are physical security measures imposed upon students' physical and personal environment whereas more indirect, or soft, safety measures are not as imposing and impact the social or cultural environment—these include staff supervision, locked doors during the day, visitor sign in, locker checks, and the distribution of a student code of conduct.

Consequently, the originally conceived security scale was divided into two measures. Hard security measures included: security guards, metal detectors, student ID badges, and security cameras. Soft security measures included: staff supervision, locked entrances or exits during the day, visitor sign in, locker checks, and a student code of conduct. The additive scale ranged from 0 to 4 for the hard measures and from 0 to 5 for the soft measures, with zero indicating the presence of no selected physical security measures and the highest number indicating affirmative responses to the presence of all selected security measures. Students who responded that they “Didn’t Know” if a security measure was present, were conservatively coded as “0,” rather than set to system missing in order to retain them as a respondent.⁷

Correlation matrices for the hard security measures scale show that the items were all positively correlated and have sufficient variability in their standard deviations. Missing cases were deleted listwise and accounted for only 0.6 percent of the sample.

⁷ The percentage of respondents who said “Don’t Know” for any of the security measures in question did not exceed 7 percent for any of the variables except security cameras. For this item, 15 percent of students reported that they did not know if their school employed such measures.

The mean for the scale was 1.506 and the standard deviation was 1.028. The Cronbach's Alpha measure of reliability for the overall scale is .421. Item-total statistics show that deletion of any single item would not increase the variance of the scale or increase the scale's reliability. Principal component analysis of the 4-item, hard security measure scale showed all items loaded highly on one factor, ranging from .558 to .662. The entire factor accounted for 37 percent of the variance.

Table Three: Operationalization of Selected Scales (Unweighted).

| | |
|--|----------|
| Hard Physical Security Measures | Factor |
| Range = 0 to 4, Mean = 1.506, SD = 1.028, $\alpha = .421$ | Loadings |
| Does your school take any measures to make sure students are safe? | |
| For example, does the school have: | |
| Security guards and/or assigned police officers? | .662 |
| Metal detectors? | .589 |
| A requirement that students wear badges or picture identification? | .620 |
| One or more security cameras to monitor the school? | .558 |
| Soft Physical Security Measures | Factor |
| Range = 0 to 5, Mean = 3.834 SD = .974, $\alpha = .327$ | Loadings |
| Does your school take any measures to make sure students are safe? For example, does the school have: | |
| Locker checks? | .593 |
| Other school staff or other adults supervising the hallway? | .436 |
| Locked entrance or exit doors during the day? | .587 |
| A requirement that visitors sign in? | .495 |
| A code of student conduct, that is, a set of written rules or guidelines that the school provides you? | .549 |
| Communication, Consistency, and Enforcement of School Rules | Factor |
| Range = 0 to 15, Mean = 10.419, SD = 2.175, $\alpha = .747$ | Loadings |
| I am going to read a list of statements that could describe a school. Thinking about your school over the last 6 months, would you strongly agree, agree, disagree, or strongly disagree with the following. | |
| Everyone knows what the school rules are. | .675 |
| The school rules are fair. | .700 |
| The punishment for breaking school rules is the same no matter who you are. | .729 |
| The school rules are strictly enforced. | .709 |
| If a school rule is broken, students know what kind of punishment will follow. | .714 |

Correlation matrices for the soft security measures scale show that the items were all positively correlated and have sufficient variability in their standard deviations. Missing cases were deleted listwise and accounted for only .9 percent of the sample. The mean for the scale was 3.834 and the standard deviation was .974. The Cronbach's Alpha measure of reliability for the overall scale is .327. Item-total statistics showed no improvement with either the variance or reliability of the scale if any of the items were deleted. Principal component analysis of the 5-item, soft security measure scale showed all items loaded highly on one factor, ranging from .436 to .593. The entire factor accounted for 29 percent of the variance. A critique of these variables, as discussed in the data limitations section, is their construction based on student awareness of security measures which are often variable within schools and may be further confounded by individual-level characteristics.

School rules

The final scale to be described includes 5 items adapted from the Gottfredson's (1999) Effective School Battery. The items were used by permission in the National Center for Education Statistics' 1989 version of the School Crime Supplement. The items tap rule fairness and clarity, but do not include all of the items suggested by the Gottfredsons to be included on the Fairness and Clarity scales and do not use exact wording in all cases. They are a select group, beginning with the stem "I am going to read a list of statements that could describe a school. Thinking about your school over the last 6 months, would you strongly agree [coded as 3], agree [coded as 2], disagree [coded as 1], or strongly disagree [coded as 0] with the following... Everyone knows what the school rules are. The school rules are fair. The punishment for breaking school rules is the same no matter who you are. The school rules are strictly enforced.

And, if a school rule is broken, students know what kind of punishment will follow.” A high score of 15 indicates strong agreement with the statements about school rules and communication and a low score of 0 indicates no agreement with any of the statements provided.

Correlation matrices show that all items are positively correlated, but none were correlated higher than .440 and all showed sufficient variability in their standard deviations, indicating no presence of multicollinearity. Missing cases were deleted listwise and accounted for only 1.6 percent of the cases. The mean for the scale was 10.4186 and the standard deviation was 2.175. Reliability of the overall scale, as measured by Cronbach’s Alpha, was .747. Item-total statistics shows that deletion of any single item would not significantly improve the scale variance or increase the scale’s reliability.

Principal component factor analysis of the scale showed that all items loaded highly on one factor, ranging from .675 to .729. The entire factor accounted for 50 percent of the variance. In order to supply sufficient variation⁸ within categories for the multivariate analyses proposed, the scale was further collapsed into three categories, those students who had scores from 0 to 5, 6 to 10, and 11 to 15. A critique of this variable, as discussed in the data limitations section, is that it is constructed from student perceptions of school climate which are often variable within schools and may be further confounded by individual-level characteristics.

⁸ When not collapsed in this way, the Taylor-series approximation method for variance estimation was unable to compute standard errors appropriately. Specifically, this was problematic because there was only a single stratum within a single sampling unit (and thus, no variation).

Control variables

Several control variables were used in this analysis that included individual and school characteristics as well as an additional variable that taps the exposure/proximity component of the target-selection process in routine activity theory.

Individual characteristics include students' self-reported sex, race/ethnicity, grade level, and household urbanicity. In addition, student reports of criminal victimization and fear will also be included as control variables. The demographic characteristics were derived from responses to the main NCVS instrument. Sex was reported in the NCVS-1 Basic Screen Questionnaire and appended to the SCS 03 data file as either "Male" (coded as 1) or "Female" (coded as 0). Race/ethnicity was derived from two items on the NCVS-1 Basic Screen Questionnaire. The first item asks the respondent their race and the second asks about Hispanic origin. Regardless of their answer to the first item, if the respondent identifies themselves as Hispanic in the second, they are included as "Hispanic" in the race/ethnicity variable used in this analysis. Remaining categories used in this analysis included "White," "Black," or "Other." Those individuals included in the "Other" category identified themselves as Asians, Pacific Islanders, and American Indians (including Alaskan Natives). The resulting categories were: White, non-Hispanic, Black, non-Hispanic, Other, non-Hispanic, and Hispanic.⁹ Grade level (grades 6 through 12) and urbanicity classification (suburban, urban, and rural) were also included. The race/ethnicity and urbanicity variables were dummy coded for the analysis and White, non-Hispanic and suburban were used for each as the reference category.

⁹ Referred to as "White, Black, Hispanic, and Other" for the remainder of this dissertation, for ease of presentation.

Criminal victimization, as opposed to bullying, may result in elevated levels of fear that may impact the behaviors of interest in this dissertation (avoidance, weapon carrying, etc.) In fact, Kingery, Pruitt, and Heuberger found that among a sample of rural students in central Texas, fearful students were more likely to carry a weapon to school (1996). May (1999) also found that fear of criminal victimization was significantly related to student weapon carrying, even when controlling for other theoretical variables. To control for such spurious relationships in this cross-sectional dataset, criminal victimization and fear variables are included in this analysis.

Of the SCS respondents who reported victimization, each may have reported at least one and as many as 9 incident(s) of criminal victimization on the NCVS-1. For each incident of victimization reported, a Crime Incident Report NCVS- 2 was completed. These (up to 9) Crime Incident Reports were appended to the SCS data file for each respondent who reported at least one incidence of victimization. Three prevalence measures were constructed that control for violent victimization and property victimization experienced by the respondent. Violent victimization includes completed and attempted rapes, all sexual attacks, all completed and attempted robberies, all aggravated assaults, all verbal threats and threats with weapons, sexual assault without injury, and unwanted sexual contact without force, simple assault with injury, assault without a weapon and without injury, and verbal threat of assault. Property victimization includes purse snatching, pick pocketing, all burglaries, attempted forcible entry, completed and attempted motor vehicle theft, and completed thefts valuing \$10 or greater. These variables measure the prevalence of victimization, that is, if a respondent reported one or more incidents in one of these types of

victimizations (coded as 1), they were included as a victim only once under the specified category. Non-victims were coded as 0.

Fear was measured in the SCS 03 instrument in a series of measures that asked students if they were afraid someone would attack or threaten to attack them at school or on the way to or from school. Response options were: “Never,” “Almost Never,” “Sometimes,” and “Most of the time.” These were combined into a single variable measuring fear at school. If a respondent reported almost never, sometimes or most of the time to either question, they were coded as 1, fearful. Remaining respondents who reported they were never fearful were coded as 0.

Student reported school sector (public/private, coded as 1 and 0, respectively) is included in this analysis, as well as a proxy variable to measure school level (elementary, secondary, or other combined). This proxy variable was constructed using the highest grade and lowest grade level that the student reported at their school and based on Gottfredson et al.’s definition put forth in their National Study of Delinquency Prevention in Schools (Gottfredson, Gottfredson, Czeh, Cantor, Crosse, and Hantman 2000) (See Figure Two).¹⁰ Level was then dummy coded and middle was used as the reference category.

Because this investigation focuses on a single element of target selection and routine activity theory, guardianship, it is also necessary to control for other elements of routine activity and target selection theory where possible. In this dataset, another

¹⁰ Additional options were available on the SCS for the highest grade reported. These options include: post-graduate study, all ungraded schools (e.g. alternative schools), or all special education schools. Those students who reported “post-graduate” level as the highest grade offered (n=5) were coded as high school students and those attending ungraded (n=0) or special education schools (n=9) were excluded from the analysis.

control based on Hough's target selection theory is available that measures target proximity and is included in this analysis (Hough 1987). Income was also included as a measure of desirability in the initial analysis, but ultimately excluded as discussed later in the findings.

Figure Two: Gottfredson et al.'s Construction of the School Level Variable Using the Reported Lowest and Highest Grades in a Student's School (E=elementary, M=middle, H=high).

| Lowest grade | Highest grade | | | | | | | | | | | |
|--------------|---------------|---|---|---|---|---|---|---|---|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Pre-K | E | E | E | E | E | E | E | E | M | M | H | H |
| K | E | E | E | E | E | E | E | E | M | M | H | H |
| 1 | E | E | E | E | E | E | E | E | M | M | H | H |
| 2 | | E | E | E | E | E | E | E | M | M | H | H |
| 3 | | | E | E | E | E | E | E | M | M | H | H |
| 4 | | | | E | E | E | M | M | M | M | H | H |
| 5 | | | | | E | E | M | M | M | M | H | H |
| 6 | | | | | | E | M | M | M | M | H | H |
| 7 | | | | | | | M | M | M | M | H | H |
| 8 | | | | | | | | M | M | H | H | H |
| 9 | | | | | | | | | M | H | H | H |
| 10 | | | | | | | | | | H | H | H |
| 11 | | | | | | | | | | | H | H |
| 12 | | | | | | | | | | | | H |

Source: Gottfredson, G., Gottfredson, D., Czeh, E., Cantor, D., Crosse, S, & Hantman, I. (2000). National Study of Delinquency Prevention in Schools. Appendix A: Sampling and Recruitment. Page A-1.

Meier and Miethe (1993) suggest that physical proximity to crime greatly increases the risk of victimization. They list common measures of physical proximity including: places of residence, socioeconomic characteristics of the area, the perceived safety of and average rate of offending in the immediate neighborhood (Meier and Miethe 1993, p. 480). One measure of proximity available on the SCS can be based on respondents' reports of gang presence at their school. Specifically, respondents were asked "Are there any gangs at your school?" with response options of "Yes," "No," and "Don't Know" (recoded to Yes (1) or No (0), which included Don't Know responses). Gangs were defined as "street gangs, fighting gangs, crews, or something else. Gangs

may use common names signs, symbols or colors. For this survey, we are interested in all gangs, whether or not they are involved in violent or illegal activity.” Assuming that gang presence can indicate increased numbers of potential offenders; this variable is included as a measure of proximity.

The only measure of target desirability available is the reported household income from the main NCVS-1 Basic Screen Questionnaire and appended to the SCS 03 data file. Income was included as was made available on the original data file, as a categorical variable with 14 categories ranging from \$5,000 or less to \$75,000 and over, in increments of \$2,000.¹¹ Seventeen percent of respondents’ household income data were missing. Those with missing data were coded as having a categorical income of 15, in order to retain data for the analysis. Though Olweus (1978) and DeVoe and Kaffenberger (2005) found no relationship between socioeconomic status of the family and student reports of bullying victimization, its role in target-selection may be a factor and is included in this analysis as such until it can be determined if findings are the same regardless of its inclusion, following such precedent set by Addington (2005).

Detecting multicollinearity

Prior to any multivariate analysis, it is necessary to explore the relationship between the variables of interest and to detect any problems associated with multicollinearity. Table Three presents the bivariate correlation coefficients of the independent variables to be included in the analysis. High intercorrelations between independent variables included in a multivariate analysis may yield unstable and biased parameter estimates (Berry and Feldman 1982). A correlation of at least .70 between

¹¹ Descriptive statistics reported above were collapsed into smaller categories for ease of presentation.

two independent variables is generally treated as the threshold at which multicollinearity must be addressed, however, as indicated in Table Four, only one set of variables was highly correlated.

The correlation between student grade level and school-level (elementary, middle, and high school) was .75. This correlation is not surprising since students in certain grades would certainly fall within consistent school-level classifications. Therefore, both variables will be retained for the purposes of descriptive analysis but only school level classifications will be retained for the purposes of the multivariate analysis.

Table Four: Bivariate Correlations and Descriptive Statistics for the Independent Variables Included in the Analysis (Listwise N=7,153), Unweighted.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| 1. Grade | 1.000 | | | | | | | | | | | | | | |
| 2. Gender | 0.020 | 1.000 | | | | | | | | | | | | | |
| 3. Race/Ethnicity | -0.035 | -0.004 | 1.000 | | | | | | | | | | | | |
| 4. Urbanicity | 0.005 | 0.004 | 0.067 | 1.000 | | | | | | | | | | | |
| 5. Violent victimization | -0.030 | -0.038 | -0.020 | -0.001 | 1.000 | | | | | | | | | | |
| 6. Theft victimization | 0.001 | 0.001 | -0.026 | 0.001 | 0.094 | 1.000 | | | | | | | | | |
| 7. Sector | 0.018 | -0.022 | 0.051 | 0.029 | 0.012 | -0.004 | 1.000 | | | | | | | | |
| 8. School level | 0.753 | 0.001 | -0.046 | -0.002 | -0.018 | 0.026 | 0.061 | 1.000 | | | | | | | |
| 9. Fear | -0.062 | 0.030 | 0.084 | 0.012 | 0.068 | 0.078 | 0.049 | -0.030 | 1.000 | | | | | | |
| 10. Gang presence | 0.095 | -0.037 | 0.217 | 0.010 | 0.067 | 0.062 | 0.135 | 0.116 | 0.193 | 1.000 | | | | | |
| 11. HH income | 0.074 | -0.011 | -0.273 | -0.178 | -0.008 | 0.029 | -0.132 | 0.057 | -0.067 | -0.103 | 1.000 | | | | |
| 12. Hard security | 0.225 | -0.017 | 0.156 | 0.018 | 0.018 | 0.009 | 0.204 | 0.267 | 0.068 | 0.217 | -0.101 | 1.000 | | | |
| 13. Soft security | 0.083 | 0.019 | -0.060 | -0.029 | -0.006 | -0.011 | 0.110 | 0.076 | 0.002 | 0.034 | 0.014 | 0.235 | 1.000 | | |
| 14. School rules | -0.100 | 0.041 | -0.015 | -0.050 | -0.047 | -0.053 | -0.109 | -0.101 | -0.100 | -0.133 | 0.061 | -0.019 | 0.071 | 1.000 | |
| 15. Bullied | -0.158 | 0.005 | -0.058 | 0.036 | 0.134 | 0.060 | 0.021 | -0.114 | 0.252 | 0.055 | -0.021 | -0.039 | -0.015 | -0.088 | 1.000 |
| N (unweighted) | 7521 | 7521 | 7521 | 7521 | 7521 | 7521 | 7511 | 7512 | 7467 | 7475 | 7521‡ | 7521 | 7521 | 7401 | 7477 |
| Range | 6-12 | 0-1 | 1-4† | 1-3† | 0-1 | 0-1 | 0-1 | 1-3† | 0-1 | 0-1 | 1-15 | 1-4 | 1-5 | 1-15 | 0-1 |
| Mean | 4.070 | 1.489 | 1.789 | 1.635 | 0.135 | 0.040 | 0.914 | 2.545 | 0.210 | 0.210 | 11.642 | 1.502 | 3.834 | 10.419 | 0.128 |
| SD (linearized) | 0.022 | 0.006 | 0.021 | 0.039 | 0.001 | 0.002 | 0.005 | 0.008 | 0.007 | 0.007 | 0.061 | 0.024 | 0.020 | 0.025 | 0.004 |

Positive coefficients <.021 and negative coefficients >-.022 are significant at the p<.05 level.

† Recoded as dummy variable for analysis.

‡ Missing cases coded as 15.

Multicollinearity depends not just on the bivariate correlations among pairs of variables, but also on the multivariate predictability of a single predictor on all others. Variance inflation factor (VIF) and Tolerance are two additional statistics that can be used to identify multicollinearity among groups of predictor variables. Variance inflation factors were estimated for all the variables in each of the models proposed. While there is no theoretical justification for establishing a “high” VIF threshold, according to some literature variance inflation factors considered to be high generally range above 5 or 10 (Haan 2002), and indicate more variance in a regression coefficient and the greater likelihood of finding that coefficient nonsignificant. This indicates that multicollinearity is present within a proposed model. The statistics calculated in this analysis indicate all VIFs and corresponding tolerances ($1/\text{VIF}$) were within acceptable limits with the exception of the school level dummy variables. Specifically, these variables (dummy coded to indicate elementary, middle, and high school) showed marginal signs of multicollinearity with tolerances of 0.2 or less and variance inflation factors of 4.0 and greater. Because of the lack of relationship found between school level and the protective behaviors of interest in the forthcoming descriptive analyses (Table Six), only the dummy variable for middle school was retained for the advanced analyses presented in Tables Eight through Twelve.

Plan for analysis

As a result of the complex sampling design of the SCS and the NCVS, the resulting estimators are more variable than they would have been had they been based on a simple random sample of the same size. In order to account for the complex design of the sample, an analysis package that utilizes the Taylor Series procedure is

required. Therefore, statistical analyses was performed using STATA statistical software package, using the relevant variables available from the dataset: PSEUDO-STRATUM CODE and STANDARD ERROR COMPUTATION CODE.

Descriptive statistics will first be provided regarding student- and school-level characteristics associated with bullying victimization and its subtypes. The bivariate statistical comparisons in this report are based on the t statistic. Whether the statistical test is considered significant or not is determined by calculating a t value for the difference between a pair of means or proportions and comparing this value to published tables of values, called critical values. The alpha level is an a priori statement of the probability that a difference exists in fact rather than by chance.

The t statistic between estimates from various subgroups presented in the tables was computed by using the following formula:

$$t = \frac{x_1 - x_2}{\sqrt{(SE_1^2 + SE_2^2)}}$$

where x_1 and x_2 are the estimates to be compared (e.g., the means of sample members in two groups) and SE_1 and SE_2 are their corresponding standard errors.

Linear trend tests were used when differences among percentages were examined relative to ordered categories of a variable, rather than the differences between two discrete categories. This test allows one to examine, for example, whether the percentage of students reporting bullying increased (or decreased) with their grade level or with their household income. Based on a regression with, for example, student grade level as the independent variable and bullying victimization as the dependent variable, the test involves calculating a regression coefficient (b) and its corresponding standard error (se). The ratio of these two (b/se) is the test statistic t . If t is greater than

1.96, the critical value for one comparison at the .05 alpha level, the hypothesis that there is a linear relationship between students' grade level and bullying victimization is not rejected.

After the presentation of descriptive statistics about victims of bullying using *t* tests and linear regression, the hypotheses under investigation will be analyzed using logistic regression. Logistic regression allows one to examine the effects of several independent variables on a dichotomous dependent variable. When introducing several independent variables simultaneously during the regression procedure, the possibility for distortion by other (uncontrolled) independent variables is removed.

Rare events and logistic regression

According to King and Zeng (2001), when using rare events as dependent binary variables, the likelihood of an event occurring $\Pr(Y=1)$ is underestimated and the likelihood of an event not occurring $\Pr(Y=0)$ is greatly overestimated, especially in cases where the estimated event of interest is less than 5 percent and the sample size is less than a few thousand (King and Zeng 2001). Though the unweighted sample size for the SCS is 7,521, several of the variables of interest in this analysis can be considered rare events. Specifically, weapon carrying was reported by only 1.2 percent of students ($n=82$) and truancy was reported by 1.9 percent of students ($n=137$) (see Table Two). When using logistic regression to model such rare events, bias exists in probabilities that are large in number and always in the same direction (that is, 0 or the nonevent). That is, the estimated event probabilities are too small and logistic regression techniques compound this underestimation. Until recently, few criminologists corrected for the underestimation of rare event probabilities (see

exception, Piquero, MacDonald, Dobrin, Daigle, and Cullen 2005). Fortunately, King and colleagues have facilitated the use of a mathematical correction through the development of software called RELOGIT (which runs concurrently within the STATA platform) that corrects for this underestimation in the case of rare events (Tomz, King, and Zeng 1999).

As is suggested by King and Zeng (2001b) when RELOGIT's method of bias correction makes a difference, the results are better than those derived with logit, when they do not, the methods are the same as those provided in logit (p. 702). As was suggested in correspondence with King (via email March 14, 2007) and in the article detailing rare events analysis (King and Zeng 2001b), analysis on questionable data should be run both ways, in order to determine if such a bias exists. Therefore, for the outcome variables of weapon carrying and truancy, supplementary analysis was performed using RELOGIT in order to verify and account for the rare nature of outcome behaviors and their relationships with the variables in question. Findings from RELOGIT did not differ from those using logistic regression. The few discrepancies found were substantively minor and are detailed in Chapter Four. Readers should note, however, that the downside of using RELOGIT is that the program is unable to account for the sampling design of the NCVS (as discussed in the variance estimation section) and results should only be considered in conjunction with those from the logistic model which incorporates these adjustments. A detailed summary of the problems posed by rare events and supplementary results to this dissertation can be found in Appendix Two.

Results detailed in the text of this dissertation will be tested for statistical significance to ensure that the differences are larger than those that might be expected due to sampling variation ($p < 0.05$). Chapter Four presents the results of the statistical analysis while Chapter Five presents a discussion of conclusions, limitations of the findings, and implications for policy makers and programs.

Chapter 4: Results

Before proceeding with the analysis of the proposed hypotheses, descriptive statistics are provided that reflect results from the most recent 2003 NCVS/SCS sample data. The second section of this chapter then explores the protective behaviors of bullied students, as established in the review of the literature and methodology discussed in Chapters One through Three. Specifically, the analysis will examine whether victims of bullying are more likely to use protective behaviors such as weapon carrying, fighting, avoidance, and truancy; whether such behaviors are more likely in those schools that are perceived to be ineffective guardians, as measured by perceived enforcement of school rules and the presence of security measures; and whether these protective behaviors will vary by the type of bullying victimization experienced.

Descriptive statistics

Among the 7,500 students aged 12 through 18 sampled by the 2003 School Crime Supplement to the National Crime Victimization Survey, 12.8 percent reported being bullied at school in the 6 month period prior to the survey (see Table Five). Approximately 7.1 percent of students reported that they had been bullied directly and 9.5 percent reported indirect bullying.¹² Almost 4 percent of students (3.8) reported being bullied both directly and indirectly.

¹² Students who were directly bullied answered “Yes” to the following question: “During the last 6 months, have you been bullied at school? That is, has anyone picked on you a lot or tried to make you do things you didn’t want to do like give them money?” Students who were indirectly bullied answered “Yes” to the following question: “During the last 6 months, have you often felt rejected by other students at school? For example, have you felt rejected because other students have made fun of you, called you names, or excluded you from activities?” Total reports of bullying include students who answered “Yes” to one of the above described items and reports of “both” types of bullying include students who answered “Yes” to both items.

Student characteristics

Descriptive statistics related to student grade level, gender, race/ethnicity, household urbanicity, household income, student fear levels and victimization are summarized in Table Five. Consistent with prior research (DeVoe and Kaffenberger 2005, Nansel et al. 2001, Olweus 1993) and confirmed by linear regressions, reports of each category of bullying (direct, indirect, and both) varied inversely with grade level, that is, as grade level increased reports of bullying decreased. Twenty two percent of 6th grade students reported being bullied in 2003, compared to only 5.8 percents of 12th grade students. Direct and indirect bullying were reported by 13.5 and 15.8 percent of 6th grade students, respectively, compared to 2.0 and 4.7 percent of twelfth grade students.

When examining total reports of bullying and those who experienced both types, males and females were equally likely to report being bullied. That is, 12.7 percent of males and 12.9 percent of females reported being bullied in either way at school and 3.9 percent of males and 3.7 percent of females reported being bullied in both ways in 2003. In addition, the data show that direct, more physical forms of bullying are experienced more by males (7.8 percent) than females (6.4 percent) and more females reported being the victim of indirect forms of bullying (10.2 percent) than males (8.7 percent). These findings regarding bullying victimization are consistent with those in the literature on the gendered nature of aggression, showing that boys are more likely than girls to engage in more physical acts of bullying (Feshbach et al. 1969, Lagerspetz et al. 1988, Crick and Grotpeter 1995, Osterman et al. 1998).

Fourteen percent of White students and 12.2 percent of Black students reported being bullied in 2003. White students were more likely to report bullying than

Hispanic students (9.6 percent) and students of other, non-Hispanic race/ethnicities (9.5 percent). Indirect bullying was more likely to be reported by White students (10.8 percent) than students in any other racial category (8.5, 6.6, and 7.1 percent of Black, Hispanic, and other students, respectively). White students were also more likely to report direct bullying victimization than Hispanic students (7.8 percent vs. 5.8 percent) and both types of bullying victimization than Black students (4.4 percent vs. 2.8 percent). These findings regarding the relationship between race and bullying are largely consistent with those of Nansel et al. (2001) and DeVoe and Kaffenberger (2005).

Also consistent with existing research, student's residential urbanicity played a role in reports of bullying while household income did not. Across all types of bullying investigated, rural students were significantly more likely to report bullying victimization than suburban and urban students. Seventeen percent of rural students reported being bullied in 2003, compared to approximately 12 percent each of suburban and urban students. Direct and indirect bullying were reported by 9.9 and 12.4 percent of rural students, respectively, compared to 6.7 percent and 9.0 percent each of suburban and urban students, respectively. When examining the relationships between student household income and bullying, none were significant in results from the linear regression. In addition, no significant differences emerged among individual comparisons of income levels among the t-tests. While DeVoe and Kaffenberger (2005) and Olweus (1993) found no effect for either urbanicity or household income on bullying behavior, Nansel and her colleagues similarly found that rural students were more likely to report bullying victimization (2001).

Table Five: Percentage of students ages 12 to 18 reporting bullying victimization by student characteristics: 2003.

| | Not bullied | Bullied | Bullied directly | Bullied indirectly | Bullied in both ways |
|--------------------------------|-----------------------|------------------------|-----------------------|------------------------|-----------------------|
| Total | 87.2 | 12.8 | 7.1 | 9.5 | 3.8 |
| <i>Standard error</i> | <i>(0.44)</i> | <i>(0.44)</i> | <i>(0.32)</i> | <i>(0.37)</i> | <i>(0.24)</i> |
| Student characteristics | | | | | |
| Grade level | | | | | |
| Sixth† | 77.8 <i>(1.85)</i> | 22.2 <i>(1.85)</i> | 13.5 <i>(1.45)</i> | 15.8 <i>(1.47)</i> | 7.2 <i>(1.02)</i> |
| Seventh | 80.3 <i>(1.06)</i> | 19.7 <i>(1.06)</i> | 12.1 <i>(0.89)</i> | 14.2 <i>(0.96)</i> | 6.6 <i>(0.66)</i> |
| Eighth | 85.6 <i>(0.92)</i> | 14.4* <i>(0.92)</i> | 8.5* <i>(0.72)</i> | 10.6* <i>(0.78)</i> | 4.7* <i>(0.53)</i> |
| Ninth | 87.7 <i>(0.94)</i> | 12.3* <i>(0.94)</i> | 7.1* <i>(0.76)</i> | 8.9* <i>(0.82)</i> | 3.6* <i>(0.61)</i> |
| Tenth | 91.3 <i>(0.90)</i> | 8.7* <i>(0.90)</i> | 3.5* <i>(0.59)</i> | 7.5* <i>(0.81)</i> | 2.3* <i>(0.46)</i> |
| Eleventh | 93.1 <i>(0.79)</i> | 6.9* <i>(0.79)</i> | 3.5* <i>(0.59)</i> | 4.9* <i>(0.69)</i> | 1.5* <i>(0.36)</i> |
| Twelfth | 94.2 <i>(0.88)</i> | 5.8* <i>(0.88)</i> | 2.0* <i>(0.49)</i> | 4.7* <i>(0.85)</i> | 0.8* <i>(0.29)</i> |
| <i>b=</i> | | -.029* | -.020* | -.020* | -.012* |
| Gender | | | | | |
| Male | 87.3 <i>(0.53)</i> | 12.7 <i>(0.53)</i> | 7.8* <i>(0.44)</i> | 8.7 <i>(0.46)</i> | 3.9 <i>(0.33)</i> |
| Female | 87.1 <i>(0.59)</i> | 12.9 <i>(0.59)</i> | 6.4 <i>(0.42)</i> | 10.2* <i>(0.53)</i> | 3.7 <i>(0.32)</i> |
| Race/ethnicity | | | | | |
| White† | 85.8 <i>(0.58)</i> | 14.2 <i>(0.58)</i> | 7.8 <i>(0.41)</i> | 10.8 <i>(0.49)</i> | 4.4 <i>(0.31)</i> |
| Black | 87.8 <i>(1.09)</i> | 12.2 <i>(1.09)</i> | 6.6 <i>(0.72)</i> | 8.5* <i>(0.87)</i> | 2.8* <i>(0.47)</i> |
| Other, non-Hispanic | 90.5 <i>(1.73)</i> | 9.5* <i>(1.73)</i> | 5.7 <i>(1.32)</i> | 7.1* <i>(1.35)</i> | 3.4 <i>(0.88)</i> |
| Hispanic | 90.4 <i>(0.69)</i> | 9.6* <i>(0.69)</i> | 5.8* <i>(0.62)</i> | 6.6* <i>(0.56)</i> | 2.8 <i>(0.47)</i> |
| Urbanicity | | | | | |
| Rural† | 83.4 <i>(1.17)</i> | 16.6 <i>(1.17)</i> | 9.9 <i>(1.15)</i> | 12.4 <i>(1.09)</i> | 5.7 <i>(0.82)</i> |
| Suburban | 87.9 <i>(0.58)</i> | 12.1* <i>(0.58)</i> | 6.7* <i>(0.40)</i> | 9.0* <i>(0.49)</i> | 3.6* <i>(0.30)</i> |
| Urban | 87.6 <i>(0.75)</i> | 12.4* <i>(0.75)</i> | 6.7* <i>(0.54)</i> | 9.0* <i>(0.64)</i> | 3.3* <i>(0.39)</i> |

* p<.05

† Denotes the reference category for significant notations.

Table Five (continued): Percentage of students ages 12 to 18 reporting bullying victimization by student characteristics: 2003.

| | Not bullied | Bullied | Bullied directly | Bullied indirectly | Bullied in both ways |
|--------------------------------|-----------------------|------------------------|------------------------|------------------------|-------------------------|
| Total | 87.2 | 12.8 | 7.1 | 9.5 | 3.8 |
| <i>Standard error</i> | <i>(0.44)</i> | <i>(0.44)</i> | <i>(0.32)</i> | <i>(0.37)</i> | <i>(0.24)</i> |
| Student characteristics | | | | | |
| Income | | | | | |
| Less than \$7,500† | 87.7 <i>(2.24)</i> | 12.3 <i>(2.24)</i> | 6.4 <i>(1.56)</i> | 9.6 <i>(1.97)</i> | 3.7 <i>(1.12)</i> |
| \$7,500-14,999 | 86.6 <i>(1.96)</i> | 13.4 <i>(1.96)</i> | 9 <i>(1.56)</i> | 9.1 <i>(1.53)</i> | 4.8 <i>(1.04)</i> |
| \$15,000-24,999 | 86.8 <i>(1.23)</i> | 13.2 <i>(1.23)</i> | 7.9 <i>(1.01)</i> | 9.2 <i>(1.07)</i> | 3.9 <i>(0.75)</i> |
| \$25,000-34,999 | 83.6 <i>(1.55)</i> | 16.4 <i>(1.55)</i> | 8.7 <i>(1.02)</i> | 12.6 <i>(1.47)</i> | 4.9 <i>(0.85)</i> |
| \$35,000-49,999 | 87.8 <i>(1.02)</i> | 12.2 <i>(1.02)</i> | 6.6 <i>(0.84)</i> | 9.3 <i>(0.86)</i> | 3.7 <i>(0.59)</i> |
| \$50,000-74,999 | 86.8 <i>(0.84)</i> | 13.2 <i>(0.84)</i> | 7.6 <i>(0.69)</i> | 10.3 <i>(0.82)</i> | 4.7 <i>(0.59)</i> |
| \$75,000 or more | 89.0 <i>(0.76)</i> | 11.0 <i>(0.76)</i> | 5.7 <i>(0.54)</i> | 8.2 <i>(0.60)</i> | 2.9 <i>(0.35)</i> |
| $b_{\ddagger} =$ | | -0.20 | -0.17 | -0.11 | -0.01 |
| Fear at school | | | | | |
| No fear | 91.6 <i>(0.39)</i> | 8.4 <i>(0.39)</i> | 4.0 <i>(0.27)</i> | 6.1 <i>(0.32)</i> | 1.7 <i>(0.17)</i> |
| Fearful | 70.8 <i>(1.23)</i> | 29.2* <i>(1.23)</i> | 18.8* <i>(1.00)</i> | 22.1* <i>(1.07)</i> | 11.7* <i>(0.82)</i> |
| Victimization | | | | | |
| Violent victimization | 47.6 <i>(5.07)</i> | 52.4* <i>(5.07)</i> | 45.7* <i>(5.13)</i> | 32.4* <i>(4.29)</i> | 25.7* <i>(4.29)</i> |
| No violent vict. | 87.8 <i>(0.42)</i> | 12.2 <i>(0.42)</i> | 6.6 <i>(0.31)</i> | 9.1 <i>(0.37)</i> | 9.1 <i>(0.37)</i> |
| Theft victimization | 87.8 <i>(2.65)</i> | 23.5* <i>(2.65)</i> | 16.7* <i>(2.03)</i> | 16.0* <i>(2.20)</i> | 9.2* <i>(1.55)</i> |
| No theft vict. | 87.7 <i>(0.45)</i> | 12.3 <i>(0.45)</i> | 6.7 <i>(0.32)</i> | 9.2 <i>(0.37)</i> | 3.6 <i>(0.24)</i> |

* $p < .05$

† Denotes the reference category for significant notations using t tests.

‡ T tests performed on collapsed categories shown, regression performed using 15 categories available on data set and described in Chapter Three.

Student levels of fear and criminal victimization were also significantly related to bullying. Bullied students of any form were more likely to report being fearful at school. Almost 30 percent of bullied students were fearful, and 8.4 percent reported no fear. Among directly and indirectly bullied students, 18.8 and 22.1 percent reported being fearful, respectively, compared to 4.0 and 6.1 percent who reported no fear at school. Students bullied in both ways were almost 6 times as likely to report fear at school. Approximately 11.7 percent of students who were victims of both direct and indirect bullying at school reported that they were also fearful at school, while only 1.7 percent reported that they were not.

Similarly, student victims of each type of bullying were more likely to report being victims of theft and/or violent victimization at school. Over half of bullied students reported that they were also the victim of a violent victimization, and 12 percent reported no such victimization. Among directly and indirectly bullied students, 45.7 and 32.4 percent reported being violently victimized, respectively, compared to 6.6 and 9.1 percent who reported no violent victimizations at school. Students bullied in both ways were twice as likely to report a violent victimization (25.7 percent of victims vs. 9.1 percent of non-victims). Theft victimization followed a similar pattern, with 23.5 percent of bullied students reporting theft victimization, compared to 12.3 percent of non-victims.

School characteristics

School characteristics examined here include school sector, school level, the presence of gangs at school, and school guardianship measures (See Table Six). Consistent with prior research using the 2001 SCS (DeVoe and Kaffenberger 2005),

descriptive analyses show that public school students were significantly more likely to report being bullied (13.0 percent) and bullied directly (7.3 percent) than private school students (10.3 and 5.0 percent, respectively). Public and private school students were equally likely to report being bullied indirectly and bullied in both ways in the 2003 sample.

Analyses by school level were consistent with the findings from student grade level, younger students were more likely than older students to report bullying. That is, 16.7 percent of students in elementary school reported being bullied, compared to 9.3 percent of students in high schools. Direct and indirect bullying was reported by 9.4 and 12.8 percent of elementary students, respectively, compared to 4.5 and 7.2 percent of high school students.

Students who reported gang presence at their schools were also more likely to report all types of bullying. For example, 16.4 percent of students who reported gangs at school also reported being bullied, compared to 11.8 percent of students who reported no gangs at their school. Among directly and indirectly bullied students, 10.2 and 11.9 percent reported gang presence, respectively, compared to 6.3 and 8.8 percent who reported no gang activity at school.

Table Six: Percentage of students ages 12 to 18 reporting bullying victimization by school characteristics: 2003.

| | Not bullied | Bullied | Bullied directly | Bullied indirectly | Bullied in both ways |
|-------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| Total | 87.2 | 12.8 | 7.1 | 9.5 | 3.8 |
| <i>Standard error</i> | <i>(0.44)</i> | <i>(0.44)</i> | <i>(0.32)</i> | <i>(0.37)</i> | <i>(0.24)</i> |
| School characteristics | | | | | |
| Sector | | | | | |
| Public | 87.0 <i>(0.46)</i> | 13.0* <i>(0.46)</i> | 7.3* <i>(0.34)</i> | 9.6 <i>(0.26)</i> | 3.9 <i>(0.26)</i> |
| Private | 89.7 <i>(1.22)</i> | 10.3 <i>(1.22)</i> | 5.0 <i>(0.93)</i> | 8.3 <i>(1.08)</i> | 3.0 <i>(0.73)</i> |
| Level | | | | | |
| Elementary† | 83.3 <i>(1.73)</i> | 16.7 <i>(1.73)</i> | 9.4 <i>(1.41)</i> | 12.8 <i>(1.54)</i> | 5.5 <i>(1.01)</i> |
| Middle | 81.8 <i>(0.80)</i> | 18.2 <i>(0.80)</i> | 11.3 <i>(0.63)</i> | 12.9 <i>(0.67)</i> | 6.0 <i>(0.51)</i> |
| High | 90.7 <i>(0.49)</i> | 9.3* <i>(0.49)</i> | 4.5* <i>(0.35)</i> | 7.2* <i>(0.44)</i> | 2.4 <i>(0.25)</i> |
| Gang presence | | | | | |
| Yes | 83.6 <i>(0.97)</i> | 16.4* <i>(0.97)</i> | 10.2* <i>(0.70)</i> | 11.9* <i>(0.81)</i> | 5.8* <i>(0.56)</i> |
| No | 88.2 <i>(0.44)</i> | 11.8 <i>(0.44)</i> | 6.3 <i>(0.32)</i> | 8.8 <i>(0.38)</i> | 3.2 <i>(0.25)</i> |

* p<.05

† Denotes the reference category for significant notations using t tests.

Table Six (continued): Percentage of students ages 12 to 18 reporting bullying victimization by school characteristics: 2003.

| | Not bullied | Bullied | Bullied directly | Bullied indirectly | Bullied in both ways |
|--|-----------------------|------------------------|-----------------------|------------------------|-----------------------|
| Total | 87.2 | 12.8 | 7.1 | 9.5 | 3.8 |
| <i>Standard error</i> | <i>(0.44)</i> | <i>(0.44)</i> | <i>(0.32)</i> | <i>(0.37)</i> | <i>(0.24)</i> |
| Measures of school guardianship | | | | | |
| Hard security scale | | | | | |
| 0† | 85.1 <i>(1.03)</i> | 14.9 <i>(1.03)</i> | 9.0 <i>(0.80)</i> | 11.2 <i>(0.94)</i> | 5.3 <i>(0.59)</i> |
| 1 | 87.1 <i>(0.70)</i> | 12.9 <i>(0.70)</i> | 6.9* <i>(0.51)</i> | 9.5 <i>(0.58)</i> | 3.5* <i>(0.34)</i> |
| 2 | 87.5 <i>(0.73)</i> | 12.5 <i>(0.73)</i> | 7.0* <i>(0.55)</i> | 9.3 <i>(0.62)</i> | 3.8* <i>(0.41)</i> |
| 3 | 88.7 <i>(0.95)</i> | 11.3* <i>(0.95)</i> | 6.1* <i>(0.82)</i> | 8.7* <i>(0.80)</i> | 3.5* <i>(0.61)</i> |
| 4 | 92.1 <i>(1.85)</i> | 7.9* <i>(1.85)</i> | 4.2* <i>(1.42)</i> | 4.6* <i>(1.30)</i> | 0.8* <i>(0.59)</i> |
| <i>b=</i> | | <i>-1.23*</i> | <i>-.84*</i> | <i>-.98*</i> | <i>-.60*</i> |
| Soft security scale | | | | | |
| 0† | 95.2 <i>(3.34)</i> | 4.8 <i>(3.34)</i> | 4.8 <i>(3.34)</i> | 2.4 <i>(2.37)</i> | 2.4 <i>(2.37)</i> |
| 1 | 80.5 <i>(4.45)</i> | 19.5 <i>(4.45)</i> | 12.5 <i>(3.68)</i> | 11.5* <i>(3.52)</i> | 4.6 <i>(2.23)</i> |
| 2 | 86.4 <i>(1.49)</i> | 13.6 <i>(1.49)</i> | 8.5 <i>(1.30)</i> | 9.7* <i>(1.25)</i> | 4.7 <i>(0.94)</i> |
| 3 | 87.1 <i>(0.70)</i> | 12.9 <i>(0.70)</i> | 7.5 <i>(0.57)</i> | 9.8* <i>(0.61)</i> | 4.5 <i>(0.46)</i> |
| 4 | 86.8 <i>(0.69)</i> | 13.2 <i>(0.69)</i> | 6.6 <i>(0.46)</i> | 10.0* <i>(0.59)</i> | 3.4 <i>(0.31)</i> |
| 5 | 88.3 <i>(0.84)</i> | 11.7 <i>(0.84)</i> | 7.0 <i>(0.67)</i> | 8.3* <i>(0.69)</i> | 3.7 <i>(0.46)</i> |
| <i>b=</i> | | <i>-.51</i> | <i>-.47</i> | <i>-.35</i> | <i>-.32</i> |
| School rule scale | | | | | |
| 0-5† | 66.4 <i>(4.70)</i> | 33.6 <i>(4.70)</i> | 20.6 <i>(3.71)</i> | 30.8 <i>(4.75)</i> | 17.8 <i>(3.69)</i> |
| 6-10 | 87.4 <i>(0.52)</i> | 12.6* <i>(0.52)</i> | 7.0* <i>(0.37)</i> | 9.3* <i>(0.46)</i> | 3.7* <i>(0.27)</i> |
| 11-15 | 87.7 <i>(0.63)</i> | 12.3* <i>(0.63)</i> | 6.8* <i>(0.46)</i> | 9.0* <i>(0.54)</i> | 3.5* <i>(0.35)</i> |
| <i>b=</i> | | <i>-1.84*</i> | <i>-1.20*</i> | <i>-1.89*</i> | <i>-1.28*</i> |

* $p < .05$

† Denotes the reference category for significant notations using t tests.

Finally, the relationship between bullying victimization and measures of school guardianship including those of hard and soft security measures and school rules were examined. When looking at hard security measures (that is whether a student reported any of the following: security guards, metal detectors, student ID badges, or security cameras), results show that as measures of hard security increased (from those who reported no security measures to those who reported all four security measures), reports of bullying of all types decreased. For example, among students who reported no hard security measures at their school, 14.9 percent reported being bullied. Of those students who reported 3 or 4 of such measures, 11.3 and 7.9 percent, respectively, also reported bullying victimization. Results from the linear regression additionally suggest an inverse relationship between bullying victimization and hard security measures, that is, for each type of bullying, as the number of security measures increased (from 1 to 4, the percentage of bullied students decreased).

Security measures deemed “soft” in nature, including staff supervision, locked entrances or exits, visitor sign in, locker checks, and a student code of conduct were largely unrelated to bullying victimization and contrary to that of hard security measures. That is, among students who reported the presence of soft security measures, compared to those who did not report any, bullying of all types was more likely to be reported by students who also reported 1 or more soft security measures, but only significantly so in the case of indirect bullying. That is, of students who reported their school did not have any of the soft security measures, 2.4 percent also reported being bullied, compared to between 8.3 and 11.5 percent of students reporting 1 or more of these measures who also reported being bullied. While on its face, this finding may

seem contrary, it may be the result of such few schools having none of these most basic security measures. Results from the linear regression confirm this explanation by showing an significant inverse relationship between bullying victimization and soft security measures, that is, for each type of bullying, as the number of security measures increased (from 1 to 5, the percentage of bullied students decreased).

Reports of bullying victimization were also less likely in schools with the presence of consistently communicated and enforced school rules. That is, when students reported (on a scale of 0-15) whether they agreed or disagreed that their school communicates school rules, is fair, is consistent, enforces the rules, and students are aware of punishments, bullying victimization was less likely. Specifically, across all types of bullying, victims of bullying were more likely to report low agreement with the school rules scale. For example, of the students who reported low-range agreement with the school rule scale (0-5), 33.6 percent also reported being bullied. Once can compare this to the 12.6 and 12.3 percent who reported middle (6-10) and high (11-15) agreement, respectively. Results from the linear regression support this relationship.

Hypothesis One: Protective behaviors used by victims of bullying

First, logistic regression techniques were used to test the effects of bullying and control variables discussed in Chapter Three (including student, school and target selection characteristics) on measures of weapon carrying, fighting, avoidance, and truancy (coded as 0 and 1). Logistic regression, or a linear probability model, is used to accommodate dependent variables that have only two possible outcomes (coded as 0 indicating the absence of or 1 the presence of the characteristic of interest). Logistic regression directly models the probability of an event. Accordingly, the dependent

variables used in this dissertation have been dichotomized and include the absence or presence of avoidance, truancy, weapon carrying or fighting behaviors. As Menard (1995) describes, “when the dependent variable is dichotomous the mean of the variable is a function of the probability that a case will fall into the higher of the two categories for the variable” (p. 6). Therefore, the value of the dependent variable is the predicted probability that a case will fall into the higher of the two categories on the dependent variable.

It is hypothesized that:

Student victims of bullying will be more likely than non-victims to use different protective behaviors such as weapon carrying, fighting, avoidance, and truancy.

To interpret the coefficients from the logistic regressions odds ratios will be used. Specifically, the probability that each case will be classified as present or absent the condition of the dependent variable will be displayed as a number ranging from 0 or more. For the above hypothesis, the larger the number, the more likely it is that the protective behavior exists according to the relevant variable.

“An odds ratio of greater than 1 indicates an increased chance of an event occurring vs. not, and an odds ratio of less than 1 indicates a decreased chance of an event occurring” (Liao 1994, p.15). For example, when interpreting odds ratios, such as those in Table Seven, one can state that bullied students are 3.2 times more likely to report avoiding school than non-bullied students, after simultaneously controlling for the other factors in the model. Another way to state this is that bullied students are 220 percent $[(3.2-1)*100 = (2.2)*100= 220]$ more likely than non-bullied students to report avoiding places at their school.

As shown in Table Two, the dependent variables of interest are somewhat small in occurrence. That is, in 2003, 5.8 percent of students reported avoiding one or more places on school property due to fear; 1.9 percent reported they had skipped a class, extra-curricular, or school entirely due to fear; 1.2 percent reported that they had carried a weapon (such as a gun, club, or knife) on school grounds for protection; and 5.8 percent reported that they had engaged in a physical fight at school in the 6 months prior to survey administration. In the case of the measures for truancy and weapon carrying, the prevalence of these behaviors may not be large enough for accurate estimation using logistic regression. That is, according to King and Zeng (2001), dependent variables that constitute less than 5 percent of the sample in a sample size of a few thousand or less may present a problem of underestimation for the analyst. To address this underestimation, additional analysis was performed using RELOGIT software to examine the hypotheses for weapon carrying and truancy to verify findings from the original logistic regression analysis. Findings using RELOGIT are detailed in Appendix Two.

Finally, it should be noted that in preliminary analyses, income was included as a 14-category continuous variable on all logistic regressions reported here. In none of these analyses did the income variable significantly relate to the outcome variable of interest. Therefore, income was dropped as a variable that did not contribute to the model specification, did not affect any of the conclusions, and because of its problems with missing data, discussed earlier in the methodology.

The first column of Table Seven of the logistic regression analysis confirms many of the results from the descriptive analysis. Gender did not emerge as a

significant predictor of bullying victimization, while White students and rural students were more likely to report being bullied at school than students of any other race/ethnicity or urbanicity. Property and violent victimization were associated with bullying victimization, as was fear. School sector was not significant and as expected, middle school students were more likely to report bullying than non-middle school students. These patterns are consistent with past research (DeVoe and Kaffenberger 2005, Nansel et al. 2001, Olweus 1993), lending credibility to the data source. Further, students who reported the presence of gangs were significantly more likely to report bullying victimization. When examining the overall model, the F statistic ($F=53.60$, $df=12$) indicates that there is a relationship between the independent variables proposed and bullying that can not be attributed to chance.

Table Seven. Odds ratios for student characteristics, school characteristics, and target selection variables on bullying and individual guardianship techniques.

| | Bullied | Avoidance | Truancy† | Weapon carrying† | Fighting |
|---|---------|-----------|----------|------------------|----------|
| Student characteristics | | | | | |
| Female ¹ | 1.0 | 0.9 | 1.2 | 0.4* | 0.5* |
| Black, non-Hispanic ² | 0.7* | 1.3 | 1.7* | 1.7* | 2.1* |
| Hispanic ² | 0.5* | 1.7* | 2.0* | 1.8* | 1.2 |
| Other, non-Hispanic ² | 0.6* | 1.6* | 0.4 | 1.3 | 1.0 |
| Suburban ³ | 0.6* | 1.2 | 0.8 | 0.7 | 0.9 |
| Urban ³ | 0.6* | 1.2 | 0.7 | 0.8 | 1.0 |
| Property victimization | 1.4* | 1.2 | 0.6 | 1.5 | 1.5 |
| Violent victimization | 5.6* | 2.6* | 3.4* | 0.9 | 8.2* |
| Fear at school | 4.4* | 7.0* | 6.5* | 1.4 | 1.3* |
| School characteristics | | | | | |
| Public ⁴ | 0.9 | 1.2 | 1.0 | 2.1 | 0.9 |
| Middle ⁵ | 2.0* | 1.4* | 1.2 | 0.4* | 1.8* |
| Routine Activities: Target Selection | | | | | |
| <i>Proximity</i> | | | | | |
| Gangs present | 1.3* | 1.6* | 1.6* | 2.3* | 2.0* |
| Bullying victim | | | | | |
| Bullied | -- | 3.4* | 5.9* | 2.4* | 3.3* |
| Model F | 53.60* | 51.99* | 21.64* | 8.15* | 29.92* |
| Degrees of freedom | 12 | 13 | 13 | 13 | 13 |
| N | 7434 | 7394 | 7384 | 7434 | 7430 |

†Refer to rare events analysis in Appendix Table One for confirmation of these findings.

*p<.05

¹ Comparison group is male.

⁴ Comparison group is private.

² Comparison group is White, non-Hispanic.

⁵ Comparison group is non-middle school.

³ Comparison group is rural.

Many similar predictive relationships by student and school characteristics hold for the protective behaviors of interest. The overall *F* statistic for each proposed model on each protective behavior was also significant. In sum, violent victimization, student reported fearfulness, gang presence, and bullying victimization were significantly related to avoidance, truancy, and fighting behaviors at school. Bullying and gang presence also significantly predicted weapon carrying, but fearfulness and violent criminal victimization did not. In most of these cases, any one of these characteristics increased the likelihood of the reported protective behavior by at least 30 percent.

More specifically, results show that bullied students were significantly more likely to report engaging in protective behaviors. That is, bullied students were approximately three times more likely to avoid specific places in school ($O_a=3.4$), to carry a weapon on school grounds ($O_w=2.4$), and to engage in fighting behaviors ($O_f=3.3$). Bullied students were almost six times more likely to report that they had been truant entirely from class, school, or an extra-curricular activity ($O_a=5.9$). These results provide support for the first hypothesis proposed in this dissertation: When controlling for other factors, bullied students are more likely than non-bullied students to avoid certain places in school, to be truant from school and school activities, to carry weapons, and to engage in fights on school property. Rare events analysis confirmed these findings for the outcome variables of truancy and weapon carrying and are detailed in Appendix Two.

Hypothesis Two: Protective behaviors, bullying, and school guardianship

Second, the independent and interactive effects of bullying and measures of school guardianship on student protective behaviors were examined, controlling for student characteristics, school characteristics, and other measures of target selection. Thus far in this analysis, there has been an assumption that the independent variables are additive, that is, that they independently contribute to the variation present in protective behaviors. As suggested in this hypothesis, it is assumed that bullied students resort to these self-protective measures in the absence of effective school guardianship.

To investigate the role of school guardianship on students' use of self-protective behaviors, interaction terms were introduced. Specifically, the independent effects of

bullying, the hard security measure scale (including security guards, metal detectors, picture IDs, and security cameras), the soft security measure scale (including locker checks, adult supervision of the hallway, locked entrances and exits, visitor sign in, and a code of student conduct) and school rules scale (specifically measures of their communication, consistency and enforcement) on student protective behaviors were examined. Then, in subsequent models, the effects of bullying and each measure of school guardianship (hard security, soft security, and school rules) were included in the model as well as an interaction term between the two. Such an analysis allows for the estimation of the effect of bullying on the protective behaviors, the effect of school guardianship on protective behaviors, and finally, the relationship between bullying and school guardianship on avoidance, truancy, weapon carrying, and fighting. The following hypothesis is put forth:

Student victim protective behaviors will be higher in those schools that are perceived to be ineffective guardians (as measured by unfavorable perceptions of school rules and little reported security presence) than in schools perceived to be effective guardians.

The results of this analysis are presented in Tables Eight through Eleven with each table detailing a protective behavior of interest. The first column of Table Eight shows the independent effects of bullying, hard security measures, soft security measures, and perceived rule enforcement on student avoidance behavior. Again, this model shows that bullying victims are at least three times more likely to report that they avoided places in their school ($O = 3.33$). When examining the independent effects of school security measures and rule enforcement on avoidance behavior, results indicate that students who reported the presence of soft security measures, including locker

checks, adult supervision of the hallway, locked entrances and exits, visitor sign-in, and a code of student conduct, were 12 percent less likely to report that they had avoided a particular place at school ($O=.88$). In addition, the independent effects of hard security measures and school rules were not significantly related to student avoidance behaviors. Finally, none of the interactions between bullying and the guardianship measures were significantly predictive of avoidance, meaning that bullied students' decisions to avoid specific areas of the school building and grounds are unaffected by their perceptions of school guardianship.

Table Eight. Odds ratios for student characteristics, school characteristics, target selection variables, bullying, school guardianship and bullying X guardianship interaction terms on avoidance behavior.

| | Independent Effects | Hard security interaction | Soft security interaction | Rule enforcement interaction |
|--------------------------------------|------------------------|---------------------------------|---------------------------------|------------------------------------|
| Dependent variable: Avoidance | | | | |
| Bullied | 3.33* | 3.53* | 3.63* | 3.6 |
| School Guardianship | | | | |
| Hard security measures | 1.03 | 1.01 | -- | -- |
| Soft security measures | 0.88* | -- | 0.89 | -- |
| School rules | 0.81 | -- | -- | 0.81 |
| Interactions | | | | |
| Bullied X Hard security | -- | 0.97 | -- | -- |
| Bullied X Soft security | -- | -- | 0.98 | -- |
| Bullied X School rules | -- | -- | -- | 0.96 |
| Model <i>F</i> | 47.40* | 44.65* | 48.43* | 46.38* |
| Degrees of freedom | 16 | 15 | 15 | 15 |
| N | 7394 | 7394 | 7394 | 7394 |

Note: Significant results for student and school characteristic variables were consistent with those presented in Table Seven, and are therefore excluded from this presentation.

* $p < .05$

Similarly, student victims of bullying were almost six times more likely to report that they had been truant from school, class, or an extra-curricular activity ($O=5.94$) (Table Nine). When looking at the independent effects of school guardianship measures, none of the relationships were significant in the logistic regression shown here. However, in the rare events analysis, detailed in Appendix Table Two, findings suggest students who reported higher scores of communication, consistency, and enforcement of school rules were significantly less likely to report that they had been truant from a school activity. Recall that the rare events analysis may find effects that were underestimated using conventional logistic regression on rare events such as truancy. That is, even though the coefficients estimated by the logit and RELOGIT programs are the same, the RELOGIT found the independent effect of school rules to be significant. However, this finding may also be due to the underestimation of adjusted standard errors (which are not considered in RELOGIT, but estimated using regular logit), so this result should be interpreted with caution. As with avoidance behavior, none of the other independent effects nor any of the interaction effects among bullying and school guardianship were significantly related to truant behavior.

Table Nine. Odds ratios for student characteristics, school characteristics, target selection variables, bullying, school guardianship and bullying X guardianship interaction terms on truancy.

| | Independent Effects | Hard security interaction | Soft security interaction | Rule enforcement interaction |
|----------------------------|---------------------|---------------------------|---------------------------|------------------------------|
| Dependent: Truancy | | | | |
| Bullied | 5.94* | 5.26* | 6.23* | 10.7* |
| School Guardianship | | | | |
| Hard security measures | 1.20 | 1.22 | -- | -- |
| Soft security measures | 0.86 | -- | 0.89 | -- |
| School rules | 0.66† | -- | -- | 0.77 |
| Interactions | | | | |
| Bullied X Hard security | -- | 1.09 | -- | -- |
| Bullied X Soft security | -- | -- | 0.98 | -- |
| Bullied X School rules | -- | -- | -- | 0.76 |
| Model <i>F</i> | 18.57* | 19.81* | 18.34* | 19.87* |
| Degrees of freedom | 16 | 15 | 15 | 15 |
| N | 7384 | 7384 | 7384 | 7384 |

Note: Significant results for student and school characteristic variables were consistent with those presented in Table Seven, and are therefore excluded from this presentation.

† Results from the rare events logistic regression show this effect as significant.

Readers should refer to rare events analysis shown in Appendix Table Two for confirmation of the remainder of these findings.

*p<.05

The independent effects shown in Table Ten demonstrate that weapon carrying was twice as likely among bullied students ($O=2.41$) and that students who reported the presence of soft security measures such as locker checks, adult supervision of the hallway, locked entrances and exits, visitor sign-in, and a code of student conduct were 20 percent less likely to report that they had carried a weapon on school grounds in the previous six months ($O=.80$). When looking at guardianship measures that are “hard” in nature, such as security guards, metal detectors, requirements for picture IDs, and security cameras, and controlling for other measures of guardianship, results indicate that students who reported hard security measures were 48 percent more likely to report weapon carrying ($O=1.48$). Results for hard security measures only, however, indicate that the presence of hard security measures alone also increases a victims’ likelihood of weapon carrying by almost 50 percent ($O=1.49$). The effect of bullying did not differ depending on the level of hard school security measures, as indicated by the interaction term. None of the remaining interaction terms were significant either. These results were confirmed in the rare events analysis using the RELOGIT program and are detailed in Appendix Table Three.

Table Ten. Odds ratios for student characteristics, school characteristics, target selection variables, bullying, school guardianship and bullying X guardianship interaction terms on weapon carrying.

| | Independent Effects | Hard security interaction | Soft security interaction | Rule enforcement interaction |
|----------------------------|---------------------|---------------------------|---------------------------|------------------------------|
| Dependent variable: | | | | |
| Weapon carrying | | | | |
| Bullied | 2.41* | 4.00* | 3.16* | 5.69 |
| School Guardianship | | | | |
| Hard security measures | 1.48* | 1.49* | -- | -- |
| Soft security measures | 0.80* | -- | 0.89 | -- |
| School rules | 0.67 | -- | -- | 0.74 |
| Interactions | | | | |
| Bullied X Hard security | -- | 0.78 | -- | -- |
| Bullied X Soft security | -- | -- | 0.92 | -- |
| Bullied X School rules | -- | -- | -- | 0.67 |
| Model <i>F</i> | 7.07* | 7.94* | 7.06* | 9.49* |
| Degrees of freedom | 16 | 15 | 15 | 15 |
| N | 7434 | 7434 | 7434 | 7434 |

Note: Significant results for student and school characteristic variables were consistent with those presented in Table Seven, and are therefore excluded from this presentation. Readers should refer to rare events analysis shown in Appendix Table Three for additional confirmation of these findings.

*p<.05

Finally, Table Eleven shows the effects of the variables of interest on student reports of fighting behavior. Again, bullying is independently predictive of involvement in fighting behavior, with bullied students three times more likely to report that they had fought at school ($O=3.23$). When looking only at the effects of the communication, consistency, and enforcement of school rules, results indicate that only the presence of weak school rule enforcement is predictive of fighting. Specifically, students who reported that school rules were communicated, consistent and enforced, independent of other measures of guardianship, were 47 percent less likely to report fighting behavior ($O=.53$). The effect of bullying did not differ depending on any measure of school guardianship, as indicated by the interaction terms.

Table Eleven. Odds ratios for student characteristics, school characteristics, target selection variables, bullying, school guardianship and bullying X guardianship interaction terms on fighting.

| | Independent Effects | Hard security interaction | Soft security interaction | Rule enforcement interaction |
|----------------------------|---------------------|---------------------------|---------------------------|------------------------------|
| Dependent variable: | | | | |
| Fighting | | | | |
| Bullied | 3.23* | 4.70* | 4.69* | 1.59 |
| School Guardianship | | | | |
| Hard security measures | 1.00 | 1.05 | -- | -- |
| Soft security measures | 0.93 | -- | 0.94 | -- |
| School rules | 0.61 | -- | -- | 0.53* |
| Interactions | | | | |
| Bullied X Hard security | -- | 0.78 | -- | -- |
| Bullied X Soft security | -- | -- | 0.91 | -- |
| Bullied X School rules | -- | -- | -- | 1.38 |
| Model <i>F</i> | 25.73* | 26.77* | 26.48* | 27.66* |
| Degrees of freedom | 16 | 15 | 15 | 15 |
| N | 7430 | 7430 | 7430 | 7430 |

Note: Significant results for student and school characteristic variables were consistent with those presented in Table Seven, and are therefore excluded from this presentation. * $p < .05$

In sum, the results of this analysis were not supportive of the second hypothesis. While the results again, confirm the importance of bullying as a significant predictor of student protective behaviors, only a few independent effects of measures of school guardianship were observed. Specifically, the presence of soft security measures significantly reduced reports of avoidance behaviors ($O=.88$) and weapon carrying ($O=.80$), while the presence of effective school rules reduced reports of truancy ($O=.66$). However, the presence of hard security measures alone ($O=1.49$) and while controlling for other measures of guardianship ($O=1.48$) was significantly related to an

increased likelihood to carry weapons. Independently, the presence of school rule enforcement and communication was related to a decreased likelihood for fighting ($O=.53$). None of the interactions between bullying and the guardianship measures were significant when controlling for other measures of guardianship, meaning that school guardianship does not seem to play a role in bullied students' decisions to engage in any of the protective behaviors under investigation.

Hypothesis Three: Variation in protective behaviors by type of bullying victimization

Finally, logistic regression techniques were used to explore the effects of specific types of bullying (direct and indirect), controlling for other variables (including student, school and routine activities characteristics) on measures of avoidance, truancy, weapon carrying and fighting behaviors (coded as 0 and 1). It is hypothesized that:

Student victim protective behaviors including avoidance, truancy, weapon carrying and fighting will vary by the type of bullying victimization (direct, indirect and/or both). Specifically, it is hypothesized that victims of indirect bullying will be more likely to adopt less aggressive tactics of self-protection (including avoidance and truancy) while directly bullied victims will adopt fighting and weapon-carrying behaviors.

Odds ratios for victims of direct, indirect, and both types of bullying were examined to determine if the various types of bullying were related to the type of protective behavior used (Table Twelve). Results indicate that being the victim of either direct or indirect bullying victimization significantly predicted avoidance, truancy, and fighting behaviors at school. Weapon carrying was significantly predicted by indirect bullying only. Only fighting behavior was significantly associated with students who reported they had been bullied both directly and indirectly ($O_f=0.5$).

Specifically, victims of direct and indirect bullying were each three times more likely to avoid places at school ($O_a=2.8$ for direct and $O_a=2.7$ for indirect) and to fight at school ($O_f=3.4$ for direct and $O_f=2.5$ for indirect). Victims of direct bullying were five times as likely to be truant ($O_t=5.4$) while indirectly bullied students were three times as likely to do so ($O_t=2.9$). Victims of indirect bullying were also significantly more likely to carry weapons to school ($O_w=2.4$), which was also true for directly bullied students, but not significantly so. When comparing the odds ratios to one another while taking into account their standard errors, one can conclude that victims of direct bullying are no more or less likely than victims of indirect bullying to adopt any of the protective behaviors of interest.¹³ These results were confirmed using the RELOGIT analysis software and are detailed in Appendix Table Four.

¹³ Additional analysis, not shown here, was performed on these data to determine whether those students bullied exclusively by direct means were more or less likely than those students bullied exclusively by indirect means to adopt the protective behaviors in question. To do this, a variable was created that excluded those students who were bullied both directly and indirectly (3.8 percent) and those students who were not bullied (87.2 percent) to allow for comparison of those victims of each type of bullying ($N\sim 677$). While sample size did not allow for the estimation of linearized standard errors and required exclusion of several perfect predictor variables, results indicated the odds that directly bullied students were more or less likely to avoid school, be truant, carry a weapon, or fight at school were no higher or lower than indirectly bullied students, confirming the findings presented above.

Table Twelve. Odds ratios for student characteristics, school characteristics, target selection variables, and bullying on individual guardianship techniques.

| | Avoidance | Truancy† | Weapon carrying† | Fighting |
|---|-----------|----------|------------------|----------|
| Student characteristics | | | | |
| Female ¹ | 1.0 | 1.2 | 0.4* | 0.5* |
| Black, non-Hispanic ² | 1.3 | 1.7* | 1.7* | 2.1* |
| Hispanic ² | 1.8* | 2.1* | 1.8* | 1.2 |
| Other, non-Hispanic ² | 1.6* | 0.4 | 1.3 | 1.0 |
| Suburban ³ | 1.2 | 0.8 | 0.7 | 0.9 |
| Urban ³ | 1.2 | 0.7 | 0.8 | 1.0 |
| Property victimization | 1.2 | 0.6 | 1.5 | 1.5* |
| Violent victimization | 2.5* | 2.8* | 0.9 | 7.8* |
| Fear at school | 6.8* | 6.0* | 1.4 | 1.3* |
| School characteristics | | | | |
| Public ⁴ | 1.2 | 1.1 | 2.1 | 0.9 |
| Middle ⁵ | 1.3* | 1.2 | 0.4* | 1.8* |
| Routine Activities: Target Selection | | | | |
| <i>Proximity</i> | | | | |
| Gangs present | 1.6* | 1.6* | 2.3* | 2.0* |
| Bullying victim | | | | |
| Direct | 2.8* | 5.4* | 2.1 | 3.4* |
| Indirect | 2.7* | 2.9* | 2.4* | 2.5* |
| Both forms of Bullying | 0.6 | 0.7 | 0.5 | 0.5* |
| Model F | 45.43* | 21.29* | 7.02* | 26.95* |
| Degrees of freedom | 15 | 15 | 15 | 15 |
| N | 7394 | 7384 | 7434 | 7430 |

†Refer to rare events analysis in Appendix Table Four for confirmation of these findings.

*p<.05

¹ Comparison group is male.

⁴ Comparison group is private.

² Comparison group is White, non-Hispanic.

⁵ Comparison group is non-middle school.

³ Comparison group is rural.

In sum, the findings presented here do not provide support for Hypothesis Three. While the results do show, consistent with the first hypothesis, that victims of specific types of bullying (direct and indirect) are more likely than non-bullied students to display almost all of the behaviors in question, the odds that direct or indirect bullying victims will engage in each of these behaviors are largely the same. The only exception was that the relationship between indirect bullying and weapon carrying was significant, where its relationship with direct bullying was not. All of these findings are in opposition to the proposed hypothesis that the type of protective behavior adopted

would mirror the type of bullying adopted in terms of assertiveness. In addition, victims of both types of bullying behavior were less likely to engage in all of the protective behaviors examined, and only significantly so in the case of fighting behavior.

Chapter 5: Discussion

Summary of the findings

Student victims of bullying were more likely than non-bullied students to adopt self-protective behaviors that further endanger school safety and school climate.

Specifically, controlling for relevant student and school characteristics, bullied students were three times more likely to carry a weapon to school, to engage in fighting behaviors, and to avoid certain places at school, and were six times more likely to be truant from a school activity.

Perceptions of school guardianship (as measured by security measures and school rules) did not interact with measures of school bullying for the protective behaviors investigated. While controlling for other measures of guardianship, soft security measures such as locker checks, adult supervision of the hallway, locked entrances and exits, visitor sign-in, and a code of student conduct, were associated with the diminished the likelihood of students avoiding particular places at school; while the consistent and effective communication and enforcement of school rules was associated with a reduced likelihood of student truancy. In addition, the presence of hard security measures, such as security guards, metal detectors, requirements for picture IDs, and security cameras, was associated with an increased likelihood for weapon carrying. Among the interaction terms, results indicated that student perceptions of school guardianship did not play a role in bullied students' decisions to engage in avoidance, truancy, weapon carrying, or fighting.

The type of bullying endured, direct or indirect, did not clearly relate to which of these protective behaviors students chose to adopt. That is, directly bullied students

were no more likely than those bullied indirectly to use the protective behaviors examined in this analysis, nor vice versa. The only instance where the type of bullying endured may have made a difference was for student weapon carrying. Specifically, both directly and indirectly bullied students were more likely to carry a weapon to school, but only indirectly bullied students were significantly so. Victims who reported that they endured both types of bullying at school were less likely to report any of the protective behaviors in question, but only significantly so in the case of fighting behaviors.

Discussion of the findings

The purpose of this dissertation was to explore whether bullied students may pose a threat to school safety. The research question was inspired by the commonly held conception that victims of school bullying turn on their schools. While the relationship between bullying victimization and Columbine-like acts of revenge are suggested in the literature (Anderson et al. 2001, Vossekuil et al. 2002), little empirical research has investigated whether bullying victims adopt behaviors that may actually put other students at risk or foster a school climate of fear and peril. A second research question was posed to determine if a student's perception of their school as an effective guardian against victimization plays a role in whether they adopt one or more of these behaviors. One would expect that if a student's school was perceived to be effective at detecting and preventing violence and misconduct, a student would be less likely to take matters into their own hands and self-protect. The final research question posed sought to determine whether the type of bullying victimization endured would play a role in whether the victim chose a certain type of self-protective behavior. That is,

bullying can take two forms, physical and emotional. Would directly and physically bullied students be more likely to carry weapons, to fight with other students, to skip school or avoid certain places in school, or would some or all of these behaviors be adopted by victims of indirect and emotional bullying?

While no support was found for either the second hypothesis that school guardianship would increase or decrease an individual's likelihood to self-protect, or for the third hypothesis, that directly and indirectly bullied students would respond with different protective behaviors, the evidence in this dissertation strongly suggests that bullied students are more likely to engage in self-protective behaviors. The self-protective behaviors under investigation included avoidance, truancy, weapon carrying and fighting, and can be considered actions that may erode school climate or further endanger other students. These results are consistent with those of Nansel and her colleagues (2003) who found that both bullies and victims were more likely to carry weapons and engage in fighting behavior at school.

Caution when considering these results is well warranted. First, the primary criticism of the findings described involves the cross-sectional nature of these data. Are the behaviors in question truly reactive or protective against bullying and assumed in response to such victimization? Or are these behaviors adopted by students as a precursor to bullying? As discussed in the review of the literature, bullies often target students who respond in ways that are rewarding to them, by retreating or withdrawing or reacting aggressively or provocatively (Olweus 1993). Salmivalli et al. (1996) suggest that helpless females and counter-aggressive males are specifically targeted by bullies. Olweus (1993) also reports that aggressive victims are those that act in ways

peers find irritating or stressful, and are targeted because of their aggressive nature. With regard to the protective behaviors of interest, is it not that students adopt these behaviors because they are targeted, but rather are targeted because they engage in these behaviors? In this case the behaviors would not be considered protective, but rather a risk factor for bullying victimization. Further, Salmiavalli et al.'s findings suggest the most chronic victims often adopt nonassertive reaction patterns. Such literature is consistent with the findings reported here that victims of both direct and indirect bullying were less likely to adopt all of the behaviors in question, but only significantly so in the case of fighting behaviors.

Alternatively, and also critical of the cross-sectional nature of this research, one could suggest that these behaviors are co morbid and actually reflect a subculture that is accepting of deviance at school, as well as one that targets in-group members for sport. Subcultural theory would explain the relationship between bullying and the protective behaviors found here not as an action/reaction, but rather as a way of life for some students. Cohen's (1955) *Delinquent Boys* suggests that subcultures of delinquent youth gangs often develop around the common adoption of "malicious" and "negativistic" values that directly oppose conventional standards. Boys that can not meet the middle-class criteria for success, according to Cohen, may gravitate together to "jointly establish new norms, new criteria of status...[and display] the kinds of conduct of which they are capable." Anderson (1999) details the relationship between the subculture and victimization in his discussion about earning respect among one's friends. Specifically, he describes street youth who raise themselves in the street and are constantly resolving their own disagreements through hitting, cursing, and fighting.

These youth are tested by one another to determine who is capable of standing up to provocation and in Anderson's words "the issue of [earning] respect is thus closely tied to whether the person has an inclination to be violent, even as a victim" (p. 74). That is, when interpreting the results found here, one may also suggest that bullying victimization, weapon carrying, fighting, and truancy are natural correlates in a subculture where each is valued.

Such co-morbidity would also occur among a group Olweus (1993) and Nansel et al. (2001) call "bully-victims." Bully-victims are students who are both more likely to be victimized and to victimize others. They are identified as the subset of victims of bullying who are most at risk for negative outcomes (such as depression, anxiety, low self-esteem) and risky behaviors (including fighting and weapon carrying).

Unfortunately, in addition to the cross-sectional limitation of the SCS, the instrument is also limited in that it does not ascertain students' bullying behaviors against others.

This is an area for future research.

Another explanation for the relationship between the behaviors of interest and bullying can be found in lifestyle/exposure theories of victimization (Hindelang et al. 1978). As suggested by such theory, specific individual characteristics, such as gender, age, and race, influence daily routines and lifestyles making certain individuals more likely to be victimized. Further variations in lifestyle contribute to the desirability, convenience, and vincibility of a victim. Vincibility is a measure of attractiveness to an offender. Accordingly, by arming or protecting oneself one may make themselves appear invincible and less desirable to a bully. Such a theory suggests these behaviors would both be significantly related to bullying victimization and, rather than co-occur

or follow the victimization, the behavior would actually precede such victimization. Taken together, these alternative explanations of the proposed relationship suggest an informed perspective be assumed when interpreting these findings. More explicitly, though it is implied through the research questions, design, and discussion employed here, the relationships found between bullying victimization and the behaviors of interest do not necessarily occur in the order specified (bullied → perceived ineffective school guardianship → self-guardianship), the reverse order of that order, or in any order at all. That is, they may reflect a host of negative life circumstances that co-occur with bullying victimization.

Some additional nuances within the findings are worth discussion as well. Controlling for other measures of guardianship, the presence of soft security measures was related to a 12 percent reduction in reports of avoidance behavior ($O=.88$) and a 20 percent reduction in reports of weapon carrying ($O=.80$). School rules reduced the likelihood of truancy by 34 percent ($O=.66$), but again, these results were only significant in the RELOGIT for rare events, and did not account for sampling variation. Independently, not controlling for hard or soft security measures, school rules alone decreased the likelihood of fighting behavior by 47 percent ($O=.53$). However, the presence of hard security measures was associated with an *increased* likelihood for weapon carrying behavior of around 48 percent. Again, this inconsistent result may be an artifact of the cross-sectional nature of the data. That is, schools where students are more likely to carry weapons may be more likely to employ hard security devices such as metal detectors, security officers, and cameras, rather than students adopting these behaviors in response to more rigorous security.

Another finding of interest was that victims of both forms of bullying were less likely to report all types of protective behaviors. This was significantly so in the case of fighting behavior. Specifically, victims of direct and indirect bullying were each 3 times more likely to fight than non-victims (direct $O=3.4$ and indirect $O=2.5$), however, victims of both types of bullying were 50 percent less likely to fight than non-victims ($O=0.5$). This finding seems counterintuitive, but may reflect a small group of victims Olweus (1993) refers to as “whipping” boys, or passive and submissive victims who will not attack or retaliate in any way if attacked or insulted.

Finally, only victims of indirect bullying were significantly more likely to report weapon carrying. This finding was contrary to the proposed hypothesis which assumed student protective behaviors would mirror the type of victimization in terms of assertiveness. That is, it was suggested that student victims of more physical and confrontational direct bullying would fight back and/or carry weapons. Exploration and verification of this finding is warranted, however, findings from studies of school shootings suggest that perpetrators were often subject of less direct forms of bullying including “acute or chronic rejection—in the form of ostracism, bullying, and/or romantic rejection” (Vossekuil et al. 2002, p. 202). In addition, Wilcox and Clayton (2001) found that the likelihood of weapon-carrying at school increases among victims of theft and threats (both of which are less physical types of victimization). In May’s (1999) findings, fear was significantly predictive of student weapon carrying when controlling for social learning and student bonding variables. On the contrary, these results showed that fear was not significantly related to weapon carrying, though it was related to the other dependent variables included in this analysis.

Consistent with expectations, gang presence, which was included as a measure of proximity under the target selection model, did prove to be a significant predictor of bullying victimization as well as all of the protective behaviors of interest. The association found here between gang presence, bullying, and avoidance, truancy, weapon carrying and fighting may be due to the increased number of potential bullies or offenders, as suggested by the target selection model (Hough 1987), but could also be indicative of a school culture generally accepting of aggression or a school that has been ineffective in controlling its' lower level indicators of disorder.

Another factor that should be the subject of further investigation is fear. Fear was significantly associated with bullying victimization, as well as avoidance, truancy, and fighting behaviors. It seems likely that there is a complex relationship between bullying victimization, the fear that either precedes or follows the victimization, and the adoption of these types of behaviors. As discussed by May (1999), student fear of criminal victimization was significantly related to weapon carrying at school, despite controlling for other variables of interest. This was not the case in this analysis when additionally controlling for bullying victimization. However, fear did play a role in the remaining protective behaviors of interest making the role of fear in student behavior an important area for further research. In addition, the role of fear as a possible intervening variable in the relationship between bullying and protective behaviors should also be considered.

Characteristics of victims

The findings presented here showed a consistent profile for student victims of bullying. Both descriptive and multivariate statistics confirmed that bullying victims

are more likely to be younger White students from rural households. These students reported that they are fearful at school and also report being the victim of a violent or property crime at school. Bullied students were also more likely to attend public elementary schools where gangs are present. All of these characteristics are consistent with the prevailing literature on bullying victims (DeVoe and Kaffenberger 2005, Nansel et al. 2001, Olweus 1993).

Limitations of the findings

In addition to the cross-sectional nature of this research, a few other limitations should be mentioned including the possibility for omitted variable bias, the single student perspective, and the inclusion of bounded interviews. Omitted variable bias exists when variables that are intimately involved with proposed processes are excluded as controls. Such exclusion greatly overestimates the effect of the variables that have been included. Variables that are important to bullying victimization, but excluded in the preceding analysis, include psychological factors, such as measures of self-esteem, depression, and anxiety. As described in the literature review (and in Rigby 2003), each of these problems are significantly related to bullying victimization as both precursors and consequences to bullying, and their omission from the analysis may be cause for concern.

Additional variables that may have played a role include measures of school disorganization or school variables. As discussed in the methodology, data were collected from the teenage student and members of the students' household. Data on school disorganization such as rates of school crime and disorder should have been included as controls. No data were collected from the student's school or school

administrator. As another consequence, individual perceptions, characteristics, and even their experience with bullying victimization may confound reports of subjective variables such as climate, school rules, and security measures. On the other hand, this limitation can also be considered a strength since the variables of interest are intended to measure students' perceptions of school guardianship as effective or ineffective and their resultant behaviors, therefore there may not be a need for objectivity when exploring the proposed hypotheses.

As discussed in the methodology, Addington (2005) found that victims of violent victimization were more likely to move in and out of households. As a result, by including the unbounded interview (of an incoming household into a residence), as was done in this dissertation, one may be overestimating criminal victimization, bullying victimization, or reports of protective behaviors through telescoping. Future research should explore whether the inclusion of these unbounded cases alters the results reported here.

Future research and theoretical development

Accordingly, future research should consider this work as a launching point for additional investigation. The primary issues that need to be addressed to confirm these findings include: the temporal ordering and establishment of causal relationships among these variables, the inclusion of relevant omitted variables, and reduction in data limitations detailed above. In addition, researchers should continue to consider the use of specialized analysis (described in Appendix Two) to verify their findings when dealing with such rare events.

Further, the age group investigated may need to be adjusted in subsequent study. As suggested by Cairns et al. (1989), boys and girls modify their strategies for aggression as they age, with boys becoming more socially adept as they get older. The findings here that are not supportive of differences in the behaviors of directly and indirectly bullied students may only be an artifact of the age of the SCS sample. Were the analyses to use students younger than age 12, who may engage in gender-specific types of aggression, the hypothesis suggesting differences in protective behaviors might have been realized.

Finally, it is the assertion of this dissertation that more theoretical attention be given to victim behavior. While criminological theory rightly focuses on the origins of crime in an attempt to contain it, with the exception of Miethe (1995) and Hindelang et al. (1978) these theories rarely include victim behavior or the consideration of victims as offenders.

Results reported here were not consistent with self-help (Black 1980) or routine activity (Cohen and Felson 1979) theory. That is, while the findings here clearly support a relationship between bullying victimization and avoidance, truancy, weapon-carrying and fighting behaviors, the mediating role of guardianship was not supported. Both self-help and routine activity theory suggested that victims of bullying would be significantly more likely to adopt the protective behaviors in question when measures of guardianship (hard security, soft security, and rule enforcement) were perceived to be low. No such interactions, however, were found.

While such logical justifications based in criminological theory were used as a basis for this dissertation, few have been explicitly used to explain victim behavior that

can be considered criminal or disorderly. This dissertation clearly shows a link between victim status and threats to school climate and safety that is deserving of additional theory and attention.

Implications for policymakers

Bullying is an important issue for school personnel, parents, students and teachers. Because bullying victimization is correlated with such poor life outcomes, it is a student condition that can not be ignored. Further, not only is bullying detrimental to the individual victim, it can also have repercussions on the entire school campus. Not only does the presence of bullying communicate tolerance for these lower level behaviors that can ultimately escalate (Garafalo, Siegel, and Laub 1989), but as these data show, student behaviors associated with bullying can have a much broader impact on school climate. First, bullying is significantly related to truancy and avoidance behavior. If bullying victims are avoiding particular places in school or truant altogether from classes or activities, this has implications for the ability for students to get to class on time, via conventional routes, to be comfortable transporting themselves from one location to the other, to relieve themselves in restrooms, and potentially nullifies the entire learning process. As Morrison and Furlong suggest, there are psychological implications of school violence due to anxiety and apprehension that may interfere with student learning, peer networks, and general well-being (1994). Students should be allowed to “thrive, not just survive” at school (Furlong and Morrison 1994).

Bullying can also directly implicate the safety of the entire school campus. Because of the significant relationships found here among bullying, weapon carrying,

and fighting, schools interested in reducing weapons and fighting behaviors need to be much more attuned to lower level indicators of disorder, with particular focus on bullying. This research indicates that bullying is significantly associated with violent behaviors at school. Such a relationship needs to be taken seriously and considered when justifying both funding and development of bullying programs and policies.

This research also suggests that the typical knee-jerk reactions of school administrators and legislators to addressing issues of school safety may not be appropriate. That is, if the object is to have safer schools and improve school climate, increasing school security and improving rule enforcement may not only be the appropriate method of reduction. Addressing lower level indicators of disorder, including bullying, may be the most prudent route. While readers may note that analysis showed hard security measures and rule enforcement did significantly reduce the odds that a student was bullied, the more prudent course of action would be to address bullying directly through proven programs (see Swearer and Espelage 2004 for a summary of effective bullying prevention and intervention programs).

Finally, this research suggests also that policymakers and practitioners need not differentiate programmatic efforts for victims of particular types of bullying. It was the assertion of this dissertation that if reactive behaviors differed by victimization type endured, direct or indirect, specific preventative or treatment attention may need to be directed toward particular types of bullying. Results found here do not support the need for such a distinction.

Conclusion

The lesson learned from this research is that bullying behavior in schools can not be ignored. Not only is it detrimental to student's educational success and well-being, it is also significantly related to behaviors that may further endanger school safety and school climate. Results presented here show that bullied students are more likely to avoid certain places in school, to be truant from class, extra-curriculars, or school entirely, to carry a weapon to school, and to engage in fighting behaviors at school. The prevention and cessation of these student and societal ills are intimately linked to addressing a long-standing and often ignored problem in the United States school system: student bullying. Researchers and practitioners of school crime and safety must continue to consider bullying a prominent factor in their research, if their goal is to impact the safety and security of America's students.

Appendix One: School Crime Supplement to the National Crime Victimization Survey Instrument

OMB No. 1121-0184; Approval Expires 06/31/2004

| | | | |
|---|----------------|---|---|
| <p>NOTICE – We are conducting this survey under the authority of Title 13, United States Code, Section 8. Section 9 of this law requires us to keep all information about you and your household strictly confidential. We may use this information only for statistical purposes. Also, Title 42, Section 3732, United States Code, authorizes the Bureau of Justice Statistics, Department of Justice, to collect information using this survey. Title 42, Sections 3789g and 3735, United States Code also requires us to keep all information about you and your household strictly confidential.</p> | | <p>FORM SCS-1 (10-2-2002)</p> | <p>U.S. DEPARTMENT OF COMMERCE Economic and Statistics Administration U.S. CENSUS BUREAU ACTING AS COLLECTING AGENT FOR THE BUREAU OF JUSTICE STATISTICS U.S. DEPARTMENT OF JUSTICE</p> |
| <p>ASK OF ALL PEOPLE AGES 12-18.</p> | | <p>SCHOOL CRIME SUPPLEMENT TO THE NATIONAL CRIME VICTIMIZATION SURVEY 2003</p> | |
| <p>We estimate that it will take from 5 to 15 minutes to complete this interview with 10 minutes being the average time. If you have any comments regarding this burden estimate or any other aspect of this survey, send them to Paperwork Project 0607-1121 U.S. Census Bureau, 4700 Silver Hill Road, Stop 1500, Washington DC 20233-1500. You may e-mail comments to Paperwork@census.gov; use "Paperwork Project 0607-1121" as the subject. According to the Paperwork Reduction Act of 1995, no such persons are required to respond to a collection of information unless such collection displays a valid OMB control number.</p> | | | |
| Sample | Control number | PSU | Segment |
| J | | | CK Serial |
| A. FR code | | B. Respondent | |
| 001 | | Line No. | Age |
| | | 002 | 003 |
| | | Name | |
| <p>FIELD REPRESENTATIVE – Complete an SCS-1 form for all <i>NCVS</i> interviewed people ages 12-18. Do NOT complete an SCS-1 form for Type Z noninterview people or for people in Type A noninterview households.</p> | | <p>D. Reason for SCS noninterview</p> <p>005 <input type="checkbox"/> Refused <input type="checkbox"/> Not available</p> | |
| <p>C. Type of SCS Interview</p> <p>004 <input type="checkbox"/> Personal – Self <input type="checkbox"/> Telephone – Self <input type="checkbox"/> Personal – Proxy <input type="checkbox"/> Telephone – Proxy <input type="checkbox"/> Noninterview – <i>FILL ITEM D</i></p> <p style="text-align: right;">} SKIP to INTRO 1</p> | | | |
| <p>FIELD REPRESENTATIVE – Read introduction. INTRO 1 – Now I have some additional questions about your school. These answers will be kept confidential, by law.</p> | | | |
| <p>E. SCREEN QUESTIONS FOR SUPPLEMENT</p> | | | |
| <p>1a. Did you attend school at any time during the last 6 months, that is, any time since _____ 1st, 2002?</p> | | 006 | <input type="checkbox"/> Yes <input type="checkbox"/> No – SKIP to CHECK ITEM B on page 7 |
| <p>1b. During that time, were you ever home-schooled? That is, did you receive ANY of that schooling at home, rather than in a public or private school?</p> | | 092 | <input type="checkbox"/> Yes <input type="checkbox"/> No – SKIP to 2b |
| <p>1c. Was ALL or SOME of that home schooling?</p> | | 007 | <input type="checkbox"/> All – SKIP to CHECK ITEM B on page 7 <input type="checkbox"/> Some |
| <p>2a. During the time you were home-schooled in the last 6 months, what grade would you have been in if you were in a public or private school?</p> | | 093 | <input type="checkbox"/> Fifth or under – SKIP to CHECK ITEM B on page 7 <input type="checkbox"/> Sixth <input type="checkbox"/> Seventh <input type="checkbox"/> Eighth <input type="checkbox"/> Ninth <input type="checkbox"/> Tenth <input type="checkbox"/> Eleventh <input type="checkbox"/> Twelfth <input type="checkbox"/> Other – Specify _____ <input type="checkbox"/> College/GED/Post-graduate/Other noneligible – SKIP to CHECK ITEM B on page 7 |
| <p>2b. During the last 6 months, that is, any time since _____ 1st, 2002, what grade were you in school?</p> | | 008 | <input type="checkbox"/> Fifth or under – SKIP to CHECK ITEM B on page 7 <input type="checkbox"/> Sixth <input type="checkbox"/> Seventh <input type="checkbox"/> Eighth <input type="checkbox"/> Ninth <input type="checkbox"/> Tenth <input type="checkbox"/> Eleventh <input type="checkbox"/> Twelfth <input type="checkbox"/> Other – Specify _____ <input type="checkbox"/> College/GED/Post-graduate/Other noneligible – SKIP to CHECK ITEM B on page 7 |

E. SCREEN QUESTIONS FOR SUPPLEMENT - Continued

FIELD REPRESENTATIVE - Read introduction only if any of the boxes 1- 8 are marked in item 2a.

INTRO 2 - The following questions pertain only to your attendance at a public or private school and not to being home-schooled.

3. In what month did your current school year begin?

009 August
 September
 Other - Specify _____

4. Did you attend school for all of the last 6 months?

010 Yes - **SKIP** to 6a
 No

5. How many months were you in school during the last 6 months?

011 One month
 Two months
 Three months
 Four months
 Five months

F. ENVIRONMENTAL QUESTIONS

6a. What is the complete name of your school?

012 _____ Office Use Only

6b. In what city, county, and state is your school located?
 FIELD REPRESENTATIVE - Probe, if necessary.

013 _____ City
 _____ County

014 _____ Office Use Only
 _____ State

015 _____ Office Use Only

7a. Is your school public or private?

016 Public - ASK 7b
 Private - **SKIP** to 7c

7b. Is this your regularly assigned school or a school that you or your family chose?

017 Assigned
 Chosen
 Assigned school is school of choice } **SKIP** to 8

7c. Is your school church-related?

018 Yes - ASK 7d
 No - **SKIP** to 8
 Don't know - ASK 7d

7d. Is your school Catholic?

019 Yes, Catholic
 No, other religion

8. What grades are taught in your school?

Pre-K or Kindergarten 00
 01
 02
 03
 04
 05
 06
 07
 08
 09
 10
 11
 12 H.S. Senior
 13 Post-graduate
 20 All ungraded
 30 All Special Education

Grades:
 020 _____ (lowest)
 TO
 021 _____ (highest)

9. How do you get to school most of the time?

FIELD REPRESENTATIVE - If multiple modes are used, code the mode in which the student spends the most time.

022 Walk
 School bus
 Public bus, subway, train
 Car
 Bicycle, motorbike, or motorcycle
 Some other way - Specify _____

F. ENVIRONMENTAL QUESTIONS – Continued

| | | | | | | | | | | | | |
|---|--|---|----------------------------|----------------------------|-------|------------|-------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <p>10. How long does it take you to get from your home to school most of the time?</p> | <p>023</p> | <p>1 <input type="checkbox"/> Less than 15 minutes 2 <input type="checkbox"/> 15–29 minutes 3 <input type="checkbox"/> 30–44 minutes 4 <input type="checkbox"/> 45–59 minutes 5 <input type="checkbox"/> 60 minutes or longer</p> | | | | | | | | | | |
| <p>11. How do you get home from school most of the time?</p> <p>FIELD REPRESENTATIVE – <i>If multiple modes are used, code the mode in which the student spends the most time.</i></p> <p><i>If the student volunteers that he or she does not go directly home after school, record the mode that the student uses to get to his or her first destination after school.</i></p> | <p>024</p> | <p>1 <input type="checkbox"/> Walk 2 <input type="checkbox"/> School bus 3 <input type="checkbox"/> Public bus, subway, train 4 <input type="checkbox"/> Car 5 <input type="checkbox"/> Bicycle, motorbike, or motorcycle 6 <input type="checkbox"/> Some other way – <i>Specify</i> _____</p> | | | | | | | | | | |
| <p>12a. How often do you leave school grounds at lunch time? (READ CATEGORIES.)</p> | <p>026</p> | <p>1 <input type="checkbox"/> Never 2 <input type="checkbox"/> Once or twice a year 3 <input type="checkbox"/> Once or twice a month 4 <input type="checkbox"/> Once or twice a week 5 <input type="checkbox"/> Almost every day</p> | | | | | | | | | | |
| <p>12b. Are MOST students at your school allowed to leave the school grounds to eat lunch?</p> | <p>025</p> | <p>1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't know</p> | | | | | | | | | | |
| <p>13. During the last 6 months, have you participated in any extra-curricular activities sponsored by your school?</p> | <p>027</p> | <p>1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p> | | | | | | | | | | |
| <p>14. Does your school take any measures to make sure students are safe? For example, does the school have:</p> <p>a. Security guards and/or assigned police officers?</p> <p>b. Other school staff or other adults supervising the hallway?</p> <p>c. Metal detectors?</p> <p>d. Locked entrance or exit doors during the day?</p> <p>e. A requirement that visitors sign in?</p> <p>f. Locker checks?</p> <p>g. A requirement that students wear badges or picture identification?</p> <p>h. One or more security cameras to monitor the school?</p> <p>i. A code of student conduct, that is, a set of written rules or guidelines that the school provides you?</p> | <p>028 029 030 031 032 033 034 035 036</p> | <table border="0"> <tr> <td></td> <td align="center">Yes</td> <td align="center">No</td> <td align="center">Don't know</td> </tr> <tr> <td></td> <td align="center">1 <input type="checkbox"/></td> <td align="center">2 <input type="checkbox"/></td> <td align="center">3 <input type="checkbox"/></td> </tr> </table> | | Yes | No | Don't know | | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | | |
| | Yes | No | Don't know | | | | | | | | | |
| | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | | | | | | | | | |
| <p>15. I am going to read a list of statements that could describe a school. Thinking about your school over the last 6 months, would you strongly agree, agree, disagree, or strongly disagree with the following...</p> <p>a. Everyone knows what the school rules are</p> <p>b. The school rules are fair</p> <p>c. The punishment for breaking school rules is the same no matter who you are</p> <p>d. The school rules are strictly enforced</p> <p>e. If a school rule is broken, students know what kind of punishment will follow</p> | <p>034 035 036 037 038</p> | <table border="0"> <tr> <td></td> <td align="center">Strongly Agree</td> <td align="center">Agree</td> <td align="center">Disagree</td> <td align="center">Strongly Disagree</td> </tr> <tr> <td></td> <td align="center">1 <input type="checkbox"/></td> <td align="center">2 <input type="checkbox"/></td> <td align="center">3 <input type="checkbox"/></td> <td align="center">4 <input type="checkbox"/></td> </tr> </table> | | Strongly Agree | Agree | Disagree | Strongly Disagree | | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> |
| | Strongly Agree | Agree | Disagree | Strongly Disagree | | | | | | | | |
| | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | | | | | | | | |
| <p>16. During the last 6 months, that is, since _____ 1st, 2002, have you attended any drug education classes in your school?</p> | <p>039</p> | <p>1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't know</p> | | | | | | | | | | |

F. ENVIRONMENTAL QUESTIONS – Continued

FIELD REPRESENTATIVE – Read introduction.

INTRO 3 – Now I have some questions about things that happened at school. For this survey, "at school" includes the school building, on school property, on a school bus, or going to and from school. I want to remind you that all of your answers are confidential.

17a. The following question refers to the availability of drugs and alcohol at your school. Tell me if you don't know what any of these items are.
 FIELD REPRESENTATIVE – For "Don't Know" responses, probe if necessary to determine if respondent means they do not know if the drug is available or if they do not know the drug.
 FIELD REPRESENTATIVE – For each item ask,

Is it possible to get _____ at your school?

| | Yes | No | Don't know | Don't know drug |
|---|------------------------------|----------------------------|----------------------------|----------------------------|
| a. Alcoholic beverages | <input type="checkbox"/> 040 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| b. Marijuana | <input type="checkbox"/> 041 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| c. Crack | <input type="checkbox"/> 042 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| d. Other forms of cocaine | <input type="checkbox"/> 043 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| e. Uppers such as ecstasy, crystal meth, or other illegal stimulants | <input type="checkbox"/> 097 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| f. Downers such as GHB or sleeping pills | <input type="checkbox"/> 098 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| g. LSD or acid | <input type="checkbox"/> 045 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| h. PCP or angel dust | <input type="checkbox"/> 046 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| i. Heroin or smack | <input type="checkbox"/> 047 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| j. Other illegal drugs – If "Yes" is marked, ASK – What drugs? (Exclude tobacco products.) | <input type="checkbox"/> 048 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |

Specify _____

FIELD REPRESENTATIVE – Refer to Drug Slang Card (SCS-2). Reclassify the "other illegal drug(s)" to one of the categories a–i if possible. If able to reclassify the drug(s) mentioned, mark the "No" box in category j, otherwise, mark the "Yes" box in category j and enter the "other illegal drug(s)" mentioned in the Specify space.

17b. FIELD REPRESENTATIVE – For each YES response in 17a ask the drug, otherwise mark NA for each category not marked YES in 17a.

Would you say _____ (is/are) easy, fairly easy, fairly hard, or hard to get at your school?

| | Easy | Fairly Easy | Fairly Hard | Hard | NA |
|--|------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| a. Alcoholic beverages | <input type="checkbox"/> 049 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| b. Marijuana | <input type="checkbox"/> 050 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| c. Crack | <input type="checkbox"/> 051 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| d. Other forms of cocaine | <input type="checkbox"/> 052 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| e. Uppers such as ecstasy, crystal meth, or other illegal stimulants | <input type="checkbox"/> 099 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| f. Downers such as GHB or sleeping pills | <input type="checkbox"/> 100 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| g. LSD or acid | <input type="checkbox"/> 054 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| h. PCP or angel dust | <input type="checkbox"/> 055 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| i. Heroin or smack | <input type="checkbox"/> 056 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| j. Other illegal drugs | <input type="checkbox"/> 057 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |

17c. During the last 6 months, did you know for sure that any students were on drugs or alcohol while they were at school?

101 Yes
 2 No

17d. During the last 6 months, did anyone offer, or try to sell or give you an illegal drug other than alcohol or tobacco at your school?

102 Yes
 2 No

G. FIGHTING, BULLYING AND HATE BEHAVIORS

18a. During the last 6 months, have you been in one or more physical fights at school?

103 Yes
 2 No – SKIP to 19a

18b. During the last 6 months, how many times have you been in a physical fight at school?

104 (Number of times)

G. FIGHTING, BULLYING AND HATE BEHAVIORS - Continued

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---------------------------|---|--------------------------|--|---------------------|--------------------------|--|--------------------------|--------------------------|--|--------------------------|--------------------------|--|-----|--------------------------|--------------------------------|--|--------------------------|--|--------------------------|--------------------------|------------------------------|--------------------------|--------------------------|--|-----|--------------------------|--------------------------|--|--|--|--|--|--|
| <p>19a. During the last 6 months, have you been bullied at school? That is, have any other students picked on you a lot or tried to make you do things you didn't want to do like give them money? (You may include incidents you reported before.)</p> | <p align="center">067</p> | <p><input type="checkbox"/> Yes <input type="checkbox"/> No - SKIP to 20a</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>19b. During the last 6 months, how OFTEN has this happened? <i>(READ CATEGORIES.)</i></p> | <p align="center">120</p> | <p><input type="checkbox"/> Once or twice in the last 6 months <input type="checkbox"/> Once or twice a month <input type="checkbox"/> Once or twice a week, or <input type="checkbox"/> Almost every day</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>20a. During the last 6 months, have you often felt rejected by other students at school? For example, have you felt rejected because other students have made fun of you, called you names, or excluded you from activities?</p> | <p align="center">105</p> | <p><input type="checkbox"/> Yes <input type="checkbox"/> No - SKIP to 21a</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>20b. During the last 6 months, how OFTEN has this happened? <i>(READ CATEGORIES.)</i></p> | <p align="center">106</p> | <p><input type="checkbox"/> Once or twice in the last 6 months <input type="checkbox"/> Once or twice a month <input type="checkbox"/> Once or twice a week, or <input type="checkbox"/> Almost every day</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>21a. During the last 6 months, has anyone called you a derogatory or bad name at school having to do with your race, religion, ethnic background or national origin, disability, gender, or sexual orientation? We call these hate-related words.</p> | <p align="center">065</p> | <p><input type="checkbox"/> Yes <input type="checkbox"/> No - SKIP to 22</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>21b. Were any of the hate-related words related to ...</p> <table border="0"> <tr> <td></td> <td align="center">Yes</td> <td align="center">No</td> <td align="center">Don't know</td> </tr> <tr> <td>a. Your race?</td> <td align="center">107</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>b. Your religion?</td> <td align="center">108</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>c. Your ethnic background or national origin (for example people of Hispanic origin)? ..</td> <td align="center">109</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>d. Any disability (by this I mean physical, mental, or developmental disabilities) you may have?</td> <td align="center">110</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>e. Your gender?</td> <td align="center">111</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>f. Your sexual orientation?</td> <td align="center">112</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td colspan="4"><i>if "Yes," SAY - (by this we mean homosexual, bisexual, or heterosexual)</i></td> </tr> </table> | | Yes | No | Don't know | a. Your race? | 107 | <input type="checkbox"/> | <input type="checkbox"/> | b. Your religion? | 108 | <input type="checkbox"/> | <input type="checkbox"/> | c. Your ethnic background or national origin (for example people of Hispanic origin)? .. | 109 | <input type="checkbox"/> | <input type="checkbox"/> | d. Any disability (by this I mean physical, mental, or developmental disabilities) you may have? | 110 | <input type="checkbox"/> | <input type="checkbox"/> | e. Your gender? | 111 | <input type="checkbox"/> | <input type="checkbox"/> | f. Your sexual orientation? | 112 | <input type="checkbox"/> | <input type="checkbox"/> | <i>if "Yes," SAY - (by this we mean homosexual, bisexual, or heterosexual)</i> | | | | | |
| | Yes | No | Don't know | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a. Your race? | 107 | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b. Your religion? | 108 | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| c. Your ethnic background or national origin (for example people of Hispanic origin)? .. | 109 | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| d. Any disability (by this I mean physical, mental, or developmental disabilities) you may have? | 110 | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| e. Your gender? | 111 | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| f. Your sexual orientation? | 112 | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>if "Yes," SAY - (by this we mean homosexual, bisexual, or heterosexual)</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>22. During the last 6 months, have you seen any hate-related words or symbols written in school classrooms, school bathrooms, school hallways, or on the outside of your school building?</p> | <p align="center">066</p> | <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H. AVOIDANCE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>23a. During the last 6 months, that is, since _____ 1st, 2002, did you STAY AWAY from any of the following places because you thought someone might attack or harm you there? <i>(READ CATEGORIES.)</i></p> <table border="0"> <tr> <td></td> <td align="center">Yes</td> <td align="center">No</td> </tr> <tr> <td>a. The shortest route to school?</td> <td align="center">068</td> <td><input type="checkbox"/></td> </tr> <tr> <td>b. The entrance into the school?</td> <td align="center">069</td> <td><input type="checkbox"/></td> </tr> <tr> <td>c. Any hallways or stairs in school?</td> <td align="center">070</td> <td><input type="checkbox"/></td> </tr> <tr> <td>d. Parts of the school cafeteria?</td> <td align="center">071</td> <td><input type="checkbox"/></td> </tr> <tr> <td>e. Any school restrooms?</td> <td align="center">072</td> <td><input type="checkbox"/></td> </tr> <tr> <td>f. Other places inside the school building? ..</td> <td align="center">073</td> <td><input type="checkbox"/></td> </tr> <tr> <td>g. School parking lot?</td> <td align="center">074</td> <td><input type="checkbox"/></td> </tr> <tr> <td>h. Other places on school grounds?</td> <td align="center">075</td> <td><input type="checkbox"/></td> </tr> </table> | | Yes | No | a. The shortest route to school? | 068 | <input type="checkbox"/> | b. The entrance into the school? | 069 | <input type="checkbox"/> | c. Any hallways or stairs in school? | 070 | <input type="checkbox"/> | d. Parts of the school cafeteria? | 071 | <input type="checkbox"/> | e. Any school restrooms? | 072 | <input type="checkbox"/> | f. Other places inside the school building? .. | 073 | <input type="checkbox"/> | g. School parking lot? | 074 | <input type="checkbox"/> | h. Other places on school grounds? | 075 | <input type="checkbox"/> | | | | | | | |
| | Yes | No | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a. The shortest route to school? | 068 | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b. The entrance into the school? | 069 | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| c. Any hallways or stairs in school? | 070 | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| d. Parts of the school cafeteria? | 071 | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| e. Any school restrooms? | 072 | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| f. Other places inside the school building? .. | 073 | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| g. School parking lot? | 074 | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| h. Other places on school grounds? | 075 | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>23b. Did you AVOID any extra-curricular activities at your school because you thought someone might attack or harm you?</p> | <p align="center">076</p> | <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

H. AVOIDANCE - Continued

| | | |
|--|-----|---|
| 23c. Did you AVOID any classes because you thought someone might attack or harm you? | 077 | 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No |
| 23d. Did you stay home from school because you thought someone might attack or harm you at school, or going to or from school? | 078 | 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No |

I. FEAR

| | | |
|--|-----|--|
| 24. How often are you afraid that someone will attack or harm you at school? <i>(READ CATEGORIES.)</i> | 079 | 1 <input type="checkbox"/> Never 2 <input type="checkbox"/> Almost never 3 <input type="checkbox"/> Sometimes 4 <input type="checkbox"/> Most of the time |
| 25. How often are you afraid that someone will attack or harm you on the way to and from school? <i>(READ CATEGORIES.)</i> | 080 | 1 <input type="checkbox"/> Never 2 <input type="checkbox"/> Almost never 3 <input type="checkbox"/> Sometimes 4 <input type="checkbox"/> Most of the time |
| 26. Besides the times you are at school, how often are you afraid that someone will attack or harm you? <i>(READ CATEGORIES.)</i> | 081 | 1 <input type="checkbox"/> Never 2 <input type="checkbox"/> Almost never 3 <input type="checkbox"/> Sometimes 4 <input type="checkbox"/> Most of the time |

J. WEAPONS

| | | | |
|--|-----|--|----------------------------|
| 27. Some people bring guns, knives, or objects that can be used as weapons to school for protection. During the last 6 months, that is, since _____ 1st, 2002, did YOU ever bring the following to school or onto school grounds? <i>(READ CATEGORIES.)</i> | | Yes | No |
| a. A gun? | 082 | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> |
| b. A knife brought as a weapon? | 083 | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> |
| c. Some other weapon? | 084 | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> |
| 28a. Do you know any (other) students who have brought a gun to your school in the last 6 months? | 085 | 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No | |
| 28b. Have you actually seen another student with a gun at school in the last 6 months? | 086 | 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't know | |
| 29. During the last 6 months, could you have gotten a loaded gun without adult supervision, either at school or away from school? | 113 | 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No | |

K. GANGS

FIELD REPRESENTATIVE - Read introduction.
INTRO 4 - Now we'd like to know about gangs at your school. You may know these as street gangs, fighting gangs, crews, or something else. Gangs may use common names, signs, symbols, or colors. For this survey, we are interested in all gangs, whether or not they are involved in violent or illegal activity.

| | | |
|---|-----|--|
| 30. Are there any gangs at your school? | 088 | 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't know |
| 31. During the last 6 months, that is, since _____ 1st, 2002, how often have gangs been involved in fights, attacks, or other violence at your school? <i>(READ CATEGORIES 1-5.)</i> | 089 | 1 <input type="checkbox"/> Never 2 <input type="checkbox"/> Once or twice in the last 6 months 3 <input type="checkbox"/> Once or twice a month 4 <input type="checkbox"/> Once or twice a week, or 5 <input type="checkbox"/> Almost every day 6 <input type="checkbox"/> Don't know |
| 32. Have gangs been involved in the sale of drugs at your school in the last 6 months? | 090 | 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't know |

| L. STUDENT CHARACTERISTICS | |
|--|---|
| 33a. During the last 4 weeks, did you skip any classes? | 114 <input type="checkbox"/> Yes <input type="checkbox"/> No – SKIP to 34 <input type="checkbox"/> Don't know – SKIP to 34 |
| 33b. During the last 4 weeks, on how many days did you skip at least one class? | 115 <input type="text"/> <input type="text"/> (Number of days) |
| 34. During this school year, across all subjects have you gotten mostly – (<i>READ CATEGORIES 1–5.</i>) | 116 <input type="checkbox"/> A's <input type="checkbox"/> B's <input type="checkbox"/> C's <input type="checkbox"/> D's <input type="checkbox"/> F's <input type="checkbox"/> School does not give grades/no alphabetic grade equivalent |
| 35. Thinking about the future, do you think you will... | Yes No Don't know |
| a. Attend school after high school? | 117 <input type="checkbox"/> <input type="checkbox"/> – SKIP to CHECK ITEM A <input type="checkbox"/> |
| b. Graduate from a 4-year college? | 118 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| CHECK ITEM A Were the supplement questions asked in private, or was an adult member of the household or family present during at least part of the questions? <i>if not sure or if a telephone interview, ask –</i> Was an adult member of the household or family present during at least part of these questions? | 091 <input type="checkbox"/> Personal interview – No adult present <input type="checkbox"/> Personal interview – Adult present <input type="checkbox"/> Telephone interview – No adult present <input type="checkbox"/> Telephone interview – Adult present <input type="checkbox"/> Telephone interview – Don't know |
| CHECK ITEM B Is this the last household member to be interviewed? | 119 <input type="checkbox"/> Yes – END SUPPLEMENT <input type="checkbox"/> No – <i>interview next household member</i> |
| NOTES | |

Appendix Two: Rare Events Analysis: Discussion and Supplementary Results

According to King and Zeng (2001), the statistical analysis of rare events, dichotomized into the presence (1) or absence (0) of a situation, are difficult to explain and predict. They attribute this difficulty to two sources: inefficient data collection strategies and the use of statistical procedures that underestimate the probability of events (in this case, logistic regression).

First, we should turn attention to the issue of data collection strategies, which King and Zeng point out is the “more important source of problems in analyzing rare events” (King and Zeng 2001, p. 694). It is useful to know that King and Zeng practice in the field of political science and use rare events such as the presence of war and plague as their examples. As would be expected, these events are so rare, that often data are collected based upon the dependent variable (that is, data are drawn primarily from countries that have experienced war or plague) and when analysis ensues no such “selection bias” adjustment is made. This criticism is not an issue for the NCVS/SCS used in this dissertation. Specifically, the NCVS/SCS relies upon a multi-stage, stratified sampling technique that is, for all intents and purposes, analogous to a simple random sample in terms of rare events’ forecasting. King and Zeng go so far as to recommend the “usual statistical models” under these types of sampling schemes (given sufficient sample size) (King and Zeng 2001, p. 698).

Second, King and Zeng suggest bias exists in probabilities that are large in number and always in the same direction (that is, 0 or the nonevent). Specifically, the estimated event probabilities are too small. Further, logistic regression techniques compound this underestimation. According to King and Zeng (2001), when using

rare events as dependent binary variables, the likelihood of an event occurring $\Pr(Y=1)$ is underestimated and the likelihood of an event not occurring $\Pr(Y=0)$ is greatly overestimated, especially in cases where the estimated event of interest is less than 5 percent and the sample size is less than a few thousand (King and Zeng 2001). Though the unweighted sample size for the SCS is 7,521, several of the variables of interest in this analysis can be considered rare events.

King and Zeng suggest that when left unadjusted, estimate bias for a behavior found in 1.1% of the population can be as large as 78% for a sample size of 2000. That is, if the coefficient (.86) tells us that bullying increases a students' likelihood of weapon carrying, with an odds ratio of 2.3, the potential bias for a sample size of 2000 is .67 (.86*.78), which is almost as large as the coefficient itself. As discussed, the sample size in the 03 SCS is approximately 7,500, which should reduce the bias a bit but, as King and Zeng point out, in the case of rare events no sample size is large enough to evade this underestimation problem.

As shown in Table Two of the main text, in the 2003 SCS, 5.8 percent of students reported avoiding one or more places on school property due to fear; 1.9 percent (n=137) reported they had skipped a class, extra-curricular, or school entirely due to fear; 1.2 percent (n=82) reported that they had carried a weapon (such as a gun, club, or knife) on school grounds for protection; and 5.8 percent reported that they had engaged in a physical fight at school in the 6 months prior to survey administration. According to King and Zeng (2001), dependent variables that constitute less than 5 percent of the sample in a sample size of a few thousand or less may present a problem of underestimation for the analyst. In the case of the measures

for truancy and weapon carrying used in this dissertation, the prevalence of these behaviors may not be large enough for accurate estimation using logistic regression.

Until recently, few sociologists and even fewer criminologists corrected accordingly for the underestimation of rare event probabilities (see exception, Piquero, MacDonald, Dobrin, Daigle, and Cullen 2005). Fortunately, King and colleagues have facilitated the use such a correction through the development of a software program called RELOGIT (Tomz et al. 1999). RELOGIT (which runs concurrently within the STATA platform) makes a mathematical correction for such underestimation in the case of rare events.

As is suggested by King and Zeng (2001b) when RELOGIT's method of bias correction makes a difference, the results are better than those derived with logit, when they do not, the methods are the same as those provided in logit (p. 702). As was suggested in correspondence with King (via email March 14, 2007) and in his article with Zeng detailing rare events estimation (King and Zeng 2001b), analysis on questionable data should be run both ways, in order to determine if such a bias exists. Therefore, for the outcome variables of weapon carrying and truancy, supplementary analysis was performed using RELOGIT in order to verify and account for the rare nature of outcome behaviors and their relationships with the variables in question.

Readers should note, however, that the downside of using RELOGIT is that the program is unable to account for the sampling design of the NCVS (as discussed in the variance estimation section) and results should only be considered in conjunction with those from the logistic model which incorporates these adjustments. Findings using RELOGIT are detailed below.

Appendix Table One shows the results from the rare events logistic regression that corresponds to the results shown in Table Seven in the main text. Consistent with the results from Table Seven, significant effects on truancy were found for the Black, Hispanic, violent victimization, fear, gangs, and bullied variables. Significant effects on weapon carrying were found for the gender, Hispanic, middle school, gangs, and bullied variables. Of primary importance to this dissertation, these adjusted results confirm that bullying victimization significantly predicts truancy and weapon carrying behaviors.

Appendix Table One. Rare events logistic regression for student characteristics, school characteristics, and target selection variables on truancy and weapon carrying.

| Variable | Truancy | | Weapon carrying | |
|--------------------------------|-------------|------|-----------------|------|
| | Coefficient | SE | Coefficient | SE |
| Female | 0.2 | 0.18 | -0.8* | 0.24 |
| Black | 0.5* | 0.25 | 0.5 | 0.33 |
| Hispanic | 0.7* | 0.24 | 0.6* | 0.31 |
| Other | -0.7 | 0.66 | 0.3 | 0.48 |
| Suburban | -0.2 | 0.26 | -0.4 | 0.33 |
| Urban | -0.4 | 0.29 | -0.3 | 0.39 |
| Theft victimization | -0.4 | 0.38 | 0.5 | 0.46 |
| Violent victimization | 1.2* | 0.38 | 0.1 | 0.80 |
| Fear | 1.9* | 0.22 | 0.4 | 0.27 |
| School sector (public/private) | 0.0 | 0.41 | 0.6 | 0.61 |
| Middle school | 0.2 | 0.19 | -1.0* | 0.29 |
| Gangs | 0.5* | 0.21 | 0.8* | 0.26 |
| Bullied | 1.8* | 0.20 | 0.9* | 0.28 |
| Constant | -5.8* | 0.57 | -4.1 | 0.75 |

*p<0.05.

NOTE: Rare events logistic regression coefficients shown here do not differ significantly from logistic regression coefficients run without the rare events adjustment and with variance adjustments. Per King and Zeng (2001) "when the results make a difference, our methods [of RELOGIT] work better than logit; when they do not, these methods give the same answer as logit" (p. 702).

Appendix Tables Two and Three confirm the results from Tables Nine and Ten in the main text. Specifically, as shown in Appendix Table Two, student victims of bullying were more likely to be truant from school and none of the independent or

interaction effects were significant. The only finding that was different from that of the main logistic regression in Table Nine of the main text was for the school rules variable. Specifically, in the logistic regression (calculated for the purposes of computing the odds ratios shown in the main text Table Nine) and the logit (calculated to generate coefficients for comparison to those in RELOGIT, $\beta = -0.42$) the independent effect of school rules on truancy was nonsignificant. Note that each of these analyses (both logistic and logit), however, considered the standard errors based on the Taylor series approximation method employed to account for the design of the NCVS/SCS survey. However, in the RELOGIT program, which does not accommodate complex survey design estimation procedures, the coefficient for the effect of school rules was almost identical to that of logit ($\beta = -0.41$) and it was indicated as a significant finding. Whether this is a true finding or an artifact of the variance adjustment is unclear, and the result should be interpreted with caution. As shown in Appendix Table Three and consistent with the results shown in Table Ten, both hard and soft security measures were significantly associated with weapon carrying and none of the interaction effects were significant.

Appendix Table Two. Rare events logistic regression for student characteristics, school characteristics, target selection, guardianship variables and bullied X guardianship interactions on truancy.

| Variable | Independent Effects | | Hard security interaction | | Soft security interaction | | Rule enforcement interaction | |
|--------------------------------|---------------------|------|---------------------------|------|---------------------------|------|------------------------------|------|
| | Coefficient | SE | Coefficient | SE | Coefficient | SE | Coefficient | SE |
| Student characteristics | | | | | | | | |
| Gender | 0.2 | 0.18 | 0.2 | 0.18 | 0.2 | 0.19 | 0.2 | 0.18 |
| Black | 0.4 | 0.26 | 0.5 | 0.26 | 0.5* | 0.26 | 0.5 | 0.26 |
| Hispanic | 0.6* | 0.25 | 0.7* | 0.24 | 0.7* | 0.24 | 0.7* | 0.24 |
| Other | -0.8 | 0.66 | -0.7 | 0.66 | -0.8 | 0.66 | -0.8 | 0.66 |
| Suburban | -0.3 | 0.27 | -0.3 | 0.27 | -0.2 | 0.27 | -0.2 | 0.27 |
| Urban | -0.5 | 0.30 | -0.5 | 0.30 | -0.4 | 0.29 | -0.4 | 0.29 |
| Theft victimization | -0.4 | 0.39 | -0.4 | 0.38 | -0.4 | 0.39 | -0.4 | 0.39 |
| Violent Victimization | 1.2* | 0.39 | 1.2* | 0.38 | 1.2* | 0.39 | 1.2* | 0.39 |
| Fear | 1.8* | 0.22 | 1.9* | 0.22 | 1.9* | 0.22 | 1.8* | 0.22 |
| School characteristics | | | | | | | | |
| School sector (public/private) | -0.2 | 0.43 | -0.1 | 0.42 | 0.0 | 0.42 | -0.1 | 0.41 |
| Middle | 0.3 | 0.20 | 0.3 | 0.20 | 0.2 | 0.19 | 0.3 | 0.19 |
| Gangs | 0.4* | 0.20 | 0.4* | 0.21 | 0.5* | 0.21 | 0.5* | 0.21 |
| Bullied | 1.8* | 0.20 | 1.7* | 0.38 | 1.8* | 0.73 | 2.3* | 0.89 |
| Guardianship | | | | | | | | |
| Hard Security | 0.2 | 0.10 | 0.1 | 0.14 | -- | -- | -- | -- |
| Soft Security | -0.1 | 0.09 | -- | -- | -0.1 | 0.14 | -- | -- |
| School Rules | -0.4*† | 0.19 | -- | -- | -- | -- | -0.3 | 0.30 |
| Interactions | | | | | | | | |
| HardXBullied Interaction | -- | -- | 0.1 | 0.19 | -- | -- | -- | -- |
| SoftXBullied Interaction | -- | -- | -- | -- | 0.0 | 0.19 | -- | -- |
| RulesXBullied Interaction | -- | -- | -- | -- | -- | -- | -0.3 | 0.39 |
| Constant | -4.5* | 0.78 | -5.9* | 0.58 | -5.4* | 0.72 | -5.2* | 0.96 |

*p<0.05.

NOTE: Except where noted (†), rare events logistic regression coefficients shown here do not differ significantly from logistic regression coefficients run without the rare events adjustment and with the survey adjustment. Per King and Zeng (2001) "when the results make a difference, our methods [of RELOGIT] work better than logit; when they do not, these methods give the same answer as logit" (p. 702).

Appendix Table Three. Rare events logistic regression for student characteristics, school characteristics, target selection, guardianship variables, and bullied X guardianship interactions on weapon carrying.

| Variable | Independent Effects | | Hard security interaction | | Soft security interaction | | Rule enforcement interaction | |
|--------------------------------|---------------------|------|---------------------------|------|---------------------------|------|------------------------------|------|
| | Coefficient | SE | Coefficient | SE | Coefficient | SE | Coefficient | SE |
| Student characteristics | | | | | | | | |
| Gender | -0.8* | 0.24 | -0.8* | 0.24 | -0.8* | 0.24 | -0.8* | 0.24 |
| Black | 0.3 | 0.33 | 0.3 | 0.33 | 0.5 | 0.33 | 0.5 | 0.33 |
| Hispanic | 0.5 | 0.31 | 0.5 | 0.32 | 0.6 | 0.31 | 0.6† | 0.31 |
| Other | 0.3 | 0.50 | 0.4 | 0.48 | 0.3 | 0.49 | 0.3 | 0.49 |
| Suburban | -0.4 | 0.33 | -0.4 | 0.33 | -0.4 | 0.33 | -0.4 | 0.33 |
| Urban | -0.5 | 0.38 | -0.4 | 0.38 | -0.3 | 0.39 | -0.3 | 0.39 |
| Theft victimization | 0.5 | 0.46 | 0.5 | 0.46 | 0.5 | 0.46 | 0.4 | 0.47 |
| Violent Victimization | 0.0 | 0.82 | 0.1 | 0.80 | 0.0 | 0.84 | 0.0 | 0.82 |
| Fear | 0.3 | 0.27 | 0.4 | 0.26 | 0.4 | 0.27 | 0.3 | 0.27 |
| School characteristics | | | | | | | | |
| School sector (public/private) | 0.3 | 0.60 | 0.3 | 0.61 | 0.6 | 0.61 | 0.6 | 0.61 |
| Middle | -0.9* | 0.29 | -0.9* | 0.29 | -1.0* | 0.29 | -1.0* | 0.29 |
| Gangs | 0.7* | 0.26 | 0.7* | 0.26 | 0.8* | 0.26 | 0.8* | 0.26 |
| Bullied | 0.9* | 0.28 | 1.4* | 0.56 | 1.2 | 0.77 | 1.7 | 1.21 |
| Guardianship | | | | | | | | |
| Hard Security | 0.4* | 0.11 | 0.4* | 0.13 | -- | -- | -- | -- |
| Soft Security | -0.2* | 0.10 | -- | -- | -0.1 | 0.12 | -- | -- |
| School Rules | -0.4 | 0.26 | -- | -- | -- | -- | -0.3 | 0.30 |
| Interactions | | | | | | | | |
| HardXBullied Interaction | -- | -- | -0.3 | 0.27 | -- | -- | -- | -- |
| SoftXBullied Interaction | -- | -- | -- | -- | -0.1 | 0.20 | -- | -- |
| RulesXBullied Interaction | -- | -- | -- | -- | -- | -- | -0.4 | 0.56 |
| Constant | -2.7* | 1.04 | -4.5* | 0.86 | -3.7* | 0.94 | -3.4 | 1.08 |

*p<0.05.

NOTE: Except where noted (†), rare events logistic regression coefficients shown here do not differ significantly from logistic regression coefficients run without the rare events adjustment and with the survey adjustment. Per King and Zeng (2001) "when the results make a difference, our methods [of RELOGIT] work better than logit; when they do not, these methods give the same answer as logit" (p. 702).

Appendix Table Four shows the results from the rare events logistic regression that corresponds to the results shown in Table Twelve of the main text. Consistent with the results from Table Twelve, significant effects on truancy were found for the Black, Hispanic, violent victimization, fear, gangs, and direct and indirect bullying variables. Significant effects on weapon carrying were found for the gender, Hispanic, middle school, gangs, and indirect bullying variables. Of primary importance to this dissertation, these adjusted results confirm that both direct and indirect bullying victimization significantly predict truancy and indirect bullying predicts weapon carrying behaviors.

In sum, the RELOGIT adjustment did not substantively impact any of the findings reported in the body of this dissertation.

Appendix Table Four Results. Rare events logistic regression for student characteristics, school characteristics, target selection variables, and bullying types on truancy and weapon carrying.

| Variable | Truancy | | Weapon carrying | |
|--------------------------------|-------------|------|-----------------|------|
| | Coefficient | SE | Coefficient | SE |
| Female | 0.2 | 0.19 | -0.8* | 0.24 |
| Black | 0.5* | 0.26 | 0.5 | 0.33 |
| Hispanic | 0.7* | 0.25 | 0.6* | 0.31 |
| Other | -0.8 | 0.64 | 0.3 | 0.48 |
| Suburban | -0.2 | 0.27 | -0.4 | 0.33 |
| Urban | -0.3 | 0.29 | -0.3 | 0.39 |
| Theft victimization | -0.5 | 0.40 | 0.5 | 0.46 |
| Violent victimization | 1.0* | 0.41 | 0.1 | 0.80 |
| Fear | 1.8* | 0.22 | 0.4 | 0.27 |
| School sector (public/private) | 0.0 | 0.43 | 0.6 | 0.61 |
| Middle school | 0.2 | 0.20 | -1.0* | 0.29 |
| Gangs | 0.4* | 0.21 | 0.8* | 0.26 |
| Direct | 1.7* | 0.31 | 0.8 | 0.50 |
| Indirect | 1.1* | 0.31 | 0.9* | 0.38 |
| Both types of bullying | -0.4 | 0.44 | -0.7 | 0.70 |
| Constant | -5.9* | 0.59 | -4.1* | 0.75 |

*p<0.05.

NOTE: Rare events logistic regression coefficients shown here do not differ significantly from logistic regression coefficients run without the rare events adjustment. Per King and Zeng (2001) "when the results make a difference, our methods [of RELOGIT] work better than logit; when they do not, these methods give the same answer as logit" (p. 702).

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- Yoon, J.S. (2004). Predicting teacher interventions in bullying situations. *Education and Treatment of Children*, *27*, 37-45.

Curriculum Vitae

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Education

- Ph.D. May 2007. University of Maryland, College Park, Criminology and Criminal Justice. G.P.A. 3.85. Dissertation: *The Protective Behaviors of Student Victims: Responses to Direct and Indirect Bullying*. Advisor: Denise Gottfredson
- M.A. 1998, East Tennessee State University (ETSU), Criminology and Criminal Justice. G.P.A. 3.99. Thesis: *The Social Consequences of Low Self-Control*. Advisor: John Paul Wright
- B.A. 1996, Randolph-Macon Woman's College (R-MWC), Psychology; Concentration in Sociology. G.P.A 3.45.

Work Experience

Adjunct Faculty Member, George Mason University (GMU). Taught a criminological theory course entitled *Crime and Its Causes* to junior and senior level Administration of Justice majors. Responsible for course content development, exam preparation, evaluation of term papers and assignments for the 2006-2007 Fall and Spring semesters. Provided oversight and guidance to an independent study on narco-terrorism.

Senior Research Analyst, American Institutes for Research, Education Statistics Services Institute (ESSI). Served two roles as a Senior Research Analyst at ESSI. The first of which was to serve as School Crime and Safety Surveys project leader to a four-member team aiding the U.S. Department of Education, National Center for Education Statistics (NCES) in the implementation of surveys related to school crime and safety. Responsibility for these surveys continued throughout their development, from drafting survey items to final reports. Responsibilities included assisting NCES with the development and implementation of several ongoing surveys, data compilation, data analysis, and the writing of resultant reports related to school crime and safety. These surveys included the 1999, 2001, 2003 and 2005 School Crime Supplement to the National Crime Victimization Survey and the 2002 and 2004 Education Longitudinal Survey. These efforts culminated in my second role at ESSI, the writing, review and release of the annual *Indicators of School Crime and Safety*, of which I was lead author and project leader. Project leadership for both projects involved coordination with the client, managing the direction and content of the project work, annual budget maintenance in excess of \$700,000, and staff supervision.

Program Assistant, Crime Mapping Research Center, National Institute of Justice (NIJ). Responsible for utilizing appropriate monitoring procedures and guidelines, including review of narrative and financial reports, to evaluate the quality and progress of 13 grant portfolios. Provided program and staff support for activities and operations. Assisted in the development of draft written material for proposals, reports, and publications. Coordinated responses to outside inquiries. Supplied statistical and analytical assistance to staff. Engaged in the compilation and analysis of literature and data. Prepared and disseminated correspondence and short reports pertaining to these data and research. Coordinated training, technical assistance and national meetings for a national inter-agency effort. Assisted in the development of strategies for identifying the state of knowledge and future research agenda. Represented NIJ to professional organizations and association through membership and attendance at local, state and federal activities through outreach and presentations.

Graduate Assistant, East Tennessee State University, Department of Criminology/Criminal Justice. Assisted the Chair to the Criminal Justice and Criminology Department. Coordinated and implemented local and national conferences. Assisted with the collection and interpretation of research data. Lead the organization of several departmental functions. Performed secretarial tasks.

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Employment History

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| 2006-2007 | Adjunct Faculty Member, part-time while completing doctoral dissertation, George Mason University, Manassas, VA |
| 2004-2005 | Senior Research Analyst, Education Statistics Services Institute, American Institutes for Research, Washington, D.C. |
| 2001-2004 | Research Analyst, Education Statistics Services Institute, American Institutes for Research, Washington, D.C. |
| 2000-2001 | Research Associate, Education Statistics Services Institute, American Institutes for Research, Washington, D.C. |
| 1998-2000 | Program Assistant, Crime Mapping Research Center, National Institute of Justice, Washington, D.C. |
| 1996-1998 | Graduate Assistant, East Tennessee State University, Johnson City, TN. |

Publications

- DeVoe, J.F., Peter, K., Noonan, M., Snyder, T.D., and Baum, K. (2005). *Indicators of School Crime and Safety: 2005*. U.S. Departments of Education and Justice. Washington, DC: U.S. Government Printing Office.
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- La Vigne, N., Fleury, J. and Szakas, J. (1999). "Crimes Against Property: Detecting Chop Shop Locations" in *Atlas of Crime*. Atlanta: Oryx Press.

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Presentations

- DeVoe, J.F. (October 2005). *Indicators of School Crime and Safety Overview*. Paper presented at the Justice Research Statistical Association Meeting, St. Petersburg, Florida.
- DeVoe, J.F. (November 2003). *Consequences of bullying: Student responses to "direct" and "indirect" bullying at school*. Paper presented at the American Society of Criminology, Denver, Colorado.
- DeVoe, J.F. (2002). *Seasonal and Temporal Variation in School Victimization*. Paper presented at the American Society of Criminology, Chicago, IL.
- Planty, M.G. and DeVoe, J.F. (2002). *Student Response to Failures in School-Level Control Mechanisms*. Paper presented at the American Society of Criminology, Chicago, IL.
- Miller, A. and Fleury, J. (November 2001). *The Safety of America's Schools: Data from the 2000 Survey of School Crime and Safety*. Paper presented at the American Society of Criminology, Atlanta, GA.
- Fleury, J. and O'Connell, M. (1999). *Mapping for Corrections*. Paper presented at the Environmental Systems Research Institute Annual Conference, San Diego, CA.
- Fleury, J. (1998). *The Social Consequences of Low Self-control*. Paper presented at the American Society of Criminology Meeting, Washington, DC.
- Fleury, J. and Holleran, D. and Brown, S. (1997). *Fear of Crime: A Report from the Tennessee Crime Survey*. Paper presented at the American Society of Criminology Meeting, San Diego, CA.

Honors and Awards

- Education Statistics Services Institute Quality Assurance Committee Member 2004, 2005
- American Institutes for Research, Staff Council Member and Child Care Task Leader 2003, 2004
- Department of Justice, Strategic Approaches to Community Safety Initiative, Core Group Member 2000, 1999
- Vice President Al Gore's DOJ/National Partnership for Reinventing Government Crime Mapping and Data Driven Management Task Force 1999
- Outstanding Graduate Student Award, ETSU 1998
- Research Assistant, Tennessee Crime Survey Legislative Report 1998
- ETSU Graduate Assistantship 1996, 1997, 1998
- Vice President, Criminal Justice and Criminology Graduate Society, ETSU, 1997-1998
- Managing Editor, American Journal of Criminal Justice 1996-1997
- R-MWC Excellence in Writing Award Recipient, August 1995, January and June, 1996

Teaching Experience

- Adjunct Faculty Member, George Mason, University, *Crime and Its Causes*, Fall 2006 and Spring 2007
- Guest Lecturer, University of Maryland, Joint Program in Statistical Methodology, *Research Methods*, October 2005
- Teaching Assistant, *Criminal Justice Research Methods*, ETSU, 1997-1998

Professional Affiliations

- American Society of Criminology Member, 1997 to present
- Academy of Criminal Justice Sciences Member, 2000, 1999, 1998, 1997, 1996
- Psi Chi, National Honor Society in Psychology Member, 1997, 1996, 1995
- Alpha Kappa Delta, National Honor Society in Sociology Member, 1997, 1996

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Available upon request.