

THE RELATIONSHIP BETWEEN BULLYING VICTIMIZATION AND FEAR OF
CRIME WITH EFFECT ANALYSIS OF ALLEVIATIVE AND AGGRAVATING
FACTORS

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By

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ABSTRACT

This thesis studies the relationship between bullying victimization and the resulting fear of crime, then analyzes how seven alleviative and aggravating factors including school activities engagement, peer support, avoidance behaviors, school structure, supportive adults, school environment and neighborhood environment, affect the relationship. Data from the 2017 National Crime Victimization Survey: School Crime Supplement are used for estimation of nine multivariate regressions. Results strongly support the conclusion that students who experience bullying victimization are more likely to be fearful of crime than those who never have such experiences. In addition, my findings suggest that peer support, positive school structure, supportive adults, safe school environments and neighborhood environment can moderate the relationship between bullying victimization and fear of crime.

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Many thanks,
Tian Tian

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I. Introduction

Schools are places of learning and playing, where students should all feel protected and happy. Unfortunately, however schools all around the world have become places of harm and crime. One recent report noted that in 2018, in the United States 2.16% adolescents were involved in assaults, thefts, drug abuse and other crimes of victimization (OJJDP Statistical Briefing Book). In addition, a growing number of students are becoming victims of crime and suffering from those horrible experiences.

The intent of the thesis is to study the bullying victimization at schools in the United States and how it predicts the level of adolescent victims' fear of crime. Although the topic has been frequently examined, no previous study has addressed how multiple alleviative and aggravating factors related to the fear of crime affect the relationship between bullying victimization and fear of crime. Such factors included in the thesis are **school activities engagement, peer support, avoidance behaviors, school structure, supportive adults, school environment and neighborhood environment**. My hypothesis is that bullying victimization is positively associated with victims' fear of crime, and that alleviative factors will weaken the relationship and aggravating factors strengthen the relationship. To test this hypothesis, I run multivariate regressions in STATA using data collected for the 2017 School Crime Supplement (SCS) of the National Crime Victimization Survey (NCVS), from the U.S. Justice Department's Bureau of Justice Statistics (BJS). The purpose of the thesis is to inform policymakers, researchers, organizations and practitioners at the federal, state and local levels so that they can implement new school-crime related policies and programs.

Bullying is one of the most prevalent types of victimization at schools. The definition of “bullying” used here and adapted from Olweus (1993) is: “**behaviors intended to inflict injury or discomfort upon another individual**”. Those behaviors can be physical, psychological, or verbal, performed by an individual or a group of people, once or repeatedly overtime. The phenomenon of bullying has drawn close attention from the school community, policymakers, and the public because of frequent reports on the news and other mass media of victim suicide. Therefore, many anti-bullying campaigns and programs have been developed.

The first state to pass anti-bullying legislation was Georgia in 1999. The state required all schools to participate in anti-bullying educational programs (*History Anti-Bullying Campaign Timeline*, n.d.). In 2005, Ross Ellis, a child advocate, launched a campaign called “STOMP out bullying” which aims to reduce bullying in various forms such as cyberbullying and sexting by providing education (*History Anti-Bullying Campaign Timeline*, n.d.). Another nationwide anti-bullying campaign, “National Bullying Prevention Month”, founded in 2006 by PACER’s National Bullying Prevention Center, was expanded in 2010 from the first week of October to the entire October (*National Bullying Prevention Month*, n.d.).

In addition to those exploratory anti-bullying campaigns and programs, many studies have examined on the serious consequences of bullying victimization, including increased avoidance behaviors (Randa et al., 2010), physical and mental issues (Salmon, 2000), and poor academic performance (Schneider et al., 2012). The present study extends this research on negative outcomes of bullying for victims, specifically their fear of crime after bullying experiences.

Fear of crime has been a frequent research focus for decades. It refers to the fear of being a victim of crime in contrast with actually being a victim of crime (Hale, 1996). Since fear is such a strong emotion that has detrimental effects on people's everyday lives, and one's fear of crime in certain places can change his or her routine activities, researchers have spent considerable effort studying the affective, cognitive and behavioral aspects of fear of crime. Various types of questions have been included in questionnaires. One way is asking respondents about their feelings of safety in their neighborhood (Krulichová, 2019). In the case of school crime, this factor has been addressed by asking students about their fear of being attacked in a school environment.

This thesis proceeds as follows. In the next session, I review the related literature and background of bullying victimization, fear of crime and all alleviative and aggravating factors mentioned above. The section also describes some famous school anti-bullying programs and policies. In Section III, I create a theoretical framework to explain types of variables and the logic of my model. In Section IV, I present details of the 2017 SCS dataset and descriptive statistics of variables used in my regressions. Section V estimates an empirical model to study the relationship between fear of crime and bullying victimization, and how it is changed by alleviative and aggravating factors. Section VI presents my regression analysis and results. Finally, in Section VII, I discuss conclusions and policy recommendations.

II. Background and Literature Review

In this section, I provide additional background information on bullying victimization, fear of crime, and alleviative and aggravating factors, followed by a summary of previous research on the subject. The section also discusses school anti-bullying programs implemented in recent years.

Bullying Victimization

Bullying is different from other aggressive behaviors, in that it involves repeated harmful behaviors from peers such as hitting or punching, spreading rumors, or exclusion (Arseneault, Bowes & Shakoor, 2010; Hutzell & Payne, 2018). The public believes that bullying in schools is a serious problem and considers it a criterion for judging whether the school is safe (Shelley et al., 2017). Bullying in schools usually happens among people of similar ages, due to an imbalanced power, including differences in physical strength, popularity and socio-economic status (Arseneault, Bowes & Shakoor, 2010). More specifically, bullying can be divided into two categories: direct bullying and indirect bullying. Direct bullying refers to face-to-face interactions, causing either verbal or physical harm. Indirect bullying can be done without victims present; for example, through rumors and exclusion (Olweus, 1993a, 1994). In general, girls tend to suffer more than boys from indirect bullying and less than boys from direct bullying than boys (Arseneault, Bowes & Shakoor, 2010; Hutzell & Payne, 2018).

Adolescents in schools face a higher risk of becoming victims of bullying than adults, since it is extremely hard for them to avoid school environments and seek support (Olweus, 2012). The majority of students who are victims of interpersonal bullying

experience such behaviors on the way to and from school (Olweus, 2012). Nonetheless, bullying in schools cannot be ignored. The consequences of being bullied can be so severe that after experiencing bullying, adolescents show symptoms such as self-harm, psychotic symptoms, depression, and anxiety, and these bad effect can persist until late adolescence, especially for students experiencing re-victimization (Arseneault, Bowes & Shakoor, 2010).

Fear of Crime

Fear of crime is a complex construct since by definition, people's fear is usually greater than their actual risk of victimization by perceived threats in the environment (Collins, 2016). The majority of research on fear of crime focuses on vulnerability and environmental perspectives (Randa et al., 2019). Vulnerability refers to people's physical and social vulnerability in the face of victimization. Children and the elderly experience greater fear because they believe they are less likely to avoid attack (Randa et al., 2019). For adults, fear of crime depends on both individual and environmental characteristics such as mental disorders, crime rates, unfavorable social environments and other factors (Vieno et al., 2016). Although little research has been conducted on adolescent's fear of crime, a similar pattern as adults can be theorized.

Victims of bullying have frequently reported increased fear and avoidance at schools (Gutt & Randa, 2016). As the level of fear of crime increases, the odds of skipping class and performing poorly in schoolwork increases (Barrett et. al, 2012). Students' desire to attend higher education also declines (Barrett et. al, 2012). A number of studies have found that women, seniors, and lower socioeconomic status people are

more likely to be fearful than others, and adolescents are more likely to become victims of crime than adults. (Krucichová & Podana, 2019).

Alleviative and Aggravating Factors

In addition to studying the directional relationship between bullying victimization and fear of crime, researchers have considered whether certain alleviative and aggravating factors would moderate the relationship between bullying victimization and fear of crime.

School Activities Engagement

A study using 2011 SCS data found that students who participated in school activities were less likely to engage in school avoidance, which is a factor reciprocally associated with fear of crime after bullying victimization (Hutzell & Payne, 2018; see also Rader et al., 2007). Given more details, physical activities could benefit students in various ways, including improving muscle strength and better mental health. One study using high school students as their samples indicates that less involvement in physical activity and more sedentary behavior are associated with a higher possibility of being bullied and skipping school (Demissie et al., 2014).

Peer Support

Not many previous studies have worked on the effect of positive friends in mediating the relationship between bullying victimization and fear of crime. Surprisingly, Hutzell & Payne's finding argues that having a positive friend at school encourages avoidance behaviors indeed because students who had previous bullying victimization would be encouraged to avoid certain places in order to prevent further victimization

(Hutzell & Payne, 2018). To fill the gap of few researchers have considered the role of peer support before, the current study includes a positive friend support factor.

Avoidance Behaviors

The study conducted by Hutzell and Payne in 2018 found that being fearful aggravates the relationship between bullying victimization and school avoidance (Hutzell & Payne, 2018); and Rader and his colleagues (2007) found that fear of crime was reciprocally related to perceived risk and avoidance behaviors. In other words, fearful people tend to have higher levels of perceived risk and are more likely to engage in avoidance behaviors, but the perceived risk level does not affect avoidance behaviors directly (May et. al, 2010; also see Figure 1). Although various studies have estimated these relationships among adults, little work have done on how avoidance behaviors moderate the relationship between bullying experiences and fear of crime among adolescents.

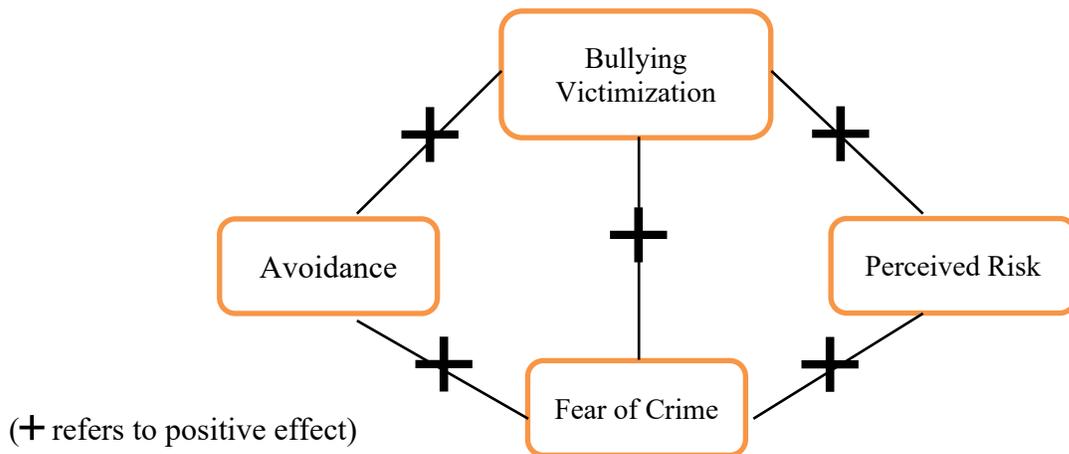


Figure 1. Relationship among Fear of Crime, Perceived Risk, Avoidance and Bullying Victimization.

School Structure and Supportive Adults

In addition to perception of risk, other factors such as school structure and positive support can influence the possibility of being bullied, and the amount of fear after bullying victimization. Some prior research has found that a supportive school climate has a positive effect on adolescents' academic achievement, mental health, and decreasing participation in criminal activities (Baek, Andreescu & Rolfe, 2019; see also Gutt & Randa, 2016). Therefore, it is interesting to investigate whether a supportive school climate may have a similar positive effect on bullying victimization and fear of crime. Gregory and his colleagues (2010) introduced a new theory of school discipline policies and practices called "Authoritative School Discipline", which combines both school structure (enforcement of school discipline) and support (availability of caring adults), and Gerlinger and Wo (2016)'s study supports the conclusion that implementing "Authoritative School Discipline" led to a significantly lower level of bullying.

Nonetheless, not only school implementation of authoritative school discipline is important but also students' positive perceptions of those structures and support. Gregory's study found that student's perceptions of school structure and support were associated with less student victimization (Gregory et al., 2010). That is to say, victimization is negatively related to students' expectations of clear and consistently enforced school and teacher rules. In contrast, students who perceive school rules as unfair tend to face a higher risk of bullying victimization (Kupchik & Farina, 2016). Similarly, students' perception of teachers' support or presence of supportive adults can effectively reduce fear of crime after victimization. Baek, Andreescu and Rolfe (2019) analyzed the data from 2013 SCS, concluded that adolescents who received emotional

support from teachers or other adults report feeling less fearful. A similar study by Gutt and Randa (2016) using 2011 SCS data, showed that an empathetic presence can alleviate fear of crime because victims of bullying may perceive that future victimization would be prevented.

School and Neighborhood Environment

Environmental factors are also important factors that cannot be ignored. Research using a sample of high school students from a southeastern state shows that students who perceive schools and neighborhoods as dangerous environments are at a higher risk of fearing criminal victimization (May & Dunaway, 2000). Another study using samples from a town named Ercolano in Italy, concluded that bullying is significantly associated with subjects' perceptions of their neighborhood safety (Bacchini & Affuso, 2009).

School Anti-bullying Programs and Policies

A well-known, also the first, anti-bullying program is the Olweus Bullying Prevention Program (OBPP), which effectively reduces bullying by implementing four rules at the individual, classroom, and school levels (Hutzell & Payne, 2018): a) limit unacceptable behaviors; b) apply both non-physical and non-punitive sanctions for unacceptable behaviors or rule violations; c) involve, positive interest, and warmth from adults; and d) include adults who act as both authorities and positive role models (Hutzell & Payne, 2018; Olweus, 2003). OBPP was first implemented in Norway in 1983, and it reduced bullying victimization by 50% successfully, as well as led to reductions in antisocial behaviors (Gerlinger & Wo, 2016). Although the reduction rate decreased in

later implementations, a meta-analytic review found that programs stemming from this model seemed to work best (Hutzell & Payne, 2018).

Another effective theory of reducing bullying in schools was proposed by Rapp-Paglicci et al. (2004). They proposed that the majority of bullying is highly possible to occur at fixed places and times where children lack supervision (Rapp-Paglicci et al., 2004). Based on this assumption, the author suggested that training school personnel to intervene at those specific locations allows school to use limited teacher and staff resources to prevent bullying in schools efficiently.

In the U.S., all states are required to adopt anti-bullying policies (Haugen et al., 2019). Officials from education, law enforcement, and other government agencies have taken action to prevent school crime and protect students' safety. Some schools cooperate with local police offices that send police officers to schools as school resource officers (SROs) (Jennings et al., 2011). In addition, an increasing number of schools are required to install video cameras, closed-circuit television (CCTV) systems and weapon detection systems. However, compared to effective school structure and support, this "get tough" approach is not as effective as it was initially assumed (Gerlinger & Wo, 2016).

To sum up, the intervention strategies of anti-bullying in schools include training school personnel on intervening, and giving student empathy and respect classes, maintaining constant adult supervision, and collaborating with parents (Hall, 2017). However, the systematic review by Hall (2017) about the effectiveness of policy interventions to reduce school bullying suggests that improving the quality of bullying policies may only be effective for direct forms of bullying, but not for relational bullying. This suspicion is reasonable since it is difficult to respond to indirect bullying occurring

without the presence of teachers or other adults witnessing the bullying behaviors. So far, no consistent findings explain the relationship between the content of anti-bullying policies and the prevalence of bullying (Haugen et al., 2019), and only a few successful models have been introduced, focusing on the effect of adults involved.

My Contribution

A certain number of studies have used the School Crime Supplement (SCS) to the National Crime Victimization Survey (NCVS) data for analysis purposes in previous years, studying the effect of bullying victimization on fear of crime. Surprisingly, however researchers come up with conflicting results: some argue that people who have experienced victimization are more likely to fear crime, while others argue that even those people who never become victims of crime are likely to fear crime as well (Doran & Burgess, 2012; Krulichová & Podana, 2019). Nevertheless, another research report by Baek, Andreescu & Rolfe (2019) found that the effect of bullying victimization on fear of crime is relatively consistent. Moreover, the relationship between the content of anti-bullying policies and the prevalence of bullying is not consistent across studies (Haugen et al., 2019). Some studies show the presence of such policies lead to lower rates of bullying and others do not (Hall, 2017). This paper attempts to resolve some of the disagreements on how bullying victimization and fear of crime are related. In addition, in order to fill the gap that not many models cover anti-bullying policies' content and their effectiveness, I selected some additional variables for my regression model. What's more, most of the studies focus on gender differences or single alleviative or aggravating

variables, and not many of them analyze the 2017 SCS in multivariate regressions models. My approach addresses all of these issues.

III. Theoretical Framework

In order to estimate the relationship between bullying victimization and fear of crime and how that relationship changes when adding alleviative and aggravating variables that are widely used as factors in designing anti-bullying policies, I present the following theoretical model below.

$$\text{Fear of Crime} = f(\text{Bullying Victimization, Alleviative, Aggravating, Control, e}) \quad (1)$$

The goal of the model is to illustrate factors that can influence either fear of crime or bullying victimization in the model, along with control variables that are not central for this thesis or that increase personal differentiation as control variables.

The logic of the model based on the majority of findings in literature is that in theory, victims of bullying show an increasing fear of crime. Thus, the aim of anti-bullying policies and campaigns is to reduce incidences of bullying, and to ameliorate the effects of any part of exposure to bullying: experiencing bullying, being fearful after bullying, and the possibility of re-victimization. The literature indicates that alleviative and aggravating variables including school activities engagement, peer support, avoidance behaviors, school structure, supportive adults, secure school environment and neighborhood environment, have proved to moderate these relationships or be logical, Activities engagement occupies a crucial part of adolescents' school life. Peers, teachers, and other school personnel are people students must interact with mostly every day. School and neighborhood environment are closely associated with their routines. Other control variables such as gender, race, grade, and household income are variables that can

be characterized as personal characteristics and cannot be changed by implementing anti-bullying policies. Nonetheless these other variables can greatly influence the outcome. For example, girls, minority groups, poor people, and those with lower grades tend to experience more bullying than others.

I next present the data I use to implement this theoretical model.

IV. Data and Descriptive Statistics

This thesis uses data from the 2017 School Crime Supplement (SCS) to the National Crime Victimization Survey (NCVS). The NCVS was designed to produce estimates of property and personal crime victimization at the national level and for the largest 22 states. Co-designed by the NCES and BJS in 1989, the SCS was intended to only produce national estimates of school-related crime and violence, to assist policymakers, researchers, and practitioners in making informed decisions concerning crime in schools. The SCS was meant as a supplement to the NCVS and has been conducted in 1989, 1995, and every two years starting in 1999. This thesis uses data from the 2017 version. The target population of the SCS is U.S. residents living in the 50 states and the District of Columbia who meet all of the following criteria: 1) Age 12 to 18; 2) Attended school any time during the current school year; 3) Not homeschooled for the entire school year; and 4) Enrolled in grades 6-12. In 2017, following a completed NCVS interview, only household members ages 12 to 18 were given an SCS interview,. The 2017 SCS was conducted from January through June 2017. **Although the whole NCVS dataset is cross-sectional, the SCS data were only collected once following the first round NCVS collection from January through June.**

For the SCS, household members age 12 to 18 were interviewed directly, except for limited situations in which proxy interviews were accepted. Proxy interviews are interviews in which one household member answers the questions for another in that household. Proxy interviews accounted for 9.1% of all SCS interviews in 2017. A person was considered a non-interview for the SCS if: 1) the person was an NCVS non-interview; 2) the person was an NCVS interview but refused or was unavailable for the

SCS interview; or 3) the person was physically or mentally unable to answer the questions and no proxy was available or an acceptable proxy respondent refused to complete a proxy SCS interview. Questionnaires of non-interview people were not included in the dataset.

The SCS survey consists of eight sections. The first section included the screening questions for confirming that the respondent was eligible for the subsequent questions. The second section asked about details of the school the student attended, including private or public, grade, and students' school life, such as extracurricular activities engagement, school actions taken for safety, classroom and school rule enforcement, peer and adults support, and the availability of drugs and alcohol in school. The third section contained questions about student fighting, bullying and hate experiences. The following two sections asked about the students' avoidance and fear responses. There were also sections in the questionnaire about weapons, gangs, and student characteristics.

In this thesis paper fear of crime is my main dependent variable and bullying victimization is my main independent variable. Additionally, as noted, I include alleviative and aggravating variables to the analysis, including school activities engagement, peer support, avoidance behaviors, school structure, supportive adults, school environment and neighborhood environment. All of these variables were coded in the form of separated questions. Therefore, I needed to create a new and averaged variable for each factor. The original dataset includes all responses from the NCVS questionnaire, but I only keep responses qualified for the SCS by dropping residue, refused and "don't know" answers. (Residue answers represent that the answer to a particular question was missing).

As noted, I also include the following control variables in the regressions: student gender (female and male), race/ethnicity (Hispanic and non-Hispanic), grade (sixth to twelfth grade), household income (location on an ordinal scale for levels of income) and school characteristics, which including sector, locale, level, enrollment size, and student to FTE (Full-Time-Equivalent) teacher ratio. (see Table 1.)

Table 1. Descriptive Statistics for Control Variables.

Variable Name	Numeric	Label	Freq.	Percent
<i>female</i>	0	Male	3090	50.51
	1	Female	3027	49.49
<i>grade</i>	1	Sixth	541	8.84
	2	Seventh	980	16.02
	3	Eighth	1009	16.50
	4	Ninth	918	15.01
	5	Tenth	966	15.79
	6	Eleventh	868	14.19
	7	Twelfth	835	13.65
<i>income</i>	1	Less than \$5,000	125	2.04
	2	\$5,000 to \$7,499	41	0.67
	3	\$7,500 to \$9,999	81	1.32
	4	\$10,000 to \$12,499	103	1.68
	5	\$12,500 to \$14,999	103	1.68
	6	\$15,000 to \$17,499	112	1.83
	7	\$17,500 to \$19,999	102	1.67
	8	\$20,000 to \$24,999	339	5.54
	9	\$25,000 to \$29,999	294	4.81
	10	\$30,000 to \$34,999	334	5.46
	11	\$35,000 to \$39,999	358	5.85
	12	\$40,000 to \$49,999	522	8.53
	13	\$50,000 to \$74,999	1006	16.45
	15	\$75,000 to \$99,999	922	15.07
	16	\$100,000-\$149,999	864	14.12
	17	\$150,000-\$199,999	405	6.62
	18	\$200,000 or more	406	6.64
	<i>sc_sector</i>	1	Public school	5447
2		Private school, no religious affiliation data reported	73	1.25
3		Private, Roman Catholic school	137	2.35

Table 1. (Cont.)

Variable Name	Numeric	Label	Freq.	Percent
<i>sc_sector</i>	4	Private, other religious school	80	1.37
	5	Private, nonsectarian school	89	1.53
	missing		291	
<i>sc_locale</i>	1	City	1608	27.67
	2	Suburb	2236	38.48
	3	Town	708	12.18
	4	Rural	1259	21.67
	missing		306	
<i>sc_level</i>	1	Primary	350	5.75
	2	Middle	1893	31.08
	3	High	3363	55.21
	4	Other	485	7.96
	missing		26	
<i>sc_enrollmentsize</i>	1	Less than 300	586	10.13
	2	300-599	1006	17.39
	3	600-999	1489	25.74
	4	1,000-1,499	1168	20.19
	5	1,500-1,999	776	13.42
	6	2,000 or more	759	13.12
	Missing		333	
<i>sc_FTE</i>	1	Less than 13 students	836	14.92
	2	13 to less than 16 students	1504	26.85
	3	16 to less than 20 students	2011	35.90
	4	20 or more students	1251	22.33
	missing		515	

Note: residue values indicate that a response is missing for the question that should be answered, recoded “residue” to “missing”.

V. Empirical Model

Based on my theoretical model and data, I estimate the following empirical model:

$$\begin{aligned} \text{fear_of_crime} = & \beta_1 \text{bullying} + \beta_2 \text{school_activities} + \beta_3 \text{school_structure} + \beta_4 \text{peer} + \\ & \beta_5 \text{teacher} + \beta_6 \text{senvironment} + \beta_7 \text{nenvironment} + \beta_8 \text{avoidance} + \beta_9 \text{female} + \beta_{10} \text{Hispanic} + \\ & \beta_{11} \text{grade} + \beta_{12} \text{income} + \beta_{13} \text{sc_sector} + \beta_{14} \text{sc_level} + \beta_{15} \text{sc_locale} + \beta_{16} \text{sc_enrollmentsize} \\ & + \beta_{17} \text{sc_FTE} + \mu \end{aligned} \quad (2)$$

Where:

***fear_of_crime*: Fear of crime** is measured by a series of questions asking if students sometimes, even if they can avoid a place, may still be afraid of what might happen there. Questions were: How often are you afraid that someone will attack or harm you (1) in the school building or on school property; and/or (2) on a school bus or on the way to and from school. Separately, students were asked: Besides the times you are in the school building, on school property, on a school bus, or going to and from school, how often are you afraid that someone will attack or harm you. The answers were coded as ordinal numbers: Never =1, Almost Never = 2, Sometimes =3, Most of the time =4. I average the responses to all three questions for analysis. This is the dependent variable of my regression; a higher score represents a higher level of fear of crime.

***bullying*: Bullying victimization** is measured by a series of questions asking if another student has bullied the respondent during this school year. In total, seven binary variables are included: Has another student: (1) made fun of you, called you names, or insulted you, in a hurtful way; (2) spread rumors about you or tried to make others dislike you; (3) threatened you with harm; (4) pushed you, shoved you, tripped you, or spit on you; (5) tried to make you do things you did not want to do, for example, give them money or other things; (6) excluded you from activities on purpose; and (7) destroyed your

property on purpose? Possible responses to each item were “yes” and “no” (yes = 1, no = 0). I combine all seven items into one dichotomous variable that represents whether students were bullied or not bullied (“yes” or “no”; yes = 1, no = 0). This is the main independent variable of my analysis, a higher score in *bullying* represents a higher frequency of being bullied.

***school_activities*: School activities** are measured by a series of questions asking whether students have participated in any of the athletic teams, spirit groups, performing art, academic clubs, student government, community service or volunteer clubs and other activities sponsored by the school during the school year. The answers to each item were coded as “yes” and “no” (yes = 1, no = 0). I took an average of all questions for analysis. A higher score in *school_activities* represents a higher frequency of getting involved in school activities.

***school_structure*: Positive school structure** is measured by a series of questions asking students’ ideas about school rules. Questions ask student opinions on the following statement: 1) The school rules are fair; 2) The punishment for breaking school rules is the same no matter who you are; 3) The school rules are strictly enforced; and 4) If a school rule is broken, students know what kind of punishment will follow. The answers are coded as ordinal numbers: Strongly Agree=1, Agree= 2, Disagree=3, Strongly Disagree=4. I average the responses to all four questions for analysis. A higher score represents less positive school structure.

***teacher*: Supportive adults** are measured by asking students: 1) whether teachers treat students with respect; or is there a teacher or other adult at school who: 2) really cares about you; 3) listens to you when you have something to say; or 4) tells you when you do

a good job. The answers are coded as ordinal numbers: Strongly Agree=1, Agree= 2, Disagree=3, Strongly Disagree=4. I average the responses to all four questions for analysis. A higher score represents less supportive adults present in schools.

peer: Peer support is measured by asking questions about whether there is a student at school who: 1) really cares about you; 2) listens to you when you have something to say; or 3) believes that you will be a success. The answers are coded as ordinal numbers: Strongly Agree=1, Agree= 2, Disagree=3, Strongly Disagree=4. I average the responses to all three questions for analysis. A higher score represents less supportive peers present in schools.

senvironment: School environment is measured based on students' perceived safety in school through asking the questions "Do you feel safe in your school" and "Is there a lot of crime in the neighborhood where you go to school". The answers are coded as ordinal numbers: Strongly Agree=1, Agree= 2, Disagree=3, Strongly Disagree=4. I recoded the second question: "Is there a lot of crime in the neighborhood where you go to school" in a reverse way. An average of the two questions is used for analysis as the factor "school environment". A higher score represents feeling less safe in schools.

nenvironment: Neighborhood environment is measured by asking students whether they think "there is a lot of crime in the neighborhood where you live". I recoded the answer to ordinal numbers: Strongly Agree=4, Agree= 3, Disagree=2, Strongly Disagree=1, then a higher score represents feeling less safe in neighborhood.

avoidance: Avoidance is measured by a series of questions asking if students during the school year, did the student ever stay away from many of the following places because they thought someone might attack or harm them there. There are nine places including:

1) the shortest route to school; 2) the entrance into the school; 3) any hallways or stairs in school; 4) parts of the school cafeteria or lunchroom; 5) any school restrooms; 6) other places inside the school building; 7) the school parking lot; 8) other places on school grounds; or 9) the school bus or bus stop. Two additional questions are: 10) Do you avoid any activities at your school because you thought someone might attack or harm you; and 11) Do you avoid any classes because you thought someone might attack or harm you. The answers to each item were coded as “yes” and “no” (yes = 1, no = 0). I average the responses to all eleven questions for analysis. A higher score represents a higher level of avoidance.

female: This variable describes participants’ original sex. I recoded it as female = 1, male = 0.

Hispanic: This variable describes participants’ race. I recoded it as Hispanic = 1, non-Hispanic = 0.

grade: This variable shows in which grade the participant was. It was coded as Sixth = 1, Seventh = 2, Eighth = 3, Ninth = 4, Tenth = 5, Eleventh = 6, Twelfth = 7.

income: This variable provided information of participants’ household income. It was coded in numeric: Less than \$5,000 = 1, \$5,000 to \$7,499 = 2, \$7,500 to \$9,999 = 3, \$10,000 to \$12,499 = 4, \$12,500 to \$14,999 = 5, \$15,000 to \$17,499 = 6, \$17,500 to \$19,999 = 7, \$20,000 to \$24,999 = 8, \$25,000 to \$29,999 = 9, \$30,000 to \$34,999 = 10, \$35,000 to \$39,999 = 11, \$40,000 to \$49,999 = 12, \$50,000 to \$74,999 = 13, \$75,000 to \$99,999 = 15, \$100,000-\$149,999 = 16, \$150,000-\$199,999 = 17, \$200,000 or more = 18.

sc_sector: This variable describes participants' school type, it was coded in numeric as well: Public school = 1, Private school, no religious affiliation data reported = 2, Private, Roman Catholic school = 3, Private, other religious school = 4, Private, nonsectarian school = 5.

sc_locale: This variable describes participants' school location: City = 1, Suburb = 2, Town = 3, Rural = 4.

sc_level: This variable describes participants' school level: Primary = 1, Middle = 2, High = 3, Other = 4.

sc_enrollmentsize: This variable describes participants' school enrollment size: Less than 300 students = 1, 300-599 students = 2, 600-999 students = 3, 1,000-1,499 students = 4, 1,500-1,999 students = 5, 2,000 or more students = 6.

sc_FTE: This variable describes participants' school's student to FTE (Full-Time-Equivalent) teacher ratio: Less than 13 students = 1, 13 to less than 16 students = 2, 16 to less than 20 students = 3, 20 or more students = 4.

According to literature review, the fear of crime level increases as bullying victimization experiences increases, so I expect the sign of my bullying coefficient is positive. Also, based on some relevant research, participating in more school activities may relieve fear of crime after bullying victimization. Thus, I expect the sign on this coefficient to be negative. In addition, the more positive students' perceptions of school structure, the less fear of crime they are likely to have, and a higher score represents less positive school structure. So I expect the sign on this coefficient to be positive. For the same reason, students' perceptions of school environment and neighborhood environment safety affect fear of crime level; as perceptions of safety increase, fear of crime decreases.

However, higher scores mean less safety felt. As a result, I expect the signs for school environment and neighborhood environment to be positive. In the same way, supportive adults and peers present in schools could relieve fear of crime after bullying victimization, but higher scores represent less support. Thus, I expect the sign on these coefficients to be positive. Lastly, since based on previous researchers' arguments, the correlation between avoidance and fear of crime is positive, that is fear of crime increases as avoidance increases. Therefore, I expect the sign for this coefficient to be positive too.

Considering the signs of the coefficients for my control variables, based on my literature review, a female is more likely to fear crime after bullying victimization than a male. The same goes for students from a low-income household or a Hispanic background. Thus, I expect that the signs for *female* and *Hispanic* are positive, while negative for *income*. I have found no explicit evidence for how grade, school type, school location, school level, enrollment size and student to FTE (Full-Time-Equivalent) teacher ratio affect my regression. Thus, I have no clear expectation for the signs of the coefficients on these control variables.

In the next section, I present the results from estimating this equation.

VI. Regression Results

To find how bullying victimization and fear of crime are related, and how multiple alleviative and aggravating variables affect the relationship, I run two regressions, which are: model (2) in the empirical model section above and model (3) presented below:

$$\text{fear_of_crime} = \beta_1\text{bullying} + \beta_9\text{female} + \beta_{10}\text{Hispanic} + \beta_{11}\text{grade} + \beta_{12}\text{income} + \beta_{13}\text{sc_sector} + \beta_{14}\text{sc_level} + \beta_{15}\text{sc_locale} + \beta_{16}\text{sc_enrollmentsize} + \beta_{17}\text{sc_FTE} + \mu \quad (3)$$

For further interest, I run seven additional regressions to analyze single effect of alleviative and aggravating variables on the relationship between bullying victimization and fear of crime. Results of the three models presented below are reported in the main body of this thesis. (See the full regression results in Appendix C). Model (4) estimates whether participating in school activities influences the fear of crime level after bullying victimization. Model (5) shows the impact of peer support and Model (6) indicates how avoidance behaviors moderate the relationship between bullying experiences and fear of crime among adolescents.

$$\text{fear_of_crime} = \beta_1\text{bullying} + \beta_2\text{ school_activities} + \beta_9\text{female} + \beta_{10}\text{Hispanic} + \beta_{11}\text{grade} + \beta_{12}\text{income} + \beta_{13}\text{sc_sector} + \beta_{14}\text{sc_level} + \beta_{15}\text{sc_locale} + \beta_{16}\text{sc_enrollmentsize} + \beta_{17}\text{sc_FTE} + \mu \quad (4)$$

$$\text{fear_of_crime} = \beta_1\text{bullying} + \beta_4\text{peer} + \beta_9\text{female} + \beta_{10}\text{Hispanic} + \beta_{11}\text{grade} + \beta_{12}\text{income} + \beta_{13}\text{sc_sector} + \beta_{14}\text{sc_level} + \beta_{15}\text{sc_locale} + \beta_{16}\text{sc_enrollmentsize} + \beta_{17}\text{sc_FTE} + \mu \quad (5)$$

$$\text{fear_of_crime} = \beta_1\text{bullying} + \beta_8\text{avoidance} + \beta_9\text{female} + \beta_{10}\text{Hispanic} + \beta_{11}\text{grade} + \beta_{12}\text{income} + \beta_{13}\text{sc_sector} + \beta_{14}\text{sc_level} + \beta_{15}\text{sc_locale} + \beta_{16}\text{sc_enrollmentsize} + \beta_{17}\text{sc_FTE} + \mu \quad (6)$$

Details of the regression results are shown in Table 2 below. All five models have significant F-statistics, which indicates that the independent variables jointly predict the level of the fear of crime. In model (2), it has the highest R-squared of the five models, (0.2129), due to inclusion in model (2) of the highest number independent variables.

In model (3), which includes no alleviative or aggravating variables, bullying victimization is significantly correlated with fear of crime, holding other control variables constant. The model indicates that one unit increase in bullying victimization leads to a 0.726 increase in fear of crime. Adding the student activities variable in model (4) increases the coefficient of bullying to 0.728, with an insignificant ($p=0.29$) coefficient of -0.034. That's to say, although the experience of participating in school activities is not significantly correlated with fear of crime, it may allow students to experience a less fear of crime after being bullied. Peer support appears to significantly moderate the effect of bullying victimization on an increasing fear of crime with a smaller coefficient of 0.717 in model (5). Since a higher peer support score represents lower perception of supportive peer around, more peer support significantly makes students feel less fearful with a coefficient of 0.09.

The model (2) with all variables included has the smallest coefficient for **Bullying**, which supports my hypothesis that those alleviative variables can moderate the effect of bullying victimization on fear of crime. In particular, peer support, avoidance, school structure, school environment, and neighborhood environment are significantly correlated with fear of crime, whereas school activities and supportive adults are not. These findings contradict with the findings of previous research, possibly due to the fact that I have included additional factors, so a more complete picture emerges. In model (2), the coefficients on the control variables - gender, grade, school sector and school FTE ratio- are significant. Coefficients on the five other control variables are not. Specifically, a female is 0.024 percentage point more likely to fear crime after bullying victimization than a male. Also, getting one grade higher seems to make students 0.006

points less likely to be fearful. Interestingly, the significant and negative signs of coefficients for school sector and school locale show that students attending private, religious school in rural areas are less likely to be fearful than students from public, non-religious schools in city areas. In addition, when the student to FTE (Full-Time-Equivalent) teacher ratio is higher, students experience more fear of crime.

In model (6), which includes avoidance as the additional variable, there appears to be an endogenous relationship between fear of crime and avoidance with a significant coefficient of 0.475 for bullying, and a significant coefficient of 1.64 for avoidance. That is to say, when a student's avoidance behaviors increase, his or her fear of crime increases, but that increases in fear of crime could then lead to an increase in avoidance behaviors. The independent variable and dependent variable affect each other in this model. Future research could correct for this issue by using an instrumental variables or fixed effects approach. Table 2 summarizes the results of regressions model(2) through model (6).

Table 2. Summary of Regression Results (Fear of Crime as Dependent Variable).

Model:	(2)	(3)	(4)	(5)	(6)
Bullying	0.426*** (0.055)	0.726*** (0.055)	0.728*** (0.056)	0.717*** (0.056)	0.475*** (0.053)
Gender	0.024** (0.009)	0.028** (0.010)	0.029** (0.010)	0.035*** (0.010)	0.027** (0.009)
Race	-0.009 (0.012)	0.015 (0.012)	0.014 (0.012)	0.006 (0.012)	0.008 (.012)
Grade	-0.006** (0.003)	-0.003 (0.003)	-0.002 (0.003)	-0.002 (0.003)	-0.003 (0.003)
Income	-0.002 (0.001)	-0.006*** (0.001)	-0.006*** (0.001)	-0.005** (0.001)	-0.006*** (0.001)
School sector	-0.014** (0.004)	-0.025*** (0.005)	-0.024*** (0.005)	-0.022*** (0.005)	-0.020*** (0.004)
School level	0.010 (0.008)	0.014 (0.009)	0.014 (0.009)	0.015* (0.009)	0.010 (0.008)
School locale	-0.007 (0.005)	-0.021*** (0.005)	-0.021*** (0.005)	-0.020*** (0.005)	-0.016** (0.005)
School enrollment size	0.003 (0.004)	0.003 (0.004)	0.002 (0.004)	0.001 (0.004)	0.003 (0.004)
School FTE ratio (student to teacher)	0.010* (0.006)	0.011* (0.006)	0.011* (0.006)	0.011* (0.006)	0.011** (0.006)
School activities	0.027 (0.030)		-0.034 (0.032)		
Peer support	0.033** (0.014)			0.090*** (0.010)	
Avoidance	1.49*** (0.147)				1.64*** (0.150)
School structure	0.030** (0.013)				
Supportive adults	-0.002 (0.017)				
School environment	0.092*** (0.013)				
Neighborhood environment	0.034*** (0.009)				
Constant	0.804*** (0.041)	1.183*** (0.033)	1.186*** (0.033)	1.015*** (0.038)	1.168*** (0.033)
No. of Obs	5316	5508	5503	5430	5504
F-statistic	35.05***	29.67***	27.01***	30.91***	40.23***
R-squared	0.2129	0.1021	0.1023	0.1176	0.1761

*Robust standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.000$*

VII. Conclusion and Policy Recommendations

The purpose of this thesis is to study the relationship of bullying victimization and fear of crime, and to determine how some alleviative and aggravating variables may change this relationship. These alleviative and aggravating variables included in my thesis are student's school activities engagement, perceptions of peer support, measures of avoidance behaviors, perceptions of positive school structure and supportive adults present, and perceptions of safe school environment and secure neighborhood environment. Well-known anti-bullying programs, campaigns, and policies mainly rely on adding or deleting these alleviative and aggravating factors to reduce the potential negative effect of bullying victimization, and reach the goal of protecting adolescents.

I found the following conclusions from the regression results: (1) bullying victimization is positively associated with fear of crime: that's to say, the more frequent or more times the student was bullied, the higher his or her fear of crime would be, compared to those who have had fewer bullying experiences or never be bullied. It cannot be denied that anti-bullying programs are effective to some extent, but the bullying phenomenon still exists, and some adolescents were still suffering from it. (2) the coefficients on all alleviative and aggravating variables except participating in school activities were statistically significant, that's to say, these variables appear to moderate or aggravate the relationship between the bullying victimization and fear of crime to a certain degree. In particular, a student's perception of a safe school environment was the most effective moderator of the relationship, and in general, the safer students perceived the school environment to be, the less fear they felt. Students' perceptions of peer support, supportive adults, positive school structure, and secure neighborhood

environment's safety are nearly equally significantly effective. Participating in school activities slightly influenced the relationship by reducing the fear level without a statistically significant result found. The insignificant result may be due to the dual effect of school activities. That's to say, it is highly possible that bullying happens while students are doing school activities, especially in athletic teams where body contact is frequent. (3) Although I encountered a potential problem with endogeneity while taking "avoidance" as the aggravating variable for my analysis, avoidance is associated with significantly aggravating the fear of crime level after bullying victimization.

While analyzing the results for control variables, they were consistent with previous research in which females were more likely to fear crime after bullying victimization and students from lower income families tend to follow that trend, probably because students from minority groups are exposed to higher risks of being bullied. In addition, when the student to FTE teacher ratio is higher, it is more difficult for teachers to supervise students, and thus they are more likely to suffer from being bullied and from fear of crime. I found unexpectedly that public, not religious, school students tend to be more fearful of crime after experiencing bullying than private, religious school students, and students who attended school in city areas have a greater fear of crime than students from schools in rural areas. These results are consistent with previous research. I found no particular research to explain why students from rural schools have less fear of crime than students from city schools. Perhaps students who attend city schools have more access to various information, so bullying is more prevalent in these areas.

Policy Recommendations

As I argued above, my results may have directive application to future anti-bullying policies. My empirical model is a possible reference model for designing any future policies, campaigns, or programs. Currently prevalent anti-bullying programs tend to focus on training school personnel to intervene in violence or bullying at schools, cooperating with parents or local police as well. However, there are places where adults cannot always keep an eye on students. So, the most important part of anti-school bullying programs, consists of education programs, not only educating adolescents to stop bullying, but also to tell them how to protect themselves and who to find for help.

Given these facts, my recommendations for anti-bullying program design are:

(1) School and community centered: Schools should continue to provide education programs to school personnel, increase the awareness of the downsides of bullying victimization in the community, and cooperate with local police and the community to create safer school and neighborhood environments. Schools should take the lead in this effort and would be responsible for forming a fixed group or team, who are responsible for patrolling their schools regularly to eliminate bullying that occurs out of sight of adults. If there are several schools in one district, a cooperation committee is feasible as well. However, the goals, policy details, procedures, and rules, daily patrolling and schedule checking be clearly stated and communicated to all team members. There should also be a person in the team who is trained to evaluate the effectiveness of work based on daily records. Critically, identifying and monitoring high risk areas where school activities take place will also be the team's responsibility. With supervisors present, schools should encourage students' engagement in school activities. In addition,

schools should establish a clear reward and punishment system to reward students who report bullying, and give appropriate punishments to the students who inflict bullying, so as to achieve the purpose of encouraging harmony at schools and putting an end to the behavior of harm. In general, the school should shoulder the responsibility of supervision all aspects of school-based anti-bullying programs.

(2) Parent centered: Schools should cooperate with parents to keep track of the “unseen” parts of students’ school experience. Communicating to parents that school violence has a bad influence on children's physical and mental development is crucial. As a result, parents have to make themselves an absolutely safe place to talk about bullying victimizations and bring their children to a counseling center if they notice their children are experiencing emotional instability.

(3) Student and peer centered: Schools should provide age-appropriate bullying prevention classes to students at all grade levels in order to get rid of the aggravating effects that increase bullying victimization. For example, we should encourage students to treat others in the way they would like themselves to be treated; they should also promote acceptance and teach them emotional control strategies and the importance of friendship. For those students who are isolated or belonging to minority groups, schools can implement buddy-paired programs, which pair up isolated students with students from the honor society.

One limitation of the SCS datasets used in this paper is that the data were collected at a single point in time. In order to analyze the effectiveness of anti-bullying programs’ content, it will be more effective if future research can use longitudinal research data. That is to say, studying whether those alleviative or aggravating factors

could indeed increase or decrease bullying victimization and the resulting fear of crime after implementing anti-bullying programs would be much more effective by using an event study analysis model. In addition, future research could study whether students from rural schools experiencing less bullying victimization and whether and why they are less likely to be fearful than students from city schools. Those findings could provide further support for the design of school anti-bullying programs in order to protect students' mental health and create a better campus environment and learning experience for them.

Appendix A. Table of Coding Information for Some Variables

Table A.1. Coding Information for Independent and Dependent Variables.

Variable Category	Original Variable Name	Question	Answer Coded (Label)	Answer Coded (Value)	Answer Coded (Freq.)
fear of crime	VS0124	How often are you afraid that someone will attack or harm you in the school building or on school property?	Never Almost Never Sometimes Most of the time Residue/Refused/Don't know	1 2 3 4 .	5051 758 197 25 86
	VS0125	How often are you afraid that someone will attack or harm you on a school bus or on the way to and from school?	Never Almost Never Sometimes Most of the time Residue/Refused/Don't know	1 2 3 4 .	5433 472 112 13 87
	VS0126	Besides the times you are in the school building, on school property, on a school bus, or going to or from school, how often are you afraid that someone will attack or harm you?	Never Almost Never Sometimes Most of the time Residue/Refused/Don't know	1 2 3 4 .	5209 664 145 13 86
bullying	VS0073	During this school year, has another student: made fun of you, called you names, or insulted you, in a hurtful way?	No Yes Residue/Refused/Don't know	0 1 .	5218 812 87
	VS0074	During this school year, has another student: spread rumors about you or tried to make others dislike you?	No Yes Residue/Refused/Don't know	0 1 .	5188 834 95
	VS0075	During this school year, has another student: threatened you with harm?	No Yes Residue/Refused/Don't know	0 1 .	5796 234 87
	VS0076	During this school year, has another student: pushed you, shoved you, tripped you, or spit on you?	No Yes Residue/Refused/Don't know	0 1 .	5714 318 85
	VS0077	During this school year, has another student: tried to make you do things you did not want to do?	No Yes Residue/Refused/Don't know	0 1 .	5907 125 85
	VS0078	During this school year, has another student: excluded you from activities on purpose?	No Yes Residue/Refused/Don't know	0 1 .	5705 320 92

Table A.1. (Cont.)

Variable Category	Original Variable Name	Question	Answer Coded (Label)	Answer Coded (Value)	Answer Coded (Freq.)
bullying (cont.)	VS0079	During this school year, has another student destroyed your property on purpose?	No	0	5945
			Yes	1	89
school activities	VS0029	During this school year, have you participated in any of the following activities sponsored by your school: Athletic teams at school?	Residue/Refused/Don't know	.	83
			No	0	3726
			Yes	1	2346
	VS0030	During this school year, have you participated in any of the following activities sponsored by your school: Spirit groups, for example, Cheerleading, Dance Team, or Pep Club?	Residue/Refused/Don't know	.	45
			No	0	5566
	VS0031	During this school year, have you participated in any of the following activities sponsored by your school: Performing arts, for example, Band, Choir, Orchestra, or Drama?	Yes	1	503
			Residue/Refused/Don't know	.	48
VS0032	During this school year, have you participated in any of the following activities sponsored by your school: Academic clubs, for example, Debate Team, Honor Society, Spanish Club, or Math Club?	No	0	4373	
		Yes	1	1693	
VS0033	During this school year, have you participated in any of the following activities sponsored by your school: Student government?	Residue/Refused/Don't know	.	51	
		No	0	4754	
VS0034	During this school year, have you participated in any of the following activities sponsored by your school: Volunteer or community service clubs?	Yes	1	1311	
		Residue/Refused/Don't know	.	52	
VS0033	During this school year, have you participated in any of the following activities sponsored by your school: Student government?	No	0	5703	
		Yes	1	359	
VS0034	During this school year, have you participated in any of the following activities sponsored by your school: Volunteer or community service clubs?	Residue/Refused/Don't know	.	55	
		No	0	5147	
VS0034	During this school year, have you participated in any of the following activities sponsored by your school: Volunteer or community service clubs?	Yes	1	917	
		Residue/Refused/Don't know	.	53	

Table A.1. (Cont.)

Variable Category	Original Variable Name	Question	Answer Coded (Label)	Answer Coded (Value)	Answer Coded (Freq.)
school activities (cont.)	VS0035	During this school year, have you participated in any of the following activities sponsored by your school: Other school clubs or school activities?	No Yes Residue/Refused/Don't know	0 1 .	5891 175 51
positive school structure	VS0049	Thinking about your school, would you strongly agree, agree, disagree, or strongly disagree with the following: The school rules are fair.	Strongly Agree Agree Disagree Strongly Disagree Residue/Refused/Don't know	1 2 3 4 .	1728 3963 302 44 80
	VS0050	Thinking about your school, would you strongly agree, agree, disagree, or strongly disagree with the following: The punishment for breaking school rules is the same no matter who you are.	Strongly Agree Agree Disagree Strongly Disagree Residue/Refused/Don't know	1 2 3 4 .	1919 3394 613 100 91
	VS0051	Thinking about your school, would you strongly agree, agree, disagree, or strongly disagree with the following: The school rules are strictly enforced.	Strongly Agree Agree Disagree Strongly Disagree Residue/Refused/Don't know	1 2 3 4 .	1598 3709 665 53 92
	VS0052	Thinking about your school, would you strongly agree, agree, disagree, or strongly disagree with the following: If a school rule is broken, students know what kind of punishment will follow.	Strongly Agree Agree Disagree Strongly Disagree Residue/Refused/Don't know	1 2 3 4 .	1623 3777 572 38 107
supportive adults	VS0053	Thinking about your school, would you strongly agree, agree, disagree, or strongly disagree with the following: Teachers treat students with respect.	Strongly Agree Agree Disagree Strongly Disagree Residue/Refused/Don't know	1 2 3 4 .	2033 3639 329 30 86

Table A.1. (Cont.)

Variable Category	Original Variable Name	Question	Answer Coded (Label)	Answer Coded (Value)	Answer Coded (Freq.)
supportive adults (cont.)	VS0146	Would you agree that: there is a teacher or other adult at school who... Really cares about you.	Strongly Agree Agree Disagree Strongly Disagree Residue/Refused/Don't know	1 2 3 4 .	2506 3246 244 18 103
	VS0148	Would you agree that: there is a teacher or other adult at school who... Listens to you when you have something to say.	Strongly Agree Agree Disagree Strongly Disagree Residue/Refused/Don't know	1 2 3 4 .	2594 3279 143 7 94
	VS0149	Would you agree that: there is a teacher or other adult at school who... Tells you when you do a good job.	Strongly Agree Agree Disagree Strongly Disagree Residue/Refused/Don't know	1 2 3 4 .	2394 3428 196 6 93
peer support	SCS186	There is a student at school who... Really cares about you.	Strongly Agree Agree Disagree Strongly Disagree Residue/Refused/Don't know	1 2 3 4 .	2485 3213 284 18 117
	SCS187	There is a student at school who: Listens to you when you have something to say.	Strongly Agree Agree Disagree Strongly Disagree Residue/Refused/Don't know	1 2 3 4 .	2530 3291 173 14 109
	SCS188	There is a student at school who... Believes that you will be a success.	Strongly Agree Agree Disagree Strongly Disagree Residue/Refused/Don't know	1 2 3 4 .	2423 3315 207 17 155
school environment	SCS213	Thinking about the neighborhood where your school is located, there is a lot of crime in the neighborhood where you go to school.	Strongly Agree Agree Disagree Strongly Disagree Residue/Refused/Don't know	4 3 2 1 .	2284 3115 458 132 128
	SCS189	Thinking about your school, you feel safe in your school	Strongly Agree Agree Disagree Strongly Disagree Residue/Refused/Don't know	1 2 3 4 .	2623 3232 145 44 73
neighborhood environment	SCS212	Thinking about the neighborhood where you live, there is a lot of crime in the neighborhood where you live.	Strongly Agree Agree Disagree Strongly Disagree Residue/Refused/Don't know	4 3 2 1 .	2802 2651 439 130 95

Table A.1. (Cont.)

Variable Category	Original Variable Name	Question	Answer Coded (Label)	Answer Coded (Value)	Answer Coded (Freq.)
avoidance	VS0113	Did you ever stay away from the shortest route to school because you thought someone might attack or harm you?	No Yes Residue/Refused/Don't know	0 1 .	5920 113 84
	VS0114	The entrance into the school?	No Yes Residue/Refused/Don't know	0 1 .	5981 53 83
	VS0115	Any hallways or stairs in school?	No Yes Residue/Refused/Don't know	0 1 .	5901 130 86
	VS0116	Parts of the school cafeteria or lunchroom?	No Yes Residue/Refused/Don't know	0 1 .	5896 131 90
	VS0117	Any school restrooms?	No Yes Residue/Refused/Don't know	0 1 .	5903 127 87
	VS0118	Other places inside the school building?	No Yes Residue/Refused/Don't know	0 1 .	5962 67 88
	VS0119	School parking lot?	No Yes Residue/Refused/Don't know	0 1 .	5974 55 88
	VS0120	Other places on school grounds?	No Yes Residue/Refused/Don't know	0 1 .	5971 58 88
	SCS208	School bus or bus stop?	No Yes Residue/Refused/Don't know	0 1 .	5980 53 84
	VS0121	Did you avoid any activities at your school because you thought someone might attack or harm you?	No Yes Residue/Refused/Don't know	0 1 .	5950 82 85
	VS0122	Did you avoid any classes because you thought someone might attack or harm you?	No Yes Residue/Refused/Don't know	0 1 .	5988 44 85

Appendix B. Table of Descriptive Statistics for Some Variables

Table B.1. Descriptive Statistics for Independent and Dependent Variables.

Variable Name	Values	Freq.	Percent
<i>fear_of_crime</i>	1	4752	78.83
	1.33	461	7.65
	1.67	319	5.29
	2	322	5.34
	2.33	73	1.21
	2.67	30	0.50
	3	60	1.00
	3.33	4	0.07
	3.67	4	0.07
	4	3	0.05
<i>bullying</i>	0	4753	79.10
	0.14	516	8.59
	0.29	315	5.24
	0.43	241	4.01
	0.57	110	1.83
	0.71	43	0.72
	0.86	24	0.40
	1	7	0.12
<i>school_activities</i>	0	2023	33.40
	0.14	1998	32.99
	0.29	1192	19.68
	0.43	563	9.30
	0.57	206	3.40
	0.71	55	0.91
	0.86	20	0.33
<i>school_structure</i>	1	783	13.07
	1.25	450	7.51
	1.5	584	9.75
	1.75	700	11.69
	2	2341	39.09
	2.25	568	9.48
	2.5	306	5.11
	2.75	154	2.57
	3	60	1.00
	3.25	29	0.48
	3.5	8	0.13
	3.75	5	0.08
4	1	0.02	
<i>teacher</i>	1	1281	21.38
	1.25	804	13.42
	1.5	547	9.13
	1.75	606	10.12
	2	2263	37.77
	2.25	324	5.41
	2.5	93	1.55

Table B.1. (Cont.)

Variable Name	Values	Freq.	Percent
<i>teacher(cont.)</i>	2.75	48	0.80
	3	20	0.33
	3.5	3	0.05
	3.25	1	0.02
	4	1	0.02
<i>peer</i>	1	2038	34.30
	1.33	427	7.19
	1.67	394	6.63
	2	2728	45.92
	2.33	166	2.79
	2.67	65	1.09
	3	106	1.78
	3.33	9	0.15
	3.67	1	0.02
	4	7	0.12
<i>senvironment</i>	1	1628	27.20
	1.5	1422	23.76
	2	2346	39.19
	2.5	465	7.77
	3	100	1.67
	3.5	22	0.37
	4	3	0.05
<i>nenvironment</i>	1	2802	46.53
	2	2651	44.02
	3	439	7.29
	4	130	2.16
<i>avoidance</i>	0	5616	93.24
	0.09	224	3.72
	0.18	73	1.21
	0.27	37	0.61
	0.36	26	0.43
	0.45	14	0.23
	0.55	11	0.18
	0.63	6	0.10
	0.73	7	0.12
	0.82	4	0.07
	0.91	3	0.05
	1	2	0.03

Appendix C. All Regression Models and Final Results

Final Results:

All

$$\text{fear_of_crime} = \beta_1 \text{bullying} + \beta_2 \text{school_activities} + \beta_3 \text{school_structure} + \beta_4 \text{peer} + \beta_5 \text{teacher} + \beta_6 \text{senvironment} + \beta_7 \text{nenvironment} + \beta_8 \text{avoidance} + \beta_9 \text{female} + \beta_{10} \text{Hispanic} + \beta_{11} \text{grade} + \beta_{12} \text{income} + \beta_{13} \text{sc_sector} + \beta_{14} \text{sc_level} + \beta_{15} \text{sc_locale} + \beta_{16} \text{sc_enrollmentsize} + \beta_{17} \text{sc_FTE} + \mu \quad (2)$$

Nothing

$$\text{fear_of_crime} = \beta_1 \text{bullying} + \beta_9 \text{female} + \beta_{10} \text{Hispanic} + \beta_{11} \text{grade} + \beta_{12} \text{income} + \beta_{13} \text{sc_sector} + \beta_{14} \text{sc_level} + \beta_{15} \text{sc_locale} + \beta_{16} \text{sc_enrollmentsize} + \beta_{17} \text{sc_FTE} + \mu \quad (3)$$

School activities

$$\text{fear_of_crime} = \beta_1 \text{bullying} + \beta_2 \text{school_activities} + \beta_9 \text{female} + \beta_{10} \text{Hispanic} + \beta_{11} \text{grade} + \beta_{12} \text{income} + \beta_{13} \text{sc_sector} + \beta_{14} \text{sc_level} + \beta_{15} \text{sc_locale} + \beta_{16} \text{sc_enrollmentsize} + \beta_{17} \text{sc_FTE} + \mu \quad (4)$$

Peer support

$$\text{fear_of_crime} = \beta_1 \text{bullying} + \beta_4 \text{peer} + \beta_9 \text{female} + \beta_{10} \text{Hispanic} + \beta_{11} \text{grade} + \beta_{12} \text{income} + \beta_{13} \text{sc_sector} + \beta_{14} \text{sc_level} + \beta_{15} \text{sc_locale} + \beta_{16} \text{sc_enrollmentsize} + \beta_{17} \text{sc_FTE} + \mu \quad (5)$$

Avoidance

$$\text{fear_of_crime} = \beta_1 \text{bullying} + \beta_8 \text{avoidance} + \beta_9 \text{female} + \beta_{10} \text{Hispanic} + \beta_{11} \text{grade} + \beta_{12} \text{income} + \beta_{13} \text{sc_sector} + \beta_{14} \text{sc_level} + \beta_{15} \text{sc_locale} + \beta_{16} \text{sc_enrollmentsize} + \beta_{17} \text{sc_FTE} + \mu \quad (6)$$

School structure

$$\text{fear_of_crime} = \beta_1 \text{bullying} + \beta_3 \text{school_structure} + \beta_9 \text{female} + \beta_{10} \text{Hispanic} + \beta_{11} \text{grade} + \beta_{12} \text{income} + \beta_{13} \text{sc_sector} + \beta_{14} \text{sc_level} + \beta_{15} \text{sc_locale} + \beta_{16} \text{sc_enrollmentsize} + \beta_{17} \text{sc_FTE} + \mu \quad (7)$$

Supportive adults

$$\text{fear_of_crime} = \beta_1 \text{bullying} + \beta_5 \text{teacher} + \beta_9 \text{female} + \beta_{10} \text{Hispanic} + \beta_{11} \text{grade} + \beta_{12} \text{income} + \beta_{13} \text{sc_sector} + \beta_{14} \text{sc_level} + \beta_{15} \text{sc_locale} + \beta_{16} \text{sc_enrollmentsize} + \beta_{17} \text{sc_FTE} + \mu \quad (8)$$

School environment

$$\text{fear_of_crime} = \beta_1 \text{bullying} + \beta_6 \text{senvironment} + \beta_9 \text{female} + \beta_{10} \text{Hispanic} + \beta_{11} \text{grade} + \beta_{12} \text{income} + \beta_{13} \text{sc_sector} + \beta_{14} \text{sc_level} + \beta_{15} \text{sc_locale} + \beta_{16} \text{sc_enrollmentsize} + \beta_{17} \text{sc_FTE} + \mu \quad (9)$$

Neighborhood environment

$$\text{fear_of_crime} = \beta_1 \text{bullying} + \beta_7 \text{nenvironment} + \beta_9 \text{female} + \beta_{10} \text{Hispanic} + \beta_{11} \text{grade} + \beta_{12} \text{income} + \beta_{13} \text{sc_sector} + \beta_{14} \text{sc_level} + \beta_{15} \text{sc_locale} + \beta_{16} \text{sc_enrollmentsize} + \beta_{17} \text{sc_FTE} + \mu \quad (10)$$

Table C.1. Summary of Remaining Regression Results (Fear of Crime as Dependent Variable).

	(2)	(3)	(7)	(8)	(9)	(10)
Bullying	0.426*** (0.055)	0.726*** (0.055)	0.680*** (0.056)	0.710*** (0.055)	0.644*** (0.055)	0.712*** (0.055)
Gender	0.024** (0.009)	0.028** (0.010)	0.025** (0.010)	0.031** (0.010)	0.023* (0.009)	0.028** (0.010)
Race	-0.009 (0.012)	0.015 (0.012)	0.015 (0.012)	0.010 (0.012)	-0.00 (0.012)	0.002 (.012)
Grade	-0.006** (0.003)	-0.003 (0.003)	-0.006 (0.003)	-0.003 (0.003)	-0.006 (0.003)	-0.003 (0.003)
Income	-0.002 (0.001)	-0.006*** (0.001)	-0.005*** (0.001)	-0.005** (0.001)	-0.003* (0.001)	-0.003* (0.001)
School sector	-0.014** (0.004)	-0.025*** (0.005)	-0.019*** (0.005)	-0.020*** (0.005)	-0.019*** (0.005)	-0.024*** (0.005)
School level	0.010 (0.008)	0.014 (0.009)	0.015 (0.009)	0.013 (0.009)	0.013 (0.009)	0.015 (0.009)
School locale	-0.007 (0.005)	-0.021*** (0.005)	-0.021*** (0.005)	-0.021*** (0.005)	-0.011* (0.005)	-0.016** (0.005)
School enrollment size	0.003 (0.004)	0.003 (0.004)	0.002 (0.004)	0.000 (0.004)	0.003 (0.004)	0.003 (0.004)
School FTE ratio (student to teacher)	0.010* (0.006)	0.011* (0.006)	0.011* (0.006)	0.011 (0.006)	0.010 (0.006)	0.010 (0.006)
School activities	0.027 (0.030)					
Peer support	0.033** (0.014)					
Avoidance	1.49*** (0.147)					
School structure	0.030** (0.013)		0.096*** (0.012)			
Supportive adults	-0.002 (0.017)			0.094*** (0.011)		
School environment	0.092*** (0.013)				0.153*** (0.011)	
Neighborhood environment	0.034*** (0.009)					0.081*** (0.008)
Constant	0.804*** (0.041)	1.183*** (0.033)	1.008*** (0.039)	1.020*** (0.038)	0.889*** (0.037)	1.004*** (0.036)
No. of Obs	5316	5508	5462	5465	5456	5489
F-statistic	35.05***	29.67***	31.11***	31.42***	38.61***	33.48***
R-squared	0.2129	0.1021	0.1170	0.1149	0.1409	0.1229

*Robust standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.000$*

Bibliography

- Arseneault, L., Bowes, L., & Shakoor, S. (2010). Bullying victimization in youths and mental health problems: 'much ado about nothing'?. *Psychological medicine*, *40*(5), 717.
- Baek, H., Andreescu, V., & Rolfe, S. M. (2019). Bullying and fear of victimization: Do supportive adults in school make a difference in adolescents' perceptions of safety?. *Journal of school violence*, *18*(1), 92-106.
- Bacchini, D., Esposito, G., & Affuso, G. (2009). Social experience and school bullying. *Journal of community & applied social psychology*, *19*(1), 17-32.
- Barrett, K. L., Jennings, W. G., & Lynch, M. J. (2012). The relation between youth fear and avoidance of crime in school and academic experiences. *Journal of School Violence*, *11*(1), 1-20.
- Collins, R. E. (2016). Addressing the inconsistencies in fear of crime research: A meta-analytic review. *Journal of criminal justice*, *47*, 21-31.
- Demissie, Z., Lowry, R., Eaton, D. K., Hertz, M. F., & Lee, S. M. (2014). Associations of school violence with physical activity among US high school students. *Journal of physical activity and health*, *11*(4), 705-711.
- Doran, B. J. & Burgess, M. B. (2012). Putting Fear of Crime on the Map. *New York: Springer*.
- Gerlinger, J., & Wo, J. C. (2016). Preventing school bullying: Should schools prioritize an authoritative school discipline approach over security measures?. *Journal of School Violence*, *15*(2), 133-157.
- Gregory, A., Cornell, D., Fan, X., Sheras, P., Shih, T. H., & Huang, F. (2010). Authoritative school discipline: High school practices associated with lower bullying and victimization. *Journal of Educational Psychology*, *102*(2), 483.
- Gutt, T. A., & Randa, R. (2016). The influence of an empathetic adult on the relationship between bullying victimization and fear at school. *Journal of Crime and Justice*, *39*, 281–302. doi:10.1080/0735648X.2014.956328
- Hall, W. (2017). The effectiveness of policy interventions for school bullying: A systematic review. *Journal of the Society for Social Work and Research*, *8*(1), 45-69.
- Hale, C. (1996). Fear of crime: A review of the literature. *International Review of Victimology*, *4*, 79-150.

Haugen, J. S., Sutter, C. C., Jones, J. L. T., & Campbell, L. O. (2019). School District Anti-Bullying Policies: a State-Wide Content Analysis. *International Journal of Bullying Prevention*, 1-15.

History of the Anti-Bullying Campaign timeline. (n.d.). Timetoast. Retrieved November 30, 2020, from <https://www.timetoast.com/timelines/history-of-the-anti-bullying-campaign>

Hutzell, K. L., & Payne, A. A. (2018). The relationship between bullying victimization and school avoidance: An examination of direct associations, protective influences, and aggravating factors. *Journal of school violence*, 17(2), 210-226.

Jennings, W. G., Khey, D. N., Maskaly, J., & Donner, C. M. (2011). Evaluating the relationship between law enforcement and school security measures and violent crime in schools. *Journal of Police Crisis Negotiations*, 11(2), 109-124.

Krulichová, E., & Podana, Z. (2019). Adolescent fear of crime: Testing Ferraro's risk interpretation model. *European journal of criminology*, 16(6), 746-766.

Kupchik, A., & Farina, K. A. (2016). Imitating authority: Students' perceptions of school punishment and security, and bullying victimization. *Youth Violence and Juvenile Justice*, 14(2), 147-163.

May, D. C., Rader, N. E., & Goodrum, S. (2010). A gendered assessment of the "threat of victimization": Examining gender differences in fear of crime, perceived risk, avoidance, and defensive behaviors. *Criminal justice review*, 35(2), 159-182.

May, D. C., & Dunaway, R. G. (2000). Predictors of fear of criminal victimization at school among adolescents. *Sociological Spectrum*, 20(2), 149-168.

National Bullying Prevention Month (n.d.). Pacer . Retrieved November 30, 2020, from <https://www.pacer.org/bullying/nbpm/>

Olweus, D. O. (1993). *Bullying at School*. Malden, MA: Blackwell.

Olweus, D. (1993a). Bully/Victim problems among school children: Long-term consequences and an effective intervention program. In S. Hodgins (Ed.), *Mental disorder and crime* (pp. 317–349). Newburg Park, CA: Sage.

Olweus, D. (1994). Bullying at school: Basic facts and effects of a school based intervention program. *Journal of Child Psychology and Psychiatry*, 35(7), 1171–1190. doi:10.1111/jcpp.1994.35.issue-7

Olweus, D. (2012). Cyberbullying: An overrated phenomenon? *European Journal of Developmental Psychology*, 9(5), 520–538. doi:10.1080/17405629.2012.682358

- Olweus, D. (2003). A profile of bullying at school. *Educational Leadership*, 60, 12–17. OJJDP Statistical Briefing Book. Online. Available: http://www.ojjdp.gov/ojstatbb/crime/JAR_Display.asp?ID=qa05200&selOffenses=1. October 31, 2019.
- Rader, N. E., May, D. C., & Goodrum, S. (2007). An empirical assessment of the 'threat of victimization:' Considering fear of crime, perceived risk, avoidance, and defensive behaviors. *Sociological Spectrum*, 27, 475-505.
- Rapp-Paglicci, L. A., Dulmus, C. N., Sowers, K. M., & Theriot, M. T. (2004). 'Hotspots' for bullying: Exploring the role of environment in school violence. *Journal of Evidence-Based Social Work*, 1(2/3), 131–141. doi:10.1300/ J394v01n02_09
- Randa, R., & P. Wilcox. (2010). "School Disorder, Victimization, and General v. Place-Specific Student Avoidance." *Journal of Criminal Justice*, 38, 854–861.
- Randa, R., Reynolds, B. W., & Nobles, M. R. (2019). Measuring the effects of limited and persistent school bullying victimization: Repeat victimization, fear, and adaptive behaviors. *Journal of interpersonal violence*, 34(2), 392-415.
- Salmon, G., and A. West. 2000. "Physical and Mental Health Issues Related to Bullying in Schools." *Current Opinion in Psychiatry*, 13, 375–380.
- Schneider, S. K., O'Donnell, L., Stueve, A., & Coulter, R. W. S. (2012). Cyberbullying, school, and psychological distress: A regional census of high school students. *American Journal of Public Health*, 102(1), 171–177.
- Shelley, W. W., Pickett, J. T., Mancini, C., McDougale, R. D., Rissler, G., & Cleary, H. (2017). Race, bullying, and public perceptions of school and university safety. *Journal of interpersonal violence*, 0886260517736272.
- Vieno, A., Lenzi, M., Roccato, M., Russo, S., Monaci, M. G., & Scacchi, L. (2016). Social capital and fear of crime in adolescence: a multilevel study. *American journal of community psychology*, 58(1-2), 100-110.