

FIGHT, FLIGHT, OR SKIPPING CLASS: WHAT PREDICTS FEAR AND
AVOIDANCE BEHAVIORS IN THE FACE OF SCHOOL VIOLENCE?

by

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To my mother, father, my fiancé, Claire, and Spud

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Matt Czmer

ABSTRACT

FIGHT, FLIGHT, OR SKIPPING CLASS: WHAT PREDICTS FEAR AND AVOIDANCE BEHAVIORS IN THE FACE OF SCHOOL VIOLENCE?

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School violence is the threat or act of violence that occurs on school property, on the way to and from school, or at school-sanctioned events. It includes things like bullying and cyberbullying, hate speech, and in extreme cases, school shootings. Research suggests that both the experience of and concerns about school violence are associated with increased internalizing disorders (i.e., depression and anxiety), poorer academic performance, and the development of chronic conditions later in life. In addition to fear, children may avoid certain locations at school, or school altogether, if they feel they might be attacked or harmed. Children who feel fear or exhibit avoidance behaviors are more likely to carry a weapon with them to school. This project sought to identify predictors of fear and avoidance that might help identify particularly vulnerable groups who may benefit from intervention. The 2022 School Crime Supplement (SCS) data were utilized to test the hypotheses, and a Bayesian zero-inflated Poisson regression model was fit to the data due to the high number of students who reported no fear or no avoidance behaviors during the past school-year. A greater number of bullying experiences were found to be associated with both an increased number of avoidance

behaviors and level of fear as well as higher odds of reporting any avoidance behaviors or fear. More frequent bullying was associated with an increased number of avoidance behaviors only. Private school attendance was associated with 2.2-2.9 times higher odds of reporting zero avoidance behaviors and zero fear compared to public school attendance. There was a small effect of household income such that higher income was associated with fewer avoidance behaviors and a lower level of fear. Lastly, males were found to be 15% less likely to report any level of fear compared to females. Consistent with prior literature, bullying victimization was associated with both increased avoidance and fear; additionally, this study found small associations between income and both outcomes and between sex and level of fear. The effect of private school attendance might be explained by the small sample of private school students in this dataset, so future work should oversample this group to learn more about their specific experiences. While this project lays the groundwork for identifying vulnerable groups, qualitative work is needed to understand how students conceptualize avoidance and fear, with the ultimate goal of designing a scale to measure these constructs.

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LIST OF ABBREVIATIONS

BJS	Bureau of Justice Statistics
CDC	Centers for Disease Control and Prevention
CI	Credibility Interval
DOJ	Department of Justice
HPDI	Highest Posterior Density Interval
IES	Institute of Education Sciences
NCES	National Center for Education Statistics
NCVS	National Crime and Victimization Survey
SCS	School Crime Supplement
SES	Socioeconomic Status
ZI	Zero-Inflation
ZIP	Zero-inflated Poisson Regression

CHAPTER ONE

INTRODUCTION

Between 2010 and 2024 there were 1,887 school shooting events which equates to one every three days (Riedman, 2025). The number of school shootings has increased exponentially from 15 events in 2010 to 331 in 2024. In 2022 there were 41 school-associated violent deaths which includes both homicides and suicides (Irwin et al., 2024). This number has fluctuated in the past decade but has remained mostly stable. School shootings are extremely traumatic events, and these incidents have become more prominent in the media in recent years (Shultz et al., 2014). Hearing about these events can cause stress and fear in children which contributes to negative internalizing symptoms such as fear of school violence (Riehm et al., 2021).

School violence is defined as violence that occurs on school property, on the way to or from school, or at school-sanctioned events and has a negative and disruptive impact on students and schools (Centers for Disease Control and Prevention [CDC], 2024). Acts that constitute school violence include bullying and cyberbullying, fighting, weapon violence, gang violence, and sexual violence. Data on school violence comes from the School Crime Supplement (SCS) to the National Crime and Victimization Survey (NCVS). The SCS broadly assesses the experiences of crime and violence among a sample of children in the United States, as well as their resulting fear and avoidance behaviors. The SCS defines nonfatal violence as bullying, sexual violence, robbery, and assault among other things. Irwin and colleagues (2024) reported that in 2022 there were 22 **nonfatal** victimizations per 1000 students at school. The rate of nonfatal

victimizations has decreased slightly over the past decade compared to 33 per 1000 students in both 2014 and 2018 (Musu et al., 2019; Zhang et al., 2016). Although there is a slight downward trend, the rate of victimizations is still higher than any parent would like to imagine, and indeed a Pew Research Center survey of parents with teens aged 13-17 found that 63% of parents expressed that they were very or somewhat worried about a *shooting* happening at their child's high school (Pew Research Center, 2018).

It is important to distinguish between school *violence* in general and school *shootings*. There is a generally accepted definition of school violence, but researchers define school *shooting* in many different ways. For example, the K-12 Shooting Database is an independently compiled database of school shootings in the United States since 1966. This database defines a school shooting as any time a gun is fired or brandished on school property, or any time a bullet hits school property regardless of the time of day or the location of the gunman (Riedman, 2025). However, other sources define a school shooting more strictly such that they count the event only if it happened inside the school or on school property and at least one person was killed from a bullet wound (Freilich et al., 2022). The focus of the present work is the broader concept of school violence; however, school shootings are extremely traumatic and thus are used here as a paradigmatic event which may make students fearful.

School violence often has a strong negative impact on children's lives (Bravo-Sanzana et al., 2022; Ferrara et al., 2019; Polanin et al., 2021). Experiences of direct school violence (i.e., fighting), cyberbullying, and discrimination lead to lower math, reading, and history scores on a standardized assessment of knowledge in tenth grade students (Bravo-Sanzana et al., 2022). Math scores decreased by three to six points for

each additional point on the students' direct exposure to violence scale which indicates more frequent violence in the child's school. Additionally, any experience of discrimination leads to a decrease in academic performance. In addition to poorer school performance, school violence is also associated with a higher incidence of mental and physical illnesses. A recent meta-analysis found that experiences of school violence were correlated with higher levels of depression and other negative internalizing problems (Polanin et al., 2021). School violence is also linked to the development of many chronic conditions such as diabetes, obesity, and in extreme cases, attachment disorders (Ferrara et al., 2019).

There is significant evidence that children who feel unsafe at school are more likely to carry a weapon with them onto school property and into the building (Esselmont, 2014; Melde et al., 2009; Mukherjee et al., 2022; Wilcox & Clayton, 2001; Yun & Hwang, 2011). There are many reasons why a child might feel unsafe at school, but a prominent factor tends to be prior victimization. Children who have been bullied or have been victims of some other form of violence are more likely to carry a weapon to school than are children who have not been victimized. Additionally, Mukherjee and colleagues (2022) found that children who missed at least two days of school due to being afraid of victimization are more than three times likely to carry a weapon to school than are children who have not missed a single day due to fear. These results suggest there is a connection between fear, avoidance, and weapon carriage at school, but there has been little work that investigates the antecedents leading to fear and avoidance. While weapon carriage does not necessarily equate to weapon usage, the mere presence of weapons can increase the level of fear that students feel as well as lead to accidental

injuries. Esselmont and colleagues (2014) found that boys carry weapons to school at higher rates than females, and this association is higher for boys who have been bullied and who feel unsafe at school. Stilwell and colleagues (2025) remark that most interventions targeting weapon carriage at school focus on “target hardening” or making it more difficult for assailants to enter schools by having metal detectors or armed resource officers. Despite these target hardening strategies, weapons are still getting into schools (Mayer & Astor, 2023), and Stilwell suggests future interventions should focus more on emotion regulation, mental health support, and improving school climate, which address the root causes of fear instead of being reactive. The present work focuses on predictors of fear of school violence and avoidance which have been identified as precursors to weapon carriage, so the results here could help inform which groups are most at risk for these crucial antecedents of weapon carriage.

Fear of Crime

The National Scientific Council on the Developing Child defines fear as an emotional response originating from the amygdala that elevates stress chemicals in the body and, by the process of fear conditioning, can create fear memories that can be generalized to other situations which can distort a person’s ability to differentiate between safety and threat; in children, fear learning is particularly harmful as fear unlearning occurs much later in life than fear learning (National Scientific Council on the Developing Child, 2010). Fear is felt when one’s current situation is perceived as threatening. For the present work, fear will be framed in the context of fear *of crime*. Warr (1984) remarked that “the phrase ‘fear of crime’ has acquired so many divergent meanings in the literature that it is in danger of losing any specificity whatsoever.”

However, blending together previous definitions, researchers have defined fear of crime as an emotional response to a danger or threat of an actual or potential criminal incident (Henson & Reyns, 2015). This definition will be used in the present work to define fear of school violence as there is no widely accepted definition for this concept. Researchers have been examining fear of crime for decades, so there are validated measures that generally ask questions about people being afraid of going to certain places or of specific events happening to them. Measures typically use Likert scales to capture the *level* of fear.

Vulnerability Hypothesis

Vulnerability in the context of crime can be defined as the belief that one is susceptible to future negative outcomes and is unprotected from danger; this includes an affective component of anxiety, fear and apprehension (Perloff, 1983). The vulnerability hypothesis posits that there are physical, social, and situational factors that affect an individual's perceived vulnerability to be victimized (Jackson, 2009; Killias, 1990). In other words, people who perceive themselves as "more vulnerable" are more likely to fear crime. Physical factors include things like sex, age, and fitness, with woman and elderly individuals generally reporting greater levels of fear (Pantazis, 2000; Smith et al., 2001; Snedker, 2012; Swartz et al., 2011; Warr, 1984). Social factors that contribute to perceived vulnerability include things like working a "risky" job (e.g., taxi driver, bank teller), individuals without a social network, and individuals who are of low socioeconomic status (SES; Pantazis, 2000). Situational factors include things like living in an area with high levels of crime or being in a deserted area where there is no one to help (Di Rocco et al., 2023; Rader et al., 2007). These factors contribute to fear of

victimization as well as avoidance behaviors that cause individuals to avoid certain places due to the perception that they are likely to be victimized. These physical, social, and situational factors are not isolated and often emerge together.

Social Disorganization Theory

Social disorganization theory was introduced in the 1980s when researchers began to study ecological factors that affect crime rates. This theory posits that neighborhood level factors such as population turnover, SES of the area, and population heterogeneity affect the cohesion of the neighborhood which in turn affects the ability of a community to control crime (Markowitz et al., 2001). Neighborhood cohesion is defined as a community's sense of collective efficacy that unites them against stopping crime. However, neighborhood level factors (e.g., low SES, ethnic and racial heterogeneity, and residential instability) themselves may cause a fear of crime, thereby undermining neighborhood cohesion. Low neighborhood cohesion due to instability in the community (i.e., fear surrounding broken windows or boarded up homes) can cause community members to disengage which in turn lowers a city's control over stopping more intense crime (Liska et al., 1982). Larger cities also tend to have higher levels of social disorder which suggests that the people who live there have higher fear of crime. Previous research has found that social disorganization is negatively associated with academic performance in public schools, but the limited work looking at the effect on private schools has not shown an association (Kanaan, 2023; Murray & Swatt, 2013).

CHAPTER TWO

FEAR AND AVOIDANCE

Fear of School Violence

Prolonged fear due to a threat of violence can disrupt brain circuitry and lead to long-term problems with learning, memory, and physical and mental health (Fox & Shonkoff, 2012). This idea extends to children who fear school violence as well; children who are exposed to situations that cause chronic fear and anxiety can disrupt the developing architecture of the brain causing long-term issues (National Scientific Council on the Developing Child, 2010). While the direct experience of school violence has many negative, long-term impacts on children's lives, the concern and fear surrounding school violence also can have deleterious effects. In 2018, a Pew research survey found that half of a sample of teenagers aged 13-17 reported being very or somewhat worried about a school *shooting* happening at their *specific* school (Graf, 2018). These worries and fears can lead to negative internalizing symptoms such that higher levels of concern about school violence are associated with *surpassing* the clinical criteria of an anxiety or panic disorder (Riehm et al., 2021). Riehm and colleagues (2021) were among the first to examine mental health outcomes related to the concern surrounding school violence as opposed to direct experience of school violence. Children with these internalizing problems may be more likely to feel fear and anxiety about school violence which perpetuates the cycle. The vulnerability hypothesis may help explain fear of school violence.

There is little other work looking at this distinct issue. Akiba (2010) investigated predictors for students feeling fear of school violence and found that males, students identifying as being members of ethnic minority groups, and students who had parents with less education experienced higher levels of fear than other groups. Despite these results, the literature on the predictors of fear is largely mixed. For example, in the United States, it appears that there is a gender pattern such that girls experience more fear of school violence than boys (Irwin et al., 2024), but this pattern has not been consistent across studies both inside the United States and elsewhere (Akiba, 2010; Natvig et al., 2001). Although males *experience* more school violence, generally in the form of physical bullying, than do females, the literature is mixed on other correlates of fear of school violence. Notably inconsistent is the relationship between SES and the experience of fear of school violence with some researchers linking low SES with higher levels of fear and others not finding this link or suggesting the opposite relationship (Akiba, 2008, 2010).

Avoidance Behaviors

Avoidance behaviors have been a large focus of the fear of crime literature. Prior research has found that people may avoid specific situations or places for fear of victimization. Avoidance behaviors are more likely in females, individuals with less education, individuals with lower SES, victims of crime in the past year, and individuals who felt crime is increasing in their community (Rader et al., 2007). Notably, Rader and colleagues (2007) found that perceptions that crime has been increasing in one's community had the strongest relationship with the choice to engage in avoidance behaviors. May and colleagues (2010) found that avoidance behaviors tend to vary based

on gender, income, and race but not usually by age. There is little research on avoidance behaviors themselves because they are commonly grouped together with fear of crime and victimization in the literature. Rader, May, and others have suggested that the relationship between fear of victimization and avoidance behaviors may not be direct and is complex, involving many correlated factors. Avoidance behaviors are inherently restricting and can prevent people from going out into situations where they fear they may be harmed, so it is important to understand more about why people are driven to these constrained behaviors.

Avoidance Behaviors in Response to School Violence

In the context of school, avoidance behaviors are defined as a student avoiding any specific location at school or avoiding school altogether by not attending. These behaviors can have particularly deleterious effects on students' school achievement, so it is important that more is learned about them so that interventions can be targeted towards groups who may be most at risk. The limited research on avoidance behaviors in students points to experiences of bullying as a strong predictor of avoidance behaviors (Hutzell & Payne, 2012; Mukherjee et al., 2022; Randa & Wilcox, 2010, 2012; Wilcox & Clayton, 2001). Hutzell and Payne (2012) found that students attending public schools, non-White students, and students with poor academic achievement exhibited a higher number of avoidance behaviors. Additionally, there is research that indicates that students who feel more fear of school violence are more likely to avoid attending school altogether (Bastian & Taylor, 1991) which suggests some reciprocal relationship between fear and avoidance which was not examined here.

The present work sought to expand on the previous literature by including other predictors of avoidance behaviors such as SES and school enrollment. The inclusion of the known predictors of avoidance behaviors, bullying experiences and school type, was intentional as it is important to know if these factors still predict avoidance behaviors using much newer data.

School-Specific Theoretical Perspectives of Fear and Avoidance Behaviors

Vulnerability Hypothesis

Individual-level physical, social, and situational factors that predict fear of violence (i.e., older individuals, women, those of low SES, non-White individuals, and people living in high-crime areas) are similar to predictors of fear of school violence identified in the limited existing literature (Akiba, 2008, 2010; Astor & Benbenishty, 2007). In addition to these factors, victims of crimes *and* victims of bullying, which are social factors, generally admit more fear of repeat violence than people who have not been victimized (Garofalo, 1977; Randa et al., 2016). Bullying victimization is associated with both general and location-specific avoidance behaviors in students, which suggests that children may avoid going to school thereby missing a day of education (Randa & Wilcox, 2010). Additionally, students with low household income and students attending public schools indicated engaging in more avoidance behaviors than those in higher income households or those who attend private school. While the limited work on the vulnerability hypothesis has centered on general crime and fear of crime, the present work sought to extend this idea to school violence.

Social Disorganization Theory

Applying social disorganization theory to fear of school violence is a logical extension. Schools in areas with higher community-level disorganization likely face similar problems such as high teacher turnover, students of lower SES, and a lack of resources (Akiba, 2008). These factors may affect students' fear of school violence. The current work applied this theory by including both the enrollment size and the locale of the school (i.e., city, town, suburb, rural). Previous research has identified a link between school-level disorder (e.g., the presence of gang activity) and heightened fear and avoidance behaviors among students (Randa & Wilcox, 2010). These factors were hypothesized to affect fear of school violence and avoidance behaviors such that attending a school with a larger enrollment and/or a school located in a city will be related to a student's higher level of fear of school violence and more avoidance behaviors. Both larger enrollment and schools in larger cities were hypothesized to follow the social disorganization theory for the present work. It is important to note that this specific theory is not being tested, but rather the theory was applied here to explain predictors of fear of school violence and avoidance behaviors.

CHAPTER THREE

THE PRESENT RESEARCH

Fear and avoidance behaviors are especially relevant topics given the climate of schools today. Any day that children feel fear or avoid classes or other places within a school is a day that they are not entirely focused on their education. Although many factors contribute to both fear and avoidance behaviors, the present work seeks to clarify what factors may be particularly important in American schools. Given the limited research on fear of school violence and avoidance behaviors, the present work sought to examine predictors of both of these behaviors using recent data. There is a large gap in the literature investigating these predictors with some of the most recent work occurring in 2010.

This project examined eight predictors of fear of school violence and avoidance behaviors: socioeconomic status (SES), experiences of being bullied, frequency of bullying, type of school, size of school, school locale, gender, and race. It was hypothesized that greater exposure to bullying and lower socioeconomic status would be associated with higher levels of fear of school violence and a greater number of reported avoidance behaviors. Enrollment in a larger school, attending a school in a city or suburb, attending a public school, identifying with a racial minority group, and being female were hypothesized to be associated with higher odds of reporting any level of fear or any avoidance behaviors.

Predictor Variables

Bullying

Bullying is defined as when an individual is exposed to negative actions on behalf of another person; usually, this involves an unequal power balance such that the person receiving the actions is unable to fight back (Olweus, 2003). Much of the previous work has viewed bullying as an outcome variable (Natvig et al., 2001; Tippet & Wolke, 2014). The vulnerability hypothesis suggests that individuals who view themselves as more vulnerable to crime will be more afraid, thus, the current work aims to use experiences of bullying as a *predictor* of fear of school violence in all its forms. More frequent bullying experiences and more severe bullying in general are associated with higher levels of fear of school violence, even after controlling for gender (Bachman et al., 2011; Randa et al., 2016). Even after controlling for individual characteristics, bullying strongly predicts increased avoidance behaviors (Hutzell & Payne, 2012; Randa & Wilcox, 2012). Victimized students may exhibit increased avoidance behaviors because when there is an uneven power dynamic within a relationship, as there is in bullying, the simplest thing to do is to avoid any interaction completely. Given the connection between experiences of being bullied and avoidance and fear, the current work examined if the previously identified trends are present in the most recent SCS dataset.

Socioeconomic Status (SES)

SES is defined as a measure of one's combined economic and social status (Baker, 2014). SES encompasses the domains of income, education, and occupation, but researchers often choose to measure SES with a single item, the most common of which is income. A consistent finding is that the level of school violence seems to reflect the crime rate of the area surrounding the school (Astor & Benbenishty, 2007). Thus, the

vulnerability hypothesis and social disorganization theory would suggest that lower SES geographic areas with higher crime rates might indicate that the schools located there would have higher levels of violence (Akiba, 2008). However, the effect of SES on the level of fear of school violence is mixed (Akiba, 2010). There current literature examining school violence seems to indicate that schools in areas of lower SES tend to have increased levels of violence and fear of school violence (Ruiz et al., 2018).

Although not conducted in the United States, a study examining schools serving students of middle-to-high SES found that school violence was present, although it was at a low level (Altun & Baker, 2010). Although it can be easy to simply attribute levels of school violence to SES, schools in higher SES areas still experience school violence. More research is needed to understand how SES may serve as a predictor for fear of school violence specifically though. The current work examined if lower SES, compared to higher SES, predicts levels of fear and avoidance behaviors.

There is not one way to conceptualize “low-income households, so for the present work, the U.S. Department of Health and Human Services (HHS) federal poverty guidelines were used. The term “low-income households” referred to households with an average annual income of \$34,999 or less. The researcher assumed an average household of four members for which the poverty line is approximately \$34,999 (HHS, 2026).

Year in School

There is little known about the impact of grade level on fear of school violence and avoidance behaviors. Research in this area tends to either focus on one grade level only or lump grades together as high school or middle school (Akiba, 2008, 2010; Bachman et al., 2011). *Older* students have been shown to report fewer avoidance

behaviors compared to younger students (Randa & Wilcox, 2010), but no work has specifically examined grade level as a contributor to fear of school violence and avoidance behaviors. Grade level was measured with one question and students chose their grade from ‘*5th or under*’ to ‘*Twelfth*’.

Size of School

The size of a school is operationalized as the number of students enrolled in the school. It is generally accepted that crime increases as a function of population; that is, as population density of an area increases, so does the crime rate (Oliveira, 2021). Given that larger schools tend to exist in urban areas with higher populations, previous research would suggest that larger schools also have a higher rate of school violence reflective of the surrounding area (Ferris & West, 2004). However, recent data has suggested that the violent and non-violent crime rates do not vary by school enrollment size (Burr et al., 2024). The SCS has six enrollment size categories that a school can belong to ranging from ‘*less than 300*’ to ‘*more than 2000*’. To the researcher’s knowledge, there has not been any work investigating the role of school size on fear of violence and avoidance behaviors.

School Locale

School locale is used by the National Center for Education Statistics (NCES) to classify geographical locations by their population size and proximity to larger, urban areas. The four locales are city, suburban, town, and rural. Research suggests that *rates* of school violence do not tend to vary by the locale of the school (i.e., city, town, suburb, or rural; Flynn et al., 2018). While social disorganization theorists have noted that urban areas tend to have more disorganization which is, in part, due to the higher population

density, this disorganization has not been linked to higher occurrences of school violence. To the researcher's knowledge, there has not been any work investigating the role of school locale on fear of violence and avoidance behaviors.

Type of School

Although there are different subtypes of private and public schools (i.e., charter, magnet, boarding, etc.), the present work focused on the main categories of public and private schools. Previous research has indicated that students attending public schools are more likely to fear attack or harm on school property than students at any type of private school (Addington et al., 2002; Hutzell & Payne, 2012). Additionally, public school students have a higher number of reported avoidance behaviors. Social disorganization (i.e., high teacher turnover, gang presence in schools) has a particularly deleterious effect on academic achievement of public school students (Kanaan, 2023). It is important to note that there is a higher number of public-school students than private school students in the SCS sample given that it is a random sample of United States households and 83% of school-aged children attend public schools (Schaeffer, 2024).

Race

There is limited work examining the role of race in avoidance behaviors and fear of school violence. Black students have been shown to have more negative affective symptoms (i.e., depressive symptoms) in response to their level of fear of school violence compared to students of other races (Riehm et al., 2021). Other work has shown that Black and White students have similar levels of fear, but there are certain situational factors such as the presence of gangs and the racial heterogeneity that function differently for students of different races (Bachman et al., 2011). The NCVS and SCS have 18 race

categories that individuals can identify with, but in line with other work utilizing the SCS, the researcher dichotomized race to ‘*White*’ and ‘*Non-White race*’ (Randa & Wilcox, 2010).

Sex

The vulnerability hypothesis suggests that females have higher fear of being victimized than males (Jackson, 2009; Smith et al., 2001; Snedker, 2012), but the knowledge of the impact of sex on fear of school violence is not well studied. There is some evidence that boys have a higher level of fear of being victimized compared to females, but the effect size is small (Akiba, 2008, 2010). There is even less known about the impact of sex on avoidance behaviors with evidence that sex is not an important contributor to avoidance (Randa & Wilcox, 2012). The SCS has questions about both sex and gender identity, but the researcher chose to include only sex for this project. Only individuals age 16 and older were asked to select their gender identity, so using this question would exclude a large portion of the sample. Sex is measured as ‘*male*,’ ‘*female*,’ and ‘*other*’. Three individuals responded ‘*other*’, but were excluded for having greater than 20% missing data.

School Crime Supplement

The School Crime Supplement (SCS) is a supplement to the National Crime and Victimization Survey (NCVS). The NCVS is an ongoing, nationally representative survey that is conducted by the Bureau of Justice Statistics (BJS) of the Department of Justice (DOJ). The BJS selects random addresses in the United States and surveys all the people who live at the address. The sampling unit is a household and households remain in the sample for three and a half years, during which they are surveyed every six months.

The NCVS collects data on nonfatal crimes (i.e., rape, robbery, assault, etc.) as well as property crimes (i.e., burglary, vehicle theft, and other types of theft); data are collected for crimes both reported and not reported to the police (BJS, 2021). Data are compiled annually, and the BJS releases a new report. Every two years, the SCS is administered in partnership with the National Center for Education Statistics (NCES) to 12–18-year-olds who live in the households being sampled in the NCVS and who attend any type of school for the previous six months. According to the BJS, the purpose of the SCS is “to obtain additional information about school-related victimizations so that policymakers, academic researchers, practitioners at the Federal, state and local levels, and special interest groups who are concerned with crime in schools can make informed decisions concerning policies and programs” (BJS, 2021, Methodology section). The SCS assesses crime, school violence, and other school climate characteristics such as the security measures at school and the presence of gang activity. The survey asks students about their experiences and perceptions of crime in their school, the security measures that their school uses, the presence of weapons and drugs in their school, their personal experiences of being bullied, and lastly, their fear of school violence and avoidance behaviors (BJS, 2021). The Institute for Educational Science (IES) and the NCES produce a report on the results of the data, but they report only descriptive statistics, such as the total percentage of sampled students who reported being afraid of attack or harm at school. These descriptive statistics do not fully capture the complexity of the data. Oftentimes, secondary analysis is performed by independent researchers. The deidentified dataset is publicly available (ICPSR: 38666). Appendix A provides the selected questions that were used in this project.

Application of the SCS Dataset

The present work analyzed the 2022 SCS data to examine what factors predict fear of school violence and avoidance behaviors. The use of archival data was the best approach for the hypotheses as the SCS has a nationally representative sample of over 4,500 students aged 12-18. Due to time and practicality issues, it would be very challenging for a single researcher to obtain a sample as large and geographically diverse as this government project can provide. Additionally, surveying adolescents can be difficult as many survey question characteristics (i.e., question wording, the number of responses, etc.) must be adjusted to ensure quality responses (Omrani et al., 2019). Omrani and colleagues (2019) suggest that Likert scales with words are the most easily understandable survey format for children. The SCS uses either dichotomous (yes/no) or four-point Likert scales responses to questions ('Never,' 'Almost never,' 'Sometimes,' 'Most of the time'). These questions have been optimized for the SCS to be as clear as possible, so this should not be a limitation of this dataset.

The reports on the SCS data generally only focus on descriptive statistics, whereas the present work will focus on a more detailed analysis of the data. There is still much to be learned about this dataset, and to my knowledge, this project will be the most recent secondary analysis of the 2022 SCS data.

Hypotheses

The focus of the project was to test the effect of multiple predictor variables on the outcomes of fear of school violence and avoidance behaviors utilizing a Bayesian zero-inflated Poisson regression model. The predictors will be the number of reported experiences of being bullied, the frequency of bullying, the SES of participants, the size

of the school, the school's locale, the type of school, race, and sex. The choice of these specific predictor variables was intentional as previous literature has identified these as potentially predictive of the outcomes of interest; however, research is mixed, so the present work sought to provide some clarity on their effects.

The researcher hypothesized that greater exposure to bullying, both in terms of the number of types of bullying and their frequency, and lower socioeconomic status would be associated with higher levels of fear of school violence and a greater number of reported avoidance behaviors. In addition, greater bullying exposure was expected to be associated with lower odds of reporting zero fear or zero avoidance behaviors. Enrollment in a larger school, attending a school in a city or suburb, attending a public school, identifying with a racial minority group, and being female were hypothesized to be associated with higher odds of reporting any level of fear or any avoidance behaviors. The previously described 2022 SCS dataset was utilized to test these hypotheses.

The hypotheses described in the thesis proposal document were modified because the researcher chose to use more advanced statistical methods. The hypotheses were originally going to be addressed using multiple linear regression, but ultimately, they were tested using Bayesian methods. The hypotheses were modified to reflect the specific zero-inflated model that is described in this work. Predictors can be entered into the zero-inflation equation, the Poisson (count) equation, or both, so the hypotheses had to be worded in a specific manner to reflect this.

CHAPTER FOUR

METHODOLOGY

Participants

The 2022 SCS dataset includes data for approximately 5,500 individuals aged 12-18 from national representative sample in the United States. All individuals who attended any public or private school were included in the sample, but those who are homeschooled were excluded ($n = 294$). It has been suggested that some parents may choose to homeschool their children due to a greater fear of violence in schools or a general distrust of school systems (Green-Hennessy & Mariotti, 2023). This implies that families who choose to homeschool their children are characteristically different from families who choose traditional schools. Additionally, individuals with greater than 20% missing data for the chosen questions (see Appendix A) or missing 100% of either outcome variable were excluded ($n = 702$). Multiple imputation can, in principle, accommodate high levels of missing data, but in this, a 20% item-level missingness cutoff was used as a quality-control criterion. Multiple imputation relies on a missing at random (MAR) assumption, and the content of the SCS makes violations of this assumption plausible. Nonresponse could be related to unmeasured factors such as stigma or fear of school violence, which is the subject of this study. For participants with more than 20% missing on the chosen items, imputed scores would be heavily model-driven and weakly anchored in their observed responses, so these cases were excluded prior to imputation. The total sample size is 4,505.

Predictor Variables

Bullying Experiences

Bullying was measured in two different ways. First, there are eight SCS questions that ask students about experiences of different types of bullying during the current school year (e.g., made fun of, threatened, shoved, etc.). The responses to these questions are ‘*Yes*,’ ‘*No*,’ ‘*Don’t know*,’ or ‘*Refused to respond*’. A response of ‘*Yes*’ was scored as 1, and ‘*No*’ as 0. The other two responses were treated as missing data. This created a score ranging from 0-8 for each participant. This variable was centered at its mean value of 0.43. An interaction term of bullying experiences and frequency was entered into the model as well. Bullying sum score was included in both the count (Poisson) model and the zero-inflation model. Experiences of being bullied were hypothesized to affect the intensity of avoidance and fear behaviors, which relates to the count model, as well as the odds that someone reports any amount of either outcome, which relates to the zero-inflation model.

Bullying Frequency

Any participant who responded ‘*Yes*’ to any of the 8 bullying type questions was asked the question, “During this school year, how many days were you bullied?” (United States Bureau of Justice Statistics, 2024). The answers are ‘*One day*,’ ‘*Two days*,’ ‘*Three to ten days*,’ and ‘*Ten or more days*.’ ‘*One day*’ was scored as 1, ‘*Two days*’ as 2, ‘*Three to ten days*’ as 3, and ‘*Ten or more days*’ as 4. This question gauged the frequency of bullying because it is possible that a student experienced five different domains of bullying but experienced only three to ten days of total bullying; similarly, a student may experience only one type of bullying, but at a more frequent rate bullying. This variable was centered at its mean value of 2.59. An interaction term of bullying experiences and

frequency was entered into the model as well. Bullying frequency was included in both the count (Poisson) model and the zero-inflation model. More frequent bullying was hypothesized to predict both a higher likelihood of reporting avoidance behaviors and fear as well as a greater intensity in those who report any avoidance or fear.

Socioeconomic Status (SES)

Annual household income was used as a proxy for SES. The NCVS provides 18 different brackets that a family can choose from ranging from an annual income of less than \$5,000 (1) to \$200,000 or more (18). For the present work, individuals in households with an income less than \$34,999 (i.e., categories 1-10) were classified as “low SES.” The remaining eight income categories remained distinct categories. SES was only included in the count (Poisson) model. SES was hypothesized to predict the intensity of avoidance and fear as opposed to the presence of either outcome.

Year in School

Individuals selected from the options, ‘*5th and under*,’ ‘*Sixth*,’ ‘*Seventh*,’ ‘*Eighth*,’ ‘*Ninth*,’ ‘*Tenth*,’ ‘*Eleventh*,’ ‘*Twelfth*,’ and ‘*Other*.’ Three individuals responded ‘*Other*’ and the researcher chose to retain them as separate group for the analyses. This variable was treated as a nominal variable in the analysis. Grade was only included in the zero-inflation model. A student’s grade level was hypothesized to predict the presence or absence of avoidance or fear as opposed to the intensity.

Enrollment Size of School

The SCS crosschecked the respondent’s school with the NCES Common Core of Data or the NCES Private School Universe Study to determine the enrollment size of the school. School enrollments were classified into the following categories: ‘*Less than 300*,’

‘300-599,’ ‘600-999,’ ‘1,000-1,499,’ ‘1,500-1,999,’ and ‘2,000 or more.’ This categorical variable was recoded into six binary indicators. Enrollment size was only included in the zero-inflation model. As enrollment size increases, it was hypothesized that the presence of fear becomes more likely, as opposed to the intensity of fear.

School Locale

The SCS classified schools into one of four locales: ‘City,’ ‘Suburb,’ ‘Town,’ and ‘Rural’. This was treated as a nominal variable in the analyses. This categorical variable was recoded into four binary indicators. School locale was only included in the zero-inflation model. Locale was hypothesized to have an effect on the presence or absence of fear as opposed to the intensity.

Type of School

The SCS asked if the student’s school is public or private. ‘Public’ was coded as 0 and ‘Private’ as 1. As previously stated, students who indicate that they are homeschooled will be excluded from analyses. Type of school was only included in the zero-inflation model. Public school attendance was hypothesized to predict presence of fear as opposed to intensity.

Race

The SCS has 20 different race categories that are presented in Appendix A (V3023). Due to small sample sizes in each category, race was dichotomized as ‘White’ and ‘Non-White’. Race was only included in the zero-inflation model. Being non-white was hypothesized to increase to odds that an individual reports any avoidance behaviors or fear.

Sex

Male was coded as 0 and female was coded as 1. Sex was only included in the zero-inflation model. Sex was hypothesized to predict activation of avoidance and fear as opposed to intensity. For sex in particular, intensity of avoidance and fear is likely affected by many factors, so understanding the effect on activation is more important.

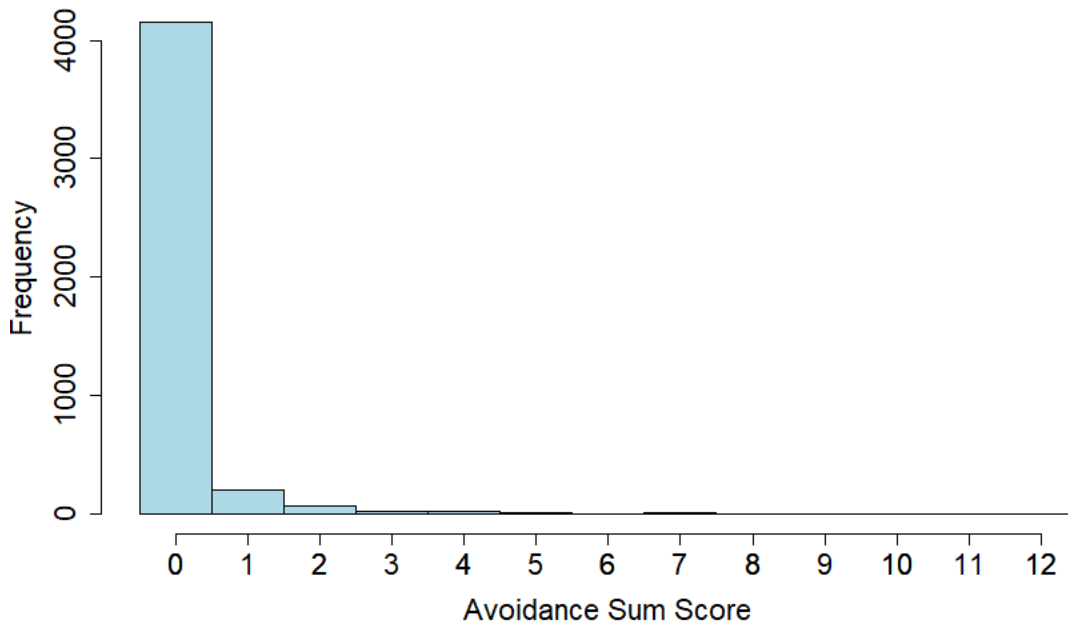
Outcome Variables

Avoidance Behaviors Score

The avoidance behavior questions were created to determine if students purposefully stay away from school or any place within or around the school out of fear of being attacked or harmed. There are 12 questions that follow the format, "Did you stay away from any of the following places because you thought someone might attack or harm you there?" with places such as the entrance to the school, the hallways, or stairs in the school, and the cafeteria. The answer of 'Yes' was scored as 1 and 'No' was 0. The answers to these questions were summed into a new variable to create a score from 0-12.

Figure 1

Frequency of Avoidance Sum Scores



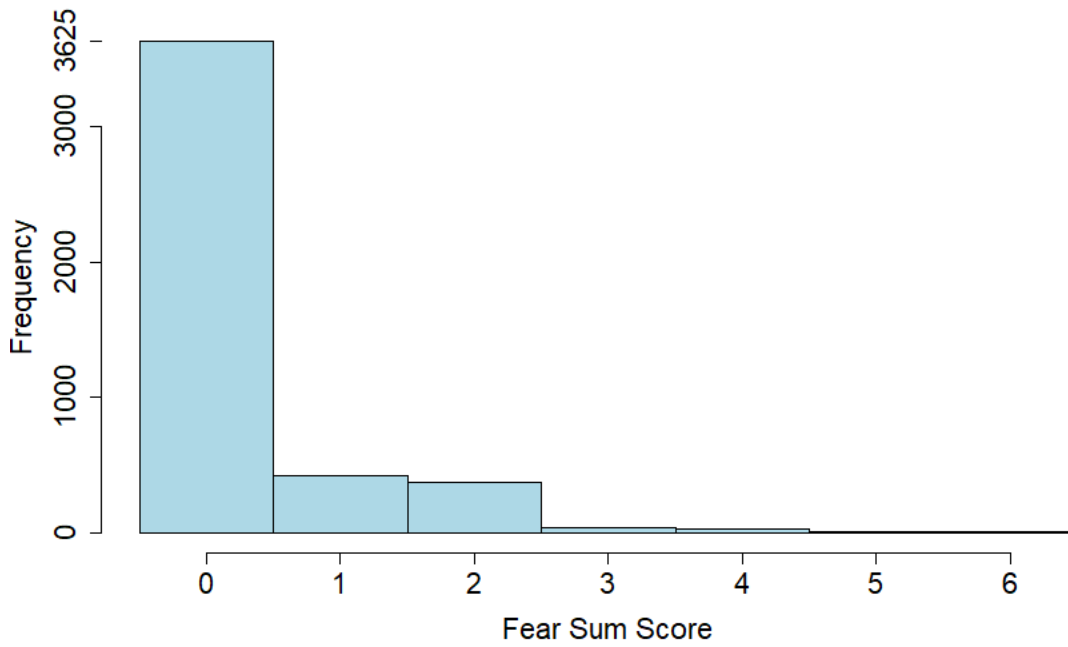
Note. The frequencies of avoidance scores are shown for the entire sample. Avoidance scores are the sum of 12 avoidance questions from the School Crime Supplement.

Fear of School Violence Score

The SCS asks three questions that assess fear of being attacked or harmed: How often are you afraid that someone will attack or harm you: (1) in the school building or on school property, (2) on a school bus or on the way to or from school, and (3) at any other time? With answers 0 = ‘*Never*,’ 1 = ‘*Almost Never*,’ 2 = ‘*Sometimes*,’ and 3 = ‘*Most of the time*.’ The answers to the **first two** questions were summed into a new variable to create a score for each participant from 0-6. The third question does not ask specifically about school-based fear, so it was not utilized for these analyses.

Figure 2

Frequency of Fear Sum Scores



Note. The frequencies of fear sum scores are shown for the entire sample. Fear scores are the sum of two questions about fear of school violence from the School Crime Supplement.

Statistical Analysis

Multiple Imputation

Individuals with greater than 20% missing data or missing 100% of either outcome variable were excluded from analyses. Multiple imputation was performed on missing data for all predictors and outcomes using the multivariate imputation by chained equations package in R (mice; van Buuren & Groothuis-Oudshoorn, 2011). Ten imputed

datasets were generated. The method of imputation was chosen for each variable based on its class.

Bayesian Zero-Inflated Poisson Regression Model

The researcher's expectation, confirmed by the data, was that most children do not experience fear and avoidance, so a model that could account for the high number of expected zeroes for both outcomes had to be utilized. A zero-inflated Poisson (ZIP) regression model was chosen to fit the data as it statistically account for all these extra zeroes. A ZIP model uses a distribution similar to Poisson distribution except the number of zeroes is inflated or statistically accounted for (Lambert, 1992; McElreath, 2020). The model assumes that zeroes come from two process, (a) structural zeroes, or individuals who really did not engage in any avoidance behaviors or have any level of fear in the last year, and (b) random zeroes, or individuals who may exhibit some avoidance behaviors or have some level of fear, but not in the past year. These two sources of zeroes must be accounted for separately because without modeling the structural zeroes, parameter estimates would be biased and could lead to incorrect inferences. The ZIP model provides more accurate estimates of both the probability of not experiencing an event (i.e., fear score of zero or no avoidance behaviors) and the expected counts of each non-zero outcome value. The Poisson distribution was chosen because the outcomes were quasi-counts (i.e., level of fear and instances of avoidance) and the counts followed the right skewed curve that is typical of this distribution.

Bayesian methods were utilized because they allow direct probabilistic inference about model parameters and provide full posterior distributions rather than point estimate like frequentist methods. Bayesian methods offer greater flexibility for modeling

complex data, including non-normal outcomes and zero-inflation. There are likely many reasons that a student exhibits avoidance behaviors and feel fear, and Bayesian models can account for these multiple influences for each individual through its credibility intervals. Frequentist point estimates may not accurately describe the contribution of many influences. Weakly informative priors were used as there were no prior observations of these predictors in the literature and the researcher did not have any strong hypotheses about the direction of the effects. The priors weakly regularized the estimates to not over extrapolate the parameter estimates. Posterior distributions for each parameter were estimated using Markov chain Monte Carlo sampling via Hamiltonian Monte Carlo (HMC) implemented through the rethinking package in R (McElreath, 2020). HMC efficiently samples from the posterior distributions to find the most likely values for the slopes and intercept. Similarly to multiple regression, each predictors' contribution to the outcome is observed independently while controlling for all the other predictors. Four chains were run which can be thought of as four independent simulations of the posterior. Multiple chains allow us to see if they converge to the same distribution which increases confidence in the results. Five-hundred burn-in samples, which calibrate the sampler to find the higher points of the distribution, were followed by 500 stable draws. A ZIP model was fit to each of the ten imputed datasets. The zero-inflation equation transforms the predictors to the logit scale and the count (Poisson) equation transforms the predictors to the log scale, so the posterior means were exponentiated to yield interpretable, multiplicative effects. For zero-inflation predictors, the exponentiated coefficients are interpreted as odds ratios (OR), or the probability of an event happening or not. For count predictors, the exponentiated coefficients are interpreted as incident rate

ratios (IRR), or the expected change in an outcome for a one unit increase in the predictor. Importantly, Bayesian methods yield *credibility intervals*, and in particular, the intervals presented in the results are the *highest posterior density intervals* (HPDI). Frequentist methods utilize confidence intervals which describe the reliability of the estimation procedure under repeated samples. HPDIs are the narrowest posterior intervals that contain the specified probability mass. For the present work, the 95% intervals represent the narrowest interval that 95% of the posterior distribution means fall into. The choice of 95% HPDI is arbitrary but does provide evidence for the direction and size of effects and are thus interpreted in that way here. HPDIs do not necessarily have equal tails if the distribution they are summarizing is not normal in shape, but the distributions described below are all approximately normal thus the intervals are generally centered at the mean. Confidence intervals are often interpreted incorrectly, so it is important to make the distinction that the credibility intervals presented in the results below allow for direct probability statements about parameters.

The full model, Equation 1, was iterated over the ten imputed datasets and posteriors were combined and samples were extracted to provide parameter estimates and intervals. Two separate models were fit, for `avoid_sum` and for `fear_sum`. There were no problematic convergences. In Equation 1, the logit equation is the zero-inflation model while the log equation is the count (Poisson) model.

```
fit <- ulam(
  alist(avoid_sum ~ dzipois(p, lambda),
    logit(p) <- ap + c1*bully_sum_c +
      c3*grade +
      c4_1*enroll_1+
      c4_2*enroll_2+
      c4_3*enroll_3+
    )
  )
```

(1)

```

c4_4*enroll_4+
c4_5*enroll_5+
c4_6*enroll_6+
c5_1*locale_city +
c5_2*locale_suburb +
c5_3*locale_town +
c5_4*locale_rural +
c6*public_vs_private +
c7*bully_num_days_c+
c8*sum_x_freq+
c9*race_recode_new+
c10*sex,
log(lambda) <- a + b1*bully_sum_c +
  b2*income_allocated +
  b7*bully_num_days_c+
  b8*sum_x_freq,
ap ~ dnorm(2.429519, 0.5),
a ~ dnorm(0,10),
c(c1,c3,c4_1,c4_2,c4_3,c4_4,c4_5,c4_6,c5_1,c5_2,c5_3,c5_4,c6,
  c7,c8,c9,c10) ~ dnorm(0,1),
c(b1,b2,b7,b8) ~ dnorm(0,1)
), data=comp_df, chains=4, cores=4
)

```

CHAPTER FIVE

RESULTS

A total of 4,505 individuals were included in analyses. Sex was approximately equally distributed (females: $n = 2096$, 46.5%). The average age was 14.7 years ($SD = 1.9$), and the most common grade level was eighth ($n = 732$, 16.2%). The majority of the sample was White ($n = 3475$, 76.9%). The full sociodemographic table can be found in Appendix B.

Model 1: Avoidance Behaviors

Posterior distribution means for the avoidance behaviors model are presented in Table 1. These results can be interpreted similarly to multiple linear regression results. The bullying sum score parameter was directionally consistent with each additional type of bullying reported being associated about 21% higher avoidance scores. For each additional type of bullying reported, the odds that a student reports no avoidance are about 48% lower, indicating that bullying exposure reduces the likelihood that no avoidance behaviors are reported. There is a small, but credible, association between income and avoidance which suggests as income increases, the number of reported avoidance behaviors tends to decrease marginally. This effect is small but is directionally consistent as the entire CI lies under one. Compared to public school students, private

school students have about 2.9 times the odds of reporting no avoidance at all. Private school students are much less likely to report any number of avoidance behaviors. Each step up in bullying frequency from one day, two days, three to ten days, and ten or more days is associated with about 32% higher avoidance scores. The zero-inflation parameter represents the overall probability that an observation belongs to the structural-zero group. In this model, about 91% of observations were structural zeroes which suggests a substantial proportion of observations were unlikely to report any avoidance behaviors.

The posterior distributions for grade (c3), enrollment size of the school (c4.1-c4.6), school locale (c5.1-c5.4), frequency of bullying (c7 only), bullying sum and frequency interaction (b8 and c8), race (c9), and sex (c10) all had substantial uncertainty in their association with avoidance behaviors. These variables *do not* credibly contribute to avoidance behaviors as their credibility intervals include the null value of one (1).

Table 1

Posterior Means for Bayesian Avoidance Sum Model

Variable	Count Model		Zero Inflation Model	
	Exp(β)	95% CI	Exp(β)	95% CI
Poisson intercept (a)	1.47	[1.17, 1.80]	-	-
Zero-inflation parameter (ap)	-	-	0.91	[0.85, 0.97]
Bullying sum score (b1*, c1*)	1.21	[1.15, 1.28]	0.52	[0.47, 0.58]
Income (b2)	0.94	[0.91, 0.98]	-	-
Grade (c3)	-	-	1.02	[0.95, 1.10]
Enrollment – Less than 300 (c4.1)	-	-	0.98	[0.32, 1.81]
Enrollment – 300-599 (c4.2)	-	-	1.31	[0.45, 2.37]
Enrollment – 600-999 (c4.3)	-	-	1.20	[0.45, 2.13]
Enrollment – 1,000-1,499 (c4.4)	-	-	1.01	[0.36, 1.79]
Enrollment – 1,500-1,999 (c4.5)	-	-	0.88	[0.30, 1.60]

Enrollment – 2,000 or more (c4.6)	-	-	1.15	[0.41, 2.09]
School locale – City (c5.1)	-	-	0.86	[0.27, 1.61]
School locale – Suburb (c5.2)	-	-	1.11	[0.35, 2.06]
School locale – Town (c5.3)	-	-	1.09	[0.33, 2.09]
School locale – Rural (c5.4)	-	-	1.38	[0.42, 2.60]
Public or private (c6)	-	-	2.87	[1.30, 4.92]
Frequency of bullying (b7*, c7*)	1.32	[1.08, 1.58]	0.98	[0.78, 1.20]
Bullying sum x Frequency (b8, c8)	1.00	[0.95, 1.06]	1.00	[0.90, 1.09]
Race (c9)	-	-	0.79	[0.56, 1.04]
Sex (c10)	-	-	0.99	[0.77, 1.20]

Note. * is centered variable (b1 centered at mean, b4 centered at middle category, and b7 centered at mean); CI = 95% *credibility interval*; b indicates predictor included in Poisson portion of the equation, c indicates predictor included in zero-inflation portion of the equation; Count model values are incidence rate ratios (IRRs) and zero inflation model values are odds ratios (OR); *N* = 4505

Model 2: Fear of School Violence

Posterior distribution means for the fear sum score model are presented in Table

2. The association between fear sum and bullying sum score was not as strong as the association with avoidance behaviors, but each additional type of bullying experienced was associated with about 11% higher fear scores. For each additional type of bullying reported, the odds of reporting no fear are 42% lower. Income again had a small, but credible, association with the outcome with higher income being associated with lower fear scores. Private school students have about 2.2 times higher odds of reporting no fear compared to public school students. Public school students are much more likely than private school students to report any level of fear. The count model interval for the bullying sum and frequency interaction contains one, but the direction suggests that as both types of bullying experienced and frequency increase, there may be a small increase in fear scores. There was no credible effect of sex on fear scores, but the odds ratio

suggests that females may be slightly more likely than males to report any level of fear. Similar to the avoidance model, the zero-inflation parameter is high and suggest that about 82% of observations were structural zeroes. This also suggests that a zero-inflation model was appropriate to use.

The posterior distributions for grade (c3), enrollment size of the school (c4.1-c4.6), school locale (c5.1-c5.4), frequency of bullying (b7 and c7), the bullying sum x frequency interaction (c8 only), race, and sex all had substantial uncertainty for the direction and size of their associations with fear scores. These variables do not credibly contribute to fear scores as their credibility intervals contain the null value of one (1).

Table 2

Posterior Means for Bayesian Fear Sum Model

Variable	Count Model		Zero Inflation Model	
	Exp(β)	95% CI	Exp(β)	95% CI
Poisson intercept (a)	1.34	[1.15, 1.54]	-	-
Zero-inflation parameter (ap)	-	-	0.82	[0.71, 0.93]
Bullying sum score (b1*, c1*)	1.11	[1.07, 1.15]	0.58	[0.52, 0.64]
Income (b2)	0.94	[0.91, 0.96]	-	-
Grade (c3)	-	-	1.00	[0.94, 1.05]
Enrollment – Less than 300 (c4.1)	-	-	1.41	[0.52, 2.54]
Enrollment – 300-599 (c4.2)	-	-	1.09	[0.40, 1.92]
Enrollment – 600-999 (c4.3)	-	-	0.79	[0.31, 1.39]
Enrollment – 1,000-1,499 (c4.4)	-	-	0.87	[0.33, 1.53]
Enrollment – 1,500-1,999 (c4.5)	-	-	0.64	[0.23, 1.13]
Enrollment – 2,000 or more (c4.6)	-	-	0.81	[0.31, 1.45]
School locale – City (c5.1)	-	-	0.68	[0.23, 1.25]
School locale – Suburb (c5.2)	-	-	0.87	[0.30, 1.61]
School locale – Town (c5.3)	-	-	1.02	[0.33, 1.92]
School locale – Rural (c5.4)	-	-	0.80	[0.25, 1.47]

Public or private (c6)	-	-	2.23	[1.32, 3.17]
Frequency of bullying (b7*, c7*)	1.04	[0.94, 1.16]	0.95	[0.81, 1.10]
Bullying sum x Frequency (b8, c8)	1.04	[1.00, 1.08]	1.03	[0.93, 1.13]
Race (c9)	-	-	1.00	[0.80, 1.21]
Sex (c10)	-	-	0.85	[0.71, 1.00]

Note. * is centered variable (b1 centered at mean, b4 centered at middle category, and b7 centered at mean); CI = 95% *credibility interval*; b indicates predictor included in Poisson portion of the equation, c indicates predictor included in zero-inflation portion of the equation; Count model values are incidence rate ratios (IRRs) and zero inflation model values are odds ratios (OR); *N* = 4505

CHAPTER SIX

DISCUSSION

The researcher's hypothesis was that more exposure to bullying, lower SES, enrollment in a larger school, attending a school in a city or suburb, attending a public school, identifying with a racial minority group, and being female would be associated with the intensity or presence of avoidance behaviors and fear of school violence. This hypothesis was partially supported. Grade, enrollment size of the school, school locale, bullying sum x frequency interaction, race, and sex all lacked credible support for their association with avoidance behaviors and fear. Experiencing more types of bullying and more frequent bullying were associated with a greater number of reported avoidance behaviors. There was a small effect that lower SES was associated with both a greater number of avoidance behaviors and a higher level of fear. Private school attendance was associated with about 2.9 times higher odds of reporting no avoidance behaviors and 2.2 times higher odds of reporting no fear. The effect of SES was small but directionally consistent with lower income being associated with a greater number of avoidance behaviors and higher level of fear .

The present study used novel techniques and found results that confirm and challenge some findings from previous literature. Bullying victimization has previously been identified as being associated with a greater number of reported avoidance

behaviors (Hutzell & Payne, 2012; Randa & Wilcox, 2012) and higher levels of fear in school-aged children (Randa et al., 2016). The present work suggests these relationships hold, with types of bullying and frequency of bullying being associated with a greater number of avoidance behaviors and higher levels of fear.

The effect of SES has been shown to be mixed (Akiba, 2010), but there is evidence that schools in lower SES areas where there is more community violent crime have schools with higher levels of violence too (Ruiz et al., 2018). Both models showed there was a small effect of SES with lower SES being associated with a greater number of reported avoidance behaviors and higher fear scores. About 70% of the sample had an annual household income greater than \$50,000 which may have led to the small effect. Additionally, the present work was unable to include other indicators of SES such as the SES of the area surrounding the school which may have been more informative.

The literature is mixed on the association between sex and fear and avoidance behaviors, but there is limited evidence that males have higher levels of fear of school violence, which is possibly attributable to their increased likelihood of experiencing bullying (Akiba, 2010). The results here did not show any credible associations with sex. However, the coefficient and CI for sex in the fear model suggest there may be a small association such that females are more likely than males to report any number of avoidance behaviors and any level of fear. This could possibly be explained by the vulnerability hypothesis, females may perceive themselves as less physically able to defend themselves, so it is possible they avoid situations or places where violence could occur at higher rates than males. Irwin and colleagues (2024) led the primary analysis of this 2022 SCS data, and they reported sex differences in both avoidance behaviors and

fear. More work should be done on avoidance behaviors and fear of school violence specifically to determine if this sex difference persists.

There is limited work about the relationship between school locale and fear and avoidance behaviors, but there is evidence that school violence is not a uniquely urban issue (Flynn et al., 2018). School violence is present in schools in any locale, including rural areas. The present work suggests this idea could attenuate the effect locale has on these outcomes. Locale was not credibly associated with avoidance behaviors nor fear scores. If school violence is a ubiquitous occurrence, then it would be reasonable that locale has limited effect on both avoidance and fear. In other words, the locale a student's school is in does not affect their reported avoidance behaviors or level of fear possibly because school violence is present in all schools.

Public school students have previously been identified as having greater levels of fear of school violence as well as reporting more avoidance behaviors (Addington et al., 2002; Hutzell & Payne, 2012; Randa & Wilcox, 2010). The present work suggests these findings are consistent with private school attendance being associated with substantially increased odds of reporting zero avoidance behaviors and zero fear. There is limited work outside of secondary analyses of SCS data that examines the role of school type on these outcomes. In line with the social disorganization hypothesis, public schools tend to have higher rates of school violence (Addington et al., 2002; Irwin et al., 2024; Randa & Wilcox, 2012). The vulnerability hypothesis would suggest that public school students would feel more fear of being victimized because victimization occurs more commonly at their type of school. Future work should oversample private school students to learn more about their experience. The 2022 SCS dataset has 4,172 public school students and only

333 private school students which is representative of the actual proportion of public to private school students in the United States, but it does not provide much data to learn about private school students' behaviors. This ratio likely contributed to the large effect of private school attendance on avoidance behaviors and fear. There is a need for research that purposefully oversamples private school students so researchers can learn more about the actual levels of avoidance and fear in that population.

The purpose of this project was to expand upon the limited knowledge of predictors of fear and avoidance behaviors in the face of school violence. School violence rates fluctuate from year to year, but regardless of the change, any number of violent events occurring at schools is traumatic. There has been an alarming increase in mental illness among children and teens (Prinstein & Ethier, 2022), so it is increasingly important to understand what is causing fear and negative internalizing symptoms. Childhood, and especially the school-age years, is a time of rapid development. Persistent fear can lead to long-term issues for students. Given its negative outcomes, it is important to learn more about this specific type of fear and when it is most commonly exhibited. By understanding what may predict fear of school violence, it is possible that future work could intervene with specific populations to help reduce the fear and undue stress. To the best of the researcher's knowledge, this will be the only recent project looking at this rising issue. Not all of these factors being investigated are directly manipulable, but the results of this work may inform where interventions can be targeted and what specific populations are most in need of an intervention.

The political climate of our country is rapidly polarizing. There is evidence that a local school shooting affects how community members vote in presidential elections with

an increase in votes for the democratic party (García-Montoya et al., 2022). Gun violence is a hot topic in politics today, but there is less talk about school violence in general. Lately, politicians have been concerned about what exactly is being taught in schools, but the present work argues that what is more important is addressing the fear that some children have surrounding going to school in the first place. This work will not provide all the answers, but it seeks to inform policy makers and school administrators on what groups of students are most vulnerable to this type of fear and avoidance behaviors.

Future Directions

This is the most recent project to utilize the 2022 SCS dataset, but there is still much to learn from this data. The researcher did not utilize large portions of the SCS that ask children about gang activity at their schools and personal victimization experiences among other topics. Past literature has suggested that drug and alcohol use also play a role in fear and avoidance behaviors in the school setting (Bachman et al., 2011), so future secondary analyses should utilize the items that ask about these topics. Additionally, Bayesian methods have never been applied to this dataset, so more work with this SCS data and future SCS datasets would allow researchers to model trends in a novel way.

Most of the work on this topic has been done by survey administration. While surveys are an inexpensive and relatively easy way to collect data, they do not explain the whole picture. There is a great need for qualitative work to examine fear of school violence. Indeed, past researchers have remarked, “The extant research would be well served by adding the voices of students to understand their perceptions of safety in their own words.” (Bachman et al., 2011, p. 74). It is essential that future research include

some qualitative component to help researchers understand more about how this particular type of fear manifests and what they think would make them feel safer. Additionally, there has been little work that has directly compared public and private school students, so reporting qualitative results for both types of schools would be a meaningful contribution to the literature.

Benefits and Limitations

There are many benefits of using this large, nationally representative data. It is unlikely that the researcher would have the resources to conduct a study near this size in any appreciable amount of time. In utilizing this dataset, the aim is to enhance the external validity of the study to provide a robust foundation to inform and guide future research for the researcher and others.

There are some drawbacks to using archival data. The researcher is unable to control for order effects given that the SCS is administered following the NCVS, so children may be primed to think about adverse victimization experiences. Additionally, there are only three questions that assess fear of school violence, so the data may not fully capture the characteristics of fear that students feel. The responses in this dataset either came directly from a child or from their parent serving as a proxy. The researchers gave parents the option to respond on behalf of their child if they were not comfortable having their child respond alone. Despite these limitations, this dataset remains valuable to use given its large size and comprehensive scope.

Conclusion

The present work used a nationally representative sample of school-aged children to investigate predictors of fear of school violence and avoidance behaviors. Many

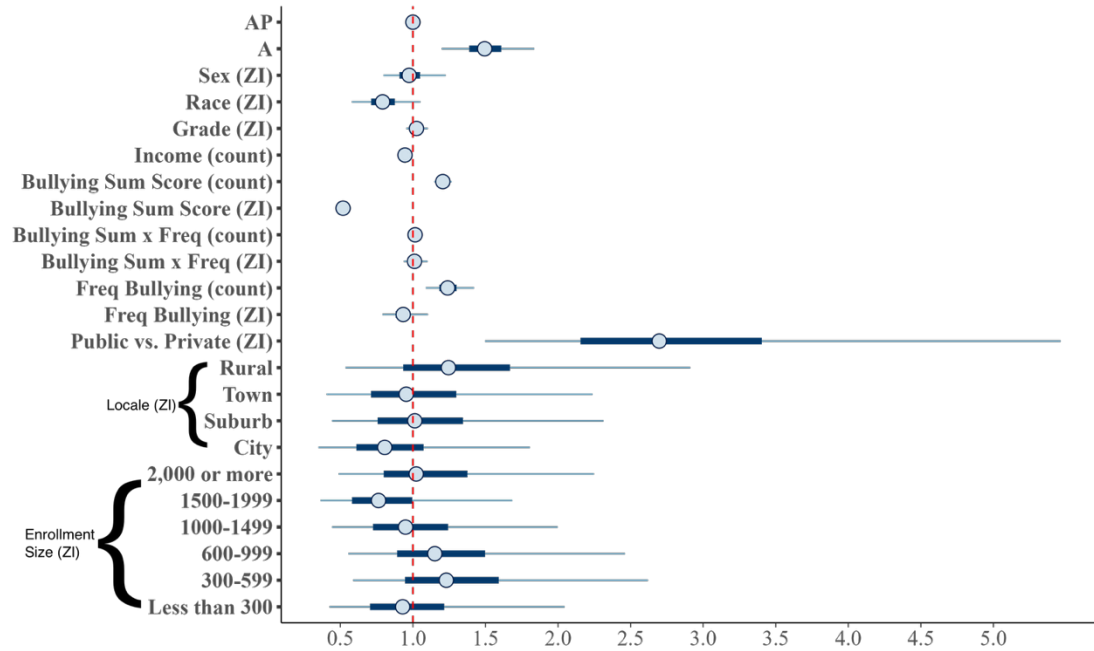
students in the dataset reported no avoidance behavior or no fear, so advanced Bayesian methods were utilized to learn more about the students who did report either outcome. There were a few predictors that emerged as important contributors to the outcomes. In congruence with past literature, experiences of bullying were associated with both a greater number of avoidance behaviors and higher levels of fear. Additionally, more frequent bullying was associated with a greater number of avoidance behaviors. Private school students in this sample were found to have 2.8 to 2.2 times greater odds of reporting no avoidance and no fear. Lastly, there was a small effect of income such that lower income was associated with a greater number of avoidance behaviors and higher levels of fear. This project was not without limitations. More research is needed to confirm these findings with a more robust measure of avoidance and fear. Additionally, qualitative work would allow for a better understanding of how students actually think about school violence and their behaviors towards it. Nonetheless, these findings point to bullying and public-school attendance as key predictors of both avoidance and fear. School administrators and researchers can use this information to provide support to students who need it the most as well as designing interventions that can target these vulnerable populations.

APPENDICES

Appendix A. Models 1 and 2 Forest Plots

Figure 3

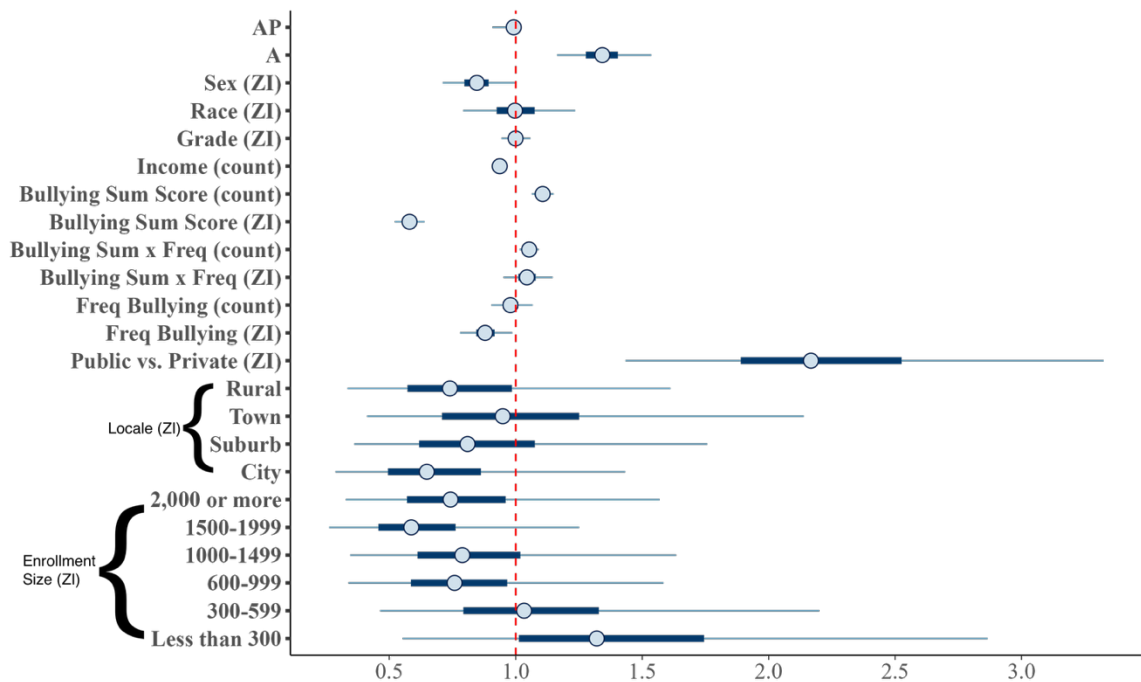
Model 1: Predictors of Avoidance Behaviors



Note. Forest plot for the effect of predictors of avoidance behaviors. The effects are derived from Bayesian zero-inflated Poisson regression model. All predictors are shown. The dots are the median of the posterior distribution for the given predictor. The thick blue line represents the 50% credibility interval and the thin blue line represents the 95% credibility interval. The medians and credibility intervals are estimated from 2000 samples of the posterior distribution per predictor. Zero-inflation predictors, denoted with (ZI), are interpreted as *odds ratios* (ORs). Count (Poisson) predictors, denoted with (count), are interpreted as *incidence rate ratios* (IRRs).

Figure 4

Model 2: Predictors of Fear of School Violence



Note. Forest plot for the effect of predictors of fear of school violence. The effects are derived from Bayesian zero-inflated Poisson regression model. All predictors are shown. The dots are the median of the posterior distribution for the given predictor. The thick blue line represents the 50% credibility interval and the thin blue line represents the 95% credibility interval. The medians and credibility intervals are estimated from 2000 samples of the posterior distribution per predictor.

Appendix B. School Crime Supplement (SCS) selected questions

United States Bureau of Justice Statistics. (2024). *National Crime Victimization Survey:*

School Crime Supplement, [United States], 2022 [Dataset]. Inter-university

Consortium for Political and Social Research [distributor].

<https://doi.org/10.3886/ICPSR3866.v1>

V2026 - HOUSEHOLD INCOME

Value	Label
1	< \$5,000
2	\$5,000-\$7,499
3	\$7,500-\$9,999
4	\$10,000-\$12,499
5	\$12,500-\$14,999
6	\$15,000-\$17,499
7	\$17,500-\$19,999
8	\$20,000-\$24,999
9	\$25,000-\$29,999
10	\$30,000-\$34,999
11	\$35,000-\$39,999
12	\$40,000-\$49,999
13	\$50,000-\$74,999
15	\$75,000 to \$99,999
16	\$100,000-\$149,999
17	\$150,000-\$199,999
18	\$200,000 or more
98	Residue

**VS0011 - TYPE OF SCS
INTERVIEW**

Value	Label
1	Personal - Self
2	Telephone - Self
3	Personal - Proxy
4	Telephone - Proxy
5	Noninterview
6	Noninterview created during interview/noninterview edit in post data collection processing
7	Interview created during interview/noninterview edit in post data collection processing

8	Interview - Type unknown (created for post data collection processing)
---	--

V3013 - AGE (ORIGINAL)

Value	Label
12	-
13	-
14	-
15	-
16	-
17	-
18	-

V3023 - RACE RECODE

Value	Label
1	White only
2	Black only
3	Am Ind/AK native only
4	Asian only
5	Hawaiian/Pacific IS only
6	White-Black
7	White-Amer Ind
8	White-Asian
9	White-Hawaiian
10	Black-Amer Ind
11	Black-Asian
12	Black-Hawaiian/Pacific IIs
13	American Indian-Asian
15	Asian-Hawaiian/Pacific IIs
16	White-Black-Asian
17	White-Amer Ind-Asian
18	White-Asian-Hawaiian
19	2 or 3 races
20	4 or 5 races
98	Residue

SCS279 - Q1A. ATTENDED A PUBLIC OR PRIVATE SCHOOL IN PERSON

1a. At any time during this school year did you attend a public or private school in person?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

SCS281 - Q1C. RECEIVED HOMESCHOOLING INSTEAD OF BEING ENROLLED IN A PUBLIC OR PRIVATE SCHOOL

1c. At any time during this school year did you receive homeschooling instead of being enrolled in a public or private school?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0017 - Q2B. WHAT GRADE ARE YOU IN?

2b. What grade are you in?

This question refers to the 2021-2022 school year.

Value	Label
0	Fifth or under
1	Sixth
2	Seventh
3	Eighth
4	Ninth
5	Tenth
6	Eleventh
7	Twelfth
8	Other
9	College/GED/Post-graduate/Other non-eligible
98	Residue
998	Refused
999	Don't know
	Missing Data
99	Blank (SCS Noninterview)

VS0021 - Q5C. IS YOUR SCHOOL AFFILIATED WITH A RELIGION?

5c. Is your school affiliated with a religion?

A 'school affiliated with a religion' is defined as an elementary or secondary school that is either partially or fully supported/funded by a church, synagogue, or mosque.

Value	Label
1	Yes
2	No
3	Don't know
8	Residue
98	Refused

	Missing Data
9	Blank (SCS Noninterview)

SCS213 - Q17. THINKING ABOUT THE NEIGHBORHOOD WHERE YOUR SCHOOL IS LOCATED, THERE IS A LOT OF CRIME IN THE NEIGHBORHOOD WHERE YOU GO TO SCHOOL

17. Thinking about the neighborhood where YOUR SCHOOL is located, would you strongly agree, agree, disagree, or strongly disagree with the following...?

There is a lot of crime in the neighborhood where YOU go to SCHOOL.

Value	Label
1	Strongly Agree
2	Agree
3	Disagree
4	Strongly Disagree
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0073 - Q22A. DURING THIS SCHOOL YEAR, HAS ANOTHER STUDENT: MADE FUN OF YOU, CALLED YOU NAMES, OR INSULTED YOU, IN A HURTFUL WAY?

22a. Now I have some questions about what students do during school that make you feel bad or are hurtful to you. These could occur in person or using

technologies, such as a phone, the Internet, or social media. We often refer to this as being bullied. During this school year, has any student bullied you? That is, has another student...

Made fun of you, called you names, or insulted you, in a hurtful way?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0074 - Q22B. DURING THIS SCHOOL YEAR HAS ANOTHER STUDENT: SPREAD RUMORS ABOUT YOU OR TRIED TO MAKE OTHER DISLIKE YOU?

22b. That is, has another student...

Spread rumors about you or tried to make others dislike you?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

SCS294 - Q22C. DURING THIS SCHOOL YEAR HAS ANOTHER STUDENT: PURPOSELY SHARED YOUR PRIVATE INFORMATION,

PHOTOS, OR VIDEOS IN A HURTFUL WAY

22c. That is, has another student...
 Purposely shared your private information, photos, or videos in a hurtful way?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0075 - Q22D. DURING THIS SCHOOL YEAR HAS ANOTHER STUDENT: THREATENED YOU WITH HARM?

22d. That is, has another student...
 Threatened you with harm?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0076 - Q22E. DURING THIS SCHOOL YEAR HAS ANOTHER STUDENT: PUSHED YOU, SHOVED YOU, TRIPPED YOU, OR SPIT ON YOU?

22e. That is, has another student...
 Pushed you, shoved you, tripped you, or spit on you?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0077 - Q22F. DURING THIS SCHOOL YEAR HAS ANOTHER STUDENT: TRIED TO MAKE YOU DO THINGS YOU DID NOT WANT TO DO?

22f. That is, has another student...
 Tried to make you do things you did not want to do, for example, give them money or other things?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0078 - Q22G. DURING THIS SCHOOL YEAR HAS ANOTHER STUDENT: EXCLUDED YOU FROM ACTIVITIES ON PURPOSE?

22g. That is, has another student...
 Excluded you from activities, social

media, or other communications to hurt you?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0079 - Q22H. DURING THIS SCHOOL YEAR HAS ANOTHER STUDENT: DESTROYED YOUR PROPERTY ON PURPOSE?

22h. That is, has another student...

Destroyed your property on purpose?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0080 - Q23A. DURING THIS SCHOOL YEAR, HOW MANY DAYS WERE YOU BULLIED?

23a. During this school year, how many days were you bullied? [READ ANSWER CATEGORIES]

Value	Label
1	One day
2	Two days
3	Three to ten days

4	More than ten days
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0113 - Q36B. DID YOU STAY AWAY FROM ANY OF THE FOLLOWING PLACES: SHORTEST ROUTE TO SCHOOL

36b. During this school year, did you ever STAY AWAY from any of the following places because you thought someone might attack or harm you there?

For example, did you ever stay away from...

The shortest route to school, because you thought someone might attack or harm you?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0114 - Q36C. DID YOU STAY AWAY FROM ANY OF THE FOLLOWING PLACES: THE ENTRANCE INTO THE SCHOOL

36c. During this school year, did you ever STAY AWAY from any of the following places because you thought

someone might attack or harm you there?

The entrance into the school?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0115 - Q36D. DID YOU STAY AWAY FROM ANY OF THE FOLLOWING PLACES: ANY HALLWAYS OR STAIRS IN SCHOOL

36d. During this school year, did you ever STAY AWAY from any of the following places because you thought someone might attack or harm you there?

Any hallways or stairs in school?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0116 - Q36E. DID YOU STAY AWAY FROM ANY OF THE FOLLOWING PLACES: PARTS OF THE SCHOOL CAFETERIA

36e. During this school year, did you ever STAY AWAY from any of the following places because you thought someone might attack or harm you there?

Parts of the school cafeteria or lunchroom?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0117 - Q36F. DID YOU STAY AWAY FROM ANY OF THE FOLLOWING PLACES: ANY SCHOOL RESTROOMS

36f. During this school year, did you ever STAY AWAY from any of the following places because you thought someone might attack or harm you there?

Any school restrooms?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0118 - Q36G. DID YOU STAY AWAY FROM ANY OF THE

FOLLOWING PLACES: OTHER PLACES INSIDE THE SCHOOL BUILDING

36g. During this school year, did you ever STAY AWAY from any of the following places because you thought someone might attack or harm you there?

Other places inside the school building?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0119 - Q36H. DID YOU STAY AWAY FROM ANY OF THE FOLLOWING PLACES: SCHOOL PARKING LOT

36h. During this school year, did you ever STAY AWAY from any of the following places because you thought someone might attack or harm you there?

School parking lot?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0120 - Q36I. DID YOU STAY AWAY FROM ANY OF THE FOLLOWING PLACES: OTHER PLACES ON SCHOOL GROUNDS

36i. During this school year, did you ever STAY AWAY from any of the following places because you thought someone might attack or harm you there?

Other places on school grounds?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

SCS208 - Q36J. DID YOU STAY AWAY FROM ANY OF THE FOLLOWING PLACES: SCHOOL BUS OR BUS STOP

36j. During this school year, did you ever STAY AWAY from any of the following places because you thought someone might attack or harm you there?

School bus or bus stop?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0121 - Q37A. DID YOU AVOID ANY ACTIVITIES AT YOUR SCHOOL BECAUSE YOU THOUGHT SOMEONE MIGHT ATTACK OR HARM YOU?

37a. Did you AVOID any activities at your school because you thought someone might attack or harm you?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0122 - Q37B. DID YOU AVOID ANY CLASSES BECAUSE YOU THOUGHT SOMEONE MIGHT ATTACK OR HARM YOU?

37b. Did you AVOID any classes because you thought someone might attack or harm you?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0123 - Q37C. DID YOU STAY HOME FROM SCHOOL BECAUSE

YOU THOUGHT SOMEONE MIGHT ATTACK OR HARM YOU?

37c. Did you stay home from school because you thought someone might attack or harm you in the school building, on school property, on a school bus, or going to or from school?

Value	Label
1	Yes
2	No
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0124 - Q38A. HOW OFTEN ARE YOU AFRAID THAT SOMEONE WILL ATTACK OR HARM YOU IN THE SCHOOL BUILDING/PROPERTY?

38a. How often are you afraid that someone will attack or harm you in the school building or on school property?

[READ ANSWER CATEGORIES]

Value	Label
1	Never
2	Almost never
3	Sometimes
4	Most of the time
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0125 - Q38B. HOW OFTEN ARE YOU AFRAID THAT SOMEONE WILL ATTACK OR HARM YOU ON A SCHOOL BUS OR ON THE WAY TO AND FROM SCHOOL?

38b. How often are you afraid that someone will attack or harm you on a school bus or on the way to and from school? [READ ANSWER CATEGORIES]

Value	Label
1	Never
2	Almost never
3	Sometimes
4	Most of the time
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

VS0126 - Q38C. BESIDES THE TIMES YOU ARE ON SCHOOL PROPERTY OR GOING TO OR FROM SCHOOL, HOW OFTEN ARE YOU AFRAID THAT SOMEONE WILL HARM YOU?

38c. 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? [READ ANSWER CATEGORIES]

Value	Label
1	Never
2	Almost never
3	Sometimes

4	Most of the time
8	Residue
98	Refused
99	Don't know
	Missing Data
9	Blank (SCS Noninterview)

SCS214 - SCHOOL REGION

Notes: This variable was obtained by matching respondent-attended school to the 2020-2021 Common Core of Data (CCD) file (version as of 02092022) or the 2019-2020 Private School Universe Survey (PSS).

Value	Label
1	Northeast
2	Midwest
3	South
4	West
8	Residue
	Missing Data
9	Blank (SCS Noninterview)

SCS215 - SCHOOL TYPE

Notes: This variable was obtained by matching respondent-attended school to the 2020-2021 Common Core of Data (CCD) file (version as of 02092022) or the 2019-2020 Private School Universe Survey (PSS).

Value	Label
1	Public school
2	Private school, no religious affiliation data reported
3	Private, Roman Catholic school
4	Private, other religious school

5	Private, nonsectarian school
8	Residue
	Missing Data
9	Blank (SCS Noninterview)

SCS217 - SCHOOL LEVEL

Notes: This variable was obtained by matching respondent-attended school to the 2020-2021 Common Core of Data (CCD) file (version as of 02092022) or the 2019-2020 Private School Universe Survey (PSS).

Value	Label
1	Elementary
2	Middle
3	Secondary
4	High
5	Other
6	Missing
7	N/A
8	Residue
	Missing Data
9	Blank (SCS Noninterview)

SCS218 - SCHOOL ENROLLMENT SIZE

Notes: This variable was obtained by matching respondent-attended school to the 2020-2021 Common Core of Data (CCD) file (version as of 02092022) or the 2019-2020 Private School Universe Survey (PSS).

Value	Label
1	Less than 300
2	300-599
3	600-999

4	1,000-1,499
5	1,500-1,999
6	2,000 or more
7	Missing
8	Residue
	Missing Data
9	Blank (SCS Noninterview)

Appendix C. Full sociodemographic characteristics table

Table 3

Sociodemographic Characteristics of the Sample

	n	%
Sex		
Male	2409	53.5
Female	2096	46.5
Race		
White	3467	77.0
Non-White	1038	23.0
Grade		
Sixth	400	8.9
Seventh	704	15.6
Eighth	732	16.2
Ninth	727	16.1
Tenth	689	15.3
Eleventh	643	14.3
Twelfth	611	13.6
Other	3	0.1
Annual Household Income		
Less than \$34,999	775	17.2
\$35,000 - \$39,999	211	4.7
\$40,000 - \$49,999	337	7.5
\$50,000 - \$74,999	722	16.0
\$75,000 - \$99,999	646	14.3
\$100,000 - \$149,000	770	17.1
\$150,000 - \$199,999	465	10.3
\$200,000 or more	579	12.9
	Mean	SD
Age	14.7	1.9

Note. Totals may not add to 100% due to rounding

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