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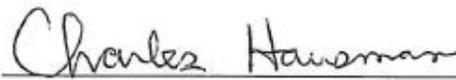
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ASSOCIATIONS BETWEEN SCHOOL SAFETY AND BEHAVIORAL HEALTH ISSUES: A
MULTIVARIABLE STUDY OF A LARGE SCHOOL SAMPLE IN KENTUCKY

BY

PATRICIA M. CLARK

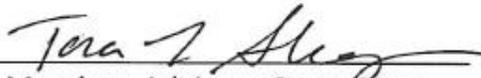
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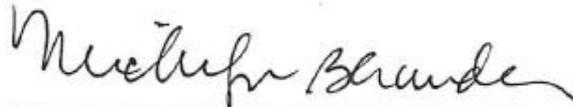
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Date: 10/9/2019

ASSOCIATIONS BETWEEN SCHOOL SAFETY AND BEHAVIORAL HEALTH ISSUES:
A MULTIVARIABLE STUDY OF A LARGE SCHOOL SAMPLE IN KENTUCKY

BY

PATRICIA M CLARK

Submitted to the Faculty of the Graduate School of
Eastern Kentucky University
in partial fulfillment of the requirements for the degree of

DOCTORATE OF EDUCATION

2019

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DEDICATION

This dissertation is dedicated to behavioral health prevention professionals around the globe, but especially those within the Kentucky Regional Prevention Center system, who seek to deliver services with a data-driven focus that ensures our resources are directed at the communities and populations in greatest need of our passion and commitment to change their corner of the world. To begin to name each would mean that I'd surely miss someone, but know that each of you walked with me each step of the way in this work. My wish and hope are that these results provide you with an extra serving of social capital that allows you to articulate your value and take your place at the table in the fight to address substance use, mental health issues, and their related consequences for our children, their families and communities.

ACKNOWLEDGEMENTS

This dissertation is the product of four years of hard work, long days, and short nights, but even more so, the pieces of everyday personal and professional life woven into each line. It would not have been possible without the support and guidance of so many, who walked with me, held my hand, and gave time and talents to this effort.

First, and foremost of those is my incredible husband, Brian, and our daughters, Samantha and Emily. I thank you for your never-ending love and belief in me. To my parents, Ray and Carol McCarty, thank you for instilling in me the value of persevering until a job is complete. Thank you to my family and friends for being constant voices of encouragement and support.

Thank you to the Prevention Branch staff who knew when to offer guidance and when to take something else off my plate so that I could focus on completing this work. I couldn't have done it without you. Thanks to REACH Evaluation, Margaret Pennington, Dr. Ben Birkby, Dr. Teresa McGeeney and Lisa Crabtree for their dedication to the KIP Survey and the importance it plays for prevention in Kentucky. Special thanks to Dr. McGeeney who answered countless emails during evenings and weekends.

To my chair, Dr. Charles Hausman, thanks for your guidance and support through this process. Thanks also to my committee members, Dr. Tara Shepperson, Dr. Michelyn Bhandari, and Dr. Nicholas Peiper. I am thankful for the time each of you has given for this effort and honored that you agreed to guide this process.

ABSTRACT

The perception of feeling safe in school impacts academic achievement of students. As the number of school shootings has grown, implementing effective school safety plans has become a significant job duty of educators. There is some conflict in the exact constructs that fit within the school safety definition and often behavioral health issues are not addressed as part of the school safety planning process. Research shows that when students don't feel safe their behavioral health issues increase (Fletcher, A., Bonell, C., Sorhaindo, A., & Strange, V., 2009). The multivariable regression study identified the association of substance use, mental health issues, personal victimization and problem behaviors on the perception of safety among middle and high school students in Kentucky schools, utilizing results from the 2016 administration of the KIP youth survey in order to determine the role of these constructs in developing school safety responses. Analysis of the results found a strong association between the perception of safety and substance use, mental health, personal victimization and problem behaviors of Kentucky students. Analysis also identified that being in high school, being any race other than White, and being male also increased the perception of feeling unsafe at school. Understanding the associations between these issues will allow prevention professionals and school administrators to work collaboratively to address the issues that impact the perception of school safety and to increase the overall safety of students and staff. The results of the study will enhance delivery of comprehensive prevention efforts focused on the variables of interest as one method of improving the perception of safety in the educational setting.

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1. INTRODUCTION

Introduction to the Problem

Every school year, as students load their backpacks with new supplies, staff prepare for their arrival to the classroom by reviewing policies, updating professional skills, and cleaning and renewing school facilities. School safety procedures are often included in policy review, but these policies may not address the impact on the perception of school safety by students with behavioral health issues (i.e. substance use, mental health issues, personal victimization, and problem behaviors), how the perception of safety impacts students with these issues, and how these interconnected issues impact academic achievement.

Research shows that school climate has a significant impact on the academic success of students (McEvoy & Welker, 2000) and that school environment is interrelated with behavioral health and academic success among students (Rothon, et al., 2009). The National School Climate Center (2017) proposed that feeling safe in school is necessary for learning, and for physical, emotional and social development. School climate is influenced by the perception of safety (Kitsantas, Ware, & Martinez-Arias, 2004). Verdugo and Schneider (1999) found that school violence, which is associated with the perception of safety, is inversely related to academic performance. Schools with higher levels of violence have lower levels of academic achievement. Schools perceived as safe are those that protect students from violence, exposure to weapons and theft, and the sale or use of illegal substances on school grounds, (American Institutes for Research, n.d.).

Students who do not feel safe in school have an increased risk of substance use and psychological distress (suicidal behavior) and other problem behaviors resulting in decreased academic success (Rothon, et al., 2009). Crime and substance use at a school are strongly correlated to school-wide test scores, graduation rates, and attendance rates (American Institutes for Research, n.d.). Substance use is also correlated with problem behaviors and violence, to include carrying weapons – such as guns and knives - to school (Grunbaum, Torolero, Weller, & Gingiss, 2000). Results from the 2016 implementation of the Kentucky Incentives for Prevention (KIP) statewide youth survey found that nearly 20% of middle and high school students in Kentucky reported substance use; more than 6% report attempting suicide in the past year; while nearly 12% also reported feeling unsafe in their school (Sanders, et al., 2017a). Addressing behavioral health issues as a component of school safety and climate is imperative in increasing the academic thriving of students in Kentucky schools.

Statement of the Research Problem

Significant attention is focused on improving school safety, and for good reason. Improved perception of safety has been correlated in research to improved academic performance of students (American Institutes for Research, n.d.; McEvoy & Welker, 2000; Verdugo & Schneider, 1999). Few Kentucky schools recognize the importance of including prevention of substance use, mental health issues, personal victimization, and problem behaviors within their safety plans, increasing the perception that school is not safe. This is despite research that shows that modifying the school environment has an impact on behavioral health issues, and a lack of safety has been found to be an

additional driver of behavioral health problems among students (Fletcher, A., Bonell, C., Sorhaindo, A., & Strange, V., 2009).

In 2016, some 12% (13,404) of middle and high school students who participated in the KIP survey said they felt unsafe at school (Sanders, et al., 2017b). To date, there has been little if any research that shows the independent association of the perception of school safety with substance use, mental health issues, personal victimization, and problem behaviors. In order to understand the interconnectedness of these issues within Kentucky schools, it is important that this multivariate associational study be conducted to determine which of these factors are most associated with school safety, in order to focus interventions aimed at improving the perception of safety.

Background of the Problem

School safety is an important component of a school's culture and climate. Safety is considered one of the most basic of needs of humans, preceded only by hunger and thirst (Maslow, Frager, Fadiman, McReynolds, & Cox, 1970). Every school year, school administrators and staff review hazardous weather policies, conduct fire drills and shelter-in-place drills, despite low numbers of students who have been impacted by these types of disasters. Many districts have added active shooter drills to their list of procedures to conduct or review at the beginning of a school year. In light of recent high-profile school shootings (e.g. Parkland, Florida, Marshall County, Kentucky), emphasis has been placed on increasing safety and reducing school violence, specifically, reducing the likelihood that armed shooters may enter a school and injure or kill students and staff. Again, this emphasis comes despite low numbers of deaths of

students in these scenarios. Since April 20, 1999, when 13 people died in a shooting at Columbine High School in Colorado, 362 people in 704 school shooting incidents have died in shootings on a school campus in the United States (Center for Homeland Defense and Security, 2019). There have been 14 shooting incidents in Kentucky school since 1970. In contrast, about 25% of Kentucky students deal with substance use, mental health issues, personal victimization or problem behaviors every school year (Sanders, 2017b), indicating the significant need to address these issues within the school safety planning process.

School climate became an important construct in educational systems more than a century ago when Arthur Perry (1908), a principal from New York City, defined the concept. Few researchers agree on the exact components that make up the school climate contexts. But most agree that school climate is constructed from the academic, community, safety and institutional environments (Wang & Degol, 2016); the shared norms, beliefs and behaviors of students and staff (Emmons, Comer, & Haynes, 1996; Johnson, Pas, & Bradshaw, 2015; LaSalle, Meyers, Varjas, & Roach, 2015); and discipline, safety, order, clarity of school rules and perception of their enforcement, as well as teacher-student relationships (Brand, Felner, Shim, Seitsinger, & Dumas, 2003; Cohen, McCabe, Michelli, & Pickeral, 2009; Furlong, et al., 2005; Griffith, 2000; Haynes, Emmons, & Ben-Avie, 1997; Haynes, Emmons, & Comer, 1993; McGeeney, Clark, & Birkby, 2017; Wilson, 2004). Hernández and Seem (2004) added psychosocial variables to the list.

Student Perception of Safety. Statewide school surveys highlight the importance of addressing the perception of student safety. In Kentucky, the perception of safety has fluctuated based on grade level since the perception of safety question was added to the KIP survey in 2004. In the 6th, 8th and 10th grades, the percentage of students who reported they felt “unsafe” or “very unsafe” started out higher, dipped to a low in 2010 and began climbing again through 2016 (Sanders, et al., 2017b). For 12th graders, the percentage of students who reported higher levels of feeling unsafe continued dropping through 2016. In 2016, nearly 15% of Kentucky’s 10th graders reported feeling “unsafe” or “very unsafe” at school; nearly 25% reported that they have been verbally threatened in the last year; and nearly 25% also reported they have had items forcibly stolen from their desk, locker or other place at school (Sanders, et al., 2017b). Additionally, 9.5% of 10th graders reported they had been physically threatened or attacked at school; 9.1% reported unwanted sexual advances in school; and nearly 23% reported they had been bullied on school property (Sanders, et al., 2017b). More than 15% of Kentucky students reported they experienced psychological distress in the last 30 days; 11.8% of students reported suicidal ideation in the last year; and 9.2% reported developing a suicide plan in the last 12 months (Sanders, et al., 2017b). Additionally, 6.3% of middle and high school students participating in the 2016 administration of the KIP survey reported a past-year suicide attempt (Sanders, et al., 2017b).

Kentucky has some unique characteristics that may impact the perception of safety among students. The state’s rural nature and the increased cultural access to weapons may have an impact on the perception of safety by students. Since 2004, the

percentage of students who reported they have access to weapons has nearly doubled, increasing from 6% to more than 11% in 2016 (Sanders, et al., 2017b). Lack of access to mental health services may also play a role in the increase in the percentage of students who report feeling unsafe. One-quarter of all children in the state between the ages of 2 and 17 have one or more emotional, behavioral or developmental issues (The Annie E. Casey Foundation, 2019). Cowan, Vaillancourt, Rossent, and Pollitt (2013) found that students should have access to school-based mental health services and supports, as access to those services and supports directly impact and improve the perception of physical and psychological safety. The overall ratio of mental health providers to residents is 490:1, with urban centers in Fayette, Jefferson and Kenton counties having the lowest ratio between residents and mental health providers (University of Wisconsin, 2019). In more rural communities, the ratio can be as low as 9,080:1. Kentucky's access to behavioral health care providers depends significantly on which part of the state someone lives.

Lack of training for staff and students is another factor present in Kentucky that may increase the perception that schools are not safe. The state's school districts are considered "local rule" with community school governing bodies determining the implementation of curriculum, policies and procedures. While state legislation requires all school staff members to receive one-hour of suicide prevention training; all middle and high school students to receive some type of suicide prevention information; and all students to receive substance use prevention, the actualization of these requirements at the local level varies. Additionally, safety assessments are now required in the state

with assessment tools provided by the Center for School Safety. However, no funds have been allocated for delivery of these services, and no professional development for staff has been mandated.

Risk Factors for Feeling Unsafe at School. Addressing the underlying issues related to the perception of safety is a key component of improving academic success of students. The perception of school safety results from any action that can impact a student's sense of well-being (Kitsantas, et al., 2004). Safety issues can be self-inflicted (e.g. substance use or mental health issues) or imposed by others (e.g. personal violence, problem behaviors) (Duke, 2002). In order to achieve academically, students must perceive their learning environment to be safe. Safety measures should balance physical and psychological safety, avoiding overly restrictive measures such as armed guards and metal detectors, and combining reasonable security measures such as monitored public spaces with efforts to enhance school climate, building relationships and reporting threats (Cowan, et al., 2013). Research also shows that adolescents who report suicidal ideation, depressive symptoms and substance use are also more likely to carry weapons to school and points to the fact that risky behaviors tend to cluster (Holmberg & Hellberg, 2007; Kim, Koh, & Levanthal, 2005; Kshirsagar, Agarwal, & Bavdekar, 2007; Park, Schepp, Jan, & Koo, 2006; Saner & Ellickson, 1996; Siziya, Muula, Kazembe, & Rudatsikira, 2008). Additionally, student issues such as substance use, mental health issues, personal victimization and problem behaviors have been correlated with the overall school environment (Bond, et. al., 2007; Bonell, Fletcher, & McCambridge, 2007; Flay, 2000; Nutbeam, Smith, Moore, & Bauman, 1993)

underscoring research by Muula, Rudatsikira, and Siziya (2008) that a multi-problem, multi-faceted prevention approach is the best way to address multiple issues among youth, such as substance use, mental health issues, personal violence and problem behaviors that impact the perception of school safety.

Theoretical Framework

The theoretical framework for this study is based on the concepts of Catalano and Hawkins' Social Development Model (1996), which utilizes the previous research on risk and protective factors to address the pathways that lead to substance use, crime and delinquency, and to guide the development of prosocial behavior, as opposed to supporting antisocial behavior. As schools face the threat of increased safety-related events, identifying the pathways that lead to the behaviors involved is essential in designing appropriate and effective prevention efforts that have long-term outcomes of improved physical, verbal and emotional safety for all students and staff within a school system. Figure 1.1 illustrates the components of the Social Development Theory at the high school level, and the potential moderating effects at each level.

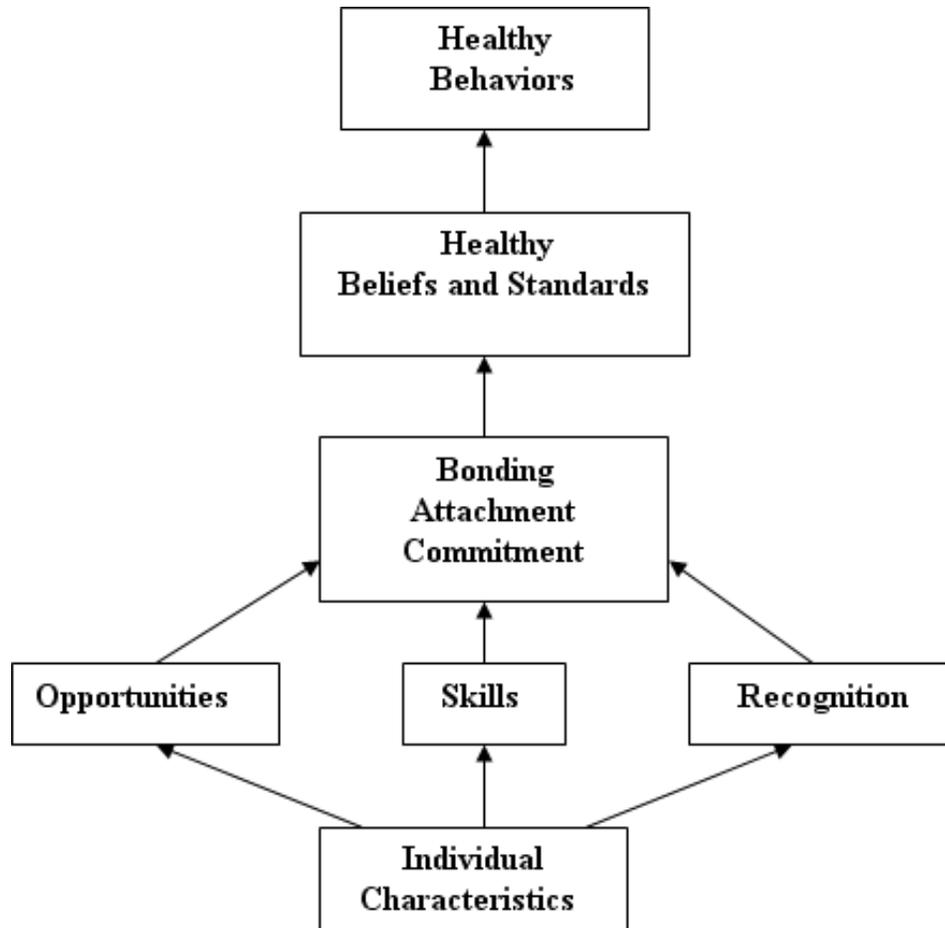


Figure 2.1. Model of Social Development. Graphic illustration of The Model of Social Development Period. Source: Center for Community Health and Development (2017)

The Social Development Model connects a person’s position in the social structure (age, gender, race, socio-economic status), their constitutional or psychological factors (cognitive ability, central nervous system disorders such as high anxiety levels, or Attention Deficit Disorder), and external constraints (environment, rules, order, perception of fair enforcement of rules) to pro- and anti-social behavior (Catalano & Hawkins, 1996). Additionally, it utilizes the concept of risk and protective factors as pathways to these behaviors. Multiple factors at the biological, psychological

and social levels exist within contexts (individual, relational, community and society), influence behaviors, and contribute to decisions toward behaviors. Risk factors increase the likelihood that a person will participate in or experience anti-social behaviors, such as peer victimization, violence, psychological distress, and substance use. Protective factors mediate those risks by providing alternatives to risky choices and behaviors. They include, for example, connection to trusted adults, perception of clear and fairly enforced rules, order, and opportunities to participate in pro-social activities (Hawkins, et al., 1997; Hawkins, Catalano, & Miller, 1992).

The Social Development Theory includes the concept of the development of an individual as a product of the interactions he or she has acquired over their lifetime. Catalano and Hawkins (1996) propose that past behaviors and experiences influence future actions. Research shows that contextual forces impact individual development (Cicchetti, 1991). Agnew (1985) found that a belief in the policies and procedures of an environment impact the legitimacy of those policies and procedures. A student who believes that a bullying policy is fairly enforced, therefore, is more likely to abide by that policy. The theory also supports the concept that experiences across the lifespan can change these beliefs and, in turn, impact future actions (Shaw & Bell, 1993). For example, when a student who believes in the policy finds it has not been fairly enforced, they may later choose to ignore the policy, participating in anti-social behaviors. The opposite can also occur. A substance-using student, when confronted through prevention services with the realities of alcohol use, may begin to understand the

impact of continued use on his or her future success and select a different behavior pathway.

In this study, I considered the association between the risk factors of substance use, mental health issues, personal victimization and problem behaviors and the perception of school safety among middle and high school students in Kentucky schools.

Figure 1.2 highlights the theoretical framework of this study.

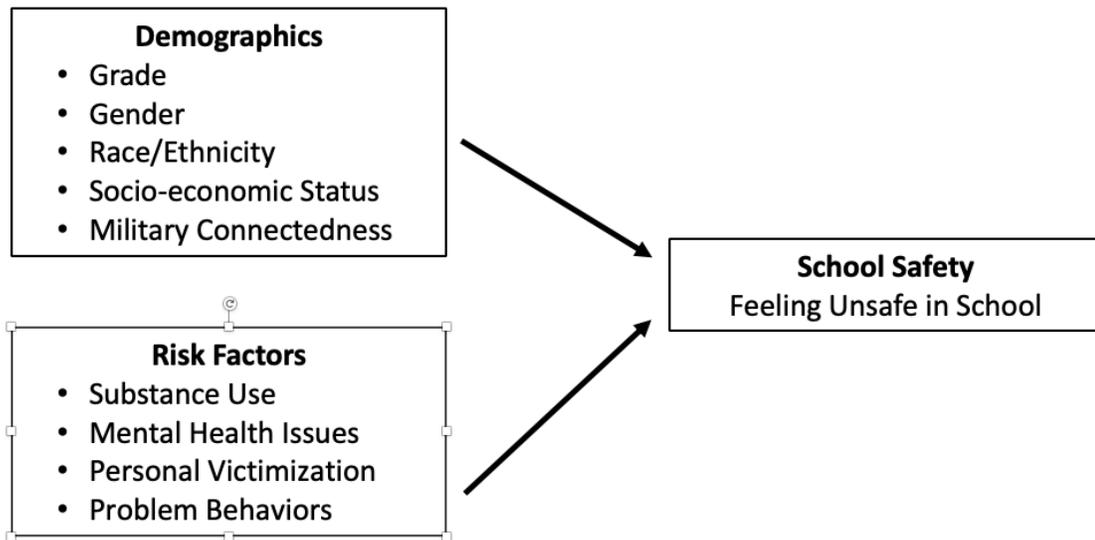


Figure 1.2. Theoretical framework of research study. Processing tree model for the proposed paradigm. Rectangles on the left show the demographic covariates and the risk factors that serve as the independent variables and influence the perception of safety in the study.

Significance of Research

This study investigated associations between the perceptions of school safety with substance use, mental health, personal victimization, and problem behaviors.

Currently, no similar study has been conducted with Kentucky-specific data to

investigate associations between the perception of school safety and key risky behaviors. Kentucky is a rural state with limited access to substance use and mental health providers. More than 90% of its counties have been designated as rural (Kasat, et al., 2016). Its rural nature also increases the stigma attached to seeking help for these issues, which are often perceived as moral failures where 76% of the population is Christian (Religious Landscape Study, 2014). Two major school shootings – Heath High School in 1997 and Marshall High School in 2018 - have occurred in the state. Legislative action has mandated the increase in school safety measures, including physical barriers and psychological supports, but no funding has been attached to new statutes. Middle and high school students in Kentucky report significant increases in access to handguns over the last six years. The state is experiencing high mortality rates connected to substance use and suicide rates, especially among young children under the age of 14. These factors make it imperative to identify the magnitude of the identified risk factors and their connection to the perception of school safety using Kentucky specific data rather than national norming measures.

The study is expected to provide insight into the significance of addressing these problem behaviors as a method of addressing the perception of school safety and, decreasing safety-related events. Identifying the magnitude of the associations between the risk factors of interest and school safety will allow educational leaders and prevention professionals to develop and implement evidence-informed interventions that should reduce the prevalence of the risk factors while increasing the perception of safety, and the academic achievement of students. Additionally, the results will provide

prevention professionals across the state association data needed to discuss with school administrators the importance of providing prevention in the school structure, offering a value-added component to the collaborative partnership that exists in many communities between prevention providers and school staff.

Methodologies/Research Questions

The purpose of this study is to identify the association of substance use, mental health issues, personal victimization and problem behaviors with the perception of school safety among middle and high school students in Kentucky. The study identified the implications for collaborative work between school administrators and prevention professionals. The analysis of secondary data utilized results from the 2016 administration of the KIP youth survey. The KIP surveys all 6th, 8th, 10th and 12th graders in participating Kentucky schools on a biennial basis. The 2016 administration involved 111,700 students from schools in 113 out of 120 Kentucky counties. Students from 149 of Kentucky's 173 public school districts participated (Sanders, et al., 2017a).

The dependent variable is defined as the perception of safety as measured by Question 11, "How safe do you feel at school?" on the 2016 KIP youth survey. The variables of interest include measures of substance use, mental health, personal victimization and problem behaviors. Age, gender, race, grade level, socio-economic level, and military connectedness were included. This study aims to answer the following questions:

RQ1: Do Kentucky middle and high school students who report substance use also report higher levels of feeling unsafe (answering “unsafe” or “very unsafe” on question 11 of the 2016 KIP Survey) in the school?

H1_o: There is not a significant relationship between substance use and the perception of feeling unsafe among students.

H1_a: There is a significant relationship between substance use and the perception of feeling unsafe among students.

RQ2: Do Kentucky middle and high school students who report mental health issues also report higher levels of feeling unsafe (answering “unsafe” or “very unsafe” on question 11 of the 2016 KIP Survey) in the school?

H2_o: There is not a significant relationship between mental health issues and the perception of feeling unsafe among students.

H2_a: There is a significant relationship between mental health issues and the perception of feeling unsafe among students.

RQ3: Do Kentucky middle and high school students who report personal victimization also report higher levels of feeling unsafe (answering “unsafe” or “very unsafe” on question 11 of the 2016 KIP Survey) in the school?

H3_o: There is not a significant relationship between personal victimization and the perception of feeling unsafe among students.

H3_a: There is a significant relationship between personal victimization and the perception of feeling unsafe among students.

RQ4: Do Kentucky middle and high school students who report problem behaviors also report higher levels of feeling unsafe (answering “unsafe” or “very unsafe” on question 11 of the 2016 KIP Survey) in the school?

H4_o: There is not a significant relationship between problem behaviors and the perception of feeling unsafe among students.

H4_a: There is a significant relationship between problem behaviors and the perception of feeling unsafe among students.

RQ5: Are there significant associations between students who report substance use (RQ1), mental health issues (RQ1), personal victimization (RQ3), and problem behaviors (RQ4) among Kentucky middle and high school students who also report higher levels of feeling unsafe (answering “unsafe” or “very unsafe” on question 11 of the 2016 KIP Survey) in the school, independent of other behavioral risk factors and student demographics?

H5_{1o}: There is not a significant association between substance use and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{1a}: There is a significant association between substance use and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{2o}: There is not a significant association between mental health issues and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{2a}: There is a significant association between mental health issues and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{3o}: There is not a significant association between personal victimization and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{3a}: There is a significant association between personal victimization and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{4o}: There is not a significant association between problem behaviors and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{4a}: There is a significant association between problem behaviors and feeling unsafe at school independent of other behavioral risk factors and student demographics.

As the literature shows that different characteristics serve as risk and protective factors, analyses were stratified by grade level, with three different models constructed: all students, middle school students, and high school students

Assumptions, Delimitations, and Limitations

Assumptions. Defining assumptions is necessary to ensure that no conflicting assumptions are being considered (Catalano & Hawkins, 1996). The assumptions for this study follow those of the Social Development Theory: human beings want to be successful and most individuals know and recognize the rules of society. The first assumption is derived from the social learning theory and recognizes that individuals are satisfaction seekers and that they behave based on the idea that the results of their behavior will provide a sense of personal satisfaction (Catalano & Hawkins, 1996, Tallman & Ihinger-Tallman, 1979.) The second assumption is that in knowing and following the rules, society is advanced and all individuals are better for following these rules. This assumption also includes the belief that prosocial behaviors are more often preferable to antisocial ones (Catalano & Hawkins 1996).

Three additional assumptions are made. The first is that the participating students responded to the self-report survey in an honest manner. In cases where responses are driven by social desirability and motivated misreporting, a control item on the survey allows responses to be removed. The next assumption is that the results are generalizable to the population of youth in Kentucky, the population of which this study is making inferences. And finally, the results are applicable to 2016. Additional analyses will be performed as future administration data sets are available.

Limitations. Limitations for this study include the largely rural nature of schools participating in the 2016 administration of the KIP survey; the self-report nature of the survey; the large sample size; the correlational, rather than causal, nature of the study; and the analysis of secondary data, limiting manipulation of study design.

The rural nature of a large number of cases in the study limits the generalizability of the results to suburban and rural students and may not be applicable to students in urban settings. Kentucky's largest, most urban district, Jefferson County, began participation in 2018, providing unprecedented amounts of data for urban students. Future proposed studies include the replication of this study to include that district, which will increase the applicability of results across multiple community sizes.

The KIP is a self-report survey answered by students between the ages of 11 and 18. While mechanisms are embedded into the administration process to ensure that over exaggeration of use is not reflected in the results, there are some considerations with youth accurately recalling whether a situation fell between the date range indicated in the questions (past 2 weeks, past 30 days, past 12 months). Overall however, self-report surveys with youth are more accurate than one-on-one interviews where students may choose to answer as they feel the interviewer expects them to answer, or in group settings where they may feel they have to prove something to other interviewees who are part of the group from which data are being collected. (REACH Evaluation, 2012).

The large sample size for this study presents the possibility of a potential Type I error, however, since many aspects of the study constitute fairly rare events, a large

sample size is necessary in order to sufficiently analyze the impacts of the variables of interest (Bachman, Johnston, O'Malley, & Schulenberg, 2011). As the sample size increases, the likelihood is greater that the analysis will detect a statistical difference between the variables.

Data from the KIP are cross-sectional, therefore, causal connections between variables cannot be inferred. However, associational connections can be made when differences noted are significant in this observational study. The study considered the degree and directionality of the impact of the independent variables on the dependent variable (either positive or negative). Observational studies are ones where investigators observe the effects of risk factors (e.g. substance use, mental health issues, personal victimization, and problem behaviors) without manipulating the study participants. For that reason, we are not in control of the independent and dependent variables. This is in contrast with experimental studies that involve random assignment to certain conditions and evaluating the effects on the outcomes of interest.

While the large sample size allows for nearly statewide generalizability of the results of the study, the analysis of secondary data creates an additional limitation in that the study design is limited to statistical manipulation of the existing case results. Additional known limitations of secondary analysis of existing data have been controlled for by selecting a data source whose original research question overlaps with the hypothesis of the current study. Investigation of the collection methods for the existing data also indicates that additional potential biases that could have been introduced have been controlled for as much as possible in the data collection process.

Delimitations. There are several delimitations from this study. First, data were only collected from middle and high school students in Kentucky schools whose administrators chose to participate in the survey during the collection period. Second, data were only collected from students who were present the day the survey was administered, and whose parents had not opted them out of participation in the study. Third, the study assumed that students answered the questions honestly. Checks are built into the survey administration to control for that issue, and additional measures, such as eliminating any students' answers who were not consistent from one time period (30 days) to another (12 months or lifetime), allow the elimination of cases that may not be accurate.

Summary

School safety is derived from a number of factors that constitute individual student behaviors as well as the climate of the facility. In order to improve the perception of safety, schools must understand the impact of risk factors – substance use, mental health issues, personal victimization and problem behaviors – and their relation to students' perception of their individual safety. Understanding the association between perceived safety and risk factors allows for prevention intervention to address underlying issues that in turn support safe and supportive schools in which students can learn and achieve success.

The purpose of this study was to examine the association between the perception of safety in school and substance use, mental health issues, personal victimization, and problem behaviors. Understanding the associations between these

issues will allow prevention professionals and school administrators to work collaboratively to address the issues that impact the perception of school safety and to increase the overall safety of students and staff. A safe school climate that is free from the underlying issues of the identified risk factors supports greater academic achievement of its students.

Definitions

Behavior Incident – A group of related behavior events linked by time, proximity and underlying issue. A behavior incident does not have to involve the same participants in the individual events.

Binge drinking- SAMHSA defines binge drinking as five or more drinks for men, four or more drinks for women on the same occasion, usually within a two-hour period.

Bullying – Unwanted behavior that is aggressive in nature, occurs repeatedly, and within a relationship of power imbalance. Bullying usually occurs in a face-to-face setting and often is classified in three types – verbal bullying, social bullying, and physical bullying.

Cyberbullying – Bullying that takes place over digital devices, usually through text, social media, instant messages, or other apps (such as Instagram and Snapchat) where individuals can view, participate in and share content. Cyberbullying is unique from bullying in that the information shared, often personal, becomes permanent, as does the responses and reactions to it. The act of bullying across digital devices increases the likelihood that cyberbullying will be persistent and that those in position to stop it will not notice the exchanges.

Illicit drug use – The use of substances that are considered illegal, such as cocaine, heroin, and marijuana (in Kentucky). Illicit drug use also includes the use of prescription drugs for uses not intended or different from doses prescribed.

Personal violence – a form of violence that is motivated by the desire to assert power, control or intimidation over another person. It includes relational violence, rape or sexual assault, stalking, force of threat, intimidation or harassment. On the KIP, personal violence is represented by having money forcibly taken, being verbally or physically threatened, and unwanted sexual advances by those inside or outside relationships.

Prevention – Steps taken to prevent something from happening or to lessen the consequences of the event. Primary prevention takes place before an incident or behavior occurs. Secondary prevention occurs after a behavior or incident but before significant consequences. Tertiary prevention occurs after a behavior or incident and significant consequences and is designed to mitigate the impact of those consequences or reduce subsequent behaviors that produced the consequences.

Problem behaviors – Types of behaviors that reduce the ability of a person to communicate effectively, maintain social relations, or reduce emotional learning. On the KIP they include behaviors such as: been suspended from school, carried a handgun, sold drugs, been arrested or been drunk or high at school.

Protective factor – A characteristic that decreases a person's likelihood of experiencing consequences from risky behaviors.

Psychological distress – Unpleasant or uncomfortable feelings or emotions that impact a person’s ability to function. Within the KIP Survey, psychological distress is a measure composed of six sub-measures that include feeling nervous, hopeless, restless or fidgety, worthless, depressed to the point that nothing could cheer someone up, and that everything was an effort.

Risk factor – A characteristic that increases a person’s likelihood of experiencing consequences from risky behaviors.

School climate/environment – The characteristics within a school facility or campus that shape the interactions between students, parents, teachers, administrators and other staff members. A school’s climate reflects in behaviors, policies and procedures the norms, beliefs and values of those who lead.

School safety – The prevention of behaviors or risk factors that increase the perception that students feel unsafe; determined by the measures and intervention implemented within the setting to address these issues.

Self-harm – Hurting oneself on purpose, not usually with the intent to die.

Serious violent crime – defined by The National Center for Education Statistics as “rape, sexual battery other than rape, physical attack, fight with a weapon, threat of physical attack with a weapon, and robbery with or without a weapon.”

Substance use – the use of illegal substances by all ages, or the use of legal substances by those who are underage (i.e. tobacco use, or alcohol use) and or in a way not intended (i.e. prescription drugs)

Suicidal behavior – a wide range of activities related to causing or contributing to one's own death that range from non-suicidal self-injury to death, and include thinking about suicide, planning suicide, and attempting suicide.

Suicide attempt – A suicide attempt is an individual's behaviors that are intended to result in their death, but which does not do so.

Youth suicide death – Death by an individual under the age of 24 that is caused by their own actions as an attempt to reduce or eliminate psychological pain.

2. LITERATURE REVIEW

School as a Safe Place

School safety ensures an environment that is safe and welcoming for all students (Elliot, 2015). Researchers describe a safe school as one that is without physical violence, but acknowledge that the perception of safety is much more complex and much broader than just a building without violence (Bosworth, Ford, & Hernández, 2011). Students perceive safety at school when they are provided a violence-free learning environment along with fair and consistently enforced rules, and caring staff members. Mennis and Mason (2011) found that adolescents correlate safety with the presence of authority figures, such as teachers and safety officers, as well as having staff who “watch over you” (p. 284). They also identified consistent enforcement of rules as another important indicator of a safe place for students. Younger adolescents are more likely to perceive the school as a safe place compared to older adolescents, potentially as a result of fewer school safety events reported among younger students. Despite recent concerns about school safety as a result of school shootings, research finds that schools are relatively safe places and that students are more likely to face violent acts outside of school facilities (Dinkes, Kemp, & Baum, 2009; Hyman, et al., 1997).

Feelings of fear and being unsafe coupled with physical and emotional injury at school can have long-term consequences on students (Akiba, 2010; Brown & Benedict, 2004; National Center of Education Statistics, 2012). The perception that school is unsafe can contribute to adverse effects on attendance rates and academic achievement (DuRant, Kahn, Beckford, & Woods, 1997; Flannery, Wester, & Singer

2004; Schwartz, Gorman, Nakamoto, & Toblin, 2005). A report from the Centers for Disease Control and Prevention (2012) found that close to 6% of students reported that they had missed school because they were concerned about their safety.

Perception of Safety

Addressing the perception of safety is vital in making students feel safe even though the overall impact may be small (Cunningham, 2007; Garcia-Reid, Reid, & Peterson, 2005; Hallinan, 2008; Holt & Espelage, 2003; Shochet, Smyth, & Homel, 2007; Whitlock, 2006). The perception of safety is considered potentially more important than concrete safety measures (Dinkes, Cataldi & Lin-Kelly, 2007; Goldstein, Young & Boyd, 2008) and necessary so that students may concentrate on academics (Bryk, Sebring, Allensworth, Easton, Luppescu, 2010). Perception of safety increases the sense of school belonging (Allen, Kern, Vella-Brodrick, Hattie & Waters, 2018). School belonging is defined by Goodenow and Grady (1993) as “the extent to which students feel personally accepted, respected, included and supported by others in the school environment” (pg. 61). In comparison, when students attend schools which they perceive to be unsafe, they are more likely to perpetuate violence on other students or to be victimized (Elsaesser, Gorman-Smith, & Henry, 2013). Research by Steinberg, Allensworth and Johnson (2011) found that quality of relationships between students, school staff, and security personnel, along with lower levels of aggression, may be a greater predictor of perceived safety than the number of violent incidents in a school.

Perception of safety and school policies. Perception of safety may also be increased through the presence and consistent enforcement of policies. Burdick-Will

(2013) describes order and discipline as essential to the perception of school safety, citing that the degree to which students adhere to school rules, the consistency of discipline among all students, and the methods used to address school violence play a crucial role in improving the perception of safety. Schools where discipline is administered consistently and social supports are provided experience fewer school referrals for bullying and victimization (Gottfredson, Gottfredson, Payne & Gottfredson, 2005; Shirley & Cornell 2012). Schools with bullying policies and perceived consistent enforcement of those policies have lower suicide ideation among middle and high school students (McGeeney, et al., 2017). Students who perceive rules to be unfairly enforced have a greater risk of being involved in violence than students who perceive a fair enforcement of policies and procedures (Schreck, Miller, & Gibson, 2003).

When school is not perceived as safe. School violence, defined as the control of physical or psychological rights or property within the school setting through the use of verbal, physical or psychological force (Elliott, Hamburg, & Williams, 1998), manifests itself in a variety of manners, including verbal and emotional abuse, and physical attacks with or without a weapon (Small & Tetrick, 2001). School violence is observed across all levels of education but is most prevalent among secondary students (Larsen, 2003; Miller, 2003; Robers, Kemp, Rathbun & Morgan, 2014) and in alternative schools (Grunbaum, Kann, & Lowry, 2001). Boxer, Edwards-Leeper, Goldstein, Musher-Eizenman, and Dubow, (2003) found verbal abuse to be just as damaging to victims as physical abuse. Violence in schools correlates with lowered self-esteem, student achievement, and connectedness to school and activities; increased feelings of

helplessness, fear and insecurity; and truancy and classroom disruption impacting instructional time and increasing dislike of school for all students (Bowen & Bowen, 1999; Flannery, et al, 2004; Macmillian & Hagan, 2004; McNally, 2003; Payne, Gottfredson, & Gottfredson, 2003).

Safety within the school building. Providing a safe school environment is an integral role of local, state and national educators and must be responsive to the changing means through which safety is threatened. Jon Akers, executive director of the Kentucky Center for School Safety stated: “School safety must be fluid, reflecting the ever-changing dynamics of the society in which we live today” (Kentucky Center for School Safety, 2016, p. 2). In order to stay abreast of school safety issues, the KCSS completes annual school safety assessments that monitor for a variety of school safety related issues. In the 2016-17 school year, the Center completed 105 assessments, identifying staff-to-student connectivity; student supervision; safety of buildings; communication of rules and policies, and consistent enforcement of those rules; anti-bullying and anti-harassment policies; resources for students with mental health issues; and emergency management planning as issues related to improving the safety of students in schools (KCSS, 2016).

Kentucky’s school assessment findings align with research and practice. Research found that safety measures should encompass both physical safety and emotional or psychological safety. Physical safety is reflected in the physical safety measures that are put in place in response to the violence, aggression and victimization that occurs in a school (Booren, Handy & Power, 2011; Gottfredson et al. 2005; Osher,

Bear, Sprague, & Doyle, 2010). Psychological or emotional safety represents the presence of staff who are connected to and considered caring and supportive by students; behavioral health services for students struggling with mental health or substance use issues; as well as the absence of bullying or harassment (Kuperminc, Leadbeater, & Blatt, 2001; Kuperminc, Leadbeater, Emmons, & Blatt, 1997; Swearer, Espelage, Vaillancourt, & Hymel, 2010). Researchers identify physical safety, emotional safety, and effective policies and procedures to maintain those safety perceptions as instrumental to school safety (Bosworth, et al., 2011; Wang & Degol, 2016). In Sandy Hook, Connecticut, where 26 students and school staff died on December 14, 2012 after being shot by 20-year-old Adam Lanza, school safety dollars have been spent on increasing physical school security measures; providing behavioral intervention programs; hiring school counselors and psychologists; and providing professional development opportunities for staff (Fisher, Nation, Nixon, McIlroy, 2017).

Physical measures of safety. Significant fiscal and physical resources have been allocated toward physical safety measures in an attempt to improve school safety. However, there is mixed research on the effectiveness of these types of measures in increasing the perception of safety of students.

Classification of physical safety measures are varied but often make the distinction between policies, procedures and programs implemented in school, and the presence of physical and visible measures such as cameras and school resource officers. Brown (2006) identifies physical safety measures as falling into two categories: soft control strategies and hard control strategies. Soft control strategies consist of

prevention programs focused on reducing safety issues such as violence, substance use, bullying and suicide prevention, and the presence of teen courts to arbitrate these issues giving youth some control of their environment (Arnette & Walsleben, 1998; Ericson, 2001; Esbensen, 2000; Mayer & Leone, 1999; Nessel, 2001). Hard control strategies, or alternatively strategies that secure buildings, include identification and punishment of high-risk youth along with surveillance cameras, metal detectors, bars on windows and locks on doors, school resource officers (SROs), drug sniffing dogs, and translucent backpacks (Garcia, 2003; Tebo, 2000; Girouard, 2001; Green, 2005; Hickman & Reaves, 2001, 2003, Mayer & Leone, 1999). Kupchik & Ward (2014) described physical safety measures as inclusionary and exclusionary, with inclusionary measures including cameras and disciplinary policies and exclusionary measures encompassing metal detectors. Most schools report utilizing at least two methods of security, mainly visible security measures, with school resource officers being reported by a majority of students.

Research found that while nearly all schools use some type of security measures, the most often used measures include security cameras, school resource officers and random dog searches while the least used measures included identification cards for faculty, random and daily metal detector checks (Robers, et. al, 2014). Seventy percent of middle and high school students in public schools reported a school resource officer present in their school (Robers, Kemp, & Truman, 2013). Only 2% of schools reported no security measures in their facility (Steinka-Fry, Fisher, & Tanner-Smith, 2016).

Physical safety measure usage variations. The geographic location of schools and the student composition often determine the type of security measures used as well. Schools with small populations in combined grades (vs. high school grades only), located outside of cities and in the Midwest, and with lower ratios of African American students are more likely to use “soft control” measures than their counterparts. Schools with more diversity are more likely to use “hard control” measures (Steinka-Fry, et al., 2016). Schools whose populations are comprised of a greater number of students with low socio-economic status, and schools with higher numbers of racial and ethnic minority students lean toward the use of a greater number of security measures, even after controlling for school crime and other contextual variables (Kupchik & Ward, 2014; Nance, 2012). Security guards/school resource officers and metal detectors are more often found in urban schools while surveillance cameras are most often found in suburban and rural schools (Shelton, Owens, & Song, 2009).

Perception of safety and physical safety measures. There is much disagreement among researchers as to the efficacy of physical security measures in the school. While some researchers found that the presence of school safety measures can make students feel safer despite actual school violence rates (Steinka-Fry, et al., 2016; Wilson- Brewer & Spivak, 1994) others identified that students were more likely to report feeling they were not safe, even in the presences of visible security measures (Gastic, 2011; Mayer & Leone, 1999). The presence of safety measures, including school resource officers, metal detectors, bars on windows and locked doors often decrease students’ perceptions of safety (Booren, et al., 2011; Gastic, 2011; Mayer 2001; Mayer & Leone, 1999;

Perumean-Chaney & Sutton, 2013). Perumean-Chaney & Sutton (2013) found that as the number of visible, physical security measures increase in a school building, the perception of school safety by students decreases. On the other hand, among administrators the perception of safety increases with the presence of physical safety measures, highlighting the disconnect between staff and student perceptions (Heinen, Webb-Dempsey, Moore, McClellan, & Friebe, 2007).

When it comes to school resource officers, a similar disconnect exists. Staff feel they are effective at reducing safety issues, while students do not (Reingle, Gonzalez, Jetelina, & Jennings, 2016). In other studies, however, school resource officers have been found to positively impact student perception of the school climate (Zullig, Ghani, Collins & Matthews-Ewald, 2017).

Visible security measures are designed to deter problem behaviors by increasing the risk of getting caught and being punished (Tanner-Smith & Fisher, 2016). Despite studies that show that surveillance cameras are considered effective safety measures (Heinen, et. al., 2007; Garcia, 2003) and increase the perception of safety (Bosworth et al, 2011), additional studies found that students had decreased perceptions of safety when cameras were present (Perumean-Chaney & Sutton, 2013; Booren, et al., 2011) and that surveillance cameras had no impact on peer victimization (Blosnich & Bossarte, 2011).

Data retrieved from schools with physical safety measures indicate that these efforts have positive effects ranging from reducing weapon possession to increasing attendance. Hundreds of weapons were confiscated in schools in New York City and

Chicago when metal detectors were added to schools there (Johnson, 2000; Wilson-Brewer & Spivak, 1994). The implementation of metal detector searches reduced by 8.4% the average weapon possession rate among students in Miami; reduced by 21% drug sales in the school, especially among Asian/other and African American students; and reduced by 28% the rate of skipping school, especially among females (Bhatt & Davis, 2018).

Physical safety measures increase the perception of safety, even when violence rates may not have been significantly impacted (Goldstein et al. 2008; Mayer & Leone, 1999). Other researchers have theorized, however, that the visible security measures lead to a culture of criminalization and fear and may increase negative student behaviors or endorse negative cultures that may not have existed prior to installation. The installation of physical safety measures reduces the perception of a positive school climate and student empowerment and increases problem behaviors (Hirschfield, 2010; Kupchik & Monahan, 2006; Na & Gottfredson, 2013; Steinka-Fry, et al., 2016; Tanner-Smith & Fisher, 2016). Hyman and Perone (1998) found that harsh discipline and physical security measures may do little in the way of increasing student safety, resulting instead in increased student alienation and misbehavior as well as a desire by students “to get even” in response to the measures.

Often there is no increase in academic achievement when physical safety measures are implemented. In fact, the installation can result in a decrease in academic performance. Tanner-Smith and Fisher (2016) found that academic performance and attendance actually declined in schools using security cameras, school resource officers

and metal detectors, especially in schools where students receiving free and reduced lunch comprised a high percentage of the population. Link (2010) found there was no difference in attendance, graduation or dropout rates in schools with security personnel, although schools with SROs were found to have higher ACT scores than those schools without officers present. Rogers (2004) found no difference in academic achievement of students after an SRO was added to the mix of security measures in place at the school. Drop-out rates also tended to climb in schools with a greater number of physical security measures, however the impact was determined to be insignificant when combined with other aspects of school climate, including policies, procedures, student-staff connectedness, and classroom disruptions (Peguero & Bracy, 2015).

The largest negative effects are noted in schools which use multiple physical safety strategies. Tanner-Smith and Fisher (2016) found that schools that have at least three physical security measures in place have lower academic outcomes. These outcomes were compounded in schools located in lower socio-economic areas. Researchers theorize that this effect may be a result of the prison-like feel these schools may have along with the removal of student input into the development of their school climate. (Addington, 2009; Beger, 2003; Fuentes, 2011; Noguera, 1995).

No studies evaluate the impact of physical safety measures when considered separate from the human component of school staff (Reingle, et al., 2016). This highlights the importance of school staff in increasing the perception of school safety.

School safety does not exist just on school grounds. School safety is not limited to addressing only the school grounds and student-to-student conflict that exists there. Students live and work within the contexts of their home, school, community and society, and efforts to increase the perception of safety must address students, staff and the community (Bowen & Bowen, 1999; Cuellar, 2018; Kitsantas et al, 2004). School violence is multifaceted, impacting not only students and school staff but their families and other community members (Eisenbraun, 2007; Furlong & Morrison, 2000; Henry, 2000). Unfortunately, the potential positive effects gained from physical security measures do not necessarily carry over to the community and property surrounding schools. Students who attend schools with metal detectors are less likely to carry weapons to school but are more likely to carry them in the community (Centers for Disease Control and Prevention, 1993). Deaths which occur outside of school buildings, but on school property suggest that physical security inside facilities is not enough to eliminate violence that occurs around schools (Lawrence & Mueller, 2003; Schreck, et. al., 2003). Despite these findings, research shows that schools would be remiss not to utilize physical safety measures to increase school safety (Brown, 2006). To counteract the negatives however, researchers have identified the need for education systems to focus on increasing the nurturing and empowerment of students, not just violence-free school buildings, to keep students safe (Steinka-Fry, et al., 2016).

School Safety Related Events

National school events impacting perception of safety. Compared to the number of students in the United States, school violence numbers are low. Even so, a

significant percentage of students report they have witnessed violence, highlighting the importance of addressing the safety issue in schools. Among students ages 12-18, there were 850,000 non-fatal victimizations in the United States in 2014, representing about 3% of the student population (U.S. Census Bureau, Population Division, 2017; Zhange, Musu-Gillette & Ouderkerk, 2016). Nationwide, students most often report verbal abuse, harassment and bullying, and students threatening others, with about 90% of students reporting they have witnessed school violence (Janosz, 2008). Serious violent crime is defined as “rape, sexual battery other than rape, physical attack or fight with a weapon, threat of physical attack with a weapon, and robbery with or without a weapon” (p. 26) and occurred only once for every 1,000 students (Robers, Kemp, & Truman (2013). Kann et al (2016) found that 10% of boys and 5% of girls in grades 9-12 reported being involved in a physical fight at school in the last year, and about 6% of high school students reported being threatened with a weapon. The rates of violence increase, however, as students enter middle school, within urban school districts, and within schools with a larger percentage of low-income students (Robers, et. al. 2013).

Substance use and Perceptions of School Safety

The extant literature reviewing the connection between school safety and substance use among students is limited, however in most all existing research studies, students who perceive their schools as safe places report less substance use and vice versa. Bachman, Randolph and Bakken (2011c) found that students who used substances, especially 5th grade girls and 5th and 8th grade girls and boys, were more likely to report their school was unsafe and to be fearful at school. School climate

influences substance use, and a positive school climate tends to be associated with lower substance use among students (Mayberry, Espelage, & Koenig, 2009). Kitsantas, et al. (2004) discovered that the perception of substance use by students in a school directly impact a student's perception of school safety within that school. Research findings also show that as the level of substance use in a school increases the likelihood that students will perceive an unsafe school environment also increases (Lowry, Sleet, Duncan, Powell, & Kolbe, 1995); and that students' experiences as a result of school climate are consistently related to substance use (Brand, et. al., 2003). Fewer substance use related behavior issues among students have been linked to fewer safety issues and classroom disruptions (Brand, Feltner, Seitsinger, Burns, & Bolton, 2008). Mennis and Mason (2011) found that students who reported going to a safe place during the weekday had lower substance use than youth who reported they did not go to a safe place in this time frame. The researchers identified this variable as serving as a proxy measure for a safe school, inferring that students who feel their schools are safe are less likely to use substances. This sense of safety was predicated on the assumption that there is a presence of authority figures and adults who care, and that rules are strictly enforced. School safety had a stronger direct impact on substance use than community safety (Kitsantas et al., 2004).

Perceptions of school safety and substance use in the school may be influenced by the school climate, the perceived fairness of the disciplinary code, and school safety actions (Kitsantas et al, 2004). Bosworth, et al. (2011) found that in schools where students and faculty report higher levels of violence and substance use, the school's

climate perception of school safety by students served as a mediator. A positive relationship between students and teachers has been shown to reduce regular tobacco, alcohol and marijuana use (Perra, Fletcher, Bonnell, Higgins, & McCrystal, 2012). Inversely, being in a fight at school increases the risk of use of these three substances; being disengaged from school increases the likelihood of drunkenness in males; and using marijuana is connected to an increase in school engagement.

Mental Health Issues and the Perception of School Safety

Mental health and perceptions of school safety are highly correlated (Nijs et al., 2014). Procedures to respond to student suicidal behavior have been identified as one component within the definition of school safety (Ventura, 1994). Cowan, et. al. (2013) found that students should have access to school-based mental health services and supports, and those services and supports directly impact and improve not only physical and psychological safety, but also academic performance and social-emotional learning.

Mental health issues among youth ages 10-25 are growing public health issues across the United States. In 2016, the Centers for Disease Control and Prevention reported that suicide was the second leading cause of death among those ages 10-34 in the U.S., behind only unintentional injury, including motor vehicle accidents (National Center for Health Statistics, 2016). Suicide death rates have increased by more than 25% across the U.S. over the last two decades with significant increases noted in females, American Indian/Alaskan Natives, young African American children, those with non-heterosexual gender norms, and youth who live in rural areas (Suicide rising across the U.S., 2018). Despite the increases, suicide is considered to be underreported by

officials, most notably among suicides involving drug overdoses (Breiding & Wiersema, 2006; Warner, Paulozzi, Nolte, Davis & Nelson, 2013). Among those who died by suicide at all age levels, relationship problems were identified as the factor contributing the greatest to the death (42%), followed by a crisis in the last or upcoming two weeks (29%), substance use (28%), physical health problem (22%), job or financial problem (16%), criminal or legal problem (9%) and loss of housing (4%) (Suicide rising across the U.S., 2018).

According to the Center for Disease Control and Prevention's (CDC) Youth Risk Behavior Survey, across the United States, about 18% of high school students reported seriously considering suicide and nearly 9% reported they actually attempted suicide in the past year (CDC, 2017a). More than 20% of Kentucky 10th graders reported actual incidents of self-harm and more than 15% reported considering suicide. More than 8% reported actual past year suicide attempts (Sanders, et al., 2017b).

As is the case across the nation, suicide represents the second leading cause of death among Kentuckians aged 10-34. In the Commonwealth, 157 students, aged 10-19, died by suicide between Jan. 1, 2014 and Dec. 31, 2017 (KDPH 2018a, 2018 b).

Kentucky's suicide rate increased 36.6%, compared to a 25.4% increase nationwide between 1999 and 2016 (Suicide rising across the U.S., 2018). Additionally, 6.3% of middle and high school students participating in the 2016 administration of the KIP survey reported a past-year suicide attempt (Sanders, et al., 2017b).

Death by suicide is not the only measure of the impact of mental health issues among youth. Results of a nationwide youth risk survey showed that 8.6% of high school

students reported attempting suicide in the past year, and 2.8% had injuries serious enough to be treated by a medical provider (Centers for Disease Control and Prevention, 2015). Additionally, the Youth Risk Behavior Survey found that 17.7% of high school students seriously considered suicide in the last year; 14.6% planned to attempt suicide; and 29.9% reported feeling sad or hopeless almost every day for two or more weeks in a row during the past 12 months (Centers for Disease Control and Prevention, 2017).

Kentucky students also reported high levels of psychological distress. More than 15% of students reported they experienced psychological distress in the last 30 days. Of those reporting psychological distress, 34% were 10th graders. More than 11% of Kentucky students reported being depressed. Nearly one-third of those were 10th graders (Sanders, et al., 2017b).

Suicidal ideation and planning are considered precursor behaviors for suicidal attempts. In Kentucky, 11.8% of students reported suicidal ideation in the last year and 9.2% reported developing a suicide plan in the last 12 months (Sanders, et al., 2017b). The rates from Kentucky's youth survey are in line with rates noted over the last seven decades by mental health assessments.

Personal Victimization

Personal victimization, including bullying, cyberbullying, sexual assault and theft by force, has been determined to impact a student's perception of the safety of their school. Wilson and Rosenthal (2003) found a strong connection between adolescent stress and the violence they experience in their community, including within their school facilities. Additionally, students report less satisfaction with their school experience

when they have been exposed to violence (Rosenfeld, Richman, Bowen, & Wynns, 2006). Exposure to violence increases the risk of mental health issues while the perception of school safety acts as a protective factor for those students who have been exposed to violence in the community (Ozer & Weinstein, 2004).

Bullying and Cyberbullying. One of the most common forms of personal victimization is bullying. Bullying behaviors range from verbal to emotional to physical abuse. Bullying was first identified in research literature more than 100 years ago in the journal *Pedagogical Seminary* (Burk, 1897) when the behavior was described, risk factors identified and potential cures noted. But not until 1978, when Swedish researcher Dan Olweus conducted a study on bullying, did an awareness of its impact on not only those who are bullied, but those who bully and those who witness bullying come to the limelight (NASEM, 2016). The CDC defines bullying as “any unwanted aggressive behavior(s) by another youth or group of youths, who are not siblings or current dating partners, involving an observed or perceived power imbalance” (CDC, 2018, p. 1). Bullying involves a power imbalance between the perpetrator and the victim and involves repeated, aggressive behaviors (Eisenberg & Aalsma, 2005; NASEM, 2016).

Bullying is one component of personal victimization that receives significant attention. Bullying comes in a number of forms. Gladden (2014) identified four types of bullying behaviors: physical, involving the use of physical force; verbal, involving oral or written communications; relational, involving the harming of reputations or relationships; and damage to property, involving the “theft, alteration, or damaging of the target youth’s property” (p. 8) Defining cyberbullying is more difficult, however,

because lack of in-person emotional cues makes it difficult to determine if the exchange was intended to be harmful; the wide reach of social media makes repeated actions unnecessary; and power imbalances may be created by the technology and not the relationship between the individuals (NASEM, 2016).

When it comes to bullying, data collection is not uniform, making it difficult to develop a clear picture of the status of bullying among adolescents. The prevalence of bullying behavior in schools across the United States varies based on the data sources. Research by the National Academies of Sciences, Engineering and Medicine (2016) found that the prevalence of bullying at school is as high as 30.9% of all students, while the prevalence of cyberbullying is as high as 14.8 percent (Finkelhor, Turner, Shattuck, & Hamby, 2013; Iannotti, 2013; Kann, et al.; U.S. Department of Education, 2015). The rate of bullying and cyberbullying for LGBT youth is nearly double that of heterosexual youth. Rates also vary for youth with disabilities and those who are overweight, but data are limited for these categories. The majority of data collected is self-report data that does not include questions about those adolescents who have bullied others or who have been bystanders.

Among 10th graders in Kentucky, 22.8% reported they had been bullied on school property in the last year (Sanders, et al., 2017b). Across the state, however, the rates ranged from a low of 18.2% in far eastern Kentucky to a high of 27.2 percent in the northeastern part of the state. Eighteen percent of 10th graders reported they had been cyberbullied in the last 12 months, which is slightly higher than the national rate of 16.6 percent as noted on the Youth Risk Behavior Survey for 2015 (Sanders, 2017b). Rates of

cyberbullying ranged from 15.4 percent of students in far eastern Kentucky and south-central Kentucky to 20.5 percent in the urban area around Louisville. Both the rates of bullying and cyberbullying in Kentucky are higher than national rates for the same issues, as reported by the 2015 Youth Risk Behavior Survey (Sanders, 2017b).

Sexual Harassment. As a result of the pervasive and secretive nature of sexual harassment and assault among adolescents, schools must not only work to prevent unwanted sexual advances within their facilities, but also must promote a sense of openness that allows discussion about the situations that do occur (Timmerman, 2004). Ormerod, Collingsworth and Perry (2008) found that students who perceived their school climate as one that allowed for sexual harassment to perpetuate also felt unsafe in the environment. These and other similar studies highlight the importance of sexual harassment being addressed within the context of school safety. In order for students to feel safe in regards to sexual harassment and assault, they must be able to talk about the experiences they have in the school and seek support for those that are violent or sexual in nature (Cauce, Mason, Gonzales, Hiraga, and Liu, 1994). Seeking and finding social supports for these types of situations can improve the emotional wellbeing of students (Cohen & Hobermann, 1983; Rigby, K., 2000).

In the first large-scale study related to sexual harassment in schools (Bryant, 1993), researchers found 31% of girls and 18% of boys had experienced sexual harassment at least once. A repeat of the survey nearly a decade later found those numbers even higher, with 81% of all students having experienced sexual harassment in their school experience (Lipson, 2001). A later study (Ormerod, et. al., 2008) found even

higher numbers, with 94% of students reporting some type of sexual harassment at school. In Kentucky, the numbers of students who report unwanted sexual advances are much lower, most likely as the result of the wording on the statewide youth survey, KIP. The survey question asks about “unwanted sexual advances,” or sexual assault, as opposed to sexual harassment, most likely resulting in lower numbers of students reporting the issue. In 2016, more than 9% of 10th graders reported sexual assault in school, followed by 7% of 12th graders, 6.7% of 8th graders, and 2.8% of 6th graders (Sanders, et al., 2017a). For all grades, except 10th, the percentages of students who reported sexual assault had fallen over the past few survey administrations. The 10th grade reports have been climbing steadily since 2012 (Sanders, et al., 2017a).

Other Personal Victimization Measures. The extant literature on the remaining personal victimization measures and their connection to school are limited. Therefore, inclusion of Kentucky specific incidence measures and state-level trend data will be included for theft by force, verbal threat, theft, and physical threat (Table 2.1).

Table 2.1. *Personal victimization measures by grade level*

Grade Level	Personal Victimization Measures			
	Theft by Force	Verbal Threat	Theft	Physical Threat
6 th (n=30,186)	4%	18.6%	39.6%	10.5%
8 th (n=30,376)	3.5%	24.5%	32.2%	11.2%
10 th (n=28,379)	2.9%	24.7%	24.6%	9.5%
12 th (n=22,759)	1.8%	17.4%	16.8%	6.1%
Trend	Upward across all grade levels	Downward across all grade levels	Downward across all grade levels	Upward for 8, 10, & 12; slightly downward for 6

Note. (Sanders, et al., 2017a).

Problem Behaviors

Problem behaviors have been defined as the behaviors that result when one individual is unable or unwilling to respect the rights of another individual (Frick, 1998). Researchers (Moffitt, 1993; Moffitt, Caspi, Dickson, Silva & Stanton, 1996) identified three different trajectories of students displaying problem behaviors, an overt one that included items such as aggression, fighting and violence; a covert trajectory including lying, shoplifting, vandalism and car theft; and a third identified by conflicts with authority, including defiance, avoidance of authority and stubborn behavior. Moffitt (1993) found that youth who manifest these types of behaviors in childhood and early adolescence have a strong propensity for problem behaviors and that they happen frequently, with high severity and across adolescence and into adulthood. Patterson, Reid and Dishion (1992) put these behaviors into a framework that grew out of the family situation into problems at school as a result of poor coping skills of students. Teachers and school administrators react to this behavior, and in turn, respond negatively, increasing the student's adverse coping mechanisms and potentially creating the perception that school is not safe. Within this study, problem behaviors are identified as being suspended, carrying a handgun, selling or dealing drugs, stealing a vehicle, being arrested and attacking another.

Suspensions. In regards to suspensions and the perception of safety, the American Zero Tolerance Task Force (2008) found that students who are expelled have lower satisfaction of their school climate, of which the perception of safety is a component. Suspension has also been found to create a sense of disengagement from

school, again reducing the perception that the school is a safe place to be (Arcia, 2006). Another study (Cornell, Sheras, Gregory & Fan, 2009) found that schools that implemented a threat assessment model that focused on problem solving vs. zero tolerance model of suspension or expulsion resulted in less bullying and more help-seeking among students, in turn improving the climate and perception of safety of students.

Carrying a handgun. In relation to handgun carrying, youth may already feel unsafe, increasing their perception that they need to carry a weapon. Sheley and Wright (1993) found that among juveniles in detention centers for committing crimes with guns, 75% indicated they carried a weapon for protection, and of those who carry handguns, 74% do so for protection rather than to commit a crime. Sixty-nine percent said they had fired their guns in self-defense resulting in their incarceration. Additional research found that among college students, more than 4% identified as having a gun on campus despite laws explicitly banning weapons (Miller, Hemenway, & Wechsler, 2002). Protection was listed as the reason for possession of the gun.

Youth who carry weapons often have the perception that they do not have social support from their teachers, peers or parents (Malecki & Demaray, 2003), reducing their perception of safety within the school construct. Muula, et. al. (2008) found that students who use substances are more likely to carry a weapon to school. Another study found that reported depression and drug use at the freshman level of high school were predictors of carrying a handgun as a senior (Simon, Richardson, Dent, Chou, & Flay, 1998) and the use of substances has been positively correlated with fighting at

school, another factor that decreases the perception of school safety (Perra, et. al., 2012).

While weapon possession in U.S. classrooms is decreasing, the carrying of weapons in schools continues to be an issue that affects the perception of student safety. More than 25% of males and about 7% of females reported carrying weapons to school (Cuellar, 2018) and about 5% of middle and high school students indicate they have access to firearms (Robers et al., 2014). The odds that a student would have access to and carry a gun increased among students who were male, used substances, had serious psychological distress and suicidal behaviors, or who were involved in a physical fight (Muula, et al., 2008). School shootings are rare events, even in light of recent shootings in Parkland, Florida and Marshall County Kentucky, but since a significant number of students carry knives and guns to school, the potential for weapon-associated violence is significant (Bailey, Flewelling, & Rosenbaum, 1997; Brown, 2004; Coker, Bush, Follingstad, & Bruncato, 2017; DeVoe et al., 2004; Hill & Drolet, 1999; Perlus, Brooks-Russell, Wang, & Iannotti, 2014; Robers, et al, 2014; Simon, Crosby, & Dahlberg, 1999; Simon, Dent, & Sussman, 1997; Wilcox & Clayton, 2001).

In Kentucky, fewer students report taking guns to school, but more students report they have access to them. The percentage of Kentucky students reporting access to firearms has increased steadily since 2004 when just 6% of students reported carrying a handgun at least once in the last year (Sanders, et al., 2017b). Twelve years later, that number has nearly doubled to 11%. Less than half a percent of middle and high school students reported taking a handgun to school in 2016, a number that has decreased

since 2004, when nearly 6% of secondary students reported they took a gun to school. However, the age at which students have access to a handgun has decreased since 2004. That year, 4.7% of middle and high school students reported they had carried a handgun by age 12 or younger. In 2016, 7.3% reported they had access to a weapon (Sanders, et al., 2017a). Accessibility to and possession of weapons is shown to increase school violence (Cuellar, 2018), highlighting the problematic nature of these statistics for the perception of safety in Kentucky schools. Access to firearms is also a risk factor for death by suicide.

Other Problem Behavior Measures. There is limited research on the additional problem behaviors of selling and dealing drugs, stealing a vehicle, being arrested and attacking another and the perception of safety, however, one study (Steinman, 2005) found that a school climate that is not warm and caring has been significantly associated with selling drugs. Bachman, et. al. (2011c) found that students who attend schools with high suspension rates have higher perceptions of feeling unsafe. Because the extant literature on the remaining problem behaviors measures and their connection to school safety are limited, inclusion of Kentucky specific incidence measures and state-level trend data will be included for suspended, selling/dealing drugs, theft of vehicle, arrested, and aggression against another (Table 2.2).

Table 2.2. Problem behaviors by grade level

Grade Level	Problem Behaviors				
	Suspended	Selling/ Dealing Drugs	Theft of a Vehicle	Arrested	Aggression Against Another
6th (n=30,186)	5.2%	0.2%	0.6%	0.7%	7%
8th (n=30,376)	10.4%	1.9%	1.3%	2.4%	10%
10th (n=28,379)	12.2%	5.2%	2.3%	4.1%	10.6%
12th (n=22,759)	10.3%	6.7%	1.6%	3.4%	8%
Trend	Significantly upward across all grade levels	The same or downward across all grade levels	Downward across all grade levels	Downward across all grade levels	Downward across all grades except 6th

Note. (Sanders, et al., 2017a).

Current Policies and Programs

Because of the strong association between substance use, mental health issues, personal victimization, and problem behaviors and the perception of safety, schools play an important role in serving as a conduit for the delivery of prevention services to students, making schools an important partner in the support and promotion of the behavioral health of students (Paternite, 2005). Between students and staff, more than one-fifth of the United States' population can be accessed through the educational setting (Hogan, 2003), providing the opportunity to provide behavioral health services (Diala et al., 2001; Weist, Myers, Hastings, Ghuman, & Han, 1999) and prevention services (Elias, Gager, & Leon, 1997; Weare, 2013). Short and Talley (1999) described behavioral health services as “both prerequisites of and contributors to student

learning” (p. 194). Rones and Hoagwood (2002) suggested that in order to fulfil their mandate of providing education to all students, schools must address the behavioral health needs of these children. When these needs are not addressed, their research shows, students have a lower capacity to learn, which can lead to disruptive behavior, which in turn affects the educational achievement of all students, even those without behavioral health concerns.

Prevention services should be integrated with educational services for the greatest impact on students (Adelman & Taylor, 1999). Strein, Hoagwood and Cohn (2003) suggest that utilizing the public health model for the implementation of prevention services within the educational setting could improve education achievement and attendance, decrease teacher turnover, and increase reintegration of previously identified special needs students into the general population. In this paradigm, schools would serve as the prevention delivery system for students (Burns et al., 1995; Hoagwood & Erwin, 1997), since this is where children and their families congregate (USDHHS, 2000). Delivery mechanisms in the education setting for these services are imperative for consistent delivery since schools are where children are (Carlson, Tharinger, Bricklin, DeMers, & Paavola, 1996). The President’s New Freedom Commission on Mental Health (Hogan, 2003) states:

The mission of public schools is to educate all students. However, children with serious emotional disturbances have the highest rates of school failure. Fifty percent of these student drop out of high school, compared to 30 percent of all students with disabilities. While schools are primarily concerned with education, mental health is essential to learning as well as to social and emotional development. Because of this

important interplay between emotional health and school success, schools must be partners in the mental health care of our children (p. 58).

Policy makers have understood for some time the connection between school safety and behavioral health issues. After the 2012 shooting at Sandy Hook Elementary in Newtown, Conn., federal funding was provided for increased numbers of school resource officers as well as school-based mental health professionals (Now is the Time, 2013). Additionally, in the time frame shortly after the shooting, more than 450 bills were introduced in state and federal legislatures across the country focused on increasing school safety (Shah & Ujifusa, 2014) signaling the importance of addressing safety and behavioral health issues collaboratively.

Research supports the concept that school safety enhances behavioral health. Wang and Degol (2016) found the increased feeling of safety in schools results in fewer conduct problems as well as less emotional distress. Feelings of helplessness, fear, insecurity and loss of power are results of students witnessing violence in their school (Bowen & Bowen, 1999; Flannery, et al., 2004; Janosz, et al., 2008). Students exposed to violence and aggression at school, as either victims or bystanders, are more likely to disengage from school and their levels of mental and emotional disorders also tend to increase compared to students exposed to no or low levels of violent acts within their school community (Bowen & Bowen, 1999; Janosz et al., 2008). Students who witness violence often externalize problems through acting out behaviors, become truant as a way to avoid the violence they have experienced, or even experience physical health

problems that keep them from school (Bowen & Bowen, 1999; Flannery, et al., 2004; Janosz, 2008; McNally, 2003).

Stressed and traumatized students are more likely to have behavioral problems and to disrupt the classroom (Gorman-Smith & Tolan, 1998; Lochman, Lampron, Gemmer & Harris, 1987). Sharkey, Tirado-Strayer, Papachristos and Raver (2012) cited impulse control and attention issues as symptoms of violence exposure. Shields et al. (2010) found increased levels of depression and post-traumatic stress disorder after exposure to violence, which they defined as victimization, witnessing violence, hearing about violence, and seeing violent behavior.

Emotional and cognitive stress and post traumatic disorder have been identified as symptoms of exposure to violence (Gorman-Smith & Tolan, 1998; Mazza & Overstreet, 2000; Ozer & Weinstein, 2004). More students exposed to community violence exhibit various internalizing, externalizing and post-traumatic disorder systems than their peers who have not been exposed to violence (Fowler, Tompsett, Braciszewski, Jacques-Tiura, & Baltes, 2009). This type of stress has been found to reduce working memory and create cognitive distractions that connect to poor performance in the academic setting (Mattarella-Micke & Beilock 2012; Sauro, Jorgensen, & Teal Pedlow 2003; Sharkey 2010). When violence occurs in the school, students may experience an increase in trauma as the classrooms and hallways in which they were victimized are constant reminders of the aggression against them (Burdick-Will, 2013).

School belonging and psychosocial function are also important components in student success functioning (Allen, et al., 2018; Waters, Cross & Shaw, 2010). School belonging is significantly impacted by emotional stability with a strong correlation between a student's experiences towards school and his or her behavioral health (McMahon, Parnes, Keys & Viola 2008; Shochet, Smith, Furlong & Homel, 2011). A low sense of school belonging has been linked to individual characteristics of anxiety, depression and suicide ideation (Bearman & Moody, 2004; McMahon, et al., 2008; Shochet, et al., 2011). Supporting students who are in psychological distress with connections to resources, including caring adults, can result in increased perceptions of safety and academic achievement (Rothon, et al., 2009).

McMahon, et al. (2008) suggested that social support from others acts as a buffer against behavioral health issues for students, underscoring the importance of parent, peer and teacher supports. In a meta-analysis of the research, teacher support and personal characteristics were found to have the strongest correlations to an increased sense of school belonging among students (Allen, et al., 2018). Autonomy, support and involvement, caring relationships, and fairness and friendliness were identified as the most important characteristics of teacher support for students (Allen, et al., 2016).

Conclusion

While students' educational needs should be primarily served in schools, these needs are also influenced by a child's health, security, safety, and nutritional needs, all of which must be addressed for students to achieve at optimal levels, underscoring the

need for the partnership between educational and behavioral health providers (Short & Talley, 1999). In order for students to thrive in the academic setting, they must perceive their schools as a safe place that protects them from physical, emotional and verbal threats. In addition to meeting educational needs of their students, school systems must create a safe place by considering the issues of substance use, mental health issues, personal victimization and problem behaviors among their students, staff, and connected community members. Understanding the interconnected risk factors that decrease the perception of safety allows schools to implement comprehensive measures that impact each issue individually and collectively. Schools can reduce or eliminate barriers to the perception of school safety through the use of physical measures, fair and consistently enforced school policies and procedures, and promotion of caring and connected adults. In doing so, they improve students' perception of safety, as well as their academic achievement, performance on standardized testing, transitions beyond high school, and overall thriving in the community at large. While schools are not necessarily tasked with delivering services beyond the educational requirements of their states, understanding the impact the perception of safety and related issues has on meeting these requirements allows school administrators to consider the most viable methods of increasing safety and in turn academic success of students.

3. METHODOLOGY

The cross-sectional study identified the association of substance use, mental health issues, personal victimization and problem behaviors on the perception of safety among middle and high school students in Kentucky schools. The study utilized the Kentucky Incentives for Prevention (KIP) survey for secondary analysis of the perception of safety and the independent variables of interest. The results of the study will enhance delivery of comprehensive prevention efforts focused on the variables of interest as one method of improving the perception of safety in the educational setting. Chapter 3 presents a detailed account of the methodology for the study. The purpose of the study and the research questions are reiterated. To allow for comparisons with the characteristics of youth who are at greatest risk of using and abusing substances, demographic characteristics of the participants in the proposed study are provided. In addition, the variables of interest are identified and how each was determined is discussed. An overview of psychometric properties of the survey instrument utilized is discussed, as is the research design and statistical analysis proposed.

Purpose

The purpose of this study is to identify the association of student perception of school safety to the potential risk factors of substance use, mental health issues, personal victimization, and problem behaviors among middle and high school students in Kentucky. School safety is a growing concern in schools across the United States and in Kentucky. While most school districts rightly prepare for weather-related emergencies and active shooter situations, few consider the impact of substance use,

mental health issues, personal victimization, and problem behaviors on the perceived safety of students.

The research questions and hypothesis testing are the following:

RQ1: Do Kentucky middle and high school students who report substance use also report higher levels of feeling unsafe (answering “unsafe” or “very unsafe” on question 11 of the 2016 KIP Survey) in the school?

H1_o: There is not a significant relationship between substance use and the perception of feeling unsafe among students.

H1_a: There is a significant relationship between substance use and the perception of feeling unsafe among students.

RQ2: Do Kentucky middle and high school students who report mental health issues also report higher levels of feeling unsafe (answering “unsafe” or “very unsafe” on question 11 of the 2016 KIP Survey) in the school?

H2_o: There is not a significant relationship between mental health issues and the perception of feeling unsafe among students.

H2_a: There is a significant relationship between mental health issues and the perception of feeling unsafe among students.

RQ3: Do Kentucky middle and high school students who report personal victimization also report higher levels of feeling unsafe (answering “unsafe” or “very unsafe” on question 11 of the 2016 KIP Survey) in the school?

H3_o: There is not a significant relationship between personal victimization and the perception of feeling unsafe among students.

H3_a: There is a significant relationship between personal victimization and the perception of feeling unsafe among students.

RQ4: Do Kentucky middle and high school students who report problem behaviors also report higher levels of feeling unsafe (answering “unsafe” or “very unsafe” on question 11 of the 2016 KIP Survey) in the school?

H4_o: There is not a significant relationship between problem behaviors and the perception of feeling unsafe among students.

H4_a: There is a significant relationship between problem behaviors and the perception of feeling unsafe among students.

RQ5: Are there significant associations between students who report substance use (RQ1), mental health issues (RQ1), personal victimization (RQ3), and problem behaviors (RQ4) among Kentucky middle and high school students who also report higher levels of feeling unsafe (answering “unsafe” or “very unsafe” on question 11 of the 2016 KIP Survey) in the school, independent of other behavioral risk factors and student demographics?

H5_{1o}: There is not a significant association between substance use and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{1a}: There is a significant association between substance use and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{2o}: There is not a significant association between mental health issues and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{2a}: There is a significant association between mental health issues and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{3o}: There is not a significant association between personal victimization and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{3a}: There is a significant association between personal victimization and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{4o}: There is not a significant association between problem behaviors and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{4a}: There is a significant association between problem behaviors and feeling unsafe at school independent of other behavioral risk factors and student demographics.

Survey Instrument

The cross-sectional study utilized data collected from the 2016 administration of the KIP youth survey. The survey is administered online and by paper and pencil biannually by REACH Evaluation of Louisville, Kentucky on behalf of the Kentucky Department of Behavioral Health, Developmental and Intellectual Disabilities (KDBHDID). Permission to utilize the survey data was obtained by the author of this dissertation from REACH Evaluation and KDBHDID. The anonymous, population-level survey includes 62 questions related to use of alcohol, tobacco, and other drugs (ATOD) by students, student perspectives about drug use, and perceived accessibility of substances in the community. It also addresses perception of school safety, mental health issues, personal victimization and problem behaviors. For the purposes of this study, data related to school safety, 30-day substance use, mental health, personal victimization, and problem behaviors, were utilized.

Context of the Study

Community. This study focuses on middle and high school students in the state of Kentucky. The Commonwealth's population estimate in 2017, according to the U.S. Census Bureau (2017), was 4,454,189, comprised of 87.8% White, 8.4% African American, 3.7% Hispanic or Latino, 1.9% two or more races, 1.6% Asian, and .4% American Indian, Alaska Native, and Native Hawaiian or other Pacific Islander. Females represented 50.7% of the population and males 49.3%. Nearly 23% of the population is under the age of 18, and 16% are over the age of 65. The median income for the state was \$44,811 with 18.5% of residents living in poverty. The percentage of residents over

the age of 25 with a high school diploma was 84.6%; those with a bachelor's degree or higher was 22.7%. Those under the age 65 with no health insurance represented 6% of the population. Those over the age of 65 with a disability were 13% of the population.

School demographics. Kentucky's school membership numbered 656,588 students during the 2016-2017 school year, with 150,953 in grades six through eight and 196,103 in grades nine through 12 (Kentucky Department of Education, 2018). The state has 174 middle schools, 191 high schools and 55 schools that combine middle and high school students. Additionally, there are 653 schools which include a combination of P-6 and 6-8 students. Not included in these numbers are schools on the military bases of Ft. Campbell and Ft. Knox, alternative programs, the Kentucky School for the Deaf or the Kentucky School for the Blind. The ethnicity breakdown for students across all grades is 77.4% White, 10.6% African American, 6.4% Hispanic, 3.6% two or more races, 1.7% Asian, and Native American and Hawaiian/Pacific Islander is less than 1%. The state's attendance rate is 94.4%. The state graduation rate is 89.7%. Nearly 61% of Kentucky's students were enrolled in free or reduced-price meals.

Sample. Total number of participants for the 2016 administration of the KIP survey was 111,700 students for 57% of the 196,480 enrolled students in the selected grades levels across the state. The sample includes results from 113 out of 120 Kentucky counties and 149 of 173 public school districts in the state. Table 3.1 provides additional information regarding the 2016 administration sample.

Table 3.1. *School district participation rate in 2016 administration*

	2016
School district participation rate (%)	149/173 (86%)
Total sample size	111,700
Total # of students in grades 6, 8, 10, 12 in participating districts	134,578
Student response rate among all participating districts	83%
Total # of students in grades 6, 8, 10, 12 in Kentucky	195,965
Student response rate among all Kentucky students	57%
School districts administering online (%)	92/149 (62%)

Note. (Sanders et al., 2017a)

Twenty four out of 173 public school districts in the state did not participate in the 2016 administration of the survey. The majority of schools not participating included independent districts in the state with administrators citing potential confidentiality issues with small district participation as one reason. However, during the 2016 administration, Kentucky’s four largest school districts – Jefferson County, Fayette County, Kenton County and Warren County – did not participate, for different reasons. As a result, the results show a mostly suburban and rural representation of the state’s students in the four selected grade levels. See Table 3.2 for a breakdown of sample size by county.

Table 3.2. County Level Sample Sizes (6th, 8th, 10th, and 12th grades)

County	Sample Size	County	Sample Size	County	Sample Size
Adair	605	Garrard	709	Mercer	845
Allen	785	Grant	1188	Metcalfe	204
Anderson	846	Graves	1496	Monroe	445
Ballard	383	Grayson	1039	Montgomery	1102
Barren	1701	Green	409	Muhlenberg	1263
Bath	482	Greenup	1641	Owen	478
Bell	1174	Hancock	426	Owsley	64
Boone	5700	Hardin	3753	Madison	3012
Bourbon	827	Harlan	1177	Magoffin	500
Boyd	938	Harrison	824	Marion	728
Boyle	1159	Hart	485	Marshall	1221
Bracken	401	Henderson	1665	Mason	620
Breathitt	427	Henry	602	McCracken	2330
Breckinridge	887	Hickman	190	Pendleton	589
Bullitt	3505	Hopkins	1691	Perry	267
Butler	533	Jackson	526	Pike	2487
Caldwell	540	Jessamine	1803	Powell	592
Calloway	196	Johnson	836	Pulaski	2562
Campbell	2987	Kenton	1840	Robertson	106
Carlisle	207	Knott	408	Rockcastle	723
Carroll	491	Knox	926	Rowan	697
Carter	1143	Larue	524	Russell	600
Casey	598	Lawrence	531	Scott	2333
Christian	2001	Lee	246	Shelby	1643
Clark	1167	Leslie	330	Simpson	727
Clay	657	Letcher	912	Spencer	790
Clinton	436	Lewis	552	Taylor	254
Crittenden	318	Lincoln	929	Todd	531
Cumberland	209	Livingston	300	Trigg	553
Daviess	3733	Logan	1087	Trimble	305
Edmonson	518	Lyon	261	Union	490
Elliott	288	Nelson	1827	Washington	399
Estill	564	Nicholas	277	Wayne	696
Fleming	618	Ohio	1023	Webster	580
Floyd	1276	Oldham	3286	Whitley	2013
Franklin	1666	McCreary	702	Wolfe	266
Fulton	232	McLean	394	Woodford	1115
Gallatin	430	Menifee	226		

Note. (Sanders et al., 2017a)

By grade level, the greatest number of participants were in the eighth grade, which was reflective of the total eighth-grade student population in the state, followed by 6th, 10th and 12th graders. See Table 3.3 for a complete demographic breakdown of students represented by the survey results. The gender representation of those participating in the survey was also representative of the gender breakdown of students enrolled in the selected grade levels. As is the case with the enrolled students, the majority of students who responded identified as White, however this race is overrepresented in the sample compared to overall population of enrolled students, most likely as a result of the state's largest urban county school district not participating in this iteration of the survey. African American students were underrepresented by those taking the survey, again as a result of the largest urban school districts not participating, but even accounting for that disparity there is an underrepresentation. The Other category, as well as American Indian and Native Hawaiian appear to be overrepresented as well, mainly attributed to the self-report nature of the survey and the fact that participants may think about their race/ethnicity differently than others might categorize them. Data from all participating students in the 2016 administration of the KIP survey was included in the analysis for this study.

Table 3.3. Demographic breakdown of KIP participants

	2016 N (%)		
	KIP 2016 (N=111,700)	KY Enrollment (N=196,094) ^a	KY Enrollment Without Jefferson Co. (N=167,904) ^b
Grade			
6	30,186 (27.0)	50,246 (25.6)	43,064 (25.6)
8	30,376 (27.2)	50,424 (25.7)	43,300 (25.8)
10	28,379 (25.4)	51,095 (26.1)	43,515 (24.4)
12	22,759 (20.4)	44,329 (22.6)	38,025 (21.3)
Gender			
Male	55,659 (50.4)	100,586 (51.3)	86,458 (51.5)
Female	54,728 (49.6)	95,508 (48.7)	81,446 (48.5)
Missing	1,313	—	—
Race/Ethnicity			
NH White	85,349 (80.4)	154,830 (79.0)	141,542 (84.3)
NH Black	4,889 (4.6)	20,989 (10.7)	10,595 (6.3)
Hispanic	6,486 (6.1)	10,879 (5.5)	8,360 (5.0)
NH AA/PI	1,038 (1.0)	3,544 (1.8)	2,405 (1.4)
AI/AN	1,024 (1.0)	237 (0.1)	203 (0.1)
Other/Multiracial	7,414 (7.0)	5,615 (2.9)	4,799 (2.9)
Missing	5,500	—	—

Note. Data in parentheses are valid percentages. KIP = Kentucky Incentives for Prevention; KY = Kentucky; AA/PI = Asian American and Pacific Islander.

^aTotal enrollment for Grades 6, 8, 10, and 12 with Jefferson County Schools.

^bTotal enrollment for Grades 6, 8, 10, and 12 without Jefferson County Schools.

Historical administration background of the KIP survey. The KIP survey provides population-level surveillance data for prevention decision-making for schools, community and state-level planners and represents the Commonwealth's largest source of youth ATOD use data (Sanders, et al., 2017a, 2017b). The survey also provides information on the perception of risk of students, their peers and parents, along with other risk and protective factors, such as school safety, sexual assault, and carrying a weapon to school. The survey was developed in 1997 with the intent of strengthening youth substance use prevention in Kentucky; strengthening state prevention systems; and improving the health and well-being of adolescents in the Commonwealth by reducing risk factors and increasing protective factors related to ATOD use (Sanders, et al., 2017a, 2017b). The KIP survey has been administered in Kentucky since 1999 through agreements with school districts across the state. The statewide youth survey is administered to students in the 6th, 8th, 10th and 12th grades by REACH Evaluation on a biannual administration schedule. The most recent completed administration and analysis of results occurred in the fall of 2016. The most recent administration of the survey was in the fall of 2018.

Substance use prevention efforts in Kentucky are grounded in science and based on four premises: 1) there are a number of different pathways to substance use by youth; 2) early childhood development, along with family factors, play a role in increasing the vulnerability for substance use; 3) risk and protective factors increase or reduce the use of substances across the lifespan; and 4) substance use prevention efforts must be conducted in a systematic manner using strategies that have been found

to be effective in reducing use by addressing the factors in the socio-ecological contexts of individuals, relationships, community and society (Sanders, et al., 2017a, 2017b). The KIP survey results provide a clear picture of the prevalence and incidence of substance use among youth and provide strong indication of the areas through which prevention efforts should be targeted for greatest impact (Sanders, et al., 2017a, 2017b).

Originally funded by a federal initiative, the survey was developed to meet state government needs in reporting on federal discretionary grants. The survey was originally validated in 1999 by researchers from the Pacific Institute for Research and Evaluation and the Center for Substance Abuse Prevention at the Substance Abuse and Mental Health Services Administration. It is based on similar studies from the Communities that Care Youth Survey (CTCYS) studies by Hawkins and Catalano (Sanders, et al., 2017a, 2017b). The CTCYS studies were validated through subsequent research (Arthur et al., 2007; Arthur, Hawkins, Pollard, Catalano & Baglioni, 2002; Glaser, Van Horn, Arthur, Hawkins, & Catalano, 2005) in turn, supporting the construct validity of the KIP survey. As needs have arisen for additional data, questions have been added to support prevention efforts in the state. Questions related to bullying, mental health, and relationship violence were added in 2014 to provide additional insight into the factors that contribute to substance use among middle and high school students. These questions mirror those on nationally administered surveys – such as the Youth Risk Behavior Survey and the Monitoring the Future Survey - in order to compare state-level data with national data (i.e. all mental health questions mirror similar questions on the Center for Disease Control’s Youth Risk Behavior Survey) (Sanders, et al., 2017a, 2017b).

These surveys too have been validated by subsequent research, in turn validating the questions on Kentucky's survey (Bachman, Johnston, O'Malley, & Schulenberg, 2006; Brener, et al., 2004; Brener, Billy, & Grady, 2003; Johnston, O'Malley, & Backman 1999).

The KIP Survey is a group-administered questionnaire with answers that are a combination of dichotomous, nominal, and semantic differential responses. The survey provides not only a current snapshot of substance use and related consequences, but also trend data for students by grade over time. The KIP has a cross-sectional design in that it surveys different people in the same population groups over a period of time. (Sanders, et al., 2017a, 2017b) Conducted biannually in the fall of even-numbered years, the survey is a population-level survey in that every student in the identified grade levels of participating schools are encouraged and have the opportunity to participate. Only students who are absent from school or whose parents have opted them out of participation do not complete the survey if the school is participating and they are in one of the surveyed grade levels.

Historical trends, cost, and capacity of initial school districts determined grade levels to be surveyed. The KIP is modeled after the Monitoring the Future Survey, which started with 12th graders when that survey was initially administered in 1975. Twelfth grade students only were initially surveyed to take stock of the cumulative influences of the school and family contexts as students transition into adulthood (Bachman, Johnston, O'Malley, & Schulenberg, 2011). Eighth and 10th grade students were added to the MTF survey in 1991 as a method of soliciting additional information earlier in the adolescent development process, as well as to avoid missing students who might drop

out before completing a 12th-grade survey (Bachman, et. al, 2011b). Additionally, having trend data at three points in adolescence allows researchers to see if individual age groups are moving in parallel, potentially identifying important intervention points in the developmental process. As a result of the additions, Bachman, et al. (2011b) found that younger students were more sensitive to changing behaviors when presented with prevention interventions. When the KIP survey was developed in 1998, researchers added 6th graders to the survey for the same reasons as the MTF researchers added 8th graders. Unlike the MTF survey, however, costs of implementing forced the Kentucky survey to be implemented only in even-numbered years. School districts initially bore the cost of implementation reducing the frequency of administration. Additional administration capacity issues and associated costs also limited the frequency the survey took place in Kentucky middle and high schools. Federal funding was later utilized to make the survey and related results accessible to every school district in the state.

The questions included on the KIP have been found to have significant reliability (Sanders, Illback, Crabtree, & Sanders, 2012). To address the issue of accuracy within a self-report survey, several steps have been incorporated into the survey design to decrease the impact of students who might select answers indiscriminately or who might over exaggerate their answers to impress their friends. These include: protections of anonymity of students to increase accurate responses, data cleaning processes that search for answers that might be classified as implausible or be discrepant from other responses from the same student; stringent administration guidelines to ensure data

are collected in the same manner across all districts; and the inclusion of a fake drug, which when selected by students will disqualify all of their answers for that survey administration. Youth who participate are assured of their anonymity and are also given the opportunity to opt out of the administration. These two factors help reduce the feeling by students of being coerced to answer a certain way, which encourages them to answer truthfully.

The survey uses a passive consent model and reporting formats ensure anonymity of individual students (Sanders, et al., 2017a, 2017b). Students or parents who do not want themselves or their children to participate must opt out of the administration. The implementation guidelines for administration of the survey give parents two weeks to respond in writing if they would not like their student to participate.

Each district determines whether its schools will participate in the biannual administration. School districts are not charged to participate. Costs for administration and analysis of data are covered by the KDBHDID through federal prevention designated funding. Data collected belongs to the individual school district, and districts have the right to say to whom the data can be released. This provides a level of assurance that school districts will not be compared across the state for the issues they may be experiencing related to ATOD use among students. The purpose of the survey is to anonymously assess ATOD use among middle and high school students as well as to consider factors related to substance use, such as school safety, peer influences, mental health issues, bullying, and perception of risk.

The survey was originally administered only on paper, but with the 2008 administration, a web-based version was added and made available to districts. Administration of the paper survey takes about 45 minutes. The web-based survey takes a lesser amount of time. In order to streamline administration as well as analysis and return of results, web-based administration will be required starting in 2020. Districts are asked to administer the survey within a five-week window in October, but have flexibility as to the exact dates they do so. Results are scanned and tabulated, data are cleaned and analyzed, and reports are presented within six-months post administration. The 2016 survey results were released in April 2017 to schools and to state officials. The length of survey administration (18 years, 9 administrations) allows for review of not only current-year administration data but also trends over time, informing prevention efforts at the state, regional and community levels.

Administration management. REACH Evaluation is contracted by the Kentucky Department for Behavioral Health, Developmental and Intellectual Disabilities and is responsible for the administration of the survey, scoring and dissemination of the results. REACH Evaluation provides process and outcome evaluation, needs assessment, software development, planning, survey research and data analysis for non-profit, for-profit, philanthropic, and governmental entities. The evaluation arm of REACH is integrated into the direct service agency's range of services offered since its inception in 1987.

REACH has been responsible for the KIP administration process for 10 survey administrations – 2003, 2004, 2006, 2008, 2010, 2012, 2014 and 2016, and 2018. After

completion of the survey by students, REACH Evaluation reviews and cleans the data, analyzes the results and prepares a report outlining district-specific results compared to the region, state, and when available, the rest of the country.

The administration of the survey has been manualized, ensuring the consistency of implementation across all school districts participating. The manual provides general project information, organization of the project, parental notification protocols, confidentiality requirements, preparation of survey materials processes, survey administration procedures, and copies of all forms, timeline and resources utilized within the project. Each survey coordinator receives a copy of the administration manual as well as participates in a training prior to the implementation period.

Data collection. Data collection for this study occurred between October 3, 2016 and November 11, 2016. Data collection occurred at the school level between these dates at the discretion of school administrators. To participate, school administrators committed to the implementation in August 2016 through a formal agreement process. At that time, each school administrator reported the number of schools in his or her district that would be participating; the estimated number of students who would be participating and if they would prefer a paper or online administration. Parents were notified of the survey administration at least two weeks prior to the survey date and given the opportunity to opt their students out of participation. Students who were opted out of the participation were required to not be penalized for doing so. All individuals involved in the administration of the survey were required to sign letters of confidentiality and professional ethics regarding survey implementation. The

administrator was given a script to read to students prior to starting the survey. The script advised students that their answers were confidential and anonymous.

Contingencies were provided for those students who were not able to complete the survey as quickly as their peers (extended time) and for those not able to adequately read the survey (read aloud survey administration). These contingencies insured that all students had the opportunity to participate. Once administration was complete, paper surveys were placed by students into envelopes, and those envelopes were returned to the evaluators still sealed for analysis. Online administration results were delivered directly to the evaluators for analysis.

Research Design and Analyses

Study design. The cross-sectional study investigated a set of variables believed to influence the perception of safety of students in the 6th, 8th, 10th and 12th grades in Kentucky and included on a survey currently being conducted on a biannual basis by REACH Evaluation for the Kentucky Department of Behavioral Health, Developmental and Intellectual Disabilities. The study investigated whether substance use, mental health issues, personal victimization, and problem behaviors impact the perception of safety students feel in school. Additional factors, including age, grade, gender, race, ethnicity, military connectedness, and community poverty levels may play a role in those perceptions of safety and were controlled for in the study. Table 3.4 provides a list of study variables. The study was cross-sectional in nature, allowing for an analysis of the relationship between the perception of safety and several different variables within a single study. Given the complexity of the school culture and the potential impact of

Table 3.4. KIP Survey measures information for variables of interest

General construct (First year with available data)	Specific measures (Survey question number)	Response categories	Source, validation studies cited
Substance Use Construct			
Substance Use (2004)	26b. On how many occasions (if any) have you had alcoholic beverages (beer, wine, or hard liquor) to drink—more than a few sips in the past 30 days?	<p>Response options: 0 times 1-2 times 3-5 times 6-9 times 10-19 times 20-39 times 40+ times</p> <p>Dichotomized measure: 0 times, 1 or more times</p> <p>(NOTE: Other illicit substances will be dichotomized into a single measure – 0 times if no occasions have been reported for any substance, and 1 or more times if any substance was used at least once.)</p>	Communities that Care Youth Survey (CTCYS) ^c
	27. On how many occasions (if any) during the past 30 days have you been drunk or very high from drinking alcoholic beverages/		
	29b. On how many occasions (if any) have you smoked cigarettes in the past 30 days?		
	34b. On how many occasions (if any) have you used marijuana in the past 30 days?		
	Other illicit substances: On how many occasions (if any) have you used _____ in the past 30 days? 37b. Cocaine or crack 38b. Narcotics or drugs that require a doctor’s prescription without a doctor telling you to take them 39b. Painkillers (Oxycontin, Percocet, Vicodin, Codeine) without a doctor’s prescription 42b. Methamphetamines 43b. Heroin 45b Ecstasy		
	8g. How many times (if any) in the past year (12 months) have you been drunk or high at school?		

Table 3.4 – Continued

General construct (First year with available data)	Specific measures (Survey Question Number)	Response categories	Source, validation studies cited
Psychological Distress and Suicidal Behavior Construct			
Serious Psychological Distress (2012)	20a. During the past 30 days, about how often did you feel nervous?	Response options: None of the time A little of the time Some of the time Most of the time All of the time Each question is scored 0-5, respectively. Item scores are summed, ranging from 0-30. Dichotomized measure: Cumulative score of \geq 13 is classified as Serious Psychological Distress	K-6 Scale ^b
	20b. During the past 30 days, about how often did you feel hopeless?		
	20c. During the past 30 days, about how often did you feel restless or fidgety?		
	20d. During the past 30 days, about how often did you feel so depressed that nothing could cheer you up?		
	20e. During the past 30 days, about how often did you feel that everything was an effort?		
	20f. During the past 30 days, about how often did you feel worthless?		
Suicidal ideation and behavior (2014)	22. During the past 12 months, did you ever seriously consider attempting suicide?	Response options: Yes No Response options: None, 1 time, 2-3 times, 4-5 times, 6+ times Dichotomized measure: 0 times, 1 or more times	Youth Risk Behavior Surveillance System (YRBS) ^d
	23. During the past 12 months, did you make a plan about how you would attempt suicide?		
	24. During the past 12 months, how many times did you actually attempt suicide?		

Table 3.4 – Continued

General construct (First year with available data)	Specific measures (Survey Question Number)	Response categories	Source, validation studies cited
Bullying & Cyberbullying Construct			
Bullying/ Cyberbullying (2014)	16. During the past year (12 months), have you ever been bullied on school property)	Response options: Yes No	Youth Risk Behavior Survey (YRBS) ^a
	17. During the past year (12 months), have you ever been electronically bullied (include being bullied through e-mail, chat rooms, instant messaging, websites, social networks, or texting.)		
Personal Violence and Problem Behaviors Construct			
Personal Violence (2004)	15a. During the last school year, did someone take money or things directly from you by using force, weapons, or threats at school?	Response options: Yes No	Items were initially added to the survey with guidance from the National School Safety Center, resembling questions on one of their assessments. The measures were evaluated for validity in an initial pilot study of the survey. ^e
	15b. During the last school year, did someone verbally threaten you at school?		
	15c. During the last school year, did you have something stolen from your desk, locker or other place at school?		
	15d. During the last school year, did someone physically threaten, attack, or hurt you at school?		
	15e. During the last school year, did someone make unwanted sexual advances or attempt to sexually assault you at school?		

Table 3.4 – Continued

General construct (First Year of Available Data)	Specific measures (Survey Question Number)	Response categories	Source, validation studies cited
Problem Behaviors (Delinquency & Aggression) (2004)	8a. How many times (if any) in the past year (12 months) have you been suspended from school?	Response options: 0 times 1-2 times 3-5 times 6-9 times 10-19 times 20-39 times 40+ times Dichotomized measure: 0 times, 1 or more times	CTCYS ^c
	8b. How many times (if any) in the past year (12 months), have you carried a handgun?		
	8c. How many times (if any) in the past year (12 months) have you sold illegal drugs?		
	8d. How many times (if any) in the past year (12 months) have you stolen or tried to steal a motor vehicle such as a car or motorcycle?		
	8e. How many times (if any) in the past year (12 months) have you been arrested?		
	8h. How many times (if any) in the past year (12 months) have you taken a handgun to school?		
	8f. How many times (if any) in the past year (12 months) have you attacked someone with the idea of seriously hurting them?		

Note: REACH Evaluation. (2016).

^a. Brener, et al. (2004). ^b. Peiper, Clayton, Wilson, & Illback, (2015); Peiper, Lee, Lindsay, Drashner, & Wing (2016). ^c. Arthur, et al. (2007); Briney, Brown, Hawkins, & Arthur (2012); Kessler, et al., (2002). ^d. Brener, et al., (2002); Brener, et al., (2013). ^e. Collins, Johnson, & Becker (2007); Arthur, Hawkins, Catalano, & Pollard (1997).

multiple factors on a student's perception of his or her safety, a correlational study allows for the examination of multiple variables to determine their influence on the dependent variable.

Measures. When the KIP is administered, youth are asked to respond to 62 multiple choice questions that assess their substance use, as well as assess their perceptions of school safety, problem behaviors, peer influences, mental health issues, bullying and perception of risk of ATOD use (REACH Evaluation, 2016). Demographic questions comprise the initial seven questions of the survey. Demographic information included in this study include age (10-18, 18+), grade (6, 8, 10, 12), gender (male or female), race (American Indian/Alaskan Native, Asian, Black or African American, Native Hawaiian or other Pacific Islander, White, Other), Hispanic (yes or no), family connection to military (Yes, only one person; Yes, more than one person; No; I don't know), and participation in the free or reduced lunch program (yes or no). The survey includes eight questions that ask about violence-related behaviors and problems experienced at school in the community, such as carried a handgun, been arrested or suspended, and been drunk at school. Question 11 specifically asks students to identify how safe they feel at school and will serve as the dependent variable in this study. Questions 16-19 ask about bullying and defines bullying as occurring when there is a power imbalance and peer victimization between two or more students (REACH, 2016). Question 20 asks about psychological distress, and the answers from that question comprise the K-6 scale. Question 21 asks students to identify if they have ever self-harmed, and questions 22 through 24 probe suicide behaviors. Questions 25 through 32 ask about alcohol and

tobacco use and defines drinking as not including drinking a few sips of wine for religious purpose. Illicit drug and prescription drug use without a prescription are assessed in questions 33-48. Question 46 asks about the use of a fake drug and is designed to identify students who are not honestly responding to the survey questions. Access to alcohol, tobacco, prescription drugs and illicit drugs are identified in questions 49-55. Perception of harm of peers and parents are assessed in questions 56-60 and gambling behaviors are assessed in questions 61 and 62.

Dependent variable. The dependent variable of perception of student safety will be measured through a construct of responses to Question 11 on the KIP survey. All responses of “unsafe” and “very unsafe” will be recoded as “No” and all responses of “very safe” and “safe” will be recoded as “Yes.” These results will then be loaded into the multivariable regression analysis model to assess for correlation among the variables of interest.

Independent variables. The general constructs of substance use, mental health issues, personal victimization, and problem behaviors will be utilized as variables of interest. Table 3.4 provides detailed information for each of the variables of interest, including exact wording of the survey question, initial source of the measure, validity/reliability studies, and the year added to the survey.

Analysis. Findings from this study stem from inferential statistics and contingency table analysis using cross tabulation to initially determine significance of association between the dependent and independent variables collected through the 2016 KIP administration. Contingency tables and Chi-Square analysis for each variable of

interest in relation to perception of safety were examined and based on those results, a logistical regression for each was conducted. Crude relative risk with 95% confidence intervals were utilized for inclusion of variables into a multivariable regression model. Multivariable regression techniques were then utilized to examine the association of each independent variable in relation to the others in predicting that students will perceive their school setting as unsafe. Adjusted relative risk with 95% confidence intervals were utilized. Findings from this study stem from inferential statistics and contingency table analysis using cross tabulation to initially determine significance of association between the dependent and independent variables collected through the 2016 KIP administration.

The initial analysis was followed by subsequent analysis of data for high school students (e.g. grades 10 and 12) and middle school students (e.g. grades 6 and 8) since the independent and dependent variables are all strongly associated with age. The KIP captures grades 6, 8, 10, and 12, so three separate models – all students, middle school (grades 6 and 8) and high school (grades 10 and 12) - were fit to determine differential associations between the independent variables with the dependent variable of school safety. A bivariate, unadjusted regression was conducted to determine the effect size and direction of the difference.

An unadjusted regression analysis was then conducted between the dependent variables and variables of interest individually to determine the strength of association and to determine which variables would be loaded into the multivariate regression model for final analysis. This step in the analysis was taken to utilize a theoretical

approach to determine strength of association of variables. All independent variables had a medium to large effect size in the bivariate regression analysis. The large sample size and the potential Type 1 errors that could result justified using the effect size in the bivariate analysis to identify variables of interest for additional analysis. An alpha level of .05 was used for all statistical tests.

Since all independent variables had a medium to large effect size in the bivariate analysis, all remaining variables were loaded into the multivariable regression model to determine which, if any, of the independent variables were greater predictors of the perception of safety while controlling for the effects of the other variables on the dependent variable. A backward stepwise approach was utilized to determine model parsimony. Multiple regression analysis is suitable for analyzing collective and separate effects, of multiple independent variables on a dependent variable (Pedhazur, 1982) and is one of the most widely used statistical analyses in educational research (Gall, Borg, & Gail, 1996). A list-wise deletion process was utilized for those cases with missing data in at least one of the specified cases. Cases with missing data were excluded from analyses, since complete data is required when utilizing the multivariable regression model. An analysis of the missing data was conducted to determine if they varied significantly from those cases which had complete data.

Finally, sensitivity analyses were conducted to determine whether students reporting use of a fictional substance named Zycopan impact the parameter estimates in the models. Data from student responses that were inconsistent across the variables were removed during data cleaning.

4. RESULTS

The purpose of this study was to identify the association of substance use, mental health, personal victimization, and problem behaviors with the perception of school safety among middle and high school students in Kentucky. Age, gender, race, grade level, socioeconomic level, and military connectedness were controlled in the final model. Prior to the presentation of the findings, this chapter begins with a review of the study's research design and analyses.

This study first employed a crosstabulation analysis of secondary data to determine if there was a correlational relationship between the perception of school safety and the independent variables. This analysis was then followed by bivariate and multivariate analysis to investigate the strength of the relationships between the dependent variable of perception of school safety and the independent variables of substance use, mental health, personal victimization and problem behaviors in middle and high school students in Kentucky.

This chapter presents a recap of the research data utilized for analysis, an overview of the research design, review of data inclusion, and finally discussion of the results from these analyses including descriptions and calculations of the statistical tests performed with IBM SPSS Statistics Version 25.0 in order to address the research questions and the associated null hypotheses.

Research Data

This study analyzed secondary data collected as part of the 2016 administration of the Kentucky Incentives for Prevention (KIP) survey. The biennial survey is

administered by REACH Evaluation of Louisville on behalf of the Cabinet for Health and Family Services, Department of Behavioral Health, Developmental and Intellectual Disabilities through agreements with individual schools in the state. The survey is administered to 6th, 8th, 10th and 12th graders and has been in place since 1999. It is intended to anonymously assess substance use, mental health, school safety, problem gambling and related risk and protective factors, such as perception of risk and perception of parental acceptance of substance use. In the 2016 administration, 149 out of 173 districts from 113 out of 120 counties in the Commonwealth participated. Total sample size was 111,700, representing nearly 60% of students in the surveyed grades in the state. All available data from the 2016 administration were utilized for the study.

Question 11 on the KIP survey served as the dependent variable for the study. The question asks students to identify their perception of safety as “very unsafe,” “unsafe,” “safe,” or “very safe.” For the purposes of this study, all responses of “safe” and “very safe” were recoded as 0. All responses of “unsafe” and “very unsafe” were recoded as 1.

Independent variables were constructed from questions focused on substance use, mental health, bullying and cyberbullying, personal victimization, and problem behaviors. Substance use questions (Table 4.1) were recoded as 0 for no use and 1 for all other response options. Recoded in a similar manner were responses for suicide attempt and problem behaviors. To develop a dichotomized measure for the serious psychological distress questions, each was scored 0-5 to correspond with the response

options of “none of the time” (0), “a little of the time” (1), “some of the time” (2), “most of the time” (3), and “all of the time” (4). A cumulative score of ≥ 13 was then coded as 1 and a score < 13 was coded as 0. The suicide ideation and plan, bullying and cyberbullying, and personal victimization questions were coded 0 for “no” responses and 1 for “yes” responses.

Research Design and Analysis

Findings from this study stem from inferential statistics and contingency table analysis using cross tabulation to initially determine significance of association between the dependent and independent variables collected through the 2016 KIP administration. All independent variables were positively correlated with the perception of school safety in the crosstabulation analysis. Data for all students was initially analyzed, followed by subsequent analysis of data for high school students (e.g. grades 10 and 12) and middle school students (e.g. grades 6 and 8).

An unadjusted regression analysis was then conducted between the dependent variables and variables of interest individually to determine the strength of association and to determine which variables would be loaded into the multivariate regression model for final analysis. This step in the analysis was taken to utilize a theoretical approach to determine strength of association of variables. All independent variables had a medium to large effect size in the bivariate regression analysis. The large sample size and the potential Type 1 errors that could result justified using the effect size in the bivariate analysis to identify variables for additional analysis. An alpha level of .05 was used for all statistical tests.

Finally, all remaining variables were loaded into a multivariable regression model to determine which, if any, of the independent variables had a greater impact on the perception of safety while taking into consideration the effects of the other variables on the dependent variable. A backward stepwise approach was utilized to determine model parsimony.

Data Inclusion

All available cases from the 2016 administration data set were utilized in the study to maximize the sample size. A pairwise deletion model was utilized for the crosstabulation analysis while a listwise deletion model was utilized for the multivariate regression analysis.

Sensitivity analyses were conducted to determine if students who answered inconsistently (e.g. reporting using substances more times in the past 30 days than they did in the past 12 months) or reported use of the fictional substance, Zycopan, impacted the analysis results. Models were run excluding students who answered inconsistently or who reported use of Zycopan to see results were changed. The models were unchanged.

Results

The findings of analysis of the data will be presented in this section without assumption as to how they relate to research questions and hypotheses. The emphasis of this study was to determine the association and the strength of that association between the dependent variable of perception of school safety and substance use, mental health, personal victimization and problem behaviors of middle and high school

students in Kentucky schools. The data set included all available data for students who participated in the 2016 administration of the KIP survey.

For each independent variable, as well as demographic factors within the domain constructs of substance use, mental health, personal victimization and problem behaviors, contingency table analysis with cross tabulation was utilized to determine the significance between the independent variables and the perception of school safety (dependent variable). The results from the cross tabulations are presented in Tables 4.1, 4.2, 4.3, 4.4, and 4.5.

Table 4.1. *Substance use and the perception of safety among all students*

Type of Substance Used in Past 30 Days	Have Not Used in Past 30 Days and felt unsafe (n)	Have Used in Past 30 Days and felt unsafe (n)	% of difference (=decrease)
Binge Drinking	11.0% (11,069)	20.4% (1,608)	85%
Cigarettes	10.8% (10,535)	20.1% (1,981)	86%
Marijuana	10.9% (10,947)	19.5% (1,575)	79%
Cocaine	11.5% (12,346)	32.2% (187)	181%
Rx Drugs	11.2% (11,781)	25.6% (709)	129%
Methamphetamines	11.5% (12,317)	38.1% (157)	231%
Heroin	11.5% (12,397)	40.9% (122)	256%
Ecstasy	11.5% (12,297)	34.3% (194)	198%

Table 4.2. *Mental health status and the perception of safety among all students*

Mental Health Issue Reported	Did not report mental health issue in past 12 months and felt unsafe (n)	Reported mental health issue in past 12 months and felt unsafe (n)	% of difference (=decrease)
Psychological Distress	8.1% (7,262)	31.4% (5,131)	288%
Suicide Ideation	9.5% (9,108)	27.2% (3,480)	186%
Suicide Plan	9.9% (9,670)	28.9% (2,886)	192%
Suicide Attempt	10.3% (10,464)	30.9% (2,124)	202%

Table 4.3. *Personal victimization and the perception of safety among all students*

Type of Personal Victimization Reported in Past 30 Days	Have Not Reported in Past 30 Days and Felt Unsafe (n)	Have Reported in Past 30 Days and Felt Unsafe (n)	% of difference (=decrease)
Theft by Force	10.8% (11,519)	39.8% (1,375)	269%
Verbal Threat	7.7% (6,685)	26.1% (6,188)	239%
Theft	8.6% (6,710)	19.3% (6,160)	124%
Physical Threat	9.7% (9,603)	31.2% (3,268)	222%
Sexual Harassment	10.2% (10,532)	33.5% (2,317)	228%
Bullying	7.9% (6,453)	25.1% (6,203)	218%
Cyberbullying	9.3% (8,452)	25.1% (4,152)	170%

Table 4.4. Problem behavior and the perception of safety among all students

Type of Problem Behavior Reported in Past 30 Days	Have Not Reported in Past 30 Days and Felt Unsafe (n)	Have Reported in Past 30 Days and Felt Unsafe (n)	% of difference (=decrease)
Suspended	10.7% (10,702)	21.6% (2,251)	102%
Carried a handgun	10.7% (10,513)	19.7% (2,388)	84%
Dealt drugs	11.2% (11,992)	24.5% (884)	119%
Stole	11.4% (12,401)	32.4% (496)	184%
Arrested	11.2% (12,080)	28.6% (806)	155%
Attacked another student	10.2% (10,276)	26.6% (2,614)	161%

Table 4.5. Demographics and the perception of safety among all students

	Perception of Safety	
	Report Feeling Safe (n)	Report Feeling Unsafe (n)
Demographic characteristics		
Gender		
Male	88.1% (48,627)	11.9% (6,570)
Female	88.6% (48,109)	11.4% (6,205)
Race		
NH White	88.7 (79,863)	11.3% (10,134)
NH Black	85.8% (6,233)	14.2% (1,029)
Hispanic	86.2% (5,536)	13.8% (884)
NH AA/PI	87.4% (1,637)	12.6% (237)
NH AI/AN	82% (2,746)	18% (602)
NH Other/Multiracial	80.2% (2,391)	19.8% (589)
Free/reduced lunch		
No	89.4% (42,550)	10.6% (5,048)
Yes	87.4% (49,337)	12.6% (7,121)
Military Connected		
No	89.1% (55,063)	10.9% (6,715)
Yes	87.3% (39,644)	12.7% (5,792)

As each of the independent variables, as well as demographic factors, indicated significance for inclusion in the model, a bivariate, unadjusted regression was conducted to determine the effect size and direction of the difference. Effect sizes of 1.5 to 1.75 were classified as small; 1.76 to 2.50 were classified as medium; and 2.5 to 3.0 were classified as large and were positively associated with the perception of safety. All independent variables showed a medium to large effect size, resulting in the inclusion of all variables in the multivariate regression model, and a backward stepwise approach was utilized to determine model parsimony. The bivariate and multivariate analyses were conducted for all students. Separate models were analyzed for middle (e.g. grades 6 and 8) and high (e.g. grades 10 and 12) school students based on the social development theory that indicates different ages are impacted by differing social constructs and representing the age construct in the demographics (Catalano & Hawkins, 1996). See Tables 4.6, 4.7, and 4.8 for results from the bivariate and multivariate analyses.

Table 4.6. *Bivariate and multivariate associations between variables of interest and perception of school safety among all students*

Characteristic (NH=Non-Hispanic)	% reporting feeling unsafe/ very unsafe	Crude RR (95% CI) (*=Significant)	Adjusted aRR (95% CI) (*=Significant)
Demographics			
<i>Gender</i>			
Male (n=55,197)	11.9%	1.00	--
Female (n=54,314)	11.4%	.96 (.92-.99)*	.78 (.74-.82)*
<i>Grade</i>			
Middle School (n=60,011)	10.3%	1.00	--
High School (n=50,758)	13.4%	1.35 (1.30-1.40)*	1.39 (1.32-1.46)*
<i>Race</i>			
NH White (n=84,755)	11.3%	1.00	1.00
NH Black (n=6,590)	9.1%	1.29 (1.20-1.39)*	1.38 (1.25-1.51)*
Hispanic (n=6,420)	12.1%	1.30 (1.20-1.40)*	1.27 (1.15-1.39)*
NH AA/PI (n=1,655)	7.8%	1.02 (.87-1.19)*	1.02 (.84-1.24)
NH AI/AN (n=3,003)	21.2%	1.69 (1.53-1.86)*	1.27 (1.12-1.44)*
NH Other/Multiracial (n=3,523)	14.4%	1.88 (1.72-2.05)*	1.44 (1.28-1.62)*
<i>Free/reduced lunch</i>			
No (n=47,598)	10.6%	1.00	--
Yes (n=56,458)	12.6%	1.22 (1.17-1.26)*	--
<i>Military</i>			
No/Don't know (n=61,778)	10.9%	1.00	--
Yes (1 or more; n=45,436)	12.7%	1.21 (1.13-1.27)*	--
Variables			
<i>Substance Use</i>			
Binge drinking (n=108,817)	20.4%	2.08 (1.96-2.20)*	1.10 (1.01-1.20)
Cigarettes (n=107,741)	20.1%	2.09 (1.98-2.21)*	--
Marijuana (n=108,044)	19.5%	1.98 (1.86-2.10)*	.87 (.80-.95)*

Table 4.6. Continued

Characteristic (NH=Non-Hispanic)	% reporting feeling unsafe/ very unsafe	Crude RR (95% CI) (*=Significant)	Adjusted aRR (95% CI) (*=Significant)
Cocaine (n=108,085)	32.2%	3.66 (3.01-4.36)*	1.29 (.97-1.71)*
Rx drug (n=107,914)	25.6%	2.73 (2.5-2.98)*	--
Methamphetamines (n=107,727)	38.1%	4.75 (3.89-5.80)*	1.62 (1.17-2.25)*
Heroin (n=107,899)	40.9%	5.32 (4.22-6.71)*	1.53 (1.04-2.27)*
MDMA (n=107,899)	34.3%	4.04 (3.39-4.81)*	--
<i>Mental Health</i>			
Psychological distress (n=106,421)	31.4%	5.23 (5.02-5.44)*	2.91 (2.74-3.08)*
Suicide ideation (n=108,286)	27.2%	3.55 (3.39-3.71)*	1.12 (1.05-1.20)*
Suicide plan (n=108,137)	28.9%	3.72 (3.54-3.90)*	--
Suicide attempt (n=108,306)	30.9%	3.88 (3.67-4.10)*	--
<i>Personal victimization</i>			
Forceful theft victim (n=110,102)	39.8%	5.47 (5.09-5.87)*	1.53 (1.38-1.70)*
Verbal threat victim (n=109,972)	26.1%	4.22 (4.06-4.38)*	1.61 (1.52-1.71)*
Theft victim (n=109,952)	19.3%	2.53 (2.44-2.63)*	1.45 (1.37-1.52)*
Physical threat victim (n=109,963)	31.2%	4.24 (4.05-4.44)*	1.32 (1.23-1.42)*
Sexual harassment/assault victim (n=109,838)	33.5%	4.41 (4.18-4.65)*	1.51 (1.40-1.63)*
Bully victim (n=107,994)	23.3%	3.52 (3.39-3.65)*	1.77 (1.67-1.88)*
Cyberbully victim (n=107,745)	25.1%	3.27 (3.14-3.41)*	1.15 (1.08-1.23)*
<i>Problem behaviors</i>			
Suspended (n=110,538)	21.6%	2.30 (2.18-2.42)*	1.24 (1.15-1.34)*

Table 4.6. Continued

Characteristic (NH=Non-Hispanic)	% reporting feeling unsafe/ very unsafe	Crude RR (95% CI) (*=Significant)	Adjusted aRR (95% CI) (*=Significant)
Carried a handgun (n=110,240)	19.7%	2.04 (1.94-2.14)*	1.20 (1.12-1.29)*
Sold illegal drugs (n=110,220)	24.5%	2.56 (2.36-2.76)*	.88 (.78-1.01)*
Theft of a vehicle (n=110,318)	32.4%	3.73 (3.35-4.16)*	--
Arrested (n=110,280)	28.6%	3.16 (2.90-3.43)*	1.22 (1.07-1.39)*
Attacked another (n=110,188)	26.6%	3.17 (3.02-3.33)*	1.28 (1.19-1.38)*

Table 4.7. *Bivariate and multivariate associations between variables of interest and perception of school safety among middle school students*

Characteristic (NH=Non-Hispanic)	% reporting feeling unsafe/ very unsafe	Crude RR (95% CI) (*=Significant)	Adjusted aRR (95% CI) (*=Significant)
Demographics			
<i>Gender</i>			
Male (n=30,104)	10.7%	1.00	--
Female (n=29,256)	9.8%	.90 (.86-.95)*	.75 (.70-.81)*
<i>Race</i>			
NH White (n=43,782)	9.5%	1.00	1.00
NH Black (n=3,520)	12.8%	1.40 (1.27-1.56)*	1.41 (1.23-1.61)*
Hispanic (n=2,790)	11.9%	1.29 (1.16-1.43)*	1.23 (1.08-1.41)*
NH AA/PI (n=868)	9.2%	.97 (.77-1.22)	.93 (.69-1.25)*
NH AI/AN (n=1,934)	15.6%	1.77 (1.56-2.01)*	1.26 (1.07-1.49)*
NH Other/Multiracial (n=2,418)	16.9%	1.95 (1.74-2.17)*	1.43 (1.23-1.66)*
<i>Free/reduced lunch</i>			
No (n=24,532)	9.5%	1.00	--
Yes (n=31,329)	10.9%	1.17 (1.12-1.24)*	--
<i>Military</i>			
No/Don't know (n=32,089)	9.5%	1.00	--
Yes (1 or more; n=26,118)	11.2%	1.21 (1.14-1.27)*	.92 (.86-.99)*
Variables			
<i>Substance Use</i>			
Binge drinking (n=57,655)	29.5%	3.83 (3.39-4.33)*	1.21 (1.01-1.46)*
Cigarettes (n=56,225)	26.0%	3.30 (2.98-3.65)*	--
Marijuana (n=57,040)	25.9%	3.22 (2.85-3.64)*	--
Cocaine (n=58,278)	35.7%	4.70 (3.43-6.46)*	1.77 (1.07-2.95)*
Rx drug (n=57,138)	27.9%	3.55 (3.12-4.05)*	--
Methamphetamines (n=58,071)	42.1%	6.44 (4.66-8.90)*	--
Heroin (n=58,164)	43.0%	6.67 (4.65-9.57)*	1.83 (1.04-3.24)*
MDMA (n=58,048)	40.3%	6.01 (4.50-8.04)*	--

Table 4.7. Continued

Characteristic (NH=Non-Hispanic)	% reporting feeling unsafe/ very unsafe	Crude RR (95% CI) (*=Significant)	Adjusted aRR (95% CI) (*=Significant)
<i>Mental Health</i>			
Psychological distress (n=50,541)	33.6%	6.49 (6.11-6.90)*	3.21 (2.94-3.52)*
Suicide ideation (n=53,116)	28.0%	4.29 (4.02-4.58)*	1.26 (1.14-1.39)*
Suicide plan (n=54,343)	29.8%	4.50 (4.19-4.84)*	--
Suicide attempt (n=55,147)	30.9%	4.55 (4.21-4.92)*	--
<i>Personal victimization</i>			
Forceful theft victim (n=57,326)	35.4%	5.34 (4.87-5.85)*	1.42 (1.24-1.62)*
Verbal threat victim (n=46,629)	23.6%	4.35 (4.12-4.60)*	1.59 (1.46-1.73)*
Theft victim (n=38,141)	16.2%	2.58 (2.45-2.72)*	1.43 (1.32-1.54)*
Physical threat victim (n=53,030)	27.6%	4.29 (4.03-4.57)*	1.36 (1.23-1.49)*
Sexual harassment/assault victim (n=56,552)	31.3%	4.49 (4.12-4.88)*	1.44 (1.28-1.63)*
Bully victim (n=41,327)	19.8%	3.60 (3.31-3.80)*	1.75 (1.62-1.90)*
Cyberbully victim (n=49,452)	21.9%	3.13 (2.94-3.32)*	1.16 (1.06-1.26)*
<i>Problem behaviors</i>			
Suspended (n=55,124)	21.4%	2.65 (2.45-2.85)*	1.30 (1.16-1.45)*
Carried a handgun (n=53,332)	18.8%	2.27 (2.12-2.43)*	1.31 (1.19-1.45)*
Sold illegal drugs (n=58,982)	31.3%	4.09 (3.46-4.82)*	--
Theft of a vehicle (n=59,137)	32.8%	4.38 (3.65-5.24)*	--
Arrested (n= 58,739)	31.3%	4.13 (3.59-4.79)*	1.46 (1.18-1.81)*
Attacked another (n= 54,533)	27.1%	3.90 (3.64-4.18)*	1.37 (1.23-1.52)*

Table 4.8. *Bivariate and multivariate associations between variables of interest and perception of school safety among high school students*

Characteristic (NH=Non-Hispanic)	% reporting feeling unsafe/ very unsafe	Crude RR (95% CI) (*=Significant)	Adjusted aRR (95% CI) (*=Significant)
Demographics			
<i>Gender</i>			
Male (n=25,093)	13.3%	1.00	--
Female (n=25,058)	13.3%	1.00 (.95-1.06)	.79 (.74-.85)
<i>Race</i>			
NH White (n=40,973)	12.6%	1.00	1.00
NH Black (n=3,070)	14.7%	1.20 (1.08-1.33)*	1.33 (1.16-1.51)*
Hispanic (n=2,630)	16.5%	1.37 (1.23-1.53)*	1.30 (1.13-1.49)*
NH AA/PI (n=787)	13.2%	1.06 (.86-1.30)*	1.10 (.85-1.43)*
NH AI/AN (n=1,069)	20.1%	1.75 (1.50-2.04)*	1.28 (1.05-1.56)*
NH Other/Multiracial (n=1,105)	23.0%	2.08 (1.80-2.39)*	1.48 (1.23-1.79)*
<i>Free/reduced lunch</i>			
No (n=23,066)	11.8%	1.00	--
Yes (n=25,129)	14.7%	1.29 (1.22-1.36)*	--
<i>Military</i>			
No/Don't know (n=29,689)	12.4%	1.00	--
Yes (1 or more; n=19,318)	14.8%	1.23 (1.17-1.30)*	--
Variables			
<i>Substance Use</i>			
Binge drinking (n=43,267)	29.5%	1.60 (1.49-1.71)*	--
Cigarettes (n=41,680)	18.6%	1.63 (1.53-1.74)*	--
Marijuana (n=42,943)	18.2%	1.56 (1.45-1.67)*	.90 (.82-.99)
Cocaine (n=49,226)	31.1%	3.01 (2.44-3.72)*	--
Rx drug (n=48,008)	23.9%	2.13 (1.89-2.40)*	--
Methamphetamines (n=49,244)	35.8%	3.71 (2.88-4.79)*	2.00 (1.38-2.90)*
Heroin (n=49,437)	39.5%	4.33 (3.20-5.86)*	--
MDMA (n=49,286)	31.3%	3.03 (2.43-3.78)*	--

Table 4.8. Continued

Characteristic (NH=Non-Hispanic)	% reporting feeling unsafe/ very unsafe	Crude RR (95% CI) (*Significant)	Adjusted aRR (95% CI) (*Significant)
<i>Mental Health</i>			
Psychological distress (n=39,550)	30.0%	4.27 (4.04-4.51)*	2.70 (2.52-2.91)*
Suicide ideation (n=42,386)	26.6%	2.91 (2.74-3.09)*	--
Suicide plan (n=43,807)	28.2%	3.06 (2.87-3.26)*	--
Suicide attempt (n=46,006)	30.9%	3.28 (3.04-3.54)*	--
<i>Personal victimization</i>			
Forceful theft victim (n=49,324)	47.9%	6.41 (5.72-7.20)*	1.68 (1.42-1.98)*
Verbal threat victim (n=39,679)	29.2%	4.13 (3.92-4.36)*	1.62 (1.50-1.76)*
Theft victim (n=39,815)	25.3%	3.00 (2.84-3.16)*	1.49 (1.39-1.61)*
Physical threat victim (n=46,456)	36.9%	4.57 (4.26-4.90)*	1.27 (1.15-1.41)*
Sexual harassment/assault victim (n=46360)	34.9%	4.14 (3.86-4.45)*	1.56 (1.41-1.71)*
Bully victim (n=40,003)	29.6%	4.00 (3.78-4.22)*	1.82 (1.67-1.98)*
Cyberbully victim (n=41,728)	28.7%	3.43 (3.24-3.64)*	1.13 (1.03-1.23)*
<i>Problem behaviors</i>			
Suspended (n=44,971)	21.7%	1.96 (1.83-2.10)*	1.20 (1.09-1.33)*
Carried a handgun (n=44,757)	20.6%	1.82 (1.70-1.95)*	1.10 (1.00-1.21)*
Sold illegal drugs (n=47,624)	22.9%	2.03 (1.86-2.22)*	--
Theft of a vehicle (n=49,652)	32.3%	3.18 (2.77-3.64)*	--
Arrested (n= 48,718)	27.2%	2.54 (2.29-2.82)*	--
Attacked another (n= 45,814)	26.0%	2.56 (2.38-2.74)*	1.18 (1.07-1.31)*

Hypothesis Testing

RQ1: Do Kentucky middle and high school students who report substance use also report higher levels of feeling unsafe (answering “unsafe” or “very unsafe” on question 11 of the 2016 KIP Survey) in the school?

H1_o: There is not a significant relationship between substance use and the perception of feeling unsafe among students.

H1_a: There is a significant relationship between substance use and the perception of feeling unsafe among students.

Correlational analyses were used to examine the relationship between use of substances and the perception of safety among students. All eight substance use variables (e.g. binge drinking, and 30-day cigarette, marijuana, cocaine, prescription drugs, methamphetamines, heroin, and ecstasy) were positively associated with the perception of feeling unsafe by students in the initial cross tabulation analysis (Table 4.1). These results indicate that students who report substance use are more likely to report a perception of being unsafe, compared to their peers who do not substance use. Differences between the feeling of being unsafe among youth who used these substances compared to youth who did not report substance use ranged from 8.6 to 29.4 percentage points higher. Illicit substance use (e.g. cocaine, methamphetamines, heroin and ecstasy) resulted in more significant feelings of being unsafe than licit substance use (e.g. binge drinking, cigarettes, and prescription drugs), increasing by nearly 2 to more than 5 times the rate that a student would report the perception of being unsafe.

Among all grades (Table 4.6), heroin use increased the risk of feeling unsafe (RR=5.52, 95% CI:4.22-6.71) most significantly of all substances, followed by methamphetamines (RR=4.75, 95% CI:3.89-5.80), ecstasy (RR=4.04 (3.39-4.81), cocaine, (RR=3.66, 95% CI:3.01-4.36) prescription drugs (RR=2.73, 95% CI:2.50-2.98), cigarettes (RR=2.09, 95% CI:1.98-2.21), binge drinking (RR=2.08, 95% CI:1.96-2.20) and marijuana (RR=1.98, 95% CI:1.86-2.10). Among middle school students (Table 4.7) use of all substances were positively associated with increased perception of feeling unsafe. Heroin (RR=6.67 95% CI: 4.65-9.57), again increased the risk of feeling unsafe most significantly, followed by methamphetamines (RR=6.44 95% CI: 4.66-8.90), ecstasy (RR=6.01, 95% CI: 4.50-8.04), cocaine (RR=4.70, 95% CI: 3.43-6.46), prescription drugs (RR=3.55, 95% CI: 3.12-4.05), cigarettes (RR=3.30, 95% CI: 2.98-3.65), binge drinking (RR=3.84, 95% CI: 3.39-4.33), and marijuana (RR=3.22, 95% CI: 2.85-3.64). Among high school students (Table 4.8), use of all substances were again positively associated with increased perception of feeling unsafe and the substances followed the same order for increased risk: heroin (RR=4.33 95% CI: 3.20-5.86), methamphetamines (RR=3.71 95% CI: 2.88-4.79), ecstasy (RR=3.03, 95% CI: 2.43-3.78), cocaine (RR=3.01, 95% CI: 2.44-3.72), prescription drugs (RR=2.13, 95% CI: 1.89-2.40), cigarettes (RR=1.63, 95% CI: 1.53-1.74), binge drinking (RR=1.60, 95% CI: 1.49-1.71), and marijuana (RR=1.56, 95% CI: 1.45-1.67). Since there is a significant positive relationship between the use of substances and the increasing feeling of being unsafe by students, the null hypothesis is rejected.

RQ2: Do Kentucky middle and high school students who report psychological distress, self-harm, and/or suicidal behavior also report higher levels of feeling unsafe (answering “unsafe” or “very unsafe” on question 11 of the 2016 KIP Survey) in the school?

H2_o: There is not a significant relationship between psychological distress, suicidal behavior and the perception of feeling unsafe among students.

H2_a: There is a significant relationship between psychological distress, suicidal behavior and the perception of feeling unsafe among students.

Correlational analyses were used to examine the relationship between mental health issues of serious psychological distress, and suicide ideation, plan and attempt and the perception of safety of students. All four mental health variables were positively correlated with the perception by students of feeling unsafe in school in the analysis (Table 4.2). These results indicate that students who report mental health issues are more likely to report a perception of being unsafe, compared to their peers who do not report mental health issues. Differences between the feeling of being unsafe among youth who reported mental health issues compared to youth who did not report mental health issues ranged from 17.7 to 23.4 percentage points higher.

Among all students (Table 4.6), psychological distress increased the risk of feeling unsafe (RR=5.23, 95% CI: 5.02-5.44) most significantly of the four mental health variables followed by suicide attempt (RR=3.88, 95% CI: 3.67-4.10); suicide ideation

(RR=3.72, 95% CI: 3.54-3.90), and suicide plan (RR=3.55, 95% CI: 3.93-3.71). Among middle school students (Table 4.7), psychological distress increased the risk of feeling unsafe (RR=6.49, 95% CI: 6.11-6.90) most significantly of the four mental health variables followed by suicide attempt (RR=4.55, 95% CI: 4.21-4.92) suicide plan (RR=4.50 95% CI: 4.19-4.84) and suicide ideation (RR=4.29, 95% CI: 4.02-4.58). Among high school students, (Table 4.8), psychological distress again increased the risk of feeling unsafe (RR=4.27, 95% CI: 4.04-4.51) most significantly of the four mental health variables followed by suicide attempt (RR=3.28 95% CI: 3.04-3.54); suicide plan (RR=3.06, 95% CI: 2.87-3.26), and suicide ideation (RR=2.91, 95% CI: 2.74-3.09). Since there is a significant positive relationship between the mental health issues and the increasing feeling of being unsafe by students, the null hypothesis is rejected.

RQ3: Do Kentucky middle and high school students who report personal victimization also report higher levels of feeling unsafe (answering “unsafe” or “very unsafe” on question 11 of the 2016 KIP Survey) in the school?

H3_o: There is not a significant relationship between personal victimization and the perception of feeling unsafe among students.

H3_a: There is a significant relationship between personal victimization and the perception of feeling unsafe among students.

Correlational analyses were used to examine the relationship between personal victimization variables of being a victim of theft by force, verbal threat, theft, physical threat, sexual harassment/assault, bullying and cyberbullying and the perception of

safety of students. All seven personal victimization variables were positively correlated with the perception by students of feeling unsafe in school in the analysis (Table 4.3). These results indicate that students who report personal victimization are more likely to report a perception of being unsafe, compared to their peers who do not report personal victimization. Differences between the feeling of being unsafe among youth who reported personal victimization compared to youth who did not report those who did not report personal victimization ranged from 10.6 to 29.0 percentage points higher.

Among all students (Table 4.6), theft by force increased the risk of feeling unsafe (RR=5.47, 95% CI: 5.09-5.87) most significantly of the seven personal victimization variables, followed by sexual harassment/assault (RR=4.41 95% CI: 4.18-4.65); physical threat (RR=4.24 95% CI: 4.05-4.44), verbal threat (RR=4.22, 95% CI: 4.06-4.38), bullying (RR=3.52, 95% CI: 3.39-3.65), cyberbullying (RR=3.27, 95% CI: 3.14-3.41), and theft (RR=2.53 95% CI: 2.44-2.63). Among middle school students (Table 4.7), theft by force increased the risk of feeling unsafe (RR=5.34, 95% CI: 4.87-5.85) most significantly of the seven personal victimization variables, followed by sexual harassment/assault (RR=4.49 95% CI: 4.12-4.88); verbal threat (RR=4.35 95% CI: 4.12-4.60), physical threat (RR=4.29, 95% CI: 4.03-4.57), bullying (RR=3.60, 95% CI: 3.31-3.80), cyberbullying (RR=3.13 95% CI: 2.94-3.32), and theft (RR=2.58 95% CI: 2.45-2.72). Among high school students (Table 4.8), theft by force increased the risk of feeling unsafe (RR=6.41 95% CI: 5.72-7.20) most significantly of the seven personal victimization variables, followed by sexual physical threat (RR=4.57 95% CI: 4.26-4.90); sexual harassment/assault (RR=4.14 95% CI: 3.86-4.45), verbal threat (RR=4.13, 95% CI: 3.92-4.36), bullying (RR=4.00, 95% CI: 3.78-4.22),

cyberbullying (RR=3.43 95% CI: 3.24-3.64), and theft (RR=3.00 95% CI: 2.84-3.16). Since there is a significant positive relationship between personal victimization and the increasing feeling of being unsafe by students, the null hypothesis is rejected.

RQ4: Do Kentucky middle and high school students who report problem behaviors also report higher levels of feeling unsafe (answering “unsafe” or “very unsafe” on question 11 of the 2016 KIP Survey) in the school?

H4_o: There is not a significant relationship between problem behaviors and the perception of feeling unsafe among students.

H4_a: There is a significant relationship between problem behaviors and the perception of feeling unsafe among students.

Correlational analyses were used to examine the relationship between problem behavior variables of being suspended, carrying a handgun, selling/dealing drugs, stealing a vehicle, being arrested, and attacking another person and the perception of safety of students. All six problem behavior variables were positively correlated with the perception by students of feeling unsafe in school in the analysis (Table 4.4). These results indicate that students who report problem behaviors are more likely to report a perception of being unsafe, compared to their peers who do not report problem behaviors. Differences between the feeling of being unsafe among youth who reported problem behaviors compared to youth who did not report these behaviors ranged from 9 to 21 percentage points higher.

Among all students (Table 4.6), stealing a vehicle increased the risk of feeling unsafe (RR=3.73, 95% CI: 3.35-4.16) most significantly of the six problem behavior variables, followed by attacked another (RR=3.17 95% CI: 3.02-3.33); arrested (RR=3.16 95% CI: 2.90-3.43), selling/dealing drugs (RR=2.56, 95% CI: 2.36-2.76), suspended (RR=2.30, 95% CI: 2.18-2.42), and carried a handgun (RR=2.04, 95% CI: 1.94-2.14).

Among middle school students (Table 4.7), stealing a vehicle increased the risk of feeling unsafe (RR=4.38, 95% CI: 3.65-5.24) most significantly of the six problem behavior variables, followed by arrested (RR=4.13 95% CI: 3.59-4.79); selling/dealing drugs (RR=4.09 95% CI: 3.46-4.82), attacked another (RR=3.90 95% CI: 3.64-4.18), suspended (RR=2.65, 95% CI: 2.45-2.85), and carried a handgun (RR=2.27, 95% CI: 2.12-2.43).

Among high school students (Table 4.8), stealing a vehicle increased the risk of feeling unsafe (RR=3.18, 95% CI: 2.77-3.64) most significantly of the six problem behavior variables, followed by attacked another (RR=2.56 95% CI: 2.38-2.74); arrested (RR=2.54 95% CI: 2.29-2.82), selling/dealing drugs (RR=2.03, 95% CI: 1.86-2.22), suspended (RR=1.96, 95% CI: 1.83-2.10), and carried a handgun (RR=1.82, 95% CI: 1.70-1.95). Since there is a significant positive relationship between problem behaviors and the increasing feeling of being unsafe by students, the null hypothesis is rejected.

RQ5: Are there significant associations between students who report substance use (RQ1), mental health issues (RQ2), personal violence (RQ3) and problem behaviors (RQ4) among Kentucky middle and high school students who also report higher levels of feeling unsafe (answering “unsafe” or “very unsafe”

on question 11 of the 2016 KIP Survey) in the school independent of other behavioral risk factors and student demographics?

H5_o: There is not a significant association between substance use and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_a: There is a significant association between substance use and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{2o}: There is not a significant association between psychological distress and suicidal behaviors and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{2a}: There is a significant association between psychological distress and suicidal behaviors and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{3o}: There is not a significant association between personal victimization and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_{3a}: There is a significant association between personal victimization and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_o: There is not a significant association between problem behaviors and feeling unsafe at school independent of other behavioral risk factors and student demographics.

H5_a: There is a significant association between problem behaviors and feeling unsafe at school independent of other behavioral risk factors and student demographics.

Subsequent to the bivariate analyses, which found all of the variables to be significant at increasing the perception of feeling unsafe at school, all variables were included in the final model for backward stepwise testing. Demographic variables of gender, grade, race, free and reduced lunch status, and military connectedness were also assessed for their association to the perception of safety. Upon testing in the final model, all four variable constructs showed significant risk in increasing the perception of feeling unsafe at school.

Within the substance use construct, methamphetamines (aRR=1.62, 95% CI: 1.17-2.25), heroin (aRR=1.53, 95% CI: 1.17-2.27), cocaine (aRR=1.29, 95% CI: .97-1.71), and binge drinking (aRR=1.10, 95% CI: 1.01-1.20) remained significant in the final model. Marijuana (aRR=.87, 95% CI: .80-.95), had an inverse relationship with the perception of safety, actually increasing the feelings of being safe at school. Cigarette use, prescription drug use, and ecstasy use were not significant. Among middle school students, heroin (aRR=1.83, 95% CI: 1.04-3.24), cocaine (aRR=1.77, 95% CI: 1.07-2.95), and binge drinking (aRR=1.21, 95% CI: 1.01-1.46) were significantly associated. Cigarette, marijuana, prescription drug, methamphetamine and ecstasy use were not. Among high school

students, only methamphetamine use (aRR=2.00, 95% CI: 1.38-2.90) was significant. Binge drinking, and cigarette, cocaine, prescription drug, heroin and ecstasy use were not significant. Marijuana use was protective against the perception of feeling unsafe at school (aRR=.90, 95% CI:.82-.99).

Within the mental health construct among all students, serious psychological distress (aRR=2.91, 95% CI: 2.74-3.08) significantly increased the risk that students would report they felt unsafe in school. Students with psychological distress are nearly twice as likely as their peers without psychological distress to report they feel unsafe in school, controlling for gender, race, socio-economic and military status. Also significant was suicide ideation (aRR=1.12, 95% CI: 1.05-1.20). Serious psychological distress was significant for middle school students (aRR=3.21, 95% CI: 2.94-3.52) and high school students (aRR=2.70, 95% CI: 2.52-2.91). Suicide ideation was also significant for middle school students (aRR=1.26, 95% CI: 1.14-1.39). Suicide planning and suicide attempts were not significant in any of the models. Suicide ideation was not significant for high school students.

All seven measures in the personal victimization construct were significant in all three models. The most significant measure in the all-students model was bullying (aRR=1.77, 95% CI: 1.67-1.87), followed by verbal threat victim (aRR=1.61, 95% CI: 1.52-1.71), forceful theft victim (aRR=1.53, 95% CI: 1.38-1.70); sexual assault/harassment (aRR=1.51, 95% CI: 1.40-1.63); theft victim (aRR=1.45, 95% CI: 1.37-1.52); physical threat victim (aRR=1.32, 95% CI: 1.23-1.42) and cyberbullying (aRR=1.15, 95% CI: 1.08-1.23). In the middle school model, bullying (aRR=1.75, 95% CI: 1.62-1.90) was again the most

significant of the measures, followed by verbal threat victim (aRR=1.59, 95% CI: 1.46-1.73), sexual assault/harassment (aRR=1.44, 95% CI: 1.28-1.63), theft victim (aRR=1.43, 95% CI: 1.32-1.54), forceful theft victim (aRR=1.42, 95% CI: 1.24-1.62), physical threat victim (aRR=1.36, 95% CI: 1.23-1.49), and cyberbullying (aRR=1.16, 95% CI: 1.06-1.27). Bullying (aRR=1.82, 95% CI: 1.67-1.98) remained the most significant measure in the high school model, followed by forceful theft (aRR=1.68, 95% CI: 1.42-1.98), verbal threat (aRR=1.62, 95% CI: 1.50-1.76), sexual harassment/assault (aRR=1.56, 95% CI: 1.41-1.71), theft victim (aRR=1.49, 95% CI: 1.39-1.61), physical threat victim (aRR=1.27, 95% CI: 1.15-1.41), and cyberbullying (aRR=1.13, 95% CI: 1.03-1.23).

Four of the six problem behavior measures were significant in the all-students model. Attacking another (aRR=1.28, 95% CI: 1.19-1.38) had the highest significance followed by being suspended (aRR=1.24, 95% CI: 1.15-1.34), being arrested (aRR=1.22, 95% CI: 1.07-1.39), and carrying a handgun (aRR=1.20, 95% CI: 1.12-1.29). Selling or dealing drugs (aRR=.88, 95% CI: .78-1.01) increased the feeling of safety in school. Theft of a vehicle was not significant in the final model. In the middle school model, selling or dealing drugs and theft of a vehicle were not significant. Being arrested (aRR=1.46, 95% CI: 1.18-1.81) was most significant, followed by attacking another (aRR=1.37, 95% CI: 1.23-1.52); carrying a handgun (aRR=1.31, 95% CI: 1.19-1.45), and being suspended (aRR=1.30, 95% CI: 1.16-1.45). Being suspended (aRR=1.20, 95% CI: 1.09-1.33) was most significant in the high school model, followed by attacking another (aRR=1.18, 95% CI: 1.07-1.31), and carrying a handgun (aRR=1.10, 95% CI: 1.00-1.22). Selling drugs, theft of a vehicle and being arrested were not significant.

Among the demographic variables, being in high school, and being any race other than white were significant in the all-student model. High school students (aRR=1.39, 95% CI: 1.32-1.46) were 39% more likely to feel unsafe at school than middle school students. Multi-racial students (aRR=1.44, 95% CI: 1.28-1.62) were 44% more likely to feel unsafe, followed by African Americans (aRR=1.38, 95% CI: 1.25-1.51), Hispanic (aRR=1.27, 95% CI: 1.15-1.39), American Indian/Alaska Native (aRR=1.27, 95% CI: 1.12-1.44), and Asian American (aRR=1.02, 95% CI: 1.84-1.24). Females (aRR=.78, 95% CI: .74-.82) were more likely to feel safe at school than their male peers. Free and reduced lunch and military connectedness were not significant in the all-student model.

In the middle school model, race was a significant risk factor for those who identify as multi-racial (aRR=1.43, 95% CI: 1.23-1.66), African American (aRR=1.41, 95% CI: 1.23-1.61), American Indian/Alaskan Native (aRR=1.26, 95% CI: 1.07-1.49), and Hispanic (aRR=1.23, 95% CI: 1.08-1.41). Asian Americans (aRR=.93, 95% CI: .69-1.25) felt safer than students who identified as white. Students who identified as military connected (aRR=.92, 95% CI: .86-.99) were less likely to report they felt unsafe than those who did not reported military connectedness. Free and reduced lunch status was not significant.

In the high school model, free and reduced lunch status, and military connectedness were not significant. Females (aRR=.79, 95% CI: 1.74-.85) were less likely to report feeling unsafe than males. Race again was a significant indicator of increased perception of feeling unsafe. Multi-racial youth (aRR=1.48, 95% CI: 1.23-1.79) were 48% more likely to feel unsafe their than White peers, followed by African Americans

(aRR=1.33, 95% CI: 1.16-1.51), Hispanic (aRR=1.30, 95% CI: 1.13-1.49), American Indian/Alaskan Native (aRR=1.28, 95% CI: 1.05-1.56), and Asian American (aRR=1.10, 95% CI: .85-1.43).

The analysis indicates that each of the four constructs had significant measures in all three models. Each of the four constructs are independently associated with each other and with the perception of school safety. Therefore, we reject the null hypothesis.

5. DISCUSSION OF FINDINGS

Interpretation of Findings

The following chapter discusses the major statistical findings of this research study and highlights the implications that the extant literature and previous research have on the findings. Recommendations for policy, practice and future research are also discussed.

Major Findings

Research Question One Results. Question one asked: “Do Kentucky middle and high school students who report substance use also report higher levels of feeling unsafe in the school?” Results from the correlational and bivariate analyses of substance use measures and the perception of school safety found that substance use negatively affects with the perception of safety in Kentucky middle and high schools. Youth who report substance use have a greater risk of also reporting they feel unsafe at school.

Correlational Analysis. Correlational analysis found that across all eight substance-use measures, the percentage of students who reported they perceived their school to be unsafe increased compared to students who reported they felt unsafe at school but who had not used substances in the past 30-days. The perception of safety among youth who reported 30-day marijuana use nearly doubled, from 10.9% to 19.5%. The percentage of students who reported binge drinking and cigarette use and also reported feeling unsafe was 9.4 percentage points higher than among students who did not report use of these substances. The perception of feeling unsafe was more than double among students who reported taking prescription drugs, such as opioids without

doctor's orders, compared to peers who did not report this type of substance use. Largest increases in the perception of feeling unsafe were noted in the illicit drug categories of cocaine, ecstasy, methamphetamines and heroin. Increases for these substances were more than double to nearly four times as high among youth who reported past 30-day cocaine use, past 30-day methamphetamine use; past 30-day ecstasy use and past 30-day heroin use. Figure 5.1 visualizes these increases. These results highlight the strong, positive correlation between substance use and the perception of feeling unsafe at school. As predicted from previous research, substance use is directly related to the overall perception of safety of students (Kitsantas, et al., 2004) and students who felt their schools are safe are less likely to use substances (Mennis & Mason, 2011).

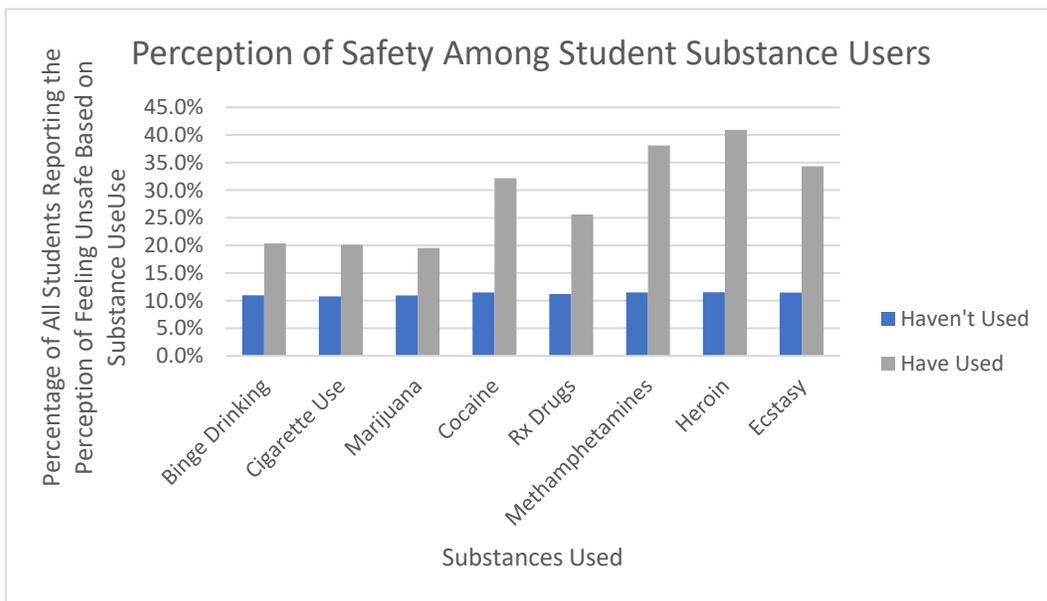


Figure 5.1. Substance use and the perception of safety among all students

Bivariate analysis. Subsequent to the correlational study, a bivariate analysis was conducted for these variables, broken down by middle (6th 8th grades) and high school (10th and 12th grades) level, as well as among all grade levels (6th, 8th, 10th and 12th grades). As with the correlational analysis, substance use was strongly associated to an increased perception of feeling unsafe. Middle school students who reported substance use were between 3.22 and 6.67 times as likely to report feeling unsafe at school as their peers who did not report substance use. While not as significant as among middle school students, the risk ratio for high school students who report the use of substances and felt unsafe at school was still significant. High school students who reported substance use were 1.56 to 4.33 times as likely to also report feeling unsafe at school. Across all ages, the odds of students reporting the perception of feeling unsafe was between 1.98 and 5.32 times as likely for substance users as for their peers who did not report substance use.

The disparities between perception of feeling unsafe and using substances at the middle and high school levels confirm research that indicates that not only does initiation before the age of 13 increase the frequency of use and the number and variety of substances used but also the problems related to substance use (DeWitt, Hance, Offord & Ogborne, 2000; Hingson, Heeren, Jamanka, & Howland, 2002). Middle school students who have initiated substance use, especially illicit substances such as heroin and methamphetamines, are more likely to report related problems from their substance use (such as perceiving their school to be unsafe). Results of the bivariate analysis also indicate that the perception of feeling unsafe among middle school

substance users may be driving the overall odds of the perception of feeling unsafe among substance using secondary school students in Kentucky.

These results are also confirmed in state-level safety event numbers across Kentucky. The number of safety-related offenses increased significantly among students in middle school grade levels. Transition grades seem to be especially problematic. The percentage of safety-related offenses increased from 5th grade (3%) to 6th grade (10%) and from 8th grade (13%) to 9th grade (20%). Ninth graders represent 8.1% of students in the state. They were involved in 20% of safety violations. Disparities between percentage of students in a grade level and the percentage of total safety violations also occur at the 6th, 7th, 8th, 10th and 11th grades. Significant increases in the number of incidents identified as assault and violence were noted from the 2014-15 school year to the 2016-17 school year. The greatest increase was noted at the second-grade level (337% increase), with all grade levels showing an increase of at least 12% over the three school years (KCSS, 2018). Table 5.1 shows the number of behavior incidents by grade level as well as the percentage of students in each grade level compared to the percentage of safety offenses recorded during the 2016-17 school year.

Table 5.1. *Kentucky school safety incidents by grade level*

Grade Level	Number of Offenses by Grade Level	Percentage of Students by Grade Level	Percentage of Safety Offenses by Grade Level
First	7,058	7.8%	3%
Second	7,516	7.9%	3%
Third	8,139	8.0%	3%
Fourth	8,330	8.0%	3%
Fifth	8,925	7.8%	3%
Sixth	28,625	7.7%	10%
Seventh	32,737	7.7%	11%
Eighth	36,330	7.7%	13%
Ninth	57,630	8.1%	20%
Tenth	40,355	7.8%	14%
Eleventh	28,125	7.2%	10%
Twelfth	18,502	6.8%	6%

When it comes to substance-use related offenses, students in grades 8 through 12 represent nearly 91% of all ATOD events for the 2016-17 school year, with 9th graders having the highest number and the biggest percentage increase from incidents recorded for 8th graders (KCSS, 2018). Substance-use related incidents represent 3% of total behavior incidents for the state for the 2016-17 school year (KCSS, 2018). Between the 2014-15 and 2016-17 school years, ATOD incidents increased from one grade level to the next each grade level, from first grade through 9th grade, when they begin to decline by grade level. The largest increase from one grade to the next occurred at the second-grade level, where the number of incidents climbed by 80%, followed by a 68% increase in incidents from fourth to fifth grades. The numbers of incidents in these younger grades were small however. In the 6th grade, when ATOD behavior incidents reached the triple digits, a 75% increase from incidents at the 5th grade was reported. Ninth grade

incidents were up 63% over eighth grade incidents from the 2014-15 through 2016-17 school years. Table 5.2 shows the number of violations by drug type, by school year, and the percentage of change between the 2016-17 school years.

Table 5.2 - Behavior events in Kentucky Schools involving drugs, alcohol or tobacco

Drugs by Type	2014-15	2015-16	2016-17	% Change from 14/15 to 16/17
Tobacco	10,942	9,548	6,349	-42%
Marijuana	1,649	1,721	1,899	15%
Alcohol	767	645	789	3%
Other Drugs	574	627	633	10%
Prescriptions	227	271	251	11%
Inhalant	18	7	24	33%
Amphetamines	7	12	10	43%
Hallucinogenic	17	7	8	-53%
Cocaine	5	4	2	-60%
Barbiturates	6	1	1	-83%
Heroin	1	0	0	-100%
Total	14,213	12,843	9,966	-30%

Note: KDE (2018).

The bivariate analysis also revealed the types of substances which are more likely to increase the risk of feeling of being unsafe at school when used by students. Use of the illicit substances heroin (5.32), methamphetamines (4.75), ecstasy (4.04) and cocaine (3.66) resulted in the greatest increase in risk of feeling unsafe. Use of legal substances, including alcohol (binge drinking, 2.08), cigarettes (2.09), and prescription drugs (2.73) had lower increases in the perception of risk, although all were significant. The illicit substance, marijuana (1.98), had the lowest risk rates of all substances with a rate nearly two times as likely that youth would report feeling unsafe as among youth who did not use the substance. These patterns held for middle and high school students

when analyzed independently, except for binge drinking. Among middle school students, binge drinking had a higher risk of youth perceiving school to be unsafe than either prescription drugs or cigarettes. See Table 5.3 for a comparison of crude risk rate for the substance use variables.

Table 5.3. Comparison of crude risk rates by grade level for perception of safety and substance use

Variable	All Students Crude RR (95% CI)	Middle School Students Crude RR (95% CI)	High School Students Crude RR (95% CI)
Heroin	5.32	6.67	4.33
Methamphetamines	4.75	6.44	3.71
Ecstasy	4.04	6.01	3.03
Cocaine	3.66	4.70	3.01
Prescription drugs	2.73	3.55	2.13
Cigarettes	2.09	3.30	1.63
Binge drinking	2.08	3.84	1.60
Marijuana	1.98	3.22	1.56

Note: Bolded risk ratios indicate those that are elevated or reduced for a specific grade level compared to all students

Research Question Two Results. Question two asked: “Do Kentucky middle and high school students who report psychological distress and suicidal behavior also report increased perception of feeling unsafe at school?” Results from the bivariate analysis of the mental health measures and the perception of school safety found that mental health issues have a negative association with the perception of safety in Kentucky middle and high schools. Students who report mental health issues have a greater risk of reporting they feel unsafe at school.

Correlational Analysis. Correlational analysis found significant differences in the perception of safety among students who report mental health issues and those who do not. The perception that school is unsafe was more than tripled among youth who reported serious psychological distress, as measured by the K6 scale on the survey, and suicide attempts compared to students who did not report these mental health issues. For students reporting the remaining mental health issues, the perception of feeling unsafe in school climbed 19 percentage points for students reporting suicide planning and 17.7 percentage points for those reporting suicide ideations. These findings confirm research by Nijs, et al. (2014) that mental health and perceptions of school safety are highly correlated. Multiple studies also have validated the K6 scale as a predictor of serious mental illness among adults and severe emotional disturbance among adolescents (Green, Gruber, Sampson, Zaslavsky, & Kessler, 2010; Kessler, et al., 2002a, b, 2010; Mewton et.al, 2016; Peiper et al., 2015, 2016). Research highlighted the precision of predicting mental distress, and is particularly useful in large-scale epidemiological studies focused on universal prevention efforts and policy and program development. Fifteen percent of middle and high school students in Kentucky report serious psychological distress (Sanders, et al, 2017b). The percentage of Kentucky students who reported feeling unsafe at school and who also reported serious psychological distress was 274% (8.1% vs. 31.4%) higher than among students who said they felt unsafe but did not report the mental health issue. More than 6% of middle and high school students participating in the 2016 administration of the KIP survey reported a past-year suicide attempt (Sanders, et al., 2017b). The percentage of students who

reported feeling unsafe at school and who also reported at least one suicide attempt in the past year was 200% (10.3% vs. 30.9%) higher than among students who said they felt unsafe at school but did not report a suicide attempt. Procedures to respond to student suicidal behavior have been identified as one component within the definition of school safety (Ventura, 1994). See Figure 5.2 for a comparison of the perception of safety among students who report mental health issues and those who do not.

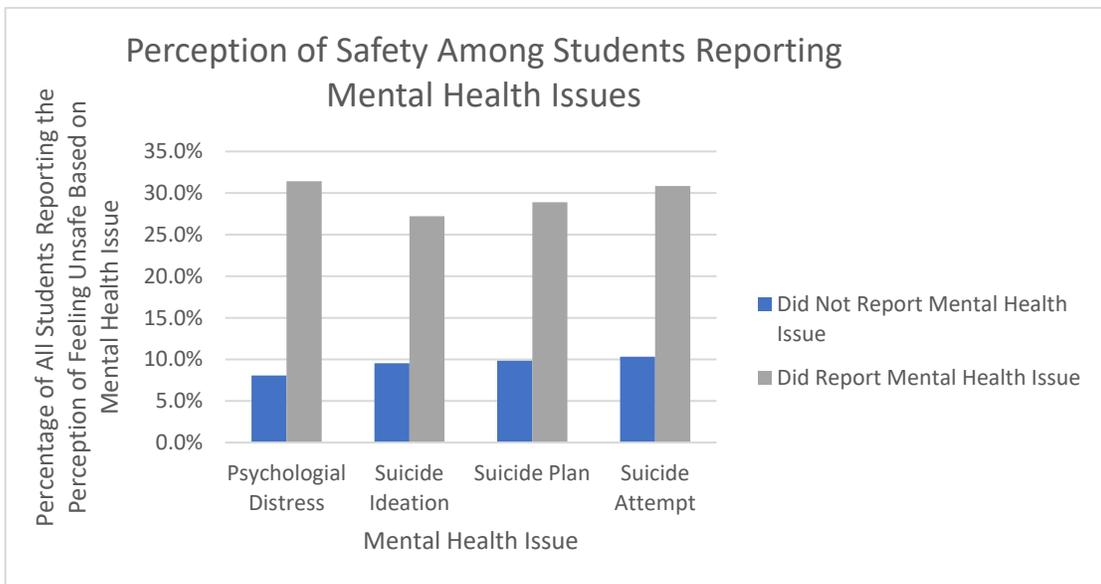


Figure 5.2. Mental health status and the perception of safety among all students

Bivariate analysis. Subsequent to the correlational study, a bivariate analysis was conducted for the mental health variables, broken down by the middle and high school levels, as well as across all grade levels. As with the correlational analysis, mental health issues were strongly associated to an increased perception of feeling unsafe. Middle school students who reported mental health issues were between 4.29 to 6.49

times as likely to report feeling unsafe at school as their peers who did not report mental health issues. As was the case for substance use, the odds ratio for high school substance users who report the perception of feeling unsafe at school and who have mental health issues was not quite as high as it was for middle school students. High school students who reported mental health issues were 2.91 to 4.27 times as likely to also report feeling unsafe at school. Across all ages, the odds of students reporting the perception of feeling unsafe was between 3.55 and 5.23 times as likely for those with mental health issues as their peers who did not report mental health concerns.

In addition, the bivariate analysis revealed that the risk of increased perception of being unsafe at school follows the same trajectory across all four variables, unlike the other constructs of substance use, personal violence and problem behaviors. The risk of reporting the feeling of being unsafe at school was highest for students who also reported serious psychological distress, suicide attempt, suicide planning and suicide ideation. These results highlight that even though, as previous research indicated, mental health issues begin earlier (Costello, et al., 2014; Kessler et al., 2005; Merikangas et al, 2010; Merikangas, Makamura, & Kessler, 2009), they follow the same pattern for youth across the developmental spectrum, whereas some issues impact safety of students at earlier points of development and others at later points. Findley (2017) found that youth with the worst cases of mental health issues miss more school and may be more disconnected from school, which could in turn increase their perception that school is not a safe place for them. For other students, the opposite may be true. They may miss school because they no longer feel safe (CDC, 2012) and their sense of

being disconnected from their peers may increase their mental health issues (Rodgers, 2011). See Table 5.4 for a grade-level comparison of crude risk rate for perception of feeling unsafe at school of students reporting the mental health variables.

Feeling unsafe at school coincides with the incidence of mental disorders in late childhood and early adolescence. Research that shows that 50% of all cases of a diagnosable mental illnesses began by the age of 14, and 75% by the age of 24 (Costello, et al., 2014; Kessler et al., 2005; Merikangas et al, 2010; Merikangas, Nakamura, & Kessler, 2009), with the median age of onset identified as 14 (Kessler et al., 2005). The number of children who experience psychological distress represents as many as one-fifth of all students, with the earlier the onset, the greater the impacts noted. Between 14 and 20 percent of all children and adolescents experience a mental, emotional or behavioral disorder (MEB) including depression, conduct disorder, suicidality, and substance use, at any given time highlighting the importance of addressing the issue when students are young (National Research Council, 2009). This study will add to the body of knowledge related to mental health issues and students’ perceptions of safety.

Table 5.4. *Comparison of crude risk rates of perception of safety of youth reporting mental health issues by grade level*

Variable	All Students	Middle School Students	High School Students
Serious psychological distress	5.23	6.49	4.27
Suicide attempt	3.88	4.55	3.28
Suicide plan	3.72	4.50	3.06
Suicide ideation	3.55	4.29	2.91

Research Question Three Results. Question three asked: “Do Kentucky middle and high school students who report personal victimization also report higher levels of feeling unsafe in the school?” Results from the bivariate analysis found that personal victimization increases the perception of feeling unsafe among Kentucky middle and high schools. Students who report personal victimization have a greater risk of reporting they feel unsafe at school.

Correlational Analysis. Correlational analysis found that across the seven personal victimization variables, the percentage of students who reported they perceived their school to be unsafe increased compared to students who reported they felt unsafe at school but who had not experienced personal victimization in the past 30 days. The percentage of students reporting they felt unsafe nearly quadrupled for those who also reported theft by force (10.8% vs. 39.8%), more than tripled for those reporting verbal threat (7.7% vs. 26.1%), physical threat (9.7% vs. 31.2%), sexual harassment (10.2% vs. 33.5%) and bullying (7.9% vs. 25.1%) categories, and doubled for the theft (8.6% vs. 19.3%) and cyberbullying (9.3% vs. 25.1%) categories. Figure 5.3 visualizes these increases. These results highlight the strong, positive correlation between personal victimization and the perception of feeling unsafe at school and confirms previous research on the individual variables. While there is little extant literature that considers several of these variables and their impact on the perception of safety, the stress that comes from personal victimization may impact the perception of safety (Wilson & Rosenthal, 2003). Students report less satisfaction with their school experience when they have been exposed to violence (Rosenfeld, et al., 2006). Exposure

to violence increases the risk of mental health issues while the perception of school safety acts as a protective factor for those students who have been exposed to violence in the community (Ozer & Weinstein, 2004). Ormerod, et. al. (2008) found that students who perceived their school climate as one that allowed for sexual harassment to perpetuate also felt unsafe.

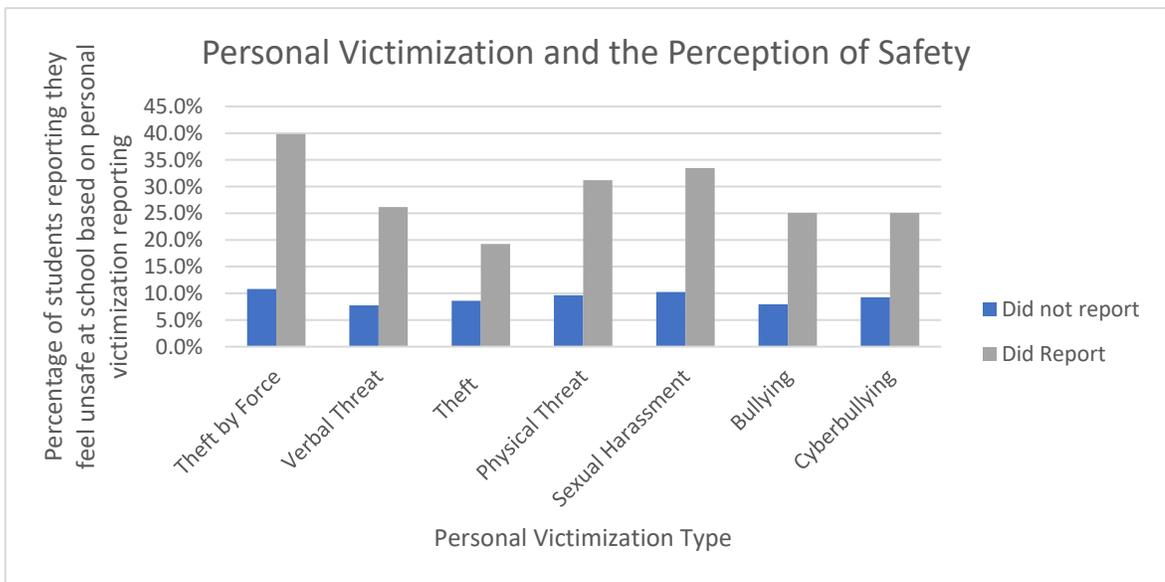


Figure 5.3. Personal victimization and the perception of safety among all students

Bivariate analysis. Subsequent to the correlational study, a bivariate analysis was conducted for the personal victimization variables, broken down by the middle and high school levels, as well as across all grade levels. As with the correlational analysis, personal victimization was strongly associated to an increased perception of feeling unsafe.

Middle school students who reported personal victimization were between 2.58 to 5.34 times as likely to report feeling unsafe at school as their peers who did not report personal victimization. Unlike substance use and mental health variables, the odds ratio for high school students reporting personal victimization who also report the perception of feeling unsafe at school was higher than for middle school students. High school students who reported personal victimization were 3.00 to 6.41 times as likely to also report feeling unsafe at school. Across all ages, the odds of students reporting the perception of feeling unsafe was between 2.53 and 5.47 times as likely for those with personal victimization as their peers who did not report personal victimization.

For all three analyses levels (all, middle and high school), being a victim of a forceful theft carried the greatest risk for increasing the perception of feeling unsafe at school. High school students who reported they were forcibly stolen from were 6.41 times as likely to report feeling unsafe at school as their peers who had not experienced a similar event. Middle school students in the same situation were 5.34 times as likely to report feeling unsafe. Overall, all students who experienced forceful theft were 5.47 times as likely to report feeling unsafe.

Of interest was the ranking of the variables by age level. While across all ages forceful theft was ranked first, and bullying, cyberbullying and theft without force fifth, sixth and seventh respectively, the rank of sexual harassment, physical threat and verbal threat varied by ages. Sexual harassment was ranked second of the personal victimization behaviors in relation to increased perception of feeling unsafe among all (4.41) and middle school students (4.49). The variable had the third greatest increase of

risk for high school students (4.14). Physical threat impacted the perception of safety the second highest for high school students (4.57), but the variable was third for all students (4.24) and fourth for middle school students (4.29). Verbal threat replaced physical threat in the third place for middle school students (4.35) but it was fourth overall for all students (4.24) and high school students (4.13). See Table 5.5 for a comparison of crude risk rate for the personal victimization variables. There is little extant literature related to the personal victimization variables - individually or collectively - and the perception of school safety. This study will add to that body of knowledge

Table 5.5. Comparison of crude risk rates of perception of safety by personal victimization variable by grade level.

Variable	All Students	Middle School Students	High School Students
Forceful theft	5.47	5.34	6.41
Sexual harassment	4.41	4.49	4.14
Physical threat	4.24	4.29	4.57
Verbal threat	4.22	4.35	4.13
Bullying	3.52	3.60	4.00
Cyberbullying	3.27	3.13	3.43
Theft (no force)	2.53	2.58	3.00

Note. Bolded risk ratios indicate those that are elevated or reduced for a specific grade compared to all students.

Research Question Four Results. Question four asked: “Do Kentucky middle and high school students who report problem behaviors also report higher levels of feeling unsafe in the school? Results from the bivariate analysis of problem behavior variables and the perception of school safety found that the problem behaviors have a negative association with the perception of safety in Kentucky middle and high schools. Youth

who report problem behaviors were at greater risk of reporting the perception they were unsafe at school.

Correlational Analysis. Correlational analysis found that across the six problem behavior variables, the percentage of students who reported they perceived their school to be unsafe increased compared to students who reported they felt unsafe at school but who had not experienced problem behaviors in the past 12 months. The percentage of students reporting they felt unsafe more than tripled for those who also reported theft of a vehicle (10.7% vs. 21.6%), more than doubled for those reporting attacking another student (10.2% vs. 26.6%), being arrested (11.2% vs. 28.6%), selling/dealing drugs (11.2% vs. 24.5%) and being suspended (10.7% vs. 21.6%), and nearly doubled for carrying a handgun (10.7% vs. 19.7%). Figure 5.4 visualizes these increases. These results highlight the strong, positive correlation between problem behaviors and the perception of feeling unsafe at school.

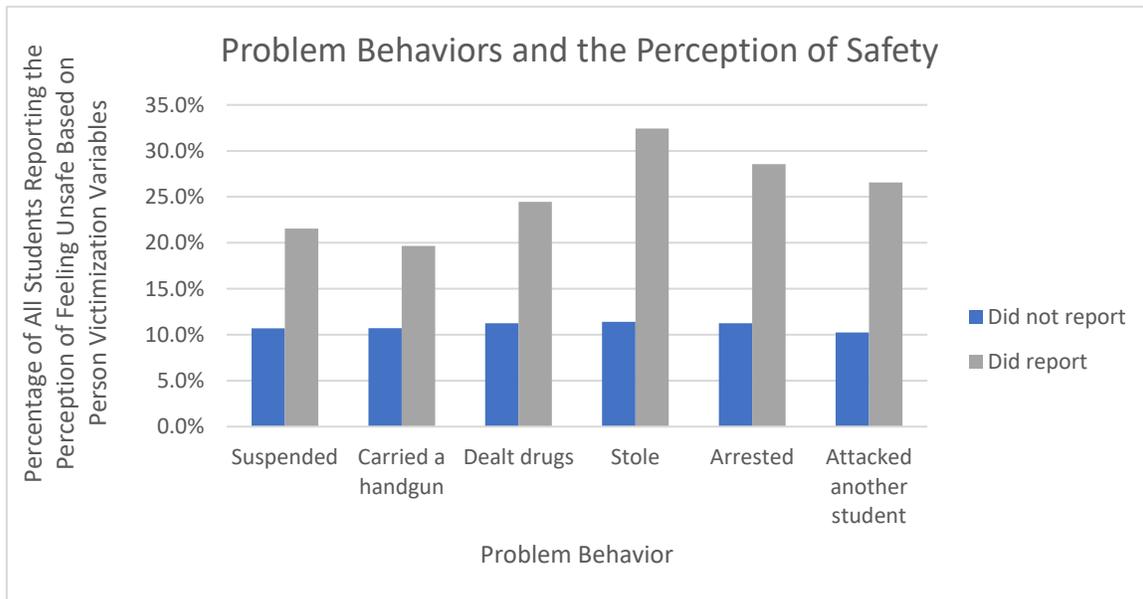


Figure 5.4. Problem behaviors and the perception of safety among all students

While there is little extant literature that considers these problem behaviors and their roles on the perception of safety in schools, there is existing literature on why these problem behaviors may have occurred and the role they play on the components that go into making up the school climate, and in turn the perception of safety of students, situating our study in alignment with the research. Students who attend schools that they feel are safe are less likely to inflict violence on other students (Elsaesser, et. al. 2013). Lower aggression levels in schools can be a predictor of a student’s perception of safety (Steinberg, et. al., 2011). Students who are expelled have a lower satisfaction of school climate, of which the perception of safety is a component (American Zero tolerance Task Force (2008). Disengagement often occurs when students are suspended, again reducing the perception of safety in school (Arcia, 2006). A significant majority of youth who carried guns did so for protection (75%) or in self-

defense (74%) (Sheley & Wright, 1993), and most college students who carried weapons on campus despite laws banning them did so because they felt they needed the protection (Miller, et. al., 2002). School climates that are not warm and caring increase the risk of selling drugs (Steinman, 2005). Perception of school safety is considered a component of school climate.

Bivariate analysis. Subsequent to the correlational study, a bivariate analysis was conducted for the problem behavior variables, broken down by the middle and high school levels, as well as across all grade levels. As with the correlational analysis, personal victimization was strongly associated to an increased perception of feeling unsafe.

Risk ratios for increased perception of feeling unsafe at school among Kentucky secondary students who also reported problem behaviors ranged from 2.04 to 3.73, with theft of a vehicle increasing the risk of perceiving school to be unsafe the greatest, followed by attacking another student (3.17), being arrested (3.16), selling or dealing drugs (2.56), being suspended (2.30) and carrying a handgun (2.04). This general order held true for high school students.

While attacking another was more significant in the all-student and high school models, being arrested and selling/dealing drugs were more significant in the middle school model. This difference could be a factor of the social development of the individual students who responded to the survey in this manner. Being arrested and selling or dealing drugs is considered one of the more severe behaviors within this construct of behaviors. These findings fit those of research that indicates that youth

who exhibit early problem behaviors such as these experience negatives outcomes as a result of their behaviors at school, in turn reducing their perception that school is a safe place (Moffit, 1993; Moffit, et al., 1996; Patterson, 1992)

See Table 5.6 for a comparison of crude risk rate for the problem behavior variables. There is little extant literature related to the problem behavior variables - individually or collectively - and the perception of school safety. This study will add to that body of knowledge

Table 5.6. Comparison of crude risk rates of perception of safety of youth reporting problem behaviors by grade level.

Variable	All Students	Middle School Students	High School Students
Theft of a vehicle	3.73	4.38	3.18
Attacked another	3.17	3.90	2.56
Arrested	3.16	4.13	2.54
Selling/dealing drugs	2.56	4.09	2.03
Suspended	2.30	2.65	1.96
Carried a handgun	2.04	2.27	1.82

Note. Bolded risk ratios indicate those that are elevated or reduced for a specific grade compared to all students.

Research Question Five Results. Question five asked: “Are there significant associations between students in Kentucky middle and high schools who report substance use, mental health issues, personal violence and problem behaviors who also report higher levels of feeling unsafe in school, independent of other behavioral risk factors and student demographics?” All independent variables and demographic variables were loaded into three models. The first model analyzed results of all

students. The second model analyzed results from only middle school students. The third analyzed results from only high school students. The following sections analyze the results by demographic categories as well as independent variable construct.

Perception of safety by gender. Females were more than 20% more likely to report feeling safe at school, compared to their male peers, across all students, and among middle and high school students separately. This finding could be related to the fact that males are more likely to be involved in safety-related offenses (KCSS, 2018). Males also report being overtly victimized more often (Goldstein, et. al., 2008), and perceiving their environment as unsafe (Hong & Eamon, 2012). Girls fear theft and sexual harassment, while boys fear physical victimization (Wilcox, Augustine, Bryan & Roberts, 2005). These findings, however, contradict research that boys feel safer than girls in school. Schreck and Miller (2003) found that males are less likely to perceive their schools as unsafe. It also contradicts research that males and females are equally likely to fear victimization (Swartz, Bradford, Reyns, & Wilcox, 2011) and that the universal concern of bullying reduces the differences between genders in the perception of safety (Williams, Langhinrichsen-Rohling, Wornell, & Finnegan, 2017; Williams, Schneider, Wornell & Langhinrichsen-Rohling, 2018; Yablon & Addington, 2010). The inconsistencies in the research could be a factor of the complex nature of the perception of safety and the specific contexts individual students experience in their schools. The gender inconsistencies warrant additional research in the future.

In Kentucky, males were disproportionately represented in the behavior incidents and White males were more likely to be involved in a safety-related offense in Kentucky,

compared to White females and students of other races and ethnicities. The majority of offenders were male (72.5% of all incidents). Male enrollment is 51.4% of the population, while males represent 72.5% of incidents. Males represent 69.4% of the behavior incidents identified as assault and violence (compared to enrollment of 51.4% of the population) (KCSS, 2018). Resolutions of behavior incidents are consistent across genders (KCSS, 2018).

Perception of safety by race. In all three models, non-white students reported a higher perception of feeling unsafe at school compared to their white peers. The only exception was among Asian-American/Pacific Islanders at the middle school level. Students reporting this racial category were about 7% less likely to report feeling unsafe at school compared to their white peers. Among all students, multi-racial students were 44% more likely to perceive their school as unsafe, compared to their white classmates. African-Americans were 38% more likely; and Hispanics and American-Indians were 27% more likely to report they felt unsafe at school. Asian-Americans were 2% more likely to feel unsafe. At the middle school level, the trends were similar with multi-racial (43%), African-American (41%), American Indian (26%) and Hispanics (23%) more likely to report feeling unsafe. The perception of being unsafe was even greater among multi-racial students (49%) at the high school level, followed by students classifying themselves as African-Americans (33%), Hispanics (30%), American Indians (28%) and Asian-Americans (10%).

These results reflect the current research which finds that white students perceive lower rates of risk perception than their non-white peers (Wilcox, et. al., 2005).

African Americans are overrepresented in safety incidents in Kentucky as well as in out-of-school suspensions as a result of the safety incidents. (KCSS, 2018). All other races are under-represented in the safety incidents. Research also finds that Hispanic students are more likely to fear being victimized and, in turn, perceive the safety of their schools to be lower (Schreck & Miller, 2003). Hong and Eamon (2012) found that there was not a significant relationship between African American and Hispanic students and school safety, which is in contrast to the current study. A more recent study (Williams, et. al., 2018) also found that race did not emerge as a significant predictor of perceptions of school safety. Also, in contrast, is research that finds that white youth have the highest rates of being bullied at school, while Asian Americans have the lowest rates (NASEM, 2016). It is also interesting to note that the perception of being unsafe among students who are non-white increases as students get older, a result that warrants additional research. As Kentucky's population is largely Caucasian, this could be a factor of the lack of diversity within its educational system. Juvonen, Nishina and Graham (2006) found that as racial diversity in a school increases, perception of safety increases as well. Racially diverse schools decrease the vulnerability of students. These findings warrant additional research and may indicate the need for culturally competent and potentially race-specific interventions across student, teacher and administrator populations.

The majority of offenders in safety-related incidents in Kentucky were White (65%). Twenty-four percent of offenses were perpetrated by students who identified as African American; 6% by those identifying as Hispanic; and 5% who identify as another race or ethnicity (KCSS, 2018). African American students were overrepresented in the

behavior incidents compared to their total population within enrolled students in the state (24% of offenses compared to 10.6% of enrollment). They were also overrepresented in the assault and violence category, at 43.8% of incidents. All other races and ethnicities were underrepresented in the behavior incidents (KCSS, 2018). African-American students were overrepresented in resolution of the incidents through out-of-school suspensions.

Perception of safety by socio-economic status and military connectedness.

Being military connected was significantly associated with the perception of safety at all grade levels in the bivariate model, and was protective for middle school youth in the multivariable model but was not significant in the final analysis. There is little existing research on military connectedness and the perception of feeling safe at school.

Similarly, receiving free and reduced lunch was significant in all three models in the bivariate analysis, but it was not significant in the multivariable model. The findings related to free-and-reduced-lunch status were opposite research that found youth who are at lower socio-economic levels are more likely to perceive their schools to be unsafe (Barrett, Jennings & Lynch, 2012; Bowen, 1998) and to be victimized at school (Foster & Brooks-Gunn, 2013; Khoury-Kassabri, Benbenishty, Astor & Zeira, 2004) making them more susceptible to hostile situations at school (Côté-Lussier, Barnett, Kestens, Tue & Séguin, 2015). Alvarez and Bachman (1997) and Scheck and Miller (2003) found youth living in poverty experienced greater levels of perceiving their school was not safe. These discrepancies are despite the fact that a high percentage of Kentucky's safety-related events involve youth with free-and-reduced-lunch status (KCSS, 2018). More

than 81% of the assault and violence events in Kentucky involved students on free and reduced meal status, yet these students represent only 60.8% of the state's enrollment (KCSS, 2018). Many researchers use the free and reduced lunch measure as a proxy for socio-economic status of students (Harwell, Maeda, & Lee, 2004; Kurki, Boyle, & Aladjem, 2005; Nierman & Veak, 1997; Sirin, 2005). Potential explanations could be that previous research was conducted in urban and suburban areas, which often have higher levels of socio-economic stratification than the rural communities found in Kentucky. A large number of school districts in Kentucky also qualify for whole-school free-and-reduced-lunch status as a result of the overall poverty rates in the state, potentially mitigating the association of socio-economic status and the perception of safety of students in the state. In Kentucky, 88.3% of districts participate in the Community Eligibility Program, which allows them to provide breakfast and lunch free for all students, as a result of the high levels of poverty in the community. In Kentucky, 152 of 172 districts participate in this program, highlighting not only the low economic status of the state, but also the significant percentage of students receiving free and reduced lunch in the state and living within economically disadvantaged communities (Food Research & Action Center, 2017). Future research to determine in-depth the relationship between youth perception of safety and their socio-economic status is warranted. Investigation of the link between socio-economic status and race status is also suggested as minorities in Kentucky could account for a large proportion of low SES status in some locations.

Perception of safety by substance use. Youth who report their school as their primary safe place are less likely to use substances (Mason & Korpela, 2009). Students, more often than adults, identify drug use as a threat against the safety of a school. (Bosworth, et al., 2011). Results of the multivariable model vary somewhat from the bivariate models, with risk ratios being significantly reduced for binge drinking, cocaine, heroin and methamphetamine usage, and cigarette, prescription drug, and ecstasy use becoming nonsignificant in the multivariable model. Among middle school students only, binge drinking, cocaine use and heroin use were the only significant variables impacting the perception of safety with all others becoming non-significant. In the high school model, only methamphetamine use remained significant with marijuana use decreasing the risk of perceiving the school to be unsafe.

Within the multivariable model, Kentucky students who binge drink as well as use cocaine, methamphetamines and heroin are more likely to perceive their school is unsafe. Students who use methamphetamines were 62% (aOR =1.62, 95% CI: 1.17-2.25) more likely to report feeling unsafe compared to their peers who do not use this substance. Heroin users were 53% (aRR=1.53, 95% CI: 1.04-2.27) more likely to feel unsafe, and cocaine users were 29% (aRR=1.29, 95% CI: .97-1.71) more likely to feel unsafe. Students who binge drink were 10% (aRR=1.10, 95% CI: 1.01-1.20) more likely to report feeling unsafe at school. Interestingly, marijuana use decreased by 13% (aRR=.87, 95% CI: .80-.95) the perception of feeling unsafe at school. While still significant in the multivariable model, the results for these substances were significantly reduced compared to the results in the bivariate and correlation models. Cigarette use,

prescription drug use without a doctor's orders and ecstasy use were not significant in the multivariable model as they were in the bivariate and correlation models. These results point to the interconnectedness of the variable domains and the potential use of substances to cope with or mediate other issues, such as mental health, personal victimization and problem behaviors. The significant results connected to the use of illicit substances (methamphetamines, heroin and cocaine) as well as binge drinking may indicate that youth who are using these substances have progressed beyond gateway, experimental substance use of non-binge drinking alcohol, cigarettes and marijuana in order to cope with significant issues in their lives.

Substances of significance were varied among middle school and high school students in separate models. Among middle school students, heroin (aRR=1.83, 95% CI: 1.04-3.24), cocaine (aRR=1.77, 95% CI: 1.07-2.95) and binge drinking (aRR=1.21, 95% CI; 1.01-1.46) were significant in the multivariable model. Middle schoolers who used heroin were 83% more likely to report feeling unsafe at school. Cocaine users were 77% more likely to feel unsafe and binge drinkers were 21% more likely to feel unsafe. Cigarette use, marijuana use, prescription drug use without a doctor's order, methamphetamine use and ecstasy use were not significant in the model for middle schoolers as they were in the bivariate model. This may indicate that as students experience increased issues, such as personal victimization, mental health issues, and problem behaviors, their substance use become normalized as a coping mechanism. Only methamphetamines (aRR=2.00, 95% CI; 1.38-2.90) were significant in the high school model, with meth users twice as likely to report feeling unsafe at school. A

normalizing effect may have reduced the perception that school is not safe among substance using students at the high school level (Bachman, et al., 2011c). These results, compared to the bivariate analysis which found all substance use significant, may indicate the normalization of substance use as a coping mechanism among students, especially high school students.

The significant increase in the perception of feeling unsafe at school among students using cocaine, heroin and methamphetamines could be attributed to the fact that these substances are ones that youth do not typically utilize. Those youth who do use these illicit substances have most likely been utilizing substances for some time and may also be using substances as a coping mechanism for mental health and other trauma-related issues. Research shows that students who use substances early are more likely to use other drugs as they get older, use more frequently and use multiple substances (Chassin, Pitts, & Prost, 2002; Ellickson, Tucker, Klein, & Saner, 2004; Fleming, Kellam & Brown, 1982; Gruber, DiClemente, Anderson, & Lodico, 1996; Hawkins, et al., 1997; Hermos, Winter, Heeren, & Hingson, 2008; Hingson, Edwards, Heeren, & Rosenbloom, 2009; Hingson, Heeren, Zakocs, Winter & Wechsler, 2003; Hill, White, Chung, Hawkins, & Catalano, 2000; Kandel, 1982). Most early initiators begin with alcohol, tobacco and marijuana and often have more significant risk factors for substance use and dependence than peers who do not use early in adolescence (Donovan & Molina, 2011; Galéra, et al., 2010; Hartman, Hopfer, Corley, Hewitt, & Stallings, 2013; Hayatbakhsh, et al., 2008; Hayatbakhsh, Williams, Bor, & Naiman, 2013; McCarty, Rhew, Murowchick, McCauley, Vander Stoep, 2012). Mental health,

educational achievement and prosocial behaviors are reduced while risky behaviors are increased among early initiators compared to their peers who do not use substances before the age of 13. Young users are more likely to experience negative psychosocial and mental health outcomes (Tucker, Ellickson, Orlando, Martino, & Klein, 2005). Depression, suicidal behavior and suicidal attempts are increased among early initiators (Bossarte, & Swahn, 2011; Brook, Brook, Zhang, Cohen, & Whiteman, 2002; Cho, Hallfors & Iritani, 2007; Lynskey, et al, 2004; Rohde, Kahler, Lewinsohn, & Brown, 2004; Swahn & Bossarte, 2007; Swahn, Bossarte, Ashby, & Meyers, 2006; Swahn, et al., 2012; Swahn, Bossarte & Sullivent, 2010). Binge drinking is also associated with coping or avoidance mechanisms, and youth who use alcohol, especially those who binge drink before the age of 15 were four times more likely to be diagnosed with an alcohol dependence issue in adulthood (Chou & Pickering, 1992; Grant & Dawson, 1997; Guttmanova et al, 2011).

These results reflect growing issues with substance use and safety violations in Kentucky schools. While behavior incidents involving alcohol, tobacco and other drugs (ATOD) have decreased 30% over the last three school years in Kentucky, mainly driven by a 42% decrease in incidents involving tobacco use, increases were noted, in incidents involving marijuana, alcohol, other drugs, prescription drugs, inhalants and amphetamines. ATOD related incidents represent 3% of total behavior incidents for the state for the 2016-17 school year (KCSS, 2018).

White students are disproportionately represented in the number of ATOD-related events, at 82.6% of events (compared to 77.4% of student population) (KCSS

2018). Males comprise 80.5% of the ATOD related behavior incidents and are overrepresented (compared to 51.4% of students). Students in grades 8 through 12 represent nearly 91% of all ATOD events for the 2016-17 school year, with 9th graders having the highest number and the biggest percentage increase from incidents recorded for 8th graders. (KCSS, 2018). Those students eligible for free and reduced lunch represent 77.1% of ATOD incidents, compared to enrollment eligibility for free and reduced lunch of 60.8%, again an overrepresentation.

Perception of safety by mental health issues. As they were among the substance use variables, the mental health variables of significance varied by grade level. Serious psychological distress and suicide ideation remained significant in the all-student, and middle school models, while only serious psychological distress was significant within the high school multivariable model. Suicide planning and suicide attempts were not significant in either of the multivariable models, most likely as a result of the small numbers of students who report these behaviors across the grade levels.

Across all students, serious psychological distress and suicide ideation significantly elevated the risk for the perception of feeling unsafe at school. Students who reported serious psychological distress (aRR=2.91, 95% CI; 2.74-3.08) were nearly three times as likely to feel unsafe at school compared to youth who did not report serious psychological distress. Youth who reported suicide ideation were 12% (aRR=1.12, 95% CI; 1.05-1.20) more likely to report feeling unsafe. Suicide planning and suicide attempts were not significant in the multivariable model as they were in the bivariate and correlation models. Among middle school students, the variables of

serious psychological distress and suicide ideation were again significant, with students reporting SPD (aRR=3.21, 95% CI; 2.94-3.52) being more than three times as likely to feel unsafe at school. Middle schoolers reporting suicide ideation (aRR=1.26, 95% CI; 1.14-1.39) were 26% more likely to report feeling unsafe. Again, suicide planning and attempts were not significant as they were in the bivariate model. Among high school students, only SPD (aRR=2.70, 95% CI; 2.52-2.91) was significant. High school students who reported SPD were nearly three times as likely to report feeling unsafe at school than their peers without the mental health issue. These results were in line with research that found that mental health and perceptions of school safety are highly correlated (Nijs, et al., 2014) and highlight the importance of addressing early psychological distress among students as an effort to increase the perception of safety in a school.

The serious psychological distress of middle and high school students and the relationship with feeling unsafe in school should be significant red flags for educators to consider when addressing safety issues in educational facilities. The average prevalence of mood disorders among children has been reported to be between 2.7 and 5.2 percent, with the variances based on the data collection measure (National Academies of Sciences, Engineering, and Medicine, 2015). In Kentucky, more than 15% of students reported serious psychological distress in the past 30 days. More than 11% of Kentucky students reported being depressed. Nearly one-third of those were 10th graders (Sanders, et al., 2017b). Providing access to school-based mental health services and

supports directly impacts physical and psychological safety, academic performance, and social and emotional learning (Cowan, et. al., 2013).

Perception of safety and personal victimization. Each of the seven personal victimization variables was significantly associated with the perception of feeling unsafe in school in all three models (among all students, middle school students and high school students) in the multivariable analysis as they were in the bivariate analysis, highlighting the importance of addressing these issues in order to increase the perception of safety in schools. However, the order of significance is varied by grade level, highlighting the importance of focusing intervention efforts at the developmental level appropriate for the specific variable.

Across all three models and among all seven personal victimization variables, bullying (aRR=1.77, 95% CI; 1.67-1.88) had the most significant impact on the perception of feeling unsafe at school. High schoolers (aRR=1.82, 95% CI; 1.67-1.98) were 82% more likely to report feeling unsafe if they also reported they had been bullied on school property in the past year. Middle schoolers who reported being bullied (aRR=1.75, 95% CI; 1.62-1.90) were 75% more likely to report feeling unsafe. In the all student model, students were 77% more likely to report feeling unsafe if they had been bullied. These results deviate from the research literature that bullying behavior peaks in middle school (Currie et al., 2012; Vaillancourt, et al., 2010). Nationwide surveys show nearly 30 percent of sixth graders report being bullied at school, while only 14 percent of 12th graders do so (NASEM, 2016).

The CDC defines bullying as “any unwanted aggressive behavior(s) by another youth or group of youths, who are not siblings or current dating partners, involving an observed or perceived power imbalance (Centers for Disease Control and Prevention, 2018). Bullying involves a power imbalance between the perpetrator and the victim and involves repeated, aggressive behaviors (Eisenberg & Aalsma, 2005; NASEM, 2016). Across Kentucky, 24% of students report they have been bullied at school. Twenty-nine percent of middle school students indicated they have been the victim of a bully in the last year while only 19% of high school students report they had been bullied (Sanders, et al., 2017b). The incident data in comparison to results from the multivariable analysis shows that older youth who are bullied may experience more aggressive bullying, or may be youth who are already feel marginalized, increasing the impact of the bullying behavior. The rate of bullying and cyberbullying for LGBT youth is nearly double that of heterosexual youth. Rates also vary for youth with disabilities and those who are overweight, but data are limited for these categories (Finkelhor, et. al., 2015; Iannotti, 2013; Kann, et al., 2014; U.S. Department of Education, 2015).

Among 10th graders in Kentucky, 22.8% reported they had been bullied on school property in the last year (Sanders, et al., 2017b). Across the state, however, the rates ranged from a low of 18.2% in far eastern Kentucky to a high of 27.2% in the northeastern part of the state. Eighteen percent of 10th graders report they had been cyberbullied in the last 12 months, which is slightly higher than the national rate of 16.6 percent as noted on the Youth Risk Behavior Survey for 2015 (Sanders, 2017b). Rates of cyberbullying ranged from 15.4 percent of students in far eastern Kentucky and south-

central Kentucky to 20.5 percent in the urban area around Louisville. Both the rates of bullying and cyberbullying in Kentucky are higher than national rates for the same issues, as reported by the 2015 Youth Risk Behavior Survey (Sanders, 2017b).

Cyberbullying also increased the perception of feeling unsafe at school, but not as significantly as physical bullying in the multivariate model. Cyberbullying increased the feeling of being unsafe at school by 15% in the all students model (aRR=1.15, 95% CI; 1.08-1.23); 16% in the middle school model (aRR=1.16, 95% CI; 1.06-1.26), and 13% in the high school model (aRR=1.13, 95% CI; 1.03-1.23). Anecdotal reports from school personnel indicate that some students may not identify bullying experiences via social media as cyberbullying despite the fact that the question specifically identifies these types of media as the location of this bullying. These results may indicate a need to revise the question to more accurately reflect the language used by youth to more fully understand the impact of cyberbullying on student perception of safety.

Ormerod, et. al. (2008) found that students who perceived their school climate as one that allowed for sexual harassment to perpetuate also felt unsafe in the environment. Results from the multivariable analysis confirmed this research. Across the all-student model, students who reported sexual harassment (aRR=1.51, 95% CI; 1.40-1.63) were more likely to also report feeling unsafe at school. The risk of feeling unsafe increased among high school students who also reported sexual harassment (aRR=1.56, 95% CI; 1.41-1.71). In the middle school model, students who reported being sexual harassed (aRR=1.44, 95% CI; 1.28-1.63) were also more likely to also report feeling unsafe at school.

Research studies (Bryant, 1993; Lipson, 2001; Ormerod, et. al., 2008) found that as many as 94% of all students experience sexual harassment. Kentucky students do not report numbers that high, possibly as a result of the way the question is worded or students' understanding of the definition of sexual harassment encompassing more behaviors than just rape, according to Eileen Recktenwald, director of the Kentucky Association of Sexual Assault Programs (personal communication, June 26, 2019). In 2016, more than 9% of 10th graders reported sexual assault in school, followed by 7% of 12th graders, 6.7% of 8th graders, and 2.8% of 6th graders (Sanders, et al., 2017a). For all grades, except 10th, the percentages of students who reported sexual assault had fallen over the past few survey administrations. The 10th grade reports have been climbing steadily since 2012 (Sanders, et al., 2017a). Future research is warranted to determine how youth interpret the question on the KIP Survey, and how they define the terms "sexual assault" and "sexual harassment" to more accurately determine the impact of these behaviors on school safety.

Verbal threats increased the perception of feeling unsafe in all three models. High school students who reported verbal threats (aRR=1.62, 95% CI; 1.50-1.76) were 62% more likely to feel unsafe; middle school students (aRR=1.59, 95% CI; 1.46-1.73) were 59% more likely to feel unsafe. In the all student model (aRR=1.61, 95% CI; 1.52-1.71), students who reported verbal threats were 61% more likely to feel unsafe. In Kentucky, about 25% of 8th and 10th grade students report verbal threats. The rate is lower for 6th (18.6%) and 12th (17.4%) grades. The incidence of verbal threats among students has been trending downward across all grades. Results from this analysis

indicate that in order to increase the perception of safety in schools, youth may need additional social and emotional learning opportunities to decrease even more the number of students who feel they have experienced a verbal threat.

High school students (aRR=1.68, 95% CI; 1.42-1.98) who experienced a forceful threat situation – having an item taken by force – were 68% more likely to report also feeling unsafe. Middle school students (aRR=1.42, 95% CI; 1.24-1.62) experiencing this type of situation were 42% more likely to report also feeling unsafe. Across all students (aRR=1.53, 95% CI; 1.38-1.70), 53% said they felt unsafe if they had experienced a forceful theft. Interestingly, middle school students were more likely to report they had experienced this type of situation (between 3.5% and 4% of all middle school students) and the incidents of forceful theft is trending upward (Sanders, et al., 2017a). While the number of students who report these behaviors is small, it is important that theft by force be addressed in order to increase the perception of safety among students as they are significantly correlated in both the bivariate and multivariable models.

On the other hand, the percentage of students who reported they had something stolen from them ranged from 16.8% among 12th graders to nearly 40% of all 6th graders (Sanders, et al., 2017a). The impact of this behavior on the perception of safety was not as great as a forceful threat situation but was still significant at 49% higher for high school students (aRR=1.49, 95% CI; 1.39-1.61), 43% higher for middle school students (aRR=1.43, 95% CI; 1.32-1.54), and 45% higher for all students (aRR=1.45, 95% CI; 1.37-1.52). Across Kentucky, these behaviors are trending downward across all grade levels (Sanders, et al., 2017a). As was the case with bully behaviors,

older students who are the victims of theft may be more likely to be marginalized students, which increases the impacts on the perception of safety of these victimization behaviors.

Physically threatening another student also increases their perception of feeling unsafe at school, with younger students impacted at greater levels than older students. For middle school students (aRR=1.36, 95% CI; 1.23-1.49), being threatened physically increased the perception of feeling unsafe 36%. Among high school students (aRR=1.27, 95% CI; 1.15-1.41), the physical threat increased the perception of feeling unsafe 27%. Among all students (aRR=1.32, 95% CI; 1.23-1.42), the increase is 32%. Physical threats in Kentucky schools are trending upward across all grade levels, except sixth grade (Sanders, et al., 2017a). Between 6.1% (12th grade) and 11.2% (8th grade) of students report being physically threatened in the last year.

Perception of safety and problem behaviors. Problem behaviors have been defined as behaviors that stem from a person's inability or unwillingness to respect the rights of another and includes such behaviors as assault, aggression that results in an arrest, and theft, three of the variables in our study (Frick, 1998). Among the six problem behaviors loaded into the multivariable model, only being suspended, carrying a handgun, being arrested and attacking another person had significance in relation to the perception of safety in school. Not significant was theft of a vehicle in all three models, selling illegal drugs in the middle school and high school model, and being arrested in the high school model. Selling or dealing in drugs had a protective factor in the all-students model. Youth who report selling drugs (aRR=.88, 95% CI; .78-1.01) were

12% less likely to report feeling unsafe at school. These results could be a factor of these students feeling they are in control or have a greater level of social capital as a result of their drug-selling behaviors, however, there is little extant literature on the connection of drug sales and the perception of safety in schools. Additional research on these findings is warranted.

Students who are expelled or suspended from school have a lower perception of the climate of their school, and a lower perception of safety (American Zero Tolerance Task Force, 2008). Additionally, students who go to schools with a high rate of suspensions have a higher perception that their school isn't safe (Bachman, et al., 2011c). Students become disengaged from schools when they are suspended, which also can increase the perception that school is not safe (Arcia, 2006). The results of this study align with the existing literature. Middle school students (aRR=1.30, 95% CI; 1.16-1.45) who reported being suspended were 30% more likely to also report feeling unsafe. Among high school students (aRR=1.20, 95% CI; 1.1.09-1.33), being suspended increased the risk of feeling unsafe by 20%. Among all students (aRR=1.24, 95% CI; 1.15-1.34), the risk of feeling unsafe increased 24% among youth who reported being suspended.

Students who carry a handgun are also more likely to report that they feel unsafe at school, most likely as a result of already feeling unsafe. Seventy-five percent of youth convicted of crimes that involved guns said they carried weapons because they needed protection (Sheley & Wright, 1993). Youth who carry weapons often have the perception that they do not have social support from their teachers, peers or parents (Malecki & Demaray, 2003). In Kentucky, 11% of youth report carrying a handgun, a

percentage that has nearly doubled over the last 12 years (Sanders, et al., 2017b), increasing accessibility and a willingness of youth to carry a gun. Research also shows that when students see or hear of other students carrying guns, their own perception of safety decreases (Brown & Benedict, 2004). Youth in Kentucky are also carrying handguns at younger ages with 7.3% reporting they have access to a gun by the age of 12 (Sanders, et al., 2017b). Among middle school students in this study, carrying a handgun (aRR=1.31, 95% CI; 1.19-1.45) increased the perception of feeling unsafe at school by 30%. Among high school students (aRR=1.10, 95% CI; 1.00-1.21), the perception of feeling unsafe increased by 10%. In the all-students model (aRR=1.20, 95% CI; 1.12-1.29), carrying a handgun increased the perception of feeling unsafe by 20%. These results indicate that further research is needed to determine if youth come to school feeling unsafe because of issues at home or the perceptions of their parents and guardians related to safety, or if they feel unsafe at school and go home requesting access to weapons. Additional research is also warranted to determine if the increased access and availability of weapons in Kentucky plays a role in the perception that school isn't safe.

While events involving weapons in school – specifically firearms – receive significant media attention, in Kentucky these types of incidents represented less than 1% of all events reported during the 2016-2017 school year (KCSS, 2018), indicating that addressing the presence of weapons is just one component of a multi-pronged safety approach. White students have the highest percentage of weapon-related incidents at 72% of the incidents, while African-American students have a disproportionate number

of weapon-related offenses compared to enrollment (20.1% of offenses compared to 10.6% of enrollment) (KCSS, 2018). Seventh through 12th graders are involved in 56.1% of the weapons related incidents in Kentucky. Students eligible for free/reduced are overrepresented in the category as they represent 79.9% of the weapons incidents and 60.8% of the state's enrollment (KCSS, 2018).

Being arrested also increases the perception of feeling unsafe at school. Middle school students (aRR=1.46, 95% CI; 1.18-1.81) who had been arrested were 46% more likely to also feel unsafe. In the all-students model (aRR=1.22, 95% CI; 1.07-1.39), the risk climbed 22% among those arrested. The variable was not a significant risk among high school students in the multivariable model compared to the bivariate model. It could be theorized that youth, especially middle school youth, who have been arrested have already had significant impact with law enforcement for a number of reasons and may have seen family members escorted from their homes by law enforcement officials. Some incidents involving middle school students and law enforcement may have occurred within the school facility, increasing the perception that school itself is not safe. These results warrant additional research as there is little extant literature related to the connection between being arrested and feeling unsafe at school.

Being attacked by another person increases the perception of feeling unsafe at school by 37% among middle school students (aRR=1.37, 95% CI; 1.23-1.52), 18% among high school students (aRR=1.18, 95% CI; 1.07-1.31), and 29% among all students (aRR=1.28, 95% CI; 1.19-1.38). These behaviors affect between 7% and 11% of students in Kentucky schools and have been trending downward in all grades except 6th over the

last two decades. There exists little existing literature on the connection of attacking another student and feeling unsafe at school, although it can be theorized that students who attack other students may feel provoked or otherwise threatened and are acting in response to those emotions. Additional research is warranted on this topic.

Relevance of Findings to the Educational Context

Creating a safe school environment is a key component to school staff responsibilities. In light of recent mass school shootings (e.g. Parkland, Marshall County, Sandy Hook), school safety has risen as a priority of educators and legislators across the United States. Safety is considered a basic need of students and staff (Maslow, et al., 1970) and is built not only from the physical security of the building, but also the environment that permeates the facility's structure (Perry, 1908; Wang & Degol, 2016), the values and norms of students and staff (Emmons, et. al., 1996; Johnson, et. al., 2015; LaSalle, et. al., 2015); the discipline and order of the school (Brand, et. al., 2003; Cohen, et. al., 2009; Furlong, et al., 2005; Griffith, 2000; Haynes, et. al, 1997; Haynes, et. al., 1993; McGeeney, et. al., 2017; Wilson, 2004), and the community that surrounds the school and in which students make their homes (Bowen & Bowen, 1999; Cuellar, 2018; Kitsantas et al, 2004). Physical and emotional safety, along with effective policies and procedures to maintain the perception that a school is safe are required (Bosworth, et al., 2011; Wang & Degol, 2016). School administrators must consider both students' physical and emotional safety, along with their perception of safety in order to create the most conducive environment for learning (Fisher, et al., 2017). Results of this study confirm previous research showing that substance use, mental health issues, personal

victimization and problem behaviors all play a role in a student's perception of their safety at school (Bachman, Randolph & Bakken, 2011c; Lowry, Sleet, Duncan, Powell, & Kolbe, 1995; Nijs et al., 2014; Rosenfeld, Richman, Bowen, & Wynns, 2006). Students who perceive their schools as safe fare better on academic outcomes relative to their peers within the same schools (Akiba, 2010; Lacoë, 2013). They also have a higher commitment to learning, as well as confidence, motivation, attendance and grades, and experience fewer classroom disruptions (Bowen & Bowen, 1999; Brown & Benedict, 2004; Card & Hodges, 2008; Juvonen, Nishina & Graham, 2000; Milam, Furr-Holden, & Leaf, 2010, 2010; Schwartz, et al., 2005). Perception of safety by students is equal to actual safety when it comes to the impact on academic achievement. Students link their academic performance and the violence they witness in their school and community (Harris, 1995). A higher percentage of urban students who perceive they are safe going to school and returning home pass reading and math portions of the state assessment at greater rates than students who report they do not feel safe on the way to and from class (Milam, et al., 2010). Students who report higher levels of substance use and weapon possession in their schools underperform on standardized assessments compared to peers in schools where these issues are not a factor (Milam, et al., 2010).

Improved climate, and not necessarily increased physical safety measures, have an impact on academic achievement. Researchers found that visible security measures, such as cameras, metal detectors and fences, have minimal impact on academic performance, increase truancy rates, and lower the perception of safety by reminding students that victimization can occur (Schreck & Miller, 2003; Tanner-Smith & Fisher,

2016). An improved school climate has been found to have an immediate impact on the sense of safety and well-being among students, in turn improving behavior (Pallas, 1988). Improving safety and the perception of safety through a welcoming and supportive school climate leads to lower levels of conflict and higher academic performance among students (Burdick-Will, 2013). Reducing personal victimization should also improve the perception of the school climate, and as shown in this study, increase the perception of safety among students, as all personal victimization variables increased significantly that students would perceive their school as unsafe.

Learning is negatively impacted in schools with high violence rates (Zulu, Urrbani, Van der Merwe, & Vander Walt 2004). When teachers rate schools as having a low number of classroom disruptions and safety problems, students perform higher on academic testing (Brand, et al., 2008). Disorder found within schools impacts school climate, and schools with strong management of discipline policies have less disorder (Gottfredson, et. al. 2005). Problem behaviors of being suspended, carrying a handgun and attacking other students were found in this study to significantly increase the perception of feeling unsafe at school. By reducing problem behaviors and interruptions in class, instruction time should increase, and learning should improve (Horner, Sugai, & Anderson, 2010).

Substance use and the educational climate. Substance use increases the perception that youth will feel unsafe at school, especially when youth report binge drinking, and cocaine, heroin and methamphetamine use. Even so, there are a number of educational characteristics that also serve as protective factors against substance use

and the resulting perception of feeling unsafe at school. School connectedness; supportive relationships with peers, teachers and other school staff; a cohesive, supportive neighborhood; and plans to attend college after graduation are identified as protective factors against substance use (Bond, et al., 2007; Catalano, Oesterle, Fleming & Hawkins, 2004; Henry, 2008; Johnston, 1985; Mayberry, et al., 2009; Su & Supple, 2014; Su, Supple & Kuo, 2018). Academic performance reduced the frequency of substance use (Hundleby & Mercer, 1987), but high intelligence and reading readiness in early grades has been correlated with early alcohol use in adolescence (Fleming, et. al., 1982) and higher lifetime levels of cocaine use among young adults (Kandel & Davies, 1991). Low commitment to educational achievement – reflected in how much students like school, how much time they spend completing homework, and the relevance of the work they are doing in class – increases the risk of substance use and, in turn, the perception of feeling unsafe at school (Friedman, 1983; Gottfredson, 1988; Kelly & Balch, 1971). School failure, poor school performance, truancy, early drop outs and placement in special education classes also increase adolescent drug use (Holmberg, 1985; Jessor, 1976; Robins, 1980; Smith & Fogg, 1978) and highlight the connection between substance use and problem behaviors in increasing the perception of feeling unsafe, as found in this study. By increasing the protective factors related to substance use and decreasing the risk factors, not only should rates of substance use by students decrease, but the perception of feeling safe at school should increase. as well

Mental health and the educational climate. As noted in this study, as mental health issues increase, so too do the rates that students will perceive their school

environment to be unsafe. Especially among students reporting serious psychological distress, the feeling of being safe at school decreases significantly. Finding ways to reduce mental health issues of psychological distress, and suicidal planning, ideation and attempts is imperative in increasing the perception of safety. Suicidality is linked to an increased risk of dropping out of school, and students with lower reading levels had higher rates of suicidality, substance use disorders, levels of depression, and conduct incidents (Daniel, et al, 2006). Youth with early onset of mental, emotional and behavioral disorders have lower academic achievement, as well as are more involved in the child welfare and juvenile justice systems than their peers without MEBs (NRC, 2006). “Mental health is a critical component of children’s learning and general health,” (NRC, 2009, pg. 65). Implementing preventive efforts prior to the onset of psychological distress among students is imperative if schools want to address the perception of safety at school among their students.

Personal victimization and the educational climate. As is the case for substance use and mental health issues, personal victimization is strongly associated with the perception of feeling unsafe at school. These results reflected previous research (Bachman, et. al., 2011a) that found that personal victimization, and bullying in particular, were the strongest predictors of the perception of feeling unsafe. All personal victimization variables remained significant across the correlational, bivariate and multivariable models, highlighting the need to address topics such as bullying, sexual assault, and multiple forms of violence among students if the perception of safety is to be increased. These findings are backed by previous research. Exposure to

violence decreases school performance (Bowen & Bowen, 1999), but students do not have to be involved in that violence for it to have a negative impact on academic performance (Gershenson & Tekin, 2015). While this study looks specifically at the individual victim and their perception of safety, additional research should be conducted to determine if bystanders to violence also report reduced perception of safety.

Multiple studies have found a link between exposure to violence in the community, academic performance and poor school attendance (Bowen & Bowen, 1999; Delaney-Black, et al., 2002; Henrich, Schwab-Stone, Fanti, Jones, & Ruchkin, 2004; Milam, et al., 2010; Rosenfeld, et. al., 2006). Students who were near the site of a homicide just before a language arts test scored lower than students who were near a homicide after the test (Sharkey, Schwartz, Ellen, & Lacoë, 2014). Bullying, by far, has the greatest impact on increasing the perception of feeling unsafe at school of any of the personal victimization variables. Being bullied and witnessing bullying can result in poor academic performance, reduced student engagement, anxiety, depression, and future behavior that can be defined as either delinquent or aggressive (Eriksen, Nielsen, & Simonsen, 2014; Konishi, Hymel, Zumbo, & Li, 2010; Nansel, Craig, Overpeck, Saluga, & Ruan, 2001; NASEM, 2016). Bullying has also been linked to increases in school shootings (Klein, 2012); suicide attempts and suicide deaths (Carney, 2000; Kaltiala-Heino, Rimpelä, Marttunen, Rimpelä, & Rantanen, 1999); and reduced psychosocial functioning (Bond, Carlin, Thomas, Rubin & Patton, 2001; Duncan 1999; Hansen & Lang, 2014; Juvonen, Wang & Espinoza, 2010; Seals & Young, 2003).

Problem behaviors and the educational climate. Problem behaviors also increase the perception of feeling unsafe at school, necessitating actions by schools to reduce these behaviors, especially the behaviors of attacking another student and being suspended from school. Feldhusen, Thurston, and Benning (1973) identified early problem behavior in schools as a predictor of both academic failure in middle and high school and subsequent substance use. Bachman, et. al. (2011c) found that students who attended schools where suspension rates were high had increased perceptions that their school was not safe. Schools with higher levels of student aggression reported higher levels of the perception of being unsafe, a decrease in the satisfaction with the school climate, and higher rates of gun carrying, especially among males (Goldstein, et. al., 2007). Students who experience victimization by bullying or the presence of factors which contribute to bullying are also more likely to bring a gun to school (Meyer-Adams & Conner, 2008)

Implications for Policy or Practice

Assess current situation. There are many reasons that youth may feel unsafe at school. The current study identifies a number of variables related to substance use, mental health issues, personal victimization and problem behaviors. In order to address students' feelings that they are not safe at school, administrators must first understand the risk factors that support that assumption by students. Because school environment impacts students' learning and experiences, students' perceptions of the school's climate plays a role in their academic success and must be considered if improving that success is the goal (Bandura, 2001; Fan, Williams, & Corkin, 2011). A school's collective

norms and values determine students' perceptions (Anderson, 1982; Koth, Bradshaw, & Leaf, 2008). For that reason, measurement of the school climate must occur among students as well as staff members (Mok & McDonald, 1994). The assessment of these factors includes looking at the demographics of those involved, the consequences that occur, and the environmental attributes that support the current status of the factors in order to select or develop an intervention that makes best use of the available fiscal and physical resources (Florin, et al., 2012). For example, in Kentucky, grade level of students is particularly important in providing prevention. Safety incidents increase at the sixth-grade level, climbing steadily through the 9th grade after which they begin to decrease. Ninth-graders were involved in 20% of the safety incidents in Kentucky schools yet they represent only 8.1% (KDE, 2016) of students in the state system. These data informs educators that middle school youth and high school freshman especially need supervision and guidance in order to reduce safety incidents. Additionally, the school must determine if there are specific locations that increase the perception of feeling unsafe. Research by Astor, Meyer, and Pitner (2001) found that different areas of the school were perceived as unsafe depending on the age level of the students and perception of the necessity of monitoring various areas in the school. In Kentucky, while the majority of safety incidents occurred in the classroom, nearly 6% occurred in hallways or stairwells, most likely as a result of lack of monitoring in those areas. Other areas of significance related to the perception of safety include the bus, cafeteria, gymnasium and restroom.

Reduce risk factors; increase protective factors. Once the factors that are contributing to the perception of safety are identified within the school context, it is vital that schools implement efforts to reduce those risk factors and increase protective factors that may be lacking. Adelman and Taylor (1999) found that integrating prevention services with education services provides the greatest impact on students. Strategies should be universal and comprehensive, focusing on the shared risk and protective factors that cross a multitude of variables. School safety prevention efforts should include the domains of substance use, mental health issues, personal victimization and problem behaviors. Prevention efforts focused on these domains individually should also include strategies that address the perception of school safety.

Universal prevention efforts focused on the existing risk factors will have the greatest impact, even when specific groups of students, or target populations, are identified. Universal prevention efforts focus on all students in a school and focus on changing norms, access and policies and procedures that contribute to the risk factor. Interventions that target an entire school are often less costly than those that target select groups and often are less stigmatizing than programs that group students because of their risks (Tolan & Brown, 1998). Providing all students with the skill sets learned during interventions cannot only decrease problem behavior but also change school norms around that behavior (Multisite Violence Prevention Project, 2014). The effects of a universal intervention are also more widespread but with increased outcomes resulting among those at high-risk for the targeted behaviors (Stoolmiller, Eddy & Reid, 2000; Tolan, Gorman-Smith & Henry, 2004). Protective factors should also

be addressed in a universal manner to target the largest number of students. Protective factor efforts support improved communication, interpersonal relationships, implementation of trauma-informed best practices, and increased help-seeking behaviors among students (Lester & Cross, 2015).

In addition to universal strategies, a multi-tiered approach that includes not only interventions delivered to the youth at risk, but also a review and revision of appropriate policies and procedures as well as engagement of stakeholders outside of education is necessary to address community-level characteristics that contribute to the problems noted in schools. The multi-tiered system of supports reduces behavioral issues while improving student success (Vaillancourt, Cowan & Skalski, 2013). Policy and procedures review and revision should include crisis response as well as promotion of both physical and psychological safety (Cowan, et al., 2013). Community capacity and engagement must be increased in order to create the change necessary to support schools as they work to improve school climate (Florin, et al., 2012), especially since several of the variables connected to the perception of safety in this study have correlations with community indicators as well.

Provide professional development. In order to implement efforts to change the perception of safety, school staff must be trained in practices that change the behaviors of students. Professional development increases buy-in and gives every staff member a role in creating the changed school environment (CDC, 2017b). In Kentucky, school staff are required to receive one-hour of training in suicide prevention techniques every other school year. They are not required to receive substance use prevention training

or bullying prevention training. New legislation recently enacted does require that schools enact a trauma-informed approach, but it does not indicate school staff should receive training in the concepts. Understanding the concepts behind these prevention strategies is vital if school staff are expected to support students in changing the environment which impacts the perception of safety. Professional development will aid in the consistent enforcement of policies, which increase their effectiveness in moving students toward the desired behaviors. For example, currently in Kentucky, ineffectively enforced bullying policies – from the perspective of students – actually increase the risk of suicidal attempts, instead of reducing them as would be expected (Bachman, et. al., 2011c; McGeeney, et al., 2017).

Future Research Directions

Future research around the perception of safety and the variables in this study are warranted, especially regarding gender, age of onset, race, and geographic location of students, as these characteristics result in different impacts for a number of the variables, according to existing literature.

Gender differences. There are a multitude of gender differences for substance use. Boys are more likely to use substances earlier and more frequently and have more significant disorders than girls (Rutter, Caspi & Moffitt, 2003; Windle, 2000). Boys who used marijuana and had sex on a regular basis were more likely to be depressed than their counterparts who abstained from drug use; girls who experimented with substance use, had multiple sexual partners and used intravenous drugs were three times more likely to be depressed than boys in the same categories (Hallfors, Waller,

Bauer, Ford & Halpern, 2005). Suicide death rates for males ages 10-19 are more than twice that of females for the same age; for the 20-24 age range, male suicide deaths are nearly five times that of females (Injury Disparities, 2018). However, suicide deaths among girls are increasing at faster rates than among boys. Traditionally, males die by suicide more often than females, usually because they choose more lethal means, such as a gun. These and other gender differences for the independent variables in this study indicate a need for additional research related to gender and the perception of safety.

Age of onset. The age that students begin to experience the behaviors identified in this study may also have an impact on their perception of safety. Girls are more likely to experience negative emotions with early use while most early initiators experience hyperactivity, impulsiveness, inattention and early aggressive behavior (Donovan & Molina, 2011; Galéra, et al., 2010; Hartman, et al., 2013; Hayathbakhsh, Williams, Bor, & Najman, 2013). Risky behaviors, such as fighting, unsafe sexual behavior, and driving while intoxicated (Hingson, Heeren, & Edwards, 2008; Hingson, et. al., 2002; Stueve & O'Donnell, 2005; Swahn, et al., 2008) as well delinquent behavior (Ellickson, et al., 2004) have been tied to early initiation. Early use of substances is also linked to dating violence, as either the victim or the perpetrator (Swahn, et al., 2008). Those who initiate use of substances early are also more likely to miss school and to have lower educational achievement levels (Flory, Lynam, Milich, Leukefeld & Clayton, 2004; Kingston, Rose, Cohen-Serrins, & Knight, 2017). For this reason, age of onset of behaviors should also be researched.

Race differences. Like gender and age of onset, there are behaviors and outcomes that are specific to race for the variables in this study. Especially in urban areas, Blacks are nearly four times as likely as Whites to be arrested for marijuana possession (Bunting, Garcia & Edwards, 2013; Wu, et al., 2013). For Asian American and African American students, substance use, depression and suicidal behavior, and violence are correlated to poor school performance (Whaley & Noel, 2013). Choi and Lahey (2006) found that Asian students have lower rates of smoking, alcohol use, binge drinking, getting drunk, and multiple or polysubstance use than Whites, but higher rates than their African American peers. Their research also shows that immigrant students to the second generation have significantly higher substance use rates compared to non-immigrant students. Physical abuse and victimization have been connected to a significantly higher use of alcohol and marijuana, across all races (Carson, Sullivan, Cochran, & Lersch, 2008; Gallupe & Baron, 2009; Lo, Kim & Church, 2008). Youth who reported any substance use were more likely to have been involved in physical altercations than adolescents who reported no substance use and the risk of physical aggression was highest among Black substance using adolescents (Mercado-Crespo & Mbah, 2013). Bachman et. al. (2011a) found that previous personal victimization increased the perception of feeling unsafe among all students, as did the presence of metal detectors in the school. They also found that among White students, security guards increased the perception of feeling unsafe as did attending school in urban areas. Among African American students, attending school in suburban or rural areas

increases the perception of feeling unsafe. It is important that additional research related to race and perception of safety be conducted.

Geographic location differences. The environment where an individual lives and spends the majority of their time seems to impact behavior (Jacobson, 2004; McLafferty, 2008). Urban youth have higher rates of early and past year use of alcohol and illicit drugs (Johnston, O'Malley, Bachman, & Schulenberg, 2009; Wright, 2004), mainly as a result of access to substances. Marijuana use is more prevalent in urban areas where Black and Latino adolescents comprise a greater percentage of the adolescent population (Choi, Harachi, Gillmore, Catalano, 2005; Jiang, Sun, Marsiglia, 2016; U.S. Department of Health and Human Services, 2014; Warren, Smalley, & Barefoot, 2017). Across the U.S., metropolitan areas also have the largest number of deaths resulting from prescription misuse, synthetic opioids, heroin and cocaine while psychostimulants result in a larger number of deaths in areas described as micropolitan (Seth, Scholl, Rudd & Bacon, 2018). However, research found that rural, White, adolescents, not urban youth, are at the greatest risk of prescription drug misuse (Ford & Rigg, 2015; Havens, Young & Havens, 2011). Age-adjusted rates for rural communities in the Southeast portion of the United States (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and Washington D.C.) show that 72% of rural counties with deaths involving non-medical use of prescription drugs had rates higher than their state death rate for the same type of substance use-related death (Kasat, et al., 2016). Kentucky's age-adjusted rate for rural deaths

involving non-medical use of prescriptions, mainly opioids, was 22% higher than the state's overall rate for these deaths (25.1 vs. 20.5) (Kasat, et al., 2016).

Research attributes higher rates in rural areas to a number of factors, including educational attainment, diversity of population, utilization of health care services, availability of physicians, number of residents who are uninsured and on Medicaid, poverty, and lack of economic opportunity (Guy, et al., 2017; Keyes, Cerda, Brady, Havens & Galea, 2014; McDonald & Carlson, 2014; McDonald, Carlson & Izrael, 2012; Webster, Cifuentes, Verma & Pransky, 2009). In the Appalachian regions of the United States, residents report lack of access to basic services as well as increased feelings of hopelessness to change their situation (Keefe, 1988). Fifty-four of Kentucky's 120 counties are within the Appalachian region, where 42% of the population is considered rural, as compared to 20% of the rest of the nation (Appalachian Regional Commission, n.d.). As the majority of students in this study live in rural areas of Kentucky, additional research is warranted on the impact of rural life on the perception of safety.

Higher levels of incidence; multiple issues. Additionally, as this study grouped all students reporting a specific behavior – substance use, suicide attempt, and all six problem behaviors – into single indicators, it would be important to understand if higher levels of the reported behavior (e.g. 4-5 times, 6+ times, 10-19 times, etc.) result in greater increases in the perception of feeling unsafe at school compared to reporting only one or two occasions of the behavior. Similarly, the study did not consider multiple substances used by students or experiencing multiple variables (e.g. substance use and suicide; bullying and attacking another) and their increased risk for perceiving their

school to be unsafe. Future research should consider if youth who report use of multiple substances or multiple variables or report higher levels of incidence have increased risk of perceiving school to be unsafe.

Study Limitations

Limitations for this study include the rural nature of the schools participating in the administration studied making it less generalizable for suburban and urban populations; the self-report nature of the survey; correlational, rather than causal nature of the study making it impossible to explore the long-term effects of the independent variables, and secondary data analysis limiting manipulation of the study design.

Conclusion

Based on the results from this study, there should be little doubt that substance use, mental health issues, personal victimization and problem behaviors impact the perception of safety among students. As perception of safety is one component of school climate or environment, it stands to reason that addressing a school's climate will reduce the perception of feeling unsafe, improve the problem behaviors noted above, and improve academic functioning. Researchers agree that a school's climate impacts academic achievement, psychosocial adjustment, sense of belonging, satisfaction with school, motivation to learn, and student behavior (Battistich, Soloman, Kim, Watson, & Schaps, 1995; Brand & Felner, 1996; Coker & Borders, 2001; Eccles, et al., 1993; Felner, Aber, Primavera, & Cauce, 1985; Griffith, 1997; Hoge, Smit, & Hanson, 1990; Kuperminc, et. al., 2001; Purkey & Smith, 1983; Reid, 1983; Roeser & Eccles, 1998; Rumberger,

1987; Sommer, 1985; Stewart, 2008; Verkuyten & Thijs, 2002; Vieno, Perkins, Smith, & Santinello, 2005). Positive school climate has also been linked to lower absenteeism, fewer risky behaviors, behavior and conduct problems, and discipline actions, as well as increased self-esteem and school completions (Cohen, et al., 2009; Johnson, et al., 2015). School climate, and the perception of that climate among students and staff, was found to impact the levels of violence as well as alcohol and other drug use (Bosworth, et al., 2011). Researchers also agree that addressing climate is a vital component of improving school safety (Cohen, Pickeral & McCloskey, 2009; Johnson & Stevens 2006; Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013; Zullig, Koopman, Patton, & Ubbes, 2010).

Assessing the current context of these behaviors within the school paradigm, providing universal interventions to maximize impact, and supporting professional development of educators to create and sustain change in the school system is vital in addressing these behaviors and the role they play in reducing the perception of safety of students. Additional research can more acutely identify the depth and breadth of the impact of these behaviors on the perception of safety, allowing for a refinement of interventions to most closely match the needs of a school system and the community in which it exists.

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APPENDICES

Appendix A: KIP 2016 Form



KIP Kentucky Incentives for Prevention

Student Survey

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Please mark the most accurate response(s) for each question. We hope that you will answer all questions, but if you find you cannot answer a question honestly, please leave it blank. In the cases where you have no experience, please mark the circle, "None," "Never Have," or "0." **Remember that your answers will be kept confidential and will never be connected to your name or class.**

- How old are you?**
 10 11 12 13 14 15 16 17 18+
- What grade are you in?** 6 8 10 12
- Are you:** Female Male
- Are you Hispanic or Latino:** Yes No
- What is your race:** (Select one or more responses if necessary.)
 American Indian or Alaska Native Native Hawaiian or other Pacific Islander
 Asian White
 Black or African American Other
- Is anyone in your family (or someone close to you) currently serving on active duty or retired/separated from the Armed Forces, the Reserves, or the National Guard?**
 Yes, only one person
 Yes, more than one person
 No
 I don't know
- Do you participate in the free or reduced price lunch program?**
 Yes No

The next 8 questions ask about violence-related behaviors and problems you may have experienced at school or in your community.

- How many times (if any) in the past year (12 months) have you...**

	Never	1-2 times	3-5 times	6-9 times	10-19 times	20-29 times	30-39 times	40+ times
a. been suspended from school?	<input type="radio"/>							
b. carried a handgun?	<input type="radio"/>							
c. sold illegal drugs?	<input type="radio"/>							
d. stolen or tried to steal a motor vehicle such as a car or motorcycle?	<input type="radio"/>							
e. been arrested?	<input type="radio"/>							
f. attacked someone with the idea of seriously hurting them?	<input type="radio"/>							
g. been drunk or high at school?	<input type="radio"/>							
h. taken a handgun to school?	<input type="radio"/>							
- When (if ever) did you first...**

	Never Have	10 or Younger	11	12	13	14	15	16	17 or older
a. get suspended from school?	<input type="radio"/>								
b. get arrested?	<input type="radio"/>								
c. carry a handgun?	<input type="radio"/>								
d. attack someone with the idea of seriously hurting them?	<input type="radio"/>								
- Do you think the following are problems at your school?**

	Yes	No
a. Vandalism, including graffiti	<input type="radio"/>	<input type="radio"/>
b. Gangs	<input type="radio"/>	<input type="radio"/>
c. Tobacco use	<input type="radio"/>	<input type="radio"/>
d. Alcohol use	<input type="radio"/>	<input type="radio"/>
e. Drug use	<input type="radio"/>	<input type="radio"/>
f. Fights between students of different racial and/or ethnic backgrounds	<input type="radio"/>	<input type="radio"/>
g. Selling (dealing) drugs	<input type="radio"/>	<input type="radio"/>
h. Carrying guns	<input type="radio"/>	<input type="radio"/>
i. Carrying other weapons	<input type="radio"/>	<input type="radio"/>
- How safe do you feel at school?**
 Very safe Safe Unsafe Very unsafe
- Are there particular places at school where you feel unsafe?**
 Yes No
- If Yes, where do you feel unsafe?** (Mark ALL that apply.)
 Restrooms Gym/Locker Rooms Stairwells
 Parking Lots Hallways School Bus
- Are there certain times of day when you feel these places are unsafe?** (Mark ALL that apply.)
 Before School During Lunch Other
 After School Entire School Day
- During the last school year...**

	Yes	No
a. did someone take money or things directly from you by using force, weapons, or threats at school?	<input type="radio"/>	<input type="radio"/>
b. did someone verbally threaten you at school?	<input type="radio"/>	<input type="radio"/>
c. did you have something stolen from your desk, locker, or other place at school?	<input type="radio"/>	<input type="radio"/>
d. did someone physically threaten, attack, or hurt you at school?	<input type="radio"/>	<input type="radio"/>
e. did someone make unwanted sexual advances or attempt to sexually assault you at school?	<input type="radio"/>	<input type="radio"/>
f. did a boyfriend or girlfriend physically hurt you (hit, push, pull your hair) on purpose?	<input type="radio"/>	<input type="radio"/>
g. did a boyfriend or girlfriend emotionally hurt you (threaten, make threatening phone calls/texts, call you names, harass you online) on purpose?	<input type="radio"/>	<input type="radio"/>

The next 4 questions ask about bullying. Bullying is when one or more students tease, threaten, spread rumors about, hit, shove, or hurt another student over and over again. It is not bullying when two students of about the same strength or power argue, fight, or tease each other in a friendly way. Bullying involves an imbalance of power and repeated incidents over time.

- Yes No
16. During the past year (12 months), have you ever been bullied on school property? Yes No
17. During the past year (12 months), have you ever been electronically bullied? Yes No
(include being bullied through e-mail, chat rooms, instant messaging, websites, social networks, or texting.)
18. Does your school have a way to report bullying or harassment? Yes No
19. If your school does have a way to report bullying or harassment, is this reporting method effective? (if not applicable, please leave blank) Yes No

The next 2 questions ask about how you have been feeling during the past 30 days. For each question, please fill in the circle that best describes how often you had this feeling.

20. During the past 30 days, about how often did you feel... (Mark ONE CIRCLE for each line.)
- | | All of the time | Most of the time | Some of the time | A little of the time | None of the time |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| a. ...nervous? | <input type="radio"/> |
| b. ...hopeless? | <input type="radio"/> |
| c. ...restless or fidgety? | <input type="radio"/> |
| d. ...so depressed that nothing could cheer you up? | <input type="radio"/> |
| e. ...that everything was an effort? | <input type="radio"/> |
| f. ...worthless? | <input type="radio"/> |
21. Have you ever cut or harmed yourself on purpose?
 Yes No

The next 3 questions ask about attempted suicide. Sometimes people feel so depressed about the future that they may consider attempting suicide, that is, taking some action to end their own life.

22. During the past 12 months, did you ever seriously consider attempting suicide?
 Yes No
23. During the past 12 months, did you make a plan about how you would attempt suicide?
 Yes No
24. During the past 12 months, how many times did you actually attempt suicide?
- | None | 1 times | 2-3 times | 4-5 times | 6+ times |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <input type="radio"/> |

The next 8 questions ask about alcohol and tobacco use. For these questions, drinking alcohol does not include drinking a few sips of wine for religious purposes.

25. When (if ever) did you first...
- | | Never Have | 10 or Younger | 11 | 12 | 13 | 14 | 15 | 16 | 17 or older |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| a. smoke a cigarette? | <input type="radio"/> |
| b. use smokeless tobacco (chew, snuff, dipping tobacco, chewing tobacco)? | <input type="radio"/> |
| c. have more than a sip or two of beer, wine or hard liquor (for ex., vodka, whiskey, gin, etc.)? | <input type="radio"/> |
| d. begin drinking alcoholic beverages regularly, that is, at least once or twice a month? | <input type="radio"/> |
26. On how many occasions (if any) have you had alcoholic beverages (beer, wine, or hard liquor) to drink—more than a few sips... (Mark ONE CIRCLE for each line.)
- | | 0 | 1-2 | 3-5 | 6-9 | 10-19 | 20-39 | 40+ |
|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| a. ...in the past 12 months? | <input type="radio"/> |
| b. ...in the past 30 days? | <input type="radio"/> |
27. On how many occasions (if any) during the past 30 days have you been drunk or very high from drinking alcoholic beverages?
- | | 0 | 1-2 | 3-5 | 6-9 | 10-19 | 20-39 | 40+ |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <input type="radio"/> |
28. Think back over the last two weeks. How many times (if any) have you had five or more alcoholic drinks in a row?
- | None | 1 time | 2 times | 3-5 times | 6-9 times | 10+ times |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <input type="radio"/> |
29. On how many occasions (if any) have you smoked cigarettes... (Mark ONE CIRCLE for each line.)
- | | 0 | 1-2 | 3-5 | 6-9 | 10-19 | 20-39 | 40+ |
|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| a. ...in the past 12 months? | <input type="radio"/> |
| b. ...in the past 30 days? | <input type="radio"/> |
30. During the past 30 days, on the days you smoked (if at all), how many cigarettes did you smoke per day?
- | None | less than 1 | 1 | 2-5 | 6-10 | 11-20 | 20+ |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <input type="radio"/> |
31. On how many occasions (if any) have you used smokeless tobacco... (Mark ONE CIRCLE for each line.)
- | | 0 | 1-2 | 3-5 | 6-9 | 10-19 | 20-39 | 40+ |
|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| a. ...in the past 12 months? | <input type="radio"/> |
| b. ...in the past 30 days? | <input type="radio"/> |
32. During the past 30 days, which of the following tobacco products did you use on at least one day? (You can choose ONE ANSWER or MORE THAN ONE ANSWER.)
- Roll-your-own cigarettes
 - Smoking tobacco from a hookah or waterpipe
 - Snus (for ex., Camel or Marlboro Snus)
 - Dissolvable tobacco products (for ex., Ariva, Stonewall, Camel orbs, Camel sticks or Camel strips)
 - Electronic cigarettes or e-cigarettes (for ex., NJOY, V2, Bull Smoke, Halo)
 - Some other new tobacco product not listed here
 - I have not used any of the products listed above, or any new tobacco product

The next 15 questions ask about illicit drugs and prescription drugs.

33. When (if ever) did you first...

a. smoke marijuana?

Never	10 or	11	12	13	14	15	16	17 or
Have	Younger							older
<input type="radio"/>								

b. take a prescription drug (such as OxyContin, Percocet, Vicodin, Codeine, Adderall, Ritalin, or Xanax) without a doctor's prescription?

<input type="radio"/>								
-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

34. On how many occasions (if any) have you used marijuana... (Mark ONE CIRCLE for each line.)

	0	1-2	3-5	6-9	10-19	20-39	40+
a. ...in the past 12 months?	<input type="radio"/>						
b. ...in the past 30 days?	<input type="radio"/>						

35. On how many occasions (if any) have you used synthetic marijuana (also called K2 or Spice)... (Mark ONE CIRCLE for each line.)

	0	1-2	3-5	6-9	10-19	20-39	40+
a. ...in the past 12 months?	<input type="radio"/>						
b. ...in the past 30 days?	<input type="radio"/>						

36. On how many occasions (if any) have you sniffed glue, breathed the contents of an aerosol spray can, or inhaled other gases or sprays, in order to get high... (Mark ONE CIRCLE for each line.)

	0	1-2	3-5	6-9	10-19	20-39	40+
a. ...in the past 12 months?	<input type="radio"/>						
b. ...in the past 30 days?	<input type="radio"/>						

37. On how many occasions (if any) have you used cocaine or crack... (Mark ONE CIRCLE for each line.)

	0	1-2	3-5	6-9	10-19	20-39	40+
a. ...in the past 12 months?	<input type="radio"/>						
b. ...in the past 30 days?	<input type="radio"/>						

38. On how many occasions (if any) have you taken narcotics or drugs that require a doctor's prescription, without a doctor telling you to take them... (Mark ONE CIRCLE for each line.)

	0	1-2	3-5	6-9	10-19	20-39	40+
a. ...in the past 12 months?	<input type="radio"/>						
b. ...in the past 30 days?	<input type="radio"/>						

39. On how many occasions (if any) have you taken painkillers (OxyContin, Percocet, Vicodin, Codeine) without a doctor's prescription... (Mark ONE CIRCLE for each line.)

	0	1-2	3-5	6-9	10-19	20-39	40+
a. ...in the past 12 months?	<input type="radio"/>						
b. ...in the past 30 days?	<input type="radio"/>						

40. On how many occasions (if any) have you used speed/uppers (Adderall, Ritalin) without a doctor's prescription... (Mark ONE CIRCLE for each line.)

	0	1-2	3-5	6-9	10-19	20-39	40+
a. ...in the past 12 months?	<input type="radio"/>						
b. ...in the past 30 days?	<input type="radio"/>						

41. On how many occasions (if any) have you used tranquilizers (Valium, Xanax, Librium, Ativan, etc.) without a doctor telling you to do so... (Mark ONE CIRCLE for each line.)

	0	1-2	3-5	6-9	10-19	20-39	40+
a. ...in the past 12 months?	<input type="radio"/>						
b. ...in the past 30 days?	<input type="radio"/>						

42. On how many occasions (if any) have you used methamphetamines ("meth," "crystal meth," "ice," "crank")... (Mark ONE CIRCLE for each line.)

	0	1-2	3-5	6-9	10-19	20-39	40+
a. ...in the past 12 months?	<input type="radio"/>						
b. ...in the past 30 days?	<input type="radio"/>						

43. On how many occasions (if any) have you used heroin ("smack," "junk," or "China White")... (Mark ONE CIRCLE for each line.)

	0	1-2	3-5	6-9	10-19	20-39	40+
a. ...in the past 12 months?	<input type="radio"/>						
b. ...in the past 30 days?	<input type="radio"/>						

44. On how many occasions (if any) have you taken over-the-counter drugs (stay-awake pills, cough syrup) in order to get high... (Mark ONE CIRCLE for each line.)

	0	1-2	3-5	6-9	10-19	20-39	40+
a. ...in the past 12 months?	<input type="radio"/>						
b. ...in the past 30 days?	<input type="radio"/>						

45. On how many occasions (if any) have you used ecstasy ("MDMA," "E," "Molly," "rolls," "beans")... (Mark ONE CIRCLE for each line.)

	0	1-2	3-5	6-9	10-19	20-39	40+
a. ...in the past 12 months?	<input type="radio"/>						
b. ...in the past 30 days?	<input type="radio"/>						

46. On how many occasions (if any) have you used Zycopan... (Mark ONE CIRCLE for each line.)

	0	1-2	3-5	6-9	10-19	20-39	40+
a. ...in the past 12 months?	<input type="radio"/>						
b. ...in the past 30 days?	<input type="radio"/>						

47. During your life, how many times have you taken steroid pills or shots without a doctor's prescription?

None	1-2 times	3-9 times	10-19 times	20-39 times	40+ times
<input type="radio"/>					

48. In the past 12 months, has your drinking and/or drug use caused any of the following problems? (If you never drank alcohol or used drugs, mark "No" for each item.)

	Yes	No
a. Got stopped by the police for drunk driving or disorderly conduct	<input type="radio"/>	<input type="radio"/>
b. Got in trouble at school	<input type="radio"/>	<input type="radio"/>
c. Hurt or injured myself	<input type="radio"/>	<input type="radio"/>
d. Got into fights (verbal or physical) with other kids	<input type="radio"/>	<input type="radio"/>
e. Got into fights with my parents	<input type="radio"/>	<input type="radio"/>
f. Committed illegal acts (for ex., theft, breaking and entering, vandalism)	<input type="radio"/>	<input type="radio"/>
g. Could not recall what I did	<input type="radio"/>	<input type="radio"/>
h. Pressured someone else to do something sexual against his/her will	<input type="radio"/>	<input type="radio"/>
i. Was pressured by someone to do something sexual against my will	<input type="radio"/>	<input type="radio"/>
j. Thought I had a drinking or drug problem	<input type="radio"/>	<input type="radio"/>
k. Was involved in a car accident	<input type="radio"/>	<input type="radio"/>

The next 7 questions ask about the neighborhood and community where you live.

49. If you wanted to get some beer, wine, or hard liquor (for ex., vodka, whiskey, or gin), how easy would it be for you to get some?

Very hard Sort of hard Sort of easy Very easy

50. If you wanted to get some cigarettes, how easy would it be for you to get some?

Very hard Sort of hard Sort of easy Very easy

51. If you wanted to get some marijuana, how easy would it be for you to get some?

Very hard Sort of hard Sort of easy Very easy

52. If you wanted to get some cocaine, how easy would it be for you to get some?

- Very hard Sort of hard Sort of easy Very easy

53. If you have ever obtained prescription drugs without a doctor's prescription issued to you, how did you get them? (Mark ALL that apply. If not applicable, however, please leave blank.)

- Wrote fake prescription
 Stole from doctor's office, clinic, hospital, or pharmacy
 From friend or relative for free
 Bought from friend or relative
 Took from friend or relative without asking
 Bought from drug dealer or other stranger
 Bought on the internet
 Some other way

54. If you drink, do you primarily get alcohol from... (Mark ALL that apply.)

- I do not drink brother/sister other relatives
 convenience stores friends other
 parents strangers

55. Where do you drink? (Mark ALL that apply.)

- I do not drink parties cars
 school friends' homes parks/fields
 home bars other

The next 5 questions ask about values and beliefs.

56. How wrong do you think it is for someone your age to... (Mark ONE CIRCLE for each line.)

- | | Very Wrong | Wrong | A Little Bit Wrong | Not Wrong at All |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| a. drink beer, wine, or hard liquor (for ex., vodka, whiskey, gin, etc.) regularly? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b. smoke cigarettes? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c. smoke marijuana? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d. use cocaine? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e. use methamphetamines ("meth," "crystal meth," "ice," "crank")? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f. use inhalants? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g. take a prescription drug (such as OxyContin, Percocet, Vicodin, Codeine, Adderall, Ritalin, or Xanax) without a doctor's prescription? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

57. How wrong do your parents feel it would be for you to... (Mark ONE CIRCLE for each line.)

- | | Very Wrong | Wrong | A Little Bit Wrong | Not Wrong at All |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| a. have one or two drinks of an alcoholic beverage nearly every day? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b. smoke cigarettes? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c. smoke marijuana? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d. use cocaine? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e. use methamphetamines ("meth," "crystal meth," "ice," "crank")? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f. use inhalants? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g. take a prescription drug (such as OxyContin, Percocet, Vicodin, Codeine, Adderall, Ritalin, or Xanax) without a doctor's prescription? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

58. How wrong do your friends feel it would be for you to... (Mark ONE CIRCLE for each line.)

- | | Very Wrong | Wrong | A Little Bit Wrong | Not Wrong at All |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| a. ...have one or two drinks of an alcoholic beverage nearly every day? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b. ...smoke tobacco? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c. ...smoke marijuana? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d. ...use prescription drugs not prescribed to you? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

59. Think of your four best friends (the friends you feel closest to). In the past year (12 months), how many (if any) of your four best friends have... (Mark ONE CIRCLE for each line.)

- | | None | 1 | 2 | 3 | 4 |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| a. smoked cigarettes? | <input type="radio"/> |
| b. tried beer, wine, or hard liquor (for ex., vodka, whiskey, gin, etc.) when their parents didn't know about it? | <input type="radio"/> |
| c. used marijuana? | <input type="radio"/> |
| d. used cocaine? | <input type="radio"/> |
| e. used methamphetamines ("meth," "crystal meth," "ice," "crank")? | <input type="radio"/> |
| f. used inhalants, that is, sniffed glue, breathed the contents of an aerosol spray can, or inhaled other gases or sprays, in order to get high? | <input type="radio"/> |
| g. taken a prescription drug (such as OxyContin, Percocet, Vicodin, Codeine, Adderall, Ritalin, or Xanax) without a doctor's prescription? | <input type="radio"/> |

60. How much do you think people risk harming themselves (physically or in other ways) if they... (Mark ONE CIRCLE for each line.)

- | | No Risk | Slight Risk | Moderate Risk | Great Risk |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| a. smoke one or more packs of cigarettes a day? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b. try marijuana once or twice? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c. smoke marijuana once or twice a week? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d. have five or more drinks of an alcoholic beverage once or twice a week? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e. take a prescription drug (such as OxyContin, Percocet, Vicodin, Codeine, Adderall, Ritalin, or Xanax) without a doctor's prescription? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f. have five or more alcoholic drinks in a row? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g. try heroin once or twice? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

The last 2 questions are about gambling.

61. On how many occasions (if any) have you gambled (bet) for money or possessions... (Mark ONE CIRCLE for each line.)

- | | 0 | 1-2 | 3-5 | 6-9 | 10-19 | 20-39 | 40+ |
|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| a. ...in your lifetime? | <input type="radio"/> |
| b. ...in the past 12 months? | <input type="radio"/> |
| c. ...in the past 30 days? | <input type="radio"/> |

62. Has the money or time you spent on gambling led to financial problems or problems in your family, work, school, or personal life?

- I never gamble Yes No

Congratulations! You have finished the survey.
 Thank you for your participation.

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