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A Psychometric Analysis of the School Safety Survey

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A PSYCHOMETRIC ANALYSIS OF THE SCHOOL SAFETY SURVEY

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The purpose of this study was to explore the psychometric properties of the School Safety Survey (SSS). This study examined the factor structures of the SSS when looking at respondent (i.e., teachers, administrators, and parents / guardians), location (i.e., urban, suburban, rural, and town) and grade span (i.e., elementary and secondary). Archival and anonymous data from the 2013-2014 school year were examined. It was hypothesized that a two-factor structure would be present across respondents, locations, and grade spans. Furthermore, it was hypothesized that all items would load on the same factors across respondents, locations, and grade spans. First, results indicated that the SSS was found to be a reliable assessment of school safety, as the survey indicated a high level of internal consistency. Findings revealed a four-factor solution to the SSS, which did not support the hypothesis that only a two-factor structure would be present. When looking at respondent, there was a four-factor solution obtained from teachers' data, a three-factor solution from administrators' data, and a two-factor solution from parents' / guardians' data. Results further revealed that there were different factor structures across urban, suburban, rural, and town locations, with a four-, three-, four-, and four-factor solution obtained, respectively. Lastly, findings indicated that there were different factor structures between elementary and secondary grade spans, with a five- and two-factor solution obtained, respectively. For the majority of research questions, it was concluded that the SSS does not just measure two factors, but rather measures four unique dimensions of school safety, which

appeared to be related to: destructive school community occurrences, constructive support services, a positive school climate, and adverse personal living conditions. Continued research is imperative to further examine school safety and for educators and practitioners to stay current to enhance school safety for all individuals. Further exploration with regard to the parent stakeholder group and elementary grade spans are encouraged due to the small sample size of parent respondents and the perplexity of the elementary grade span factor structure. Lastly, it is recommended for all of the EFA results to be validated by a confirmatory factor analysis (CFA).

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And finally, I am dedicating this dissertation to my beautiful children. James, you are my pride and joy. Baby girl on the way, you have been the greatest motivation in this final stretch. I can't wait to meet you and have you make our family complete. May this dedication be a constant reminder to you both that anything is possible. May you always follow your dreams, reach for the stars, and never give up.

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CHAPTER I

INTRODUCTION

School Climate

A positive school climate is an important component that helps to define successful schools, and therefore, is often the aim of school wide initiatives. According to the National School Climate Center (2017), school climate refers to the quality and character of school life. Moreover, school climate is the patterns of students', parents' and school personnel's experiences as it relates to school life and reflects norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures (National School Climate Center, 2017). Positive perceptions of school climate have been associated with more desirable academic, behavioral, and social-emotional outcomes (O'Malley, Voight, Renshaw, & Eklund, 2015). Not only do students attain higher academic achievement in all academic areas, but students also engage in fewer risk-taking and violent behaviors (O'Malley et al., 2015). School climate perceptions are related to students' overall mental health status, with positive climate perceptions associated with both increases in life satisfaction and decreases in internalizing and externalizing symptoms (O'Malley et al., 2015).

According to Cohen, McCabe, Michelli, and Pickeral (2009), school climate includes four imperative dimensions: safety, teaching and learning, relationships, and environment. Safety refers to the establishment of clear and consistent rules as well as the extent to which individuals feel physically, mentally, and emotionally safe. Teaching and learning refers to the quality of instruction, the extent to which social-emotional and academic learning is valued, and ongoing professional development opportunities for school personnel. Relationships refer to the degree of respect for diversity, a sense of connectedness among members of the school

community, and the institution of positive relationships among students, staff, families, and the community. Lastly, environment refers to the degree of cleanliness, orderliness, and the appeal of the building facility. These four dimensions and their specific components undoubtedly impact perceptions of school climate, which can either have long-lasting positive or negative ramifications (Cohen et al., 2009).

Safety is one of the most critical components of school climate and has a direct and important connection to school climate and academic achievement (O'Malley et al., 2015). School safety incidences can put a huge strain on a child's growth and development. As a result, students will underperform academically or have emotional or behavioral difficulty. Not only do extreme incidences such as school shootings put strain on a school, but so do seemingly inconsequential occurrences. For example, verbal abuse of staff, breaking up student fights, and even dealing with smaller discipline issues in the classroom cause strain. Ultimately, when feelings of safety are compromised, the overall climate is impacted and negatively influences teaching and learning in schools.

School Safety

School safety is one of the most important issues in education today. The concept of safety is often operationalized as the antithesis of violence (Morrison, Furlong, & Morrison, 1994). School safety is a fundamental organizing system that guides the development of maturation, psychological competencies, learning functions, and motivations in an educational environment (Morrison et al., 1994). Similar to school climate, school safety is linked to improved student and school outcomes. School safety supports student learning by creating and promoting a physically, emotionally, and academically secure climate for all students, staff, and visitors. It involves planning for the prevention, intervention, mitigation of, and recovery from a

variety of threats to a school and school community (U.S. Department of Education, 2007). Safety is vital so that children, teachers, administrators, and parents can focus on developing and maintaining an optimal learning environment. When school violence occurs, students shift their concentration away from academics to personal safety, which ultimately results in less productive learning. Exposure to violence has severe academic and psychological consequences and is associated with marked emotional and cognitive stress (Kuperminc, Leadbeater, Emmons, & Blatt, 1997).

School Violence

School violence is a topic that continues to gain much attention and has been an ongoing and rising concern throughout American history (Cornell, 2015). Addressing violence in school settings is critically important. Significant efforts have been taken to examine its causes and ways to intervene; however, continuing research is warranted. School violence is a complex, multidimensional construct that is derived from an interaction of factors (O'Connell, Boat, & Warner, 2009). One of the greatest challenges in understanding school violence is the lack of a common universal definition. First, it is important to note the difference between aggression and violence. Aggression refers to an external social behavior that is intended to harm another person who does not want to be harmed (Bushman & Huesmann, 2010). Violence refers to aggression that has extreme physical harm as its goal, such as injury or death (Bushman & Huesmann, 2010). As an example, a child that intentionally pushes another child down is considered an act of aggression but not an act of violence. Moreover, a person that intentionally shoots or stabs another person is considered an act of violence, as it is likely to cause extreme physical harm. Bushman and Huesmann (2010) concluded that all violent acts are aggressive while not all aggressive acts are violent.

As school violence is a multidimensional construct, there are no definitive statements about its specific dimensions (Furlong & Morrison, 2000). According to the Center for Disease Control and Prevention (2014), violence refers to the intentional use of physical force or power against another person, group, or community, with the behavior likely to cause physical or psychological harm**.** The World Health Organization (2018) further defines violence as the intentional use of physical force or power that results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation. School violence behavior includes bullying, fighting (e.g., punching, slapping, kicking), weapon use, electronic aggression (e.g., cyber bullying or internet harassment), and gang violence (Center for Disease Control and Prevention, 2014). Additionally, in more recent decades, terroristic events such as mass school shootings, is considered an act of school violence as well. School violence can occur on school property, on the way to or from school, during a school-sponsored event, or on the way to or from a school-sponsored event (Center for Disease Control and Prevention, 2014). However, despite these detailed definitions, there are still a multitude of varied definitions, and this contributes to the difficulty of establishing a universal consensus on what actually constitutes school violence.

Contrary to popular belief, schools are amongst the safest places for children. In fact, school violence of serious nature (i.e., school shootings) has declined dramatically over the past two decades (Cornell, 2015). Dewey Cornell (2015), a prominent scholar on school violence and safety, asserts that pervasive media coverage of school shootings and other serious violent acts have led to misperceptions about danger in schools. Extensive news coverage has led many people to conclude that schools are horribly flawed and violent institutions, when in reality, the overall rate of school violence of serious nature (i.e., school shootings) is actually declining.

However, despite this downward trend of more serious acts of school violence, it should be noted that in 2016, the prevalence rate for simple assaults among youth ages 12-18 was higher at school than in the community (National Center for Education Statistics, 2017). The term 'simple assaults' refers to threats and attacks without a weapon or serious injury (National Center for Education Statistics, 2017). Therefore, despite the higher prevalence rate of simple assaults occurring at school than in the community, more serious acts of violence in schools have in fact, decreased over time (Cornell, 2015).

While US schools are relatively safe, any amount of violence is intolerable. Parents, teachers, and administrators expect schools to be safe havens of learning. Any act of violence disrupts the learning process and has negative effects on students, the school itself, and the broader community (Howard, Howell, & Brainard, 1987). Despite low incidents of violence in schools, it is still critical to plan for violent events as a precautionary measure.

Statement of the Problem

As research has linked school safety with positive outcomes for students, school safety has become a focus for many federal and local school improvement initiatives. Despite this increased attention, there has been little consensus among educators, policymakers, and researchers on how to accurately measure school safety or school violence. As previously referenced, school violence is a complex, multidimensional construct that is influenced by a variety of environmental dimensions (O'Connell et al., 2009). These dimensions are comprised of potential risks for and protections against violence. Risk factors are characteristics at the biological, psychological, familial, communal, or cultural level that are linked with a higher likelihood of academic, social, emotional, and behavioral problems (O'Connell et al., 2009). Conversely, protective factors are characteristics at the same aforementioned levels that are

linked with a lower likelihood of academic, social, emotional, and behavioral problems (O'Connell et al., 2009). Risk and protective factors respectively align with violence and safety by nature of their descriptions. In other words, risk factors are associated with school violence and protective factors are associated with school safety.

The School Safety Survey (SSS; Sprague, Colvin, & Irvin, 1995) is an instrument that schools often use to assess school safety. "The SSS assesses risk and protective factors associated with school violence and school safety. Some risk factors include poverty, child abuse, graffiti, bullying, and deteriorating physical facilities. Some protective factors include positive teacher-student relationships, parent involvement, student supervision, and high academic expectations. The survey asks respondents to rate the extent to which 17 risk and 16 protective factors exist in their schools using a Likert scale of one (not at all) to four (extensive)" (Sprague et al., 1995, p. 2).

Two psychometric properties of any instrument that are important to mention are validity and reliability. Validity refers to the degree to which a research instrument or tool is actually measuring what it is supposed to measure (Etchegaray & Fischer, 2010). Reliability refers to the extent to which results are consistent over time and can be reproduced under a similar methodology (Golafshani, 2003). Valid and reliable measurement of school safety is important because precise data are required for sensible decisions to take place. Without accurate measurement, unreliable data will lead to potentially invalid or even dangerous conclusions. Accurate results of school safety assessment will ultimately provide precise information about a school's strengths and weaknesses; or in other words, protective and risk factors.

With respect to school safety assessment, validity and reliability are critical for the purposes of analyzing the appropriateness, significance, and usefulness of its results. In turn,

results will lead to a deeper understanding of how schools can interpret results for safety action planning and program evaluation purposes. Overall, it is important that meaningful interpretations can be made from school safety data because these data facilitate successful action planning and programs that enhances the safety of all individuals.

Problem Significance

There are many school safety instruments that are used across the nation. The Youth Risk Behavior Surveillance Survey (YRBSS) is one example that monitors six types of health-risk behaviors, which contribute to the leading causes of death and disability among youth and adults (Center for Disease Control and Prevention, 2013). Another instrument widely used is the School Crime Supplement to the National School Crime Victimization Survey (SCS / NCVS; National Center for Education Statistics, 2013). The SCS / NCVS explores students' reports of victimization and perceptions of crime, violence, and school climate, which are all important when looking at school safety on a comprehensive level. The School Survey on Crime and Safety (SSOCS) is also a widely used instrument to measure school safety. The SSOCS provides estimates of school crime, discipline, disorder, programs, and policies (National Center for Education Statistics, 2015). The California School Climate and Safety Survey (CSCSS) was designed to measure general school climate and personal safety experiences (Furlong, Greif, Bates, Whipple, & Jimenez, 2005). In 2013, a progress monitor version of the CSCSS was introduced to provide a very brief measure that schools can use multiple times a year to assess progress. Lastly, the Delaware School Climate Survey (DSCS) assesses perceptions of students, teachers / staff, and parents on school climate, social emotional learning / self-discipline skills, techniques, bullying, and engagement (Bear, Gaskins, Blank, & Chen, 2011).

As previously stated, the SSS is an instrument that measures school safety and assesses the physicality and the social dynamics of a school (Sprague et al., 1995). Schools that implement School-Wide Positive Behavioral Interventions and Supports (SWPBIS) are encouraged to use the SSS, and the free measure is included in the suite of assessments available to all SWPBIS schools associated with the National Technical Assistance Center on PBIS. SWPBIS is a school reform effort that focuses on creating safe and supportive environments for all students to succeed. More and more schools are implementing SWPBIS and currently, over 21,000 schools have initiated SWPBIS efforts in their buildings (Horner, n.d.). As schools are encouraged to use the SSS with school wide initiatives, it is important to establish the reliability and validity of this instrument. Without understanding the survey's psychometric properties, data may not be valid, which will subsequently have unknown effects on the thousands of SWPBIS schools that use the SSS. Consistent with ethical and responsible assessment practices, it is critical to empirically establish the validity and reliability of all instruments such as the SSS, given its use in American schools. There is little known about the psychometric quality of the SSS. This is concerning because so many schools are using it, based on the recommendation of the National Technical Assistance Center on PBIS, and schools are using the survey's data to make decisions about organizational programming (i.e., SWPBIS; Horner, Freeman, Nelson, & Sugai, n.d.). In an effort to fill this void, this study will explore the psychometric properties of the SSS.

Research Questions and Hypotheses

Five research questions were answered in this study. The following section outlines each research question and its hypothesis.

Research Question 1

What is the internal consistency of the SSS? It is hypothesized that items on the SSS are all measuring the same general constructs. It is believed that this reliability analysis will be an adequate screener.

Research Question 2

What is the underlying factor structure of the SSS? It is hypothesized that the SSS assesses two different factors: protective factors and risk factors. It is believed that the items on the SSS, as reported by its authors, will align with the obtained two-factor structure.

Research Question 3

Does the underlying factor structure vary by stakeholder group / respondent (i.e., teachers, administrators, and parents / guardians)? It is hypothesized that a two-factor structure will be present across teachers, administrators, and parents / guardians. Further, all items will load on the same factors across teachers, administrators, and parents / guardians.

Research Question 4

Does the underlying factor structure vary by school location (i.e., urban, suburban, rural, and town)? It is hypothesized that a two-factor structure will be present across urban, suburban, rural, and town locations. Further, all items will load on the same factors across urban, suburban, rural, and town locations.

Research Question 5

Does the underlying factor structure vary by grade span (i.e., elementary school, secondary school)? It is hypothesized that a two-factor structure will be present across elementary and secondary grade spans. Further, all items will load on the same factors across elementary and secondary grade spans.

Definition of Terms

The following are definitions and abbreviations of technical and important terms included in this study:

The School Safety Survey

The School Safety Survey (SSS) is an instrument that schools commonly use to assess risk factors and protective factors pertaining to school safety. Risk factors included in the survey are as follows: "illegal weapons, vandalism, high student mobility (i.e., frequent changes in school enrollment); graffiti; gang activity; truancy; student suspensions and / or expulsions; students adjudicated by the court; parents withdrawing students from school because of safety concerns; child abuse in the home; trespassing on school grounds; poverty; crimes (e.g., theft, extortion, hazing); illegal drug and alcohol use; fights, conflict, and assault; incidence of bullying, intimidation, and harassment; and, deteriorating condition of the physical facilities in the school" (Sprague et al., 1995, p. 2). Protective factors included in the survey are as follows: "opportunity for extracurricular programs and sports activities; professional development and staff training; crisis and emergency response plans; consistently implemented school-wide discipline plans; student support services in school (e.g., counseling, monitoring, support team systems); parent involvement in our school (e.g., efforts to enhance school safety, student support); student preparation for crises and emergencies; supervision of students across all settings; suicide prevention / response plans; student participation and involvement in academic activities; positive school climate for learning; acceptance of diversity; response to conflict and problem solving; collaboration with community resources; high expectations for student learning and productivity; and, effective student-teacher relationships" (Sprague et al., 1995, p. 3). Open ended questions included in the survey are as follows: "What is the most pressing safety need in

your school?; What school safety activities does your school do best?; What topics are most important for training and staff development?; What are the biggest barriers to improved school safety measures?; What other comments do you have regarding school safety?; and, What other factors not included in this survey do you believe affect school safety?" (Sprague et al., 1995, p. 4). The SSS asks respondents to rate the presence and extent to which 17 risk and 16 protective factors exist in their schools using a Likert scale of one (not at all) to four (extensive). Results are then interpreted through the two factor scores, risk and protective factors. Schools can use results from the SSS for purposes of planning, decision-making, goal setting, and allocation of resources.

School Climate

A school's climate is the "overall atmosphere for learning. It includes the feelings people have about the school and whether it is an environment where learning can occur" (Howard et al., 1987, p. 5). Further, it is the composition of norms, values, beliefs, traditions, and rituals built up over time (Howard et al., 1987).

School Safety

The concept of safety is often operationalized as the antithesis of violence. School safety is a fundamental organizing system that guides the development of maturation, psychological competencies, learning functions, and motivations (Morrison et al., 1994).

School Violence

School violence refers to the "intentional use of physical force or power, against another person, group, or community, with the behavior likely to cause physical or psychological harm. School violence behavior includes bullying, fighting (e.g., punching, slapping, kicking), weapon use, electronic aggression (e.g., cyber bullying or internet harassment), and gang violence"

(Center for Disease Control and Prevention, 2014, Examples of violent behaviors, para. 1). School violence can occur on "school property, on the way to or from school, during a school-sponsored event, or on the way to or from a school-sponsored event" (Center for Disease Control and Prevention, 2014, Where school violence occurs, para. 1).

Risk Factors

Risk factors are characteristics at the biological, psychological, familial, communal, or cultural level that are linked with a higher likelihood of academic, social, emotional, and behavioral problems (O'Connell et al., 2009).

Protective Factors

Protective factors are characteristics at the biological, psychological, familial, communal, or cultural level that are linked with a lower likelihood of academic, social, emotional, and behavioral problems (O'Connell et al., 2009).

Grade Span

Elementary school was identified as kindergarten through fifth grade and secondary school was identified as ninth through twelfth grade, as suggested by the National Center for Education Statistics (National Center for Education Statistics, 2013).

Assumptions

This study is based on several assumptions. First, it is assumed that the SSS was administered with fidelity. Similarly, it is assumed that the respondents (i.e., teachers, administrators, and parents / guardians) provided honest and truthful answers to each question on the survey. Respondents who completed the SSS were volunteers and were not mandated to complete the survey. In addition, anonymity was preserved, which lends credibility to the assumption that respondents honestly answered the SSS. As this study is a review of archival

data, steps to ensure accurate administration were not possible. However, it is assumed that the archival data used in this study were collected per standardized procedures. Lastly, the SSS is not intended to measure everything related to school safety. As the term school safety refers to an extraordinarily broad area, it is assumed that all safety components cannot be fully encompassed within the survey.

Limitations

There are some limitations that are noteworthy. The validity of an assessment is compromised when a construct (e.g., school violence) has been operationally defined in a single way (e.g., school violence is defined only by number of physical assaults). As previously stated, there is no unified definition of safety, which poses a threat for generalization of this study's outcomes. Nevertheless, the SSS encompasses a broad range of areas related to both risk and protective factors, which naturally involves many elements associated with school safety. Using an instrument that contains risk and protective variables is advantageous and will provide a wide range of useful information.

External factors at the time of completion of the SSS may pose a threat as well. For example, a school shooting that occurred around the time respondents completed the SSS may influence their perception of safety. Furthering this point, respondents completing the SSS at different times throughout the 2013-2014 school year may have elicited different perceptions, depending on varying external factors that were current at that time of survey completion.

Lastly, perceptions are subjective and can be extremely difficult to accurately measure, which poses another threat to the validity of this study. Surveys may lead to unclear data because respondents interpret certain questions and answers differently. However, questions on the SSS are straightforward and well defined. This intelligible approach will help to alleviate

differences in the understanding and interpretation of survey questions and this leads to more accurate results.

Delimitations

A delimitation in this study was that only 2013-2014 data was used since this study was limited based on convenience and the data provided by its proprietor. However, there is very little reason to believe that the construct of school safety would be substantially different if data from other years were analyzed as well. Additionally, an important stakeholder group that was not included in this research is students. This delimitation occurred because the SSS is not designed to assess perceptions of this population.

Summary

Administrators need to feel safe to implement effective leadership, teachers need to feel safe to teach, students need to feel safe to learn, and families need to feel comfortable when they send their children off to school every morning. Quintessentially, American schools should be recognized as safe havens. However, many argue that this picture has been a goal rather than a reality (Laxton & Sprague, 2005). Of course, violence has ebbed and flowed through the years, but it has never disappeared nor will it likely in the future. Therefore, in addressing this area of importance, we need to pay particular attention to the assessment of school safety and accurate measurement. Accurate measurement yields to accurate results, which subsequently leads to effective program planning and intervention. Not only should there be a focus on how to respond to violent crimes, but we also need to shift our focus and attention toward accurate assessment of school safety. It has to start with assessment, because from its results, effective programs can then be put into place and the right interventions can be developed to address any area of need. School safety is vital because when children, teachers, administrators, and parents

feel safe, they can concentrate on developing and maintaining an optimal learning environment for everyone to succeed. School safety is linked to improved student and school outcomes by creating and promoting a physically, emotionally, and academically secure climate for all individuals.

Educators and school boards across the nation are diligently trying to implement measures to assess school safety. Part of the challenge with school safety assessment is that it is so complex. Safety is perceived and studied in various ways, which complicates comprehensively assessing this construct. Therefore, it is imperative that assessment tools have undergone rigorous inspection of their psychometric properties. Without this thorough examination, educators should not use these instruments to guide clinical or professional decision-making. This is because findings from unsubstantiated instruments may be unreliable and / or invalid. When using assessment instruments, it is crucial to determine their trustworthiness and credibility so that one can be confident when interpreting results.

It is clear that no one will ever be immune to the devastating impact of school violence. Investing time and effort in creating a positive school climate and increasing school safety, results in a healthy academic environment. This promotes positive outcomes for students, teachers, families, and the community (Morrison et al., 1994). Overall, a safe environment fosters learning and academic growth (Kuperminc et al., 1997; Lehr, 2004; Gregory, Cornell, Fan, Sheras, Shih, & Huang, 2010). For this reason, the purpose of this study is to better understand and interpret school safety research so as to provide a more unified and comprehensive evaluation of school safety assessment. This will be contingent on developing a core literature that critically examines accurate measurements, methods, and data analysis practices.

CHAPTER II

REVIEW OF RELATED LITERATURE

Defining School Climate

A positive school climate is an essential component of effective education. School climate is a construct that has been identified as directly correlated with academic success. Many studies have explored the association of school climate with improved student outcomes. School climate has been shown to strongly influence the way students learn and it can either promote or demote their academic achievements. It is more likely that students will have higher academic achievement, more positive self-worth, improved behavior and higher aspirations when they are surrounded by a positive school climate (Lehr, 2004). A sustained positive school climate is associated with positive youth development, effective risk prevention, student learning, academic achievement, increased student graduation rates, and teacher retention (Thapa, Cohen, Guffey, & D'Alessandro, 2013). Essentially, schools with positive climates enable students to focus on learning and demonstrate academic improvement at faster rates than schools with weaker climates. If students feel safe, cared for, and appropriately supported, academic success is more likely to be achieved.

There have been a few studies that have examined the importance of school climate and its impact on externalizing and internalizing problems among students. Results of these studies have found that a positive school climate has been connected to fewer behavioral and emotional problems among students, and conversely, a negative school climate can prevent optimal learning and development (Kuperminc et al., 1997; Gregory et al., 2010). More explicitly, the study conducted by Kuperminc and colleagues (1997) found that positive school climate perceptions were associated with fewer discipline referrals for boys and a higher sense of self-

worth for girls. Further, a favorable school climate has been linked with elevated psychological well-being for both boys and girls. Overall, a safe, caring, and responsive school climate fosters positive relationships, which results in fewer social, emotional, and behavioral issues. Students who feel accepted, valued, respected, and included are less at risk for delinquency and mental health issues. Another study conducted by Najaka, Gottfredson, and Wilson (2001) investigated the relationship between problem behavior and bonding to school. The authors of this study defined *school bonding* as attachment or commitment to school, involving the extent to which individuals like school, as well as their educational aspirations and expectations. Results indicated that school bonding was the most significant in relation to risk and problem behaviors among students. In sum, positive changes in attachment and commitment to school predicted positive changes in problem behaviors (Najaka et al., 2001).

A growing number of studies and legislation emphasize the importance of positive school climate in enhancing the promotion of skills for healthy emotional development (Shochet, Dadds, Ham, & Montague, 2006). More specifically, Shochet and colleagues (2006) found that poor school connectedness strongly correlated with mental health symptoms of depression and anxiety in adolescent boys and girls. Since we know the importance of school climate on the overall well-being of students, it is imperative to know how to measure school climate in a reliable and valid manner. These analyses will yield to improved school connectedness and promote a positive school climate.

Not only are students affected by school climate, but teachers are as well. There have been many studies highlighting the importance of positive staff perceptions of the school environment for high work productivity, staff efficacy and, in turn, student achievement (Bevans, Bradshaw, Miech, & Leaf, 2007; Pas, Bradshaw, Hershfeldt, & Leaf, 2010). In contrast, when

teachers feel emotionally exhausted, their relationships with students and staff and the quality of their instruction are impacted (Maslach & Jackson, 1981). Teachers with low teaching efficacy demonstrate less effective teaching practices, which result in poorer academic achievement and an increased likelihood for student misbehavior (Skaalvik & Skaalvik, 2007). When teachers feel supported, they report higher levels of teaching efficacy, increased job satisfaction, and a stronger commitment to the field (Karcher, 2002; Brown & Medway, 2007; Boe, Cook, & Sunderland, 2008). Teachers' overall perception of school climate significantly impacts their teaching practices.

Additional key stakeholders in the educational environment affected by school climate are administrators and parents. If administrators view their school climate as positive, they provide effective leadership and create a culture that empowers and instills confidence in teachers and students, solicits professional dialogue in their buildings, values their students and teachers, and implements parent and community outreach programs (Habegger, 2008). Parents' attitudes about their child's schools can have far-reaching effects as well. Their perceptions of school climate can influence their child's attitudes, motivation, behavior, and academic performance (Roeser & Eccles, 1998; Cohen et al., 2009; Harackiewicz, Rozek, Hulleman, & Hyde 2012). Thus, parents' perceptions ultimately affect student achievement outcomes. Furthermore, parents' impressions of school climate influence their engagement and the degree to which they participate in their child's education. Increased positive perceptions of a school climate are associated with higher levels of parent involvement (Griffith, 1998). Given that family engagement with children's learning is strongly correlated with academic achievement, it is important to gauge parent perceptions of school climate.

Although school climate is a central element of education, it is very elusive and difficult to define. According to Howard and colleagues (1987), a school's climate is the overall atmosphere for learning. It includes the viewpoints people have about the school and whether it is an environment where learning can occur. Further, they concluded that school climate is the composition of norms, values, beliefs, traditions, and rituals built up over time (Howard et al., 1987). A school with a positive climate is a place with a "shared sense of what is important, a shared ethos of caring and concern, and a shared commitment to helping students learn" (Peterson & Deal, 1998, p. 29). Moreover, McEvoy and Welker (2000) defined school climate as the attitudes, written and unwritten beliefs, values, and norms that underlie the teacher practices, the level of academic achievement, and the operation and functioning of the school. Freiberg (1998) concluded that elements contributing to school climate are complex, including the quality of interactions, the noise levels in the hallways and cafeterias, the physical structure of the school building, and the physical comfort levels of individuals (e.g., heating, cooling, lighting). Even school size can add to or detract from a learning environment.

Fundamentally, there is no single factor that defines a school climate or a single definition that adequately sums up the term as a whole. Rather, it is the interaction of various factors that enables all members of the school community to teach and learn at optimal levels (Freiberg, 1998). Overall, school climate is not a static concept. It is continuously being constructed and shaped through the interactions of students, staff, parents / guardians, and the community. While there are many factors that define school climate, there are certain components, which are viewed to be more salient. Despite school climate being a multidimensional construct, there are two features that seem to be unanimously integrated in school climate literature; the physical and the social dynamics of a school.

The physical environment of a school can be indicative of its internal climate. For example, the physicality of a building can imply a safe, clean, and comfortable place where students can learn; or the reverse, an unsafe, dirty, and uncomfortable place where learning is not a priority (Thapa, Cohen, Higgins-D'Alessandro, & Guffey, 2012). Specifically, the appearance of a school building and the degree of upkeep adds to or detracts from the overall feeling of school climate. For instance, if the outside or inside of a building is deteriorating, this can detract from the overall climate of a school. Additionally, lighting, indoor air quality, and thermal comfort are also influential and can lead to workplace satisfaction or dissatisfaction. Moreover, school size and student to teacher ratio in the classroom can also influence school climate. Attending a large school or a small school undoubtedly affects the overall climate of a school.

The second feature commonly discussed in school climate literature involves the social dynamics of a school. The quality of interpersonal relationships between and among students, teachers, and staff are highly influential when it comes to school climate. When a student knows that his or her teacher cares, not only about academic success, but also about personal well-being, the student will gain a higher sense of self-worth, which ultimately affects school climate. A study conducted by Hamre and Pianta (2001) found that if a teacher-student relationship is negative from when a child enters school in kindergarten, it is more likely that student will develop behavioral and academic difficulties in later grades. Additionally, when an educator feels like a valuable contributor to the team and is cared for by the administration, he or she will be eager to put forth his or her best effort. Equitable and fair treatment of students, teachers, and staff is very important. Enforcing a school's commitment to fair and equal disciplinary actions is critical to the maintenance of a positive school climate. Students should be held accountable for

their actions and for their responsibility to the school community, which again, supports the overall climate (Thapa et al., 2012).

Previous research indicates that school climate and school safety are often linked with one another (Derosier & Newcity, 2005). In fact, researchers believe that school safety is a central sub-component to school climate (Freiberg, 1998). Fundamentally, school safety is instrumental to the environment, as it can either add to or detract from the overall school climate within a building. Simply stated, individuals who feel safer will view their school climate more positively. School safety considers both the psychological and physical safety of all individuals. Therefore, in order to create an environment that is conducive to learning, school climate, particularly school safety, must be intact.

Defining School Safety

The concept of safety is often operationalized as the antithesis of violence (Morrison et al., 1994). Safety is a fundamental organizing system that guides the development of maturation, psychological competencies, learning functions, and motivations. School safety is linked to improved student and school outcomes (Morrison et al., 1994). School safety supports student learning by creating and promoting a physically, emotionally, and academically secure climate for all students, staff, and visitors.

Safety is a major sub-component of school climate. Again, those who feel safer in a school environment will ultimately view their school climate more positively. Therefore, school safety is an educational imperative. Not only do schools have to work towards maximizing academic achievement, but schools also have to work towards the social, emotional, and behavioral development of all learners. School safety remains a prevalent topic in today's society as it impacts every one of us on some level or another, regardless of demographics,

socioeconomic status, or race. Reflecting on Maslow's hierarchy of needs, an individual needs to feel safe, both physically and mentally, in order to successfully move on to subsequent levels of development, including a strong sense of belongingness, self-worth, and ultimately, self-actualization (Maddi, 1996). These subsequent levels essentially refer to a hierarchy of human needs that must be met in order, starting with the lower most basic survival needs. When the lower order survival needs are satisfied (i.e., food and water), the higher order needs of personal development can be achieved (i.e., self-worth). In contrast, if basic survival needs are not met, we are no longer concerned about the maintenance of our higher order needs (Maddi, 1996). Connecting Maslow's concept to school safety, students are not available to learn or be present in the educational environment if they do not feel physically, mentally, or emotionally safe. Furthering this point, students who feel safe and have positive perceptions of their school climate have higher academic achievement (O'Malley et al., 2015). If students feel unsafe, their academic performance is compromised as well as their overall mental, emotional, and social well-being (O'Malley et al., 2015).

Connection Between School Climate and School Safety

School safety and school climate are commonly known as interrelated constructs, as school safety is often referred to as a subset or a dimension of school climate. The broader concept, school climate, sets the tone for all the learning and teaching in the school environment. There is consensus that a positive school climate directly impacts indicators of success such as teacher retention, lower dropout rates, decreased incidences of violence, and higher student academic achievement (Kuperminc et al., 1997; Lehr, 2004). A sustainable, positive school climate fosters youth development and learning that supports individuals feeling socially, emotionally, and physically safe. Individuals that do not feel safe are largely a consequence of

breakdowns in the many variables that define a school's climate. Schools that feel safe, for instance, foster high-quality relationships among students and teachers while decreasing the probability of violence (Lehr, 2004). However, it is important to note that the environment of a school is not necessarily experienced in the same way by all of its members. There is variability in individual perceptions of a school's climate and it is the perception of the environment that influences outcomes. For example, if a student feels that a teacher does not care about him / her, this perception will impact the student's behavior in the classroom, and in serious cases, result in violence, which in turn will affect the school's climate. Schools that lack supportive structures and relationships result in an increased likelihood of violence, peer-victimization, and punitive disciplinary actions, which are often accompanied with reduced academic achievement (Thapa et al., 2012).

Defining School Violence

School violence is a critical issue and has certainly created a large amount of concern throughout the nation. School violence disturbs the learning environment and creates an atmosphere of tension and worry. According to the Center for Disease Control and Prevention (2014), school violence refers to the "intentional use of physical force or power against another person, group, or community, with the behavior likely to cause physical or psychological harm**.** **S**chool violence behavior includes bullying, fighting (e.g., punching, slapping, kicking), weapon use, electronic aggression (e.g., cyber bullying or internet harassment), and gang violence" (Examples of violent behaviors, para. 1). School violence can occur on "school property, on the way to or from school, during a school-sponsored event, or on the way to or from a school-sponsored event" (Center for Disease Control and Prevention, 2014, Where school violence occurs, para. 1).

There is a dire need to continue to prevent and reduce violence in schools. It is not only important for a child's educational career but also for the healthy growth and development of his / her social, emotional, and behavioral functioning. Therefore, prevention efforts should be aimed at promoting protection to create a culture of safety and security at individual, relationship, community, and societal levels (Kuperminc et al., 1997).

Connection Between School Safety and School Violence

Understanding the relationship between school safety and school violence is necessary. School safety and school violence are often used concurrently in the literature by nature of their inverse relationship. However, when broken down, the term school safety is believed to incorporate a broader scope that involves the full educational community, not just when violence or a tragedy occurs at a school (Morrison et al., 1994). School safety and school violence have become topics of broad national concern in the United States in reaction to a series of school tragedies, particularly school shootings', over the past few decades. Efforts to understand and prevent school violence and simultaneously promote school safety have stimulated a rapid development of strong interest. Violence is profoundly damaging to an individual's sense of security, and can therefore significantly interfere with education and learning. A negative outlook on school climate results in lower academic achievement and more social, emotional, and behavioral issues among students and staff (Kuperminc et al., 1997; Gregory et al., 2010).

School Violence Statistics

School violence is far from a new phenomenon, and in fact, traces back to centuries ago. One of the earliest acts of school violence is known as the Enoch Brown School Massacre in Greencastle, Pennsylvania, which occurred on July 26, 1764 (Glenn, 2014). Four Native Americans entered a schoolhouse and killed Enoch Brown (the schoolmaster) and nine children.

Two children survived with wounds and four more children were taken as prisoners. On December 13, 1898 in Charleston, West Virginia, a shooting occurred during a school exhibition which resulted in five deaths and two injuries (Virginia Hoodlums, 1898). On May 18, 1927 in Bath, Michigan, a farmer set off two explosions at a schoolhouse, killing himself, six adults, and 38 children (Boissoneault, 2017). Of course, there are many more horrific shootings that have occurred in our nation, but these are some of the earliest school tragedies that have been documented. In more recent times, devastating recounts such as the Heath High School shooting in Paducah, Kentucky on December 1, 1997; the Parker Middle School dance shooting in Edinboro, Pennsylvania on April 24, 1998 (The Associated Press, 1998); the Columbine High School massacre in Littleton, Colorado on April 20, 1999 (Brooke, 1999); the Santana High School shooting in Santee, California on March 5, 2001 (Wakin, 2001), the Red Lake Massacre in Red Lake, Minnesota on March 21, 2005 (Wilgoren, 2005); the Sandy Hook Elementary School shooting in Newtown, Connecticut on December 14, 2012 (Barron, 2012); and the recent Parkland, Florida school shooting at Marjory Stoneman Douglas High School on February 14, 2018 (Turkewitz, Mazzei, & Burch, 2018), have changed the outlook on school violence in America forever.

Distinguishing violence from overall or general crime is noteworthy. According to the National Center for Education Statistics (2013), violence is an action that causes destruction, pain, or suffering. Crime is considered a specific act committed in violation of a law. School violence fundamentally refers to criminal activities that occur within the educational environment (e.g., robbery and vandalism). The Crime and Safety Surveys Program, as part of the National Center for Education Statistics collects and reports data on crime, violence, and safety in U.S. elementary and secondary schools. The National Center for Education Statistics

(2013) reported that during the 2010-11 school year, 85% of public schools recorded that one or more criminal incidents had taken place at school, amounting to an estimated 1.9 million crimes. Additionally, in 2011, a higher percentage of students ages 12-18 reported that they were afraid of attack or harm at school (4%) than away from school (2%) during the school year. School violence reached a peak in the United States in 1993 according to the National Center for Education Statistics (2013). In 1993, there were a total of 42 homicides committed by students as well as 13 violent crimes (i.e., rape, sexual assault, robbery, and aggravated assault), per 1,000 students at primary and secondary schools. In 2010, those numbers decreased to two homicides in total and four violent crimes per 1,000 students in primary and secondary schools (The National Center for Education Statistics, 2013). More currently, the National Center for Education Statistics (2016) indicated that in 2014, approximately 850,100 nonfatal victimizations occurred at school among students ages 12-18. Of these nonfatal acts of victimization, 363,700 were theft victimizations and 486,400 were violent victimizations. By definition from the National Center for Education Statistics, theft victimizations include attempted and completed purse-snatching, completed pick pocketing, and all attempted and completed thefts. Violent victimizations include simple assaults (e.g. threat or attack without a weapon or serious injury) and serious violent victimizations (e.g. crimes of rape, sexual assault, robbery, and aggravated assault). Lastly, during the 2013-14 school year, there were a total of 1.3 million reported discipline incidents in the United States for reasons related to alcohol, drugs, violence, or weapon possession, that resulted in the removal of the student from school for at least one day (The National Center for Education Statistics, 2016).

Dewey Cornell (2015), along with other scholars in the field, noted that school-age children are in fact safer and more secure on school campuses than anywhere else. Contrary to

popular belief, Cornell (2015) indicated that violence in schools has declined dramatically during the past two decades. Although Dr. Cornell's research shows there has been a steady downward trend of school violence incidences over the past 15 years, there is a perception that violence is on the rise in America (Cornell, 2015). Peter Langman, another well-renowned researcher in the field, has been studying school shootings for the past several decades and is considered an expert on the psychology of school shooters. Langman wrote an article that investigated multi-victim school shootings over a fifty-year period, from 1966 through 2015. Differing from Cornell, Langman (2016) concluded that multi-victim school shootings have increased over the last fifty years. Three school shootings occurred within 1966 to 1975 and 19 school shootings occurred within 2006 to 2015. Moreover, within the fifty-year time period, 17 attacks occurred during the first 25 years and 45 attacks occurred during the second 25 years. Of note, these results may be skewed due to more recent events being better documented and easier to identify due to the availability of news stories and social media. It was also concluded that there were significantly more school shootings in high schools (33.8%) and colleges (33.8%) compared to elementary schools (12.9%) and middle schools (14.5%). Langman further concluded that perpetrators ranged in age from 11 to 62, with an average age of 23.3. The majority of perpetrators (53.1%) were between the ages of 10 and 19.

Cornell (2015) found in his research that increased media attention given to school shootings has the effect of biasing our thinking that school shootings are more prevalent than actually take place. According to Cornell (2015), school violence can be misleading because it implies that the location (i.e., school) is the defining feature of the problem. For example, although many shootings have occurred in restaurants and shopping malls, there is little focused concern among the public about "restaurant violence" or "mall violence". In response to this,

Cornell concludes that school violence receives the enormous amount of attention it does because we expect our schools to be safe places for children more so than restaurants or malls. Any amount of school violence unquestionably generates increased levels of fear, which leads to heightened reactions and calls for action. Even violent acts that are considered small or infrequent are naturally magnified, which in turn, creates an increased perception of violence. While school violence rates are in fact steadily declining according to Cornell (2015), when a tragedy does occur, it creates an epidemic of panic, fear, and horror among the public. Every time there is a highly publicized shooting in a school, there is widespread concern that school violence is rampant in the United States.

It is important to be reminded that school violence comes in a variety of different behaviors and can be considered from very severe (e.g., school shootings) to less severe (e.g., bullying, pushing, and shoving). While severe occurrences naturally receive an enormous amount of attention giving the impression that they are prevalent in today's society, less severe occurrences (e.g., bullying, pushing, and shoving) are significantly more prevalent and more typical in schools today (National Center for Education Statistics, 2018). Data collected through the National Center for Education Statistics (2018) indicated that there were 47 school-associated violent deaths (i.e., homicide and suicide) from July 1, 2014 through June 30, 2015. However, in 2015, a shocking 67% of students, ages 12-18, reported being bullied at school once or twice throughout the school year, and about 33% indicated that they were bullied at least once or twice a month during the school year. When taking a closer look at what types of occurrences are most prevalent in schools, it was concluded that bullying is the most prevalent with 20.8% of students, ages 12-18, reportedly having been bullied in 2015. Of the 20.8% who reported being bulled, 13.3% of students reported that they have been made fun of, been called names, or have been

insulted; 12.3% of students reported being a subject to rumors; 5.1% of students reported being pushed, shoved, tripped, or spit on; 5% of students reported being purposely excluded from activities; 3.9% of students reported being threatened with harm; 2.5% of students reported being made to do things against their will; and, 1.8% of students reported purposeful property destruction (National Center for Education Statistics, 2018). Given that school shootings are rare and considered unusual events, it is important to be continuously mindful of the more prevalent and less serious acts of violence that occur within schools and use these incidences to form policy and institute program planning. Overall, any amount of violence is unacceptable. Parents, teachers, and administrators expect schools to be safe havens of learning. Acts of violence can disrupt the learning process and have significant negative effects on students, the school itself, and the broader community.

Another study conducted by Nekvasil, Cornell, and Huang (2015) found that murders are statistically rare in schools compared to other locations. This study used the National Incident Based Reporting System to investigate homicide incidents involving victims who were either killed or injured from 2005 to 2010. Results from this study indicated there was a higher likelihood of homicides in residences (47%) versus schools (0.8%). Homicides in residences, however, tended to have one victim (78%) rather than multiple victims (22%), whereas homicides in schools were about equally likely to have one victim (57%) versus multiple victims (43%). Although school shootings certainly need to be understood and addressed, society's perception that schools are a high-risk location for homicides is false. The conclusion, therefore, is that homicidal tragedies are more common in other locations; however, non-school locations do not receive comparable media attention or public demands for strict policies and interventions to address shootings and other violent crimes (Nekvasil et al., 2015).

School Responses to Violence

Over the past several decades, there seems to have been a heightened sense of vulnerability and apprehension in response to the violent attacks that occur within our nation's schools (Cornell, 2015). School violence undoubtedly captures significant attention after highly publicized shootings or attacks. With each individual tragedy generating renewed conviction that schools are becoming increasingly dangerous places, statistics are in fact indicating a downward trend of violence in schools (Cornell, 2015). School violence is not so much a new problem as a recurring one that is investigated or explored once a tragic event takes place. The effects stemming from acts of school violence leave lasting impressions on students, teachers, administration, and families within school communities, across the country, and around the world. In response to this fear, schools have implemented various efforts to strengthen safety. For example, some physical interventions have included installing surveillance cameras, identification systems, metal detectors, and even bulletproof windows. Educational efforts have included emergency drills, not only for weather-related catastrophes, but also for lockdown crises, which are practiced and rehearsed to get everyone prepared for an emergency that may occur. As result of such efforts, individuals may question if schools are creating a climate of security and protection, or an environment that is full of unease and angst (Begar, 2002).

In addition, curricular approaches that aim to teach pro-social behaviors as well as interpersonal skills have been implemented to help identify and decrease risky behaviors. For example, School-Wide Positive Behavioral Interventions and Supports (SWPBIS) provides a framework for improving the social behavior climate of the schools and supporting or enhancing the impact of academic instruction and increasing proactive management. SWPBIS is a multi-tiered system of supports aimed at altering the school environment through improved systems,

data-based decision making, and implementation of evidence-based practices (Bradshaw, Waasdorp, & Leaf, 2015). This school-wide initiative applies behavioral, social learning, and organizational principles across all school contexts in order to prevent disruptive behavior and enhance the overall school experience.

Preventative school discipline through the SWPBIS framework is essential for supporting teaching and learning (Bradshaw et al., 2015; Lewis, Barrett, Sugai, Horner, Mitchell, & Starkey, 2016). SWPBIS emphasizes that preventative school discipline with the integration of effective academic instruction maximizes success for all students and individuals within the school community. When schools implement SWPBIS, they typically experience decreases in inappropriate behaviors (as measured by decreases in discipline referrals, suspensions, and expulsions); and conversely, an increase in desirable behaviors, which aids to the overall climate of a school (Simonsen, Sugai, & Negron, 2008). Increasing numbers of schools are implementing SWPBIS. Teachers explicitly educate all students as to the SWPBIS expectations in an effort to increase desirable behaviors and decrease misbehaviors. By establishing this behavioral framework, teachers will gain instructional time within the classroom and spend less time responding to and managing problem behaviors (Lane, Menzies, Oakes, & Kalberg, 2012). Implementing curricular frameworks to help teach pro-social behaviors and interpersonal skills will aid in the identification of risky behaviors among students that often warrant professional help. Without such preliminary behavioral screeners, students suffering emotionally and / or mentally may never be detected.

Measuring School Safety

Federal laws have mandated that schools develop and implement safety plans and procedures as a preventative tactic (Council of State Governments Justice Center, 2014). As part

of this safety implementation, it is critical for schools to continually engage in comprehensive planning and preparation for potential emergencies that may transpire. Schools should assess and measure school safety in an effort to have a deeper understanding of what strengths and weaknesses lie within their educational environments.

Most current models that address the prediction and prevention of school safety are associated with the importance of day-to-day interactions. Therefore, many scholars and practitioners have developed tools that evaluate school climate in an effort to measure school safety. Self-report school surveys, in which individuals rate their perceptions of violence and their personal sense of safety at school, are among the most important tools in assessment. Due to time and cost benefits, self-report surveys are the most frequently used procedure for this type of assessment (Furlong & Morrison, 1994; Sharkey, Furlong, & Yetter, 2006). Self-report surveys are often created by school buildings, school districts, and / or states, which result in a lack of commonality or cohesion on a universal level. Further, locally-created surveys often also lack evaluation of reliability and validity, which poses as a potential issue as well. There are many different types of constructs included in surveys associated with school safety, which are essential to understanding what exists within a school building. Survey content may include aspects relating to safety (e.g., discipline fairness policies) as well as violence (e.g., gang related activity). This ultimately provides a broader picture of the extent to which these related constructs exist in a school.

School safety is believed to incorporate a broader scope that involves the full educational community, not just when violence or a tragedy occurs (Morrison et al., 1994; Skiba, Simmons, Peterson, McKelvey, Forde, & Gallini, 2004). With a few notable exceptions, the measurements of school safety and school climate are not usually seen as independent of one another, as these

two constructs go hand in hand (Furlong, Morrison, Skiba, & Cornell, 2004). Typical factors in school climate assessments pertain to climate and safety on both an individual as well as a global level. Items that are likely addressed in these evaluations are teacher-student relationships, student-peer relationships, order and discipline, environmental and school building characteristics, and parental involvement. Although most assessments are intended to represent a wide range of variables that contribute to school climate, few measures include constructs that directly evaluate the presence or absence of violence (Skiba et al., 2004).

Measuring School Violence

Quantifying violence in schools has proven to be quite challenging for researchers. At the most basic level, how does one define violence? Violence can be defined as ambiguous incidents (e.g., intimidation or harassment) or can be defined as clear physical threats (e.g., assaults). Differences in descriptions are linked to diverse opinions on how violence should be defined, which then causes theories and measurements to be inconsistent (Hernandez, Floden, & Bosworth, 2010). As school violence is a multidimensional construct, no definitive definition exists. As previously noted, the Center for Disease Control and Prevention (2014) defines violence as the intentional use of physical force or power, against another person, group, or community, with the behavior likely to cause physical or psychological harm. Violence may include, but is not limited to the perpetration of violence, violence victimization, antisocial behavior, criminal behavior, fear / worry beliefs, discipline, and school climate (Furlong & Morrison, 2000). Therefore, as one can imagine, the many elements of school violence naturally becomes complicated to assess.

Similar to school safety, school violence is often assessed through self-reports or surveys. Surveys have emerged as a major source of information with reference to school violence. Self-

report surveys are one of the most frequently used methods for assessing school safety (Furlong & Morrison, 1994; Sharkey et al., 2006). Due to time and cost benefits, self-reports are known to be efficient and effective assessment instruments. However, school surveys are vulnerable to methodological criticisms as they are susceptible to either exaggerations or careless reporting by individuals (Furlong & Morrison, 1994). These reports may be inaccurate because of the discrepancy in recollections of the perpetrators, victims, and school authorities involved (Hernandez et al., 2010). In other words, one never can fully know the accuracy behind statements. For example, surveys may ask broadly worded questions which can lead to inaccurate or invalid answers. If questions are worded broadly, it is left with a great deal of interpretation to the individual (Brener, Grunbaum, Kann, McManus, & Ross, 2004). Students may report, "carrying a weapon" because they have recently gone hunting or because they may have a small pocketknife on their key chain. This reporting can be misleading and cause a distorted reality of violence in schools. Questions pertaining to carrying a weapon should specify the purpose of the action and whether this behavior occurs inside or outside of school (Cornell & Loper, 1998). Without careful wording of every question and screening for invalid responses, individuals could gain an exaggerated viewpoint of the level of violence inside schools. Brener et al., (2004) concluded in their study that differences in item wording across three national surveys resulted in significantly different ratings of violence and safety.

Additionally, some surveys are developed for a specific school versus surveys that are considered large-scale surveillance instruments and are distributed nationwide. The challenge with large-scale surveillance surveys is that the information that is derived from these instruments may not be applicable to individual school sites, so therefore, its generalization or applicability to local schools is limited (Sharkey et al., 2006). For example, large-scale

surveillance surveys provide limited information about meaningful cultural differences between schools and communities (Benbenishty, Astor, & Zeira, 2003). Although surveys typically go through careful scrutiny by its researchers, they usually do not go through rigorous psychometric analyses (Sharkey et al., 2006). Nevertheless, "these instruments provide the best information available about school violence and safety and there is overwhelming momentum to continue their use, raising them to the status of a 'gold standard'" (Sharkey et al., 2006, p. 122).

It is important to note that several types of errors can occur when using self-reports, which can significantly reduce the accuracy of results (Rosenblatt & Furlong, 1997). These include telescoping, saliency of event, availability heuristic, and anchoring. A telescoping error refers to the tendency to report events in false time. For example, individuals will report an event as occurring earlier or later than when it actually took place. Saliency of an event also impacts memory recall. It has been found that events become more salient when there is an emotional connection that reinforces personal values and beliefs. In other words, individuals can recall emotionally stimulating events more accurately. A heuristic error can also influence accurate recall of an event. This term refers to the availability and speed with which an incident is remembered, as these two processes can affect judgment. Other heuristics, such as anchoring, can also influence self-reports. For example, if individuals believe that a high level of school violence is a normal condition, they alter or adjust their thinking to be consistent with this perceived general norm (Rosenblatt & Furlong, 1997). Another disadvantage of self-report surveys is non-response rates from the target population that may be of most interest to the researcher (Sax, Gilmartin, & Bryant, 2003). In other words, schools are often missing responses from students who are most at-risk, either due to truancy, absence, or drop out, which can certainly alter survey results.

School violence is also assessed through more objective measures, such as official crime statistics. This source of information can be misleading as these objective measures only take into account crimes that have been reported to law enforcements (Hernandez et al., 2010). Police and court reports may consist of estimates rather than true measures of crime, which causes these data to not always be uniform or consistent. As a result, many violent acts or criminal activity have gone unreported or undocumented and this can lead to inaccurate information.

Assessment of School Safety and School Violence

Endorsing safety and security remains a top priority for all schools. Gathering school-specific data is vital to inform school personnel about current strengths and weaknesses that exist within a building to allow for continuous evaluation and adaptation of safety interventions. One way to develop a school safety plan is to conduct a needs assessment. Surveys are considered one of the most efficient and effective tools to obtain this type of information (Ernest & Edward, 2015).

There are many instruments used to measure school safety. The Youth Risk Behavior Surveillance Survey (YRBSS) was developed in the late 1980s by the Center for Disease Control and Prevention. The purpose of this survey is to monitor priority health risk behaviors that contribute markedly to the leading causes of death, disability, and social problems among youth and adults (Center for Disease Control, 2016). Specific behaviors included in this survey are ones that contribute to unintentional injuries and violence, sexual behaviors related to accidental pregnancy and sexually transmitted infections, alcohol and other drug use, tobacco use, unhealthy dietary behaviors, inadequate physical activity, the prevalence of obesity and asthma, and other priority-health related behaviors. Over time, the YRBS has been modified to expand its content in response to various social concerns. While the YRBS is considered a meaningful

instrument and contributor to school safety assessment, there have been few studies that have examined its psychometric properties (Furlong, Sharkey, Bates, & Smith, 2004). Brener, Kann, McManus, Kinchen, Sundberg, and Ross (2002) examined the reliability of the YRBS. This research investigated responses of approximately 4,500 students who completed the survey over a two-week time period. Responses to all survey items were computed using a kappa statistic, which is a measure of response consistency. Results of this study indicated kappa statistics ranging from .406 to .678. Therefore, Brener et al. (2002) concluded that the YRBS was a reliable instrument to use.

The School Crime Supplement to the National School Crime Victimization Survey (SCS / NCVS) is another instrument used to assess school safety. The SCS / NCVS was co-designed by the National Center for Education Statistics and the Bureau of Justice Statistics (National Center for Education Statistics, 2013). Its purpose is to explore information about victimization, crime, and safety at school. Specific school-related topics included in the survey are alcohol and drug availability, fighting / bullying / hate-related behaviors, fear and avoidance behaviors, gun and weapon carrying, and gangs at school (National Center for Education Statistics, 2013). To date, no follow-up studies have examined the psychometrics of the SCS / NCVS. Therefore, future research is warranted.

The School Survey on Crime and Safety (SSOCS), another evaluative instrument, is the primary source of school-level data on crime and safety for the U.S. Department of Education, National Center for Education Statistics (National Center for Education Statistics, 2013). The SSOCS is designed to provide estimates of school crime, discipline, disorder, programs and policies (National Center for Education Statistics, 2015). The SSOCS is a nationally representative cross-sectional survey of elementary and secondary schools. This instrument was

designed to be completed by principals at the end of a school year. Specific areas that are covered in this survey include school practices and programs, parent and community involvement at school, school security, staff training, limitations on crime prevention, frequency of crime and violence at school, frequency of incidents reported to police or law enforcement, frequency of hate crimes, gang-related crimes, disciplinary problems and disciplinary actions, and other school characteristics related to school crime. Again, there have not been any studies to date that have investigated the psychometric properties of the SSOCS.

The School Safety Survey (SSS) is a widely used instrument as well. The SSS is used to assess risk and protective factors associated with school violence and discipline problems (Sprague et al., 1995). The SSS assesses these issues through questions, which address the physicality and social dynamics of a school. Protective factors are associated with a lower likelihood of problem outcomes, and conversely, risk factors are associated with a higher likelihood of problem outcomes. Some risk factors include poverty, graffiti, bullying, and deteriorating physical facilities. Examples of protective factors include parent involvement, positive teacher-student relationships, and high academic expectations. Most school safety instruments are comprised of both risk and protective elements. Evaluating both dimensions provides a broader overview of the many different elements that determines feelings of safety in a school environment. Without exploring both these separate and unique components, a complete analytical approach is not possible, and therefore hinders the accuracy of comprehensive results.

Psychometric measurement is important in all areas of research, whether it be self-reports, direct or indirect assessments. Alarmingly, however, there have been very few instruments measuring school safety and violence that have undergone rigorous evaluation of

reliability and validity evidence. When surveys ask individuals to subjectively rate their own behavior, feelings, or situation, it is necessary to assess the validity and reliability of these reports. These psychometric properties have been overlooked in school safety research. Since schools are increasingly using the SSS across the nation, understanding the survey's psychometric properties is essential. Otherwise, schools will have data that may not be valid, which will have an unknown effect on the thousands of schools using the SSS. Ultimately, this study will examine the SSS to substantiate some of its psychometric qualities. A direct benefit of this research will be a more accurate assessment of school safety. A direct implication of this research will assist in prevention and intervention efforts, thereby increasing school safety and a healthy learning environment.

Psychometric Properties

There are two primary components of measurement to consider when assessing school safety: reliability and validity. The understanding of what is being measured and how it is measured is crucial. The absence of measuring these two psychometric properties can lead to inaccurate results and improper program planning and implementation. In this next section, reliability and validity are discussed in further detail, as they are the key components of measurement.

Reliability

Reliability is the overall consistency of an instrument (Etchegaray & Fischer, 2010). If an instrument, such as a survey, produces similar results under consistently applied conditions, it lessens the chance that obtained results are due to randomly occurring variables. Essentially, reliability is the degree to which the result of a measurement, calculation, or specification can be depended on to be accurate. The goal of estimating reliability is to determine how much of the

variability in results is due to errors in measurement. These errors in measurement could either be random or systematic. Random errors are errors in measurement that are caused by unknown and unpredictable changes (e.g., environmental changes). Systematic errors are errors that are not determined by chance (e.g., an instrument that is wrongly used by an experimenter). There are four types of reliability: inter-rater, test-retest, parallel-form, and internal consistency. Inter-rater, also known as inter-observer reliability, is the degree to which different raters / observers give consistent estimates relating to the same phenomenon. Test-retest reliability is the consistency of a measure from one period of time to another. Parallel-forms reliability is the consistency of the results from two instruments created to measure the same construct. Lastly, internal consistency reliability is the consistency of results across items within an instrument (Etchegaray & Fischer, 2010).

Validity

Validity is the degree to which an instrument measures its intended construct (Etchegaray & Fischer, 2010). There are many types of validity, including construct, content, criterion, and experimental. Construct validity is the degree to which an instrument assesses the underlying theoretical construct it is supposed to measure. Content validity is the match between instrument questions and the constructs they are intended to assess. Criterion-related validity evaluates the relationships between a score on an instrument and a particular outcome. More specifically, a criterion-related validation study can be predictive, concurrent, or divergent. Predictive validity is the power or usefulness of an instrument to predict particular outcomes in the future. Concurrent validity examines whether two independently-created instruments measure the same construct. Divergent validity evaluates the extent to which two independently-created instruments measure different constructs. Lastly, experimental validity (consisting of internal

and external validities) evaluates variables that influence both the results of a research study and the generalizability to the larger population. Internal validity is the ability of the research design to rule out alternative explanations of results. High degrees of internal validity are associated with experimental design, where the effect of an independent variable on a dependent variable is studied under strictly controlled conditions. External validity refers to the generalization of research findings. This type of validity evaluates the likelihood that the results from a sample can be inferred to represent the general population (Etchegaray & Fischer, 2010).

Validity and reliability should not be viewed as independent from one another, even though they are separate constructs. A measurement cannot be valid unless it is reliable, and the relationship between these two psychometric properties must be considered when determining if an instrument is an accurate representation of a theory or construct. It is important to note that an instrument can be reliable but not valid. An assessment can provide you with consistent results, making it reliable, but unless it is measuring what it is supposed to measure, it is not valid. Reliability and validity are not dichotomous constructs. There are degrees of reliability and validity that fall on a continuum ranging from none to considerable findings. Presently, there have not been any studies conducted on the SSS in regard to its psychometric properties. Therefore, it is vital to establish the reliability and validity of this instrument in order to confirm its consistency as well as its underlying theoretical construct; school safety.

Factor Analysis

Factor analysis is the primary statistical computation that will be used in this research study. A factor analysis is an explorative examination that summarizes data so that relationships and patterns can be easily interpreted and understood (Yong & Pearce, 2013). This analysis groups variables into dimensions, which are known as latent variables, based on shared variance.

This type of statistical procedure removes redundancy or duplication from a set of correlated variables. In particular, a factor analysis can be used to explore data to identify patterns as well as to reduce a large number of variables into a more meaningful smaller quantity. In essence, factors can be interpreted by determining the strength of each variable to its corresponding descriptive category. Factor analysis is often used to establish the validity of a psychological construct or an instrument used to measure that construct. In other words, factor analyses help to define a psychological construct and its subsequent measurement. For the purposes of the current study, a factor analysis will be used to define the latent constructs measured by the SSS.

School Safety Related to Stakeholder Groups

An important measure of safety of any school campus is the perception of safety. Bandura (2001) declared that individuals' attitudes, behaviors, and feelings are a product of how one perceives their own experiences. Therefore, some may argue that people's perceptions of school safety and how they view their school are more influential than definitive safety statistics such as discipline referrals, physical assaults, or the presence of drugs / weapons on school grounds. Perceptions of school safety may have a greater influence on parents, teachers, and administrators than do the tangible incidences measured by objective data. Essentially, it is argued that perceptions shape reality. We often have the assumption that our external world maps perfectly onto our internal view of it, which is often an expectation that is reinforced by daily experiences (Koch, 2010). Our thoughts and feelings seem real to us, and therefore, we conclude they must be true. We, as humans, supply perceptions and then build beliefs around them, which in turn, becomes our reality (Bandura, 2001).

Understanding the perceptions of school safety of certain stakeholder groups is important, as their perceptions shape reality in their minds. While much of the extant research on bullying,

victimization, and overall school safety has focused on children, there is an increased interest in the role that parents, teachers, and administrators play. Working to better understand parent, teacher, and administrator perceptions of school safety and what factors affect those perceptions must be considered to help address this area of concern. Perceptions are most often used in an effort to find out how people understand and experience their environments. Perceptions are used to assess needs, answer questions, analyze trends, problem solve, and set goals. Investigating stakeholder perceptions are important as it creates an avenue for everyone to think and talk about school safety in a cohesive and unified way. Ultimately, people's behaviors are based on their perception of what reality is, which therefore, becomes the basis on which they go about their daily life. In this next section, a comprehensive literature review of all aforementioned stakeholders will be discussed in an effort to gain a better understanding of school safety and school violence from their points of view. The purpose of this dissertation study is in part to examine the various stakeholder groups and to determine if there are differences or similarities pertaining to their feelings of safety. This information is invaluable to the literature, as all of the stakeholder groups are key components in addressing school safety in its entirety. Understanding these perceptions will create a comprehensive view of school safety. Just examining one stakeholder group (e.g., teachers) would provide a one-sided viewpoint and give a partial or incomplete picture. Addressing all key stakeholders will not only measure multiple perceptions, but will also generate comprehensive action steps geared toward immediate and long-term safety improvements. Based on this literature review, it is hypothesized that there are differences in perceptions of safety based on stakeholder groups within the school community.

Parent Stakeholder Group

Emerging evidence highlights the importance of collaboration and communication between families and schools to more effectively prevent school violence (Brookmeyer, Fanti, & Henrich, 2006). Parent involvement in education has been associated with a variety of positive academic, social, emotional, and behavioral outcomes. Therefore, it is critical to understand how parents perceive school violence, as they are prominent figures in the schooling of their children. Perceptions of parents strongly influence whether or not their children feel safe at school (Hong & Eamon, 2012). Children primarily learn how to navigate the world through their parents' eyes. Children who observe their parents' worries oftentimes adopt those same fears. Parents may then perpetuate a problem by allowing their child's fears or anxieties to dictate their parenting choices. This cyclical pattern subsequently becomes destructive and harmful. Therefore, identifying parents' perceptions of their child's school environment is crucial in the development of collaborative intervention and prevention efforts related to school safety.

Although parents may not directly witness their children's victimization or bullying, they are often sought for guidance or advice on how to handle conflict or difficult situations involving their children (Ladd & Kochenderfer-Ladd, 2002). Parents may respond to their child's reports of victimization in a number of different ways, such as talking to their child; contacting the child's teacher, school counselor, administrator, or contacting the bully or the bully's parents. Perhaps the most common parental response when their child discloses undesirable information (e.g., a bullying incident) is talking with them directly, as this is a seemingly natural response. There is great alignment in the literature that parents should in fact talk with their children about bullying situations, as this provides a learning moment for parents to teach adaptive ways for coping with conflict and negative emotions (Ladd & Kochenderfer-Ladd, 2002; Conners-

Burrow, Johnson, Whiteside-Mansell, McKelvey, & Gargus, 2009; Waasdorp, Bradshaw, & Duong, 2011).

Research suggests that children who are victimized but receive parental emotional support are less likely to develop symptoms of depression (Conners-Burrow et al., 2009). It is astonishing how parental support is of great importance, yet so many parents do not know how to help their children cope and may even respond to their children in counterproductive ways (Mishna, Pepler, & Wiener, 2006). For example, some studies indicate that contacting the parents of their child's bully results in adverse or unintended consequences and, in fact, can make a child's victimization worse. Parents are strongly encouraged to contact the school when they become aware of a bullying incident, as teachers and other school personnel may not be aware of the bullying (Brookmeyer et al., 2006). Studies show that children are more likely to tell their parents than their teachers when they are a victim at school, which is why it is extremely important that parents know how to respond. Further, Waasdorp et al. (2011) concluded that parents' perceptions of school climate were associated with the likelihood of contacting the school regarding an issue. More specifically, parents who perceived their child's school climate more favorably were less likely to contact the school about their child or even talk to their child. This finding may be due to parents trusting that their child's school is supportive and effectively and efficiently dealing with the issue. Conversely, parents who perceived a school climate less positively, were more likely to talk to their child or contact the school regarding a victimization issue (Waasdorp et al., 2011). Parent connectedness in their child's educational and personal development is important. Parents knowing how to appropriately respond to their child when they are faced with distress (e.g., bullying) can lead to the lessening of violence they may be experiencing at school (Brookmeyer et al., 2006). It is important to note

that bullying is one example of violence exposure. It is worth mentioning that while bullying and violence are certainly related constructs, they are very different in nature. Violence is a broader term that includes bullying in its definition (Center for Disease Control and Prevention, 2014). In other words, bullying is a component of violence whereas violence is not solely defined as bullying.

Parent connectedness is advantageous in helping to reduce a child's violence exposure in school (Brookmeyer et al., 2006). A central component of parent connectedness involves knowing how to respond to their child who may be experiencing distress or anguish at school. There are many factors that can influence parent responses, one of which is demographics. It is suggested that ethnic minority parents may perceive bullying and their child's responses differently than other ethnicities (Desimone, 1999). Parents of non-White students tend to participate less in schools than do other parents. This could be due to factors such as language barriers, discrepancy of cultural values between the home and school, and parents' efficacy level with their child's education. These differences can also lead to a lack of communication between home and school and overall involvement in their child's education. Another factor that can influence how a parent responds to their child is the child's gender. Parents may expect their son to be more emotionally tough when faced with victimization and therefore, feel he does not need any type of intervention to help support him during that time (Waasdorp & Bradshaw, 2011). Females, on the other hand, may be perceived as more emotionally sensitive, and therefore, may require more support from their parents (Waasdorp & Bradshaw, 2011).

Further, developmental differences may have an effect on parent responses. As children get older, parents are less likely to intervene (Green, Walker, Hoover-Dempsey, & Sandler, 2007; Waasdorp et al., 2011). Additionally, parents of younger children tend to be more

satisfied with their child's school efforts of violence prevention and overall climate support than parents of older children (Waasdorp et al., 2011). This conclusion may be attributed to teachers who may be less emotionally supportive during middle and high school years compared to elementary school teachers who interact with younger children that require more nurturing and fostering. On the contrary, middle and high school parents felt they were adequately informed about student safety related topics and information, while parents of elementary school students believed they were not adequately informed (Ewton, 2014).

A child's form of victimization can also influence parent responses. Parents typically report overtly aggressive behaviors (e.g., physical aggression) that are considered more serious and harmful than indirect aggression such as exclusion, spreading rumors, or ignoring (Mishna, 2004; Mishna et al., 2006). Additionally, parents may feel less optimistic reporting indirect behaviors and the impact their report will have in comparison to reporting more direct aggressive behaviors. Different forms of victimization yield to different parental responses, which in turn, can certainly impact a child's educational experience.

A study conducted by Lam and Ducreux (2013), found a strong correlation between parent-child communication and academic achievement. As the communication between a parent and child increased, academic achievement also increased. Lam and Ducreux (2013) also concluded that an important component of parent-child communication is expressing the value and importance of education. Therefore, it was recommended, since parents have a strong influence on their child's education, they should build and maintain positive affiliations at their child's school. Fully understanding school-based violence should take into account all individuals associated in a school setting, and that includes a child's parents. Ultimately, the role

of a parent in their child's education must be considered, understood, and addressed as part of an overall comprehensive assessment of school safety.

Teacher Stakeholder Group

Teachers of course play an integral role in creating a healthy school environment. Therefore, it is imperative to gain an understanding of teachers' impressions as it relates to safety in their schools and what influences those points of view. It should be noted that teachers not only deal with safety issues among the study body, but they can also be direct recipients of violent acts themselves (Finley, 2003).

Teachers are truly in a unique position to influence students' social, emotional, and behavioral development. Literature in this area proclaims that teachers are closest to students and have the greatest potential for making a difference in their lives, more than any other professional in the school building (Finley, 2003). Teachers can influence students through the climate they create in their classrooms, the curriculum they teach, or through direct modeling of their own behavior. Surprisingly, this area of research has been proclaimed to be largely ignored within the literature (Finley, 2003). If we want to fully understand school-based violence, we have to take into account one of the most important stakeholders within a school setting, and that is the perspective of teachers.

As previously noted, teachers can be directly or indirectly involved with school-based violence. According to the National Center for Education Statistics (2015), during the 2011-12 school year, 10% of elementary teachers and nine percent of secondary teachers reported being threatened by a student from their school. Also, during the 2011-12 school year, approximately 38% of teachers agreed or strongly agreed that student misbehavior interfered with their teaching, and 35% of teachers reported that student tardiness and class cutting interfered as well

(National Center for Education Statistics, 2015). Additionally, the American Psychological Association Task Force on Violence Directed Against Teachers (2011) revealed that 80% of teachers reported at least one experience with victimization. Of those teachers who experienced an offense, 94% of teacher respondents reported being victimized by students. A case study conducted by Finley (2003), investigated teachers' understanding of school violence and their perceptions of the school climate. This case study consisted of focus group sessions of high school teachers in a small, rural school district. Specifically, these sessions assessed teachers' understanding of school violence and their perceptions of school climate. There were 11 high school teachers that participated in these focus groups. Findings from this study indicated that a negative school climate is directly tied to school violence. Additionally, student / staff pride, camaraderie, adequate supplies, administrative support, and physical structure of the building are all areas that contribute to a teacher's feeling of safety as well. However, it is important to note that this study was based on teachers' perceptions from one high school, so generalization to other teachers is naturally limited.

A larger case study conducted by Bosworth, Ford, and Hernandez (2011) conducted 22 focus groups with students and faculty across 11 secondary schools. Schools were selected from a strategized sample to vary in location, size, and type. The results indicated that while perceptions of school safety are related to various factors, school climate was the most influential relating to the perception of school safety. Bosworth and colleagues (2011) concluded that adults within the building felt safest when they perceived they were in a caring and helpful environment, and when rules were clearly and consistently stated and applied. In school environments where this type of climate exists, there were fewer incidences of bullying, fighting, weapon use, alcohol and drug use, and vandalism.

For teachers, incidents of victimization can lead to professional disenchantment and even departure from the profession indefinitely (Karcher, 2002; Espelage, Anderman, Brown, Jones, Lane, McMahon, Reddy, & Reynolds, 2013). Teachers often leave the field due to the demands and expectations they experience with regard to responding to students' disruptive and violent behavior. Some teachers are afraid of lawsuits or of being targets themselves of student-perpetrated violent acts. A study conducted by Mitchell, Bradshaw and Leaf (2010) found that teachers' perceptions of school climate were significantly influenced by "poor classroom management and proportion of students with disruptive behaviors" (p. 276). Increasingly, teachers have the responsibility in handling student violence, both preventively and reactively. A common practice within schools is including the classroom teacher in prevention efforts, which creates an even deeper involvement in this area. Teachers may feel unprepared to respond to or manage violent behaviors, let alone prevent violence (Karcher, 2002, Espelage et al., 2013). It is likely that teacher preparation programs on how to deal with violence are not a prioritized area of professional development (Espelage et al., 2013). Therefore, many teachers have insufficient knowledge and skills to prevent challenging behaviors from occurring and effectively respond when a misbehavior does occur in their classroom (Espelage et al., 2013). Despite the increase in mental health providers in school systems over the last decade or so, much of the responsibility of violence prevention and reaction falls on teachers, who oftentimes feel ill prepared and who may feel threatened themselves. Teachers are expected to not only teach students to read, write and understand math, but they are also expected to help them develop their social and moral character (Thapa et al., 2013). In summary, teachers who are well-equipped with evidence-based techniques to mitigate, manage, or prevent violent behaviors,

have an enhanced sense of empowerment and reduced levels of job-related stress (Espelage et al., 2013).

Since teachers play an important role in violence response and prevention, it is critical to look into their perceptions of safety when understanding school-based violence in a comprehensive way. Those teachers who are fearful in the workplace may become less devoted to the profession. This, in turn, can have a negative impact on the overall school climate and can be directly linked back to school violence (Roberts, Wilcox, May, & Clayton, 2007). In such cases, a vicious cycle can develop: School-based violence can increase fears amongst teachers; which, then negatively impacts school climate; which, then continues to breed an environment more susceptible to student violence. Given the important implications for sustaining qualified, dedicated, and devoted teachers to the educational field, research must look deeper into their perceptions of danger, risk, and fear. Additionally, recognizing the crucial role that teachers have in violence prevention and intervention, is essential to include their perspective when examining the very important topic of school-based violence.

In addition to other key individuals who are part of a school environment, teacher perceptions of school safety should be a focal area of exploration. Due to their important role in the educational field, it is crucial to consider their perceptions of school safety and its specific contributing factors. Considering the differences and similarities of teachers to other stakeholder groups will provide instrumental information on how to understand and address school safety on a more comprehensive level.

Administrator Stakeholder Group

Administrators play an essential part in a school's day-to-day functioning. It is primarily the responsibility of a principal to inform parents, staff, students, and the community about

teaching, learning, and student achievement initiatives within the school. In addition to these responsibilities, administrators are also responsible for the safety of all students, staff, and visitors. Principals' perceptions of school safety are critically important in order to identify what best practices should be put in place to best mitigate any threats of violence. This implementation of best practices will ultimately drive prevention and intervention programs to further enhance the safety within their buildings.

With an ever-increasing number of state and federal mandates being passed down to local school districts, safety and security have become one of the more important priorities for school administrators. Principals need to accurately conduct their own assessments of threats to school safety; they need to implement mandated security measures in their buildings; and, they need to understand parental and community expectations. Naturally, safety plans look different from district to district and even from school to school. Shelton, Owens, and Song (2009) suggested that schools should choose safety and security strategies that will be effective for their respective school environment and situation. Specific elements that go into a school safety plan should only be implemented if they are necessary for keeping that specific school safe and free of violence and threats.

Ewton (2014) conducted one of the few studies investigating principals' perceptions of school safety. Two instruments were used in this study. The first instrument was entitled *Parent Perceptions of Student Safety Survey* with the second instrument entitled *School Principal Perceptions of Student Safety Survey*. These electronic surveys contained similar questions that were designed to analyze the perceptions of parent and school principals (Ewton, 2014). Results of this research revealed that principals felt that armed civilian security volunteers, armed school administrators, and installing walk-through metal detectors are not an effective or an appropriate

approach as compared to other tactics. This may be due to the belief that certain safety measures can actually create an anxious and fearful environment compared to a safe and protective environment. Further, communication between schools and parents was recognized as an essential ingredient to student success (Ewton, 2014). Improving communication relating to safety measures, needs, and concerns were also imperative in ensuring the safety of everyone in the school (Ewton, 2014).

Sprague, Smith, and Stieber (2002) investigated school principals' perceptions as well. They looked into what risk and protective factors derived from the School Safety Survey (SSS) were present in their buildings. Open-ended questions related to school safety concerns and intervention programs were also investigated in this research. Results of this study indicated that protective factors were rated higher than risk factors. Principals classified response to conflict, suicide prevention, and staff training as top protective factors. Further, Sprague and colleagues (2002) concluded that improvement of the academic curriculum is of their highest priority, closely followed by school safety and discipline improvement initiatives. Similar to findings from the study conducted by Ewton (2014), Sprague et al. (2002) emphasized the importance of family and community partnerships as well. The findings indicated that professional support and appropriate responses to conflict from principals to students, teachers, and families directly correlate to feelings of safety at school.

Understanding administrators' perceptions of school safety on a deeper level is important. Not only is it crucial to explore administrators' perceptions, but it is also essential to investigate the similarities and differences among the many individuals who are part of a school environment. Considering these different perspectives in a child's educational life will yield to a more all-inclusive and thoughtful approach to safety intervention efforts and planning.

School Safety Related to Location of School

In the wake of multiple, high-profile acts of school violence throughout the past few decades, investigation of school violence has been brought to the forefront and has become a national priority. One area of focus in this examination involves geographic location. The vast majority of literature reporting on school violence has been focused on urban youth. This focus on urban violence most likely reflects the reasoning that many schools in urban areas are located in an inner city and populated with lower socio-economic families. Shelton et al. (2009) found the impact of older school buildings to be particularly relevant to feelings of school safety. Urban public schools tend to be older in age in comparison to schools in other geographic locations. On average, urban schools are 17 years older than suburban schools, and approximately 12 years older than rural schools. Inner-city urban schools are also more likely to be populated with lower socioeconomic neighborhoods and with high rates of criminal activity. A study conducted by Gottfredson, Gottfredson, Payne, and Gottfredson (2005) investigated the association of school organizational characteristics with school disorder. In this study, school organizational characteristics were defined as characteristics of the community such as urban location, immigration, crowding, racial heterogeneity, and size of school. School disorder in this study referred to crimes and acts of incivility, either perpetrated by students or experienced by students or teachers. Results indicated that at the high school level, significant negative correlations were found with relation to student delinquency (i.e., purposeful damage / destruction of property, hit / threatened a teacher or other adult, hit / threatened other students, or stolen / attempt to steal from another person) and size / location of a school. Gottfredson and colleagues (2005) attributed these results due to the most delinquent youths being those

individuals that are most likely to drop out of high school, with drop-out rates being higher in large, urban schools in comparison to other school locations.

Children in the suburbs have been often overlooked with regard to youth violence because society views them as coming from more prosperous families, and associate that with less school violence (Shelton et al., 2009). Some researchers have reported that suburban schools are generally newer and located in safer communities than urban schools. Moreover, newer schools bring more up to date capabilities, such as technologically-supported safety features like state-of-the-art security cameras. Therefore, it has been suggested that suburban schools are more protected from violence than urban or rural communities.

Not only does school location come with different societal views with respect to socioeconomic status, but the location of a school also can be associated with different student behaviors. A study conducted by Mink, Moore, Johnson, Probst, and Martin (2005), looked at three datasets compiled by the Centers for Disease Control (CDC): The Youth Risk Behavior Survey (YRBS) results from 2001, the YRBS for alternative schools collected in 1998, and data from the School Health Policies and Programs Study in 2000. Data from the two YRBS datasets were used to assess the nationwide prevalence of violence-related activities and exposure among youth. The CDC used data sets that contained 13,601 responses stratified as urban (5,113), suburban (7,144) and rural (1,263). A number of key findings were determined. First, rural teens are at significantly greater risk of using drugs than both suburban and urban teens. There was a higher prevalence among rural teens to chew tobacco, smoke cigarettes, use crack / cocaine, use steroids, and use crystal methamphetamine. The only drug with a higher prevalence rate among urban teens compared to suburban and rural counterparts was marijuana consumption. Second, rural schools were less likely than urban schools to offer peer counseling

and self-help services. Moreover, mental health care staff in rural schools was available for fewer hours in comparison to urban schools. Third, urban teens were significantly more likely than rural and suburban teens to have been in a fight during the last 12 months. Another finding was that suburban teens were less likely than rural and urban teens to be in a fight, be in a fight at school, or be hit by a dating partner (Mink et al., 2005). It is clear that understanding differences of school locations on a deeper level is important when examining school safety. Investigating the similarities and differences of school locations are vital for a thoughtful and effective approach to safety interventions and planning efforts within educational communities.

School shooting incidences on suburban school grounds, such as the tragedies that took place in Littleton, Colorado; Springfield, Oregon; and Paducah, Kentucky, support the concept that violence may not be limited to youth in urban communities. Hawkins, Campanaro, Pitts, and Steiner (2002) argued that sexual victimization, mental health, and physical abuse are issues that exist in all geographic communities and not necessarily limited to urban locations. Further, Brooks, Schiraldi, and Zeidenberg (2000) analyzed data on school crime from the National Center for Education Statistics, the National School Safety Center, the Bureau of Justice Statistics, and juvenile arrest data from the FBI and the Office of Juvenile Justice and Delinquency Prevention. The authors explored these data one year after the Columbine High School shooting in Littleton, Colorado. With a focus on geographic location, this study found that 54% of rural parents were reported to be worried about school shootings, while 46% of urban parents and 44% of suburban parents expressed this concern. Subsequently, a *Washington Post* poll was conducted in an effort to investigate parent's anxieties about school safety. Results from this poll found that the number one worry of parents with school children centered around

school safety. Specifically, 60% of participants stated that, "children in America are no longer safe at their own schools" (Brooks et al., 2000, p. 7).

Contrary to popular belief, rural communities are not necessarily safe havens from violence. Several studies have sought to address this issue and have found this was simply not the case. Rural youth are in fact exposed to high levels of violence (Slovak & Singer, 2001; Slovak & Singer, 2002). Specifically, rural teens were found to be at a higher risk for carrying a weapon at school, carrying a gun on or off school grounds, and using tobacco, alcohol, or other drugs (Atav & Spencer, 2002; Mink et al., 2005). Additionally, the prevalence of using cigarettes, alcohol, marijuana, inhalants, heroin, or crystal methamphetamine on or off school grounds was equal across rural, urban, and suburban teens. Notably, rural teens were more likely than both urban and suburban teens to chew tobacco, use cocaine, and take steroids on and off school grounds. Rural adolescents were also more likely than urban adolescents to be victims of dating violence (Slovak & Singer, 2001). Consistent with these findings, Mink et al. (2005) found similar results in their research as well and concluded that rural teens were more likely to be hit by a dating partner than urban or suburban teens.

Based on this literature review, it was hypothesized that there are differences in perceptions of safety based on geographic location. Diverse geographic environments may yield different views and judgments regarding feelings of safety. Therefore, potential disparities among urban, rural, and suburban geographies are important to assess since safety efforts appear to be different in each environment. Understanding patterns of violence across these three locations will hopefully lead to improved safety efforts and reduction of violence.

School Safety Related to Grade Span

Astor, Meyer, and Pitner (2001) explored whether there were differences in students' feelings about safety based on grade level. Their research found that feelings of safety were more heavily influenced by the social, organizational, and physical aspects embedded within the whole school rather than by grade level alone. For example, sixth grade students in elementary schools viewed their environments as similar in safety to other students at lower grade levels in that same school.

There are a few factors that impact feelings of safety with regard to building level. First, Astor et al. (2001) found that elementary students described far fewer internal spaces as dangerous (inside the school building) compared to middle school students. Second, smaller schools and classrooms within elementary buildings, with fewer students have fewer misbehavior incidences, thus increasing feelings of safety. Similarly, since middle and high schools tend to naturally be bigger in physical size, secondary grades experience more violent acts on their premises. Astor and colleagues (2001) further concluded that elementary, middle, and high school students' perceptions of adult supervision and relationships were similar and its impact on feelings of safety (e.g., follow-through, social connectedness, etc.). Essentially, students' perceptions of safety appeared to be related to teacher-student social dynamics regardless of grade level. Fundamentally, school violence perceptions are largely impacted by school type (i.e., elementary, middle, or high school) rather than by an individual grade level.

Crisis Management

Ensuring that schools are safe havens for teaching and learning without crime and violence is a priority for both the state and federal government. Largely speaking, while most children feel safe in American schools, there are certainly existing schools in neighborhoods

where fear, crime, and violence are a part of everyday life. While there are no guarantees that a school will ever be completely safe, school safety needs to be an ongoing initiative and must always remain a top agenda item.

Crisis management within an educational community is a continuous process that always warrants attention and reflection. This process should be continuously updated based on experience, research, and changing vulnerabilities within a school environment. Effective crisis planning should be initiated from the top down. Every governor, mayor, legislator, superintendent, and principal must work collaboratively and effectively to make school crisis planning an important focus. It is these key stakeholders that can secure the resources to build a community and create a safe educational environment for students, teachers, families, and administrators.

It is noteworthy to mention four critical stages of crisis management in this section of the literature review because of their importance (U.S. Department of Education, 2007). The first phase is known as Mitigation / Prevention. This area addresses what schools and districts can employ to reduce or eliminate risk to life and property. For example, schools in earthquake-prone areas can secure bookcases and educate school personnel on what to do or where to go during possible quakes and tremors. Additionally, actions can be taken to reduce the possibilities of bomb threats or school shootings, such as implementing a strict security system upon entering the building. This stage of crisis management requires schools to survey possible dangers inside a building as well as the surrounding community to reduce and ideally prevent harm. Crisis and emergency mitigations are also imperative from a legal standpoint. If a school or district does not take all necessary precautionary actions in good faith to create safe schools, they will essentially be committing negligence (U.S. Department of Education, 2007).

The second phase is Preparedness. Crises can significantly affect every individual in a school community. Thorough planning will facilitate rapid, coordinated, efficient, and effective responses to crises. However, a complete and comprehensive crisis plan cannot be developed overnight. Being well prepared involves an investment of time, effort, and resources. School districts must open channels of communication well in advance and before a crisis occurs. Cultivating strong cooperating relationships with emergency responders, public safety officials, medical, and mental health professionals will aid in the response to a crisis. It is also important to determine individual plans for different kinds of crises. This information will most likely be identified from safety audits, evaluations, and assessments. Preparedness includes emergency drills and crisis exercises for staff, students, and emergency responders. Oftentimes, drills can identify issues and problems that need to be addressed in the crisis plan. Careful planning and practice drills will better prepare the school and all school community members to respond in an actual crisis (U.S. Department of Education, 2007).

The third phase is Response. This phase is devoted to the steps and actions that are taken during a crisis. An immediate and best response is dependent on how strong and complete the crisis plan is as well as the amount and quality of practice and drills. A reliable and trustworthy plan should include clearly articulated roles and responsibilities. This will enable the district's or school's crisis team to immediately commence with the necessary measures to protect the safety of all persons involved. During a traumatic event, leaders need to maintain a calm and confident demeanor in order to give people the trust that they are in good hands. This will further give people reassurance that leaders are making good judgments, and that their decisions have been carefully thought through. This leadership will help keep a calm environment, which in turn, will aid in mitigating panicked reactions during a crisis (U.S. Department of Education, 2007).

The fourth and final stage is Recovery. This stage deals with how to restore learning and teaching and the overall infrastructure of a school community after a crisis occurs. Given the emotional impact that will be felt by many individuals, a primary goal during this phase is to provide a caring and supportive school environment. This type of warm and trusting environment allows for students and staff to talk about what they felt and experienced during the traumatic event and essentially partake in a debriefing process. There is an immense feeling of vulnerability. Therefore, it is critical to create this type of climate for people to start to feel safe again; not just physically, but also mentally and emotionally. Experts in the field say that it is important to return students to learning as quickly as possible in an effort to try and establish some sense of normalcy again. Healing after a crisis is a process and it takes time. Depending on the type of crisis and the level of damage done, recovery may take months or even years (U.S. Department of Education, 2007).

Importantly, these four stages could not be appropriately addressed and implemented without an accurate assessment of school safety or school violence. Knowing how to mitigate, prepare, respond and recover from a traumatic event would all be irrelevant without the proper evaluations that initially should take place. Reliable and valid information derived from school safety and school violence assessments will crucially aid in the implementation of the four stages of crisis management.

Safe School Initiatives

Several federal initiatives over the past few decades have been passed in an effort to address school safety. Laws are imperative as they serve as a norm of conduct for citizens and act as a guideline for acceptable behavior. Laws help outline what a person can or cannot do and what crimes violate acceptable practices in society. While these laws are certainly vital to

execute on a federal level, there also needs to be a focus on rules at the school level, as each school is unique and different in its own way. However, in order to determine what school rules and regulations should be implemented, assessment of school safety and school violence is of the utmost importance. More specifically, reliable and valid measures of school safety and school violence are critical. Without this type of psychometric assessment, any information that is derived from violence or safety assessments becomes meaningless for interpretation purposes. For example, a reliable and valid outcome is one that will give you the same / close outcome every time. However, even though the outcome is precise to a particular value, the real value may be far from the desired target. Consequently, it would not be considered a trusted tool that can be used for generalizability and interpretation.

Noteworthy among the many federal movements include, the Improving America's Schools Act (IASA) of 1994, the Safe and Drug Free Schools and Communities Act of 1994, the Gun Free Schools Act of 1994, the Safe Schools Improvement Act of 2011, and the Supportive School Climate Act of 2015. These initiatives reflect the nation's goal of ensuring that all children attend schools that provide them with the services and supports they need to flourish and succeed.

The Improving America's Schools Act (IASA) of 1994 was a major part of the Clinton administration's efforts to reform education. This initiative reauthorized the Elementary and Secondary Education Act of 1965 (U.S. Department of Education, 1995). Through Title IV of the IASA, the Safe and Drug Free Schools and Communities Act was passed in 1994 (U.S. Department of Education, 2001). The Safe and Drug Free Schools program provided federal assistance to schools for programs that prevent violence in schools, prevent the illegal use of alcohol, tobacco, and drugs, and involve parents and the surrounding community. Ultimately,

this act was a central part to create safe, disciplined, and drug-free learning environments to support academic pursuits of students.

As part of the IASA, the Gun Free Schools Act of 1994, which also amends the Elementary and Secondary Education Act of 1965, was passed (U.S. Department of Education, 2001). The Gun Free Schools Act of 1994 encouraged each state receiving federal education funds to institute zero tolerance laws. This act required each state receiving federal funds to have a state law that expels, for at least one year, any student who has brought a weapon to school. This one-year expulsion is said to be mandatory, however consequences can also be administered on a case-by-case basis. It is important to acknowledge that there is a degree of controversy around zero tolerance laws. While this law is intended to create safer school climates, there are some studies indicating otherwise. A central philosophy around zero tolerance laws is that the removal of misbehaved students will yield to a decrease in future misbehaviors. However, it has been found that school suspensions and expulsions appear to predict increased rates of misbehavior among those students who have been suspended or expelled (Raffaele-Mendez, 2003). Moreover, some believe that zero tolerance policies enhance or accelerate mental health issues among youth by alienating them from the school community (Thorson, 1996). Zero tolerance policies may cause neglect in looking at individual situations as every offence may be given the same punishment (American Psychological Association Zero Tolerance Task Force, 2008). For example, a student could have accidentally brought a pocketknife to school and receive the same punishment as another student who purposefully attacks someone with a weapon. Skiba, Chung, Trachok, Baker, Sheya, and Hughes (2014) indicated that the use of school expulsion or school suspension as a disciplinary tactic is associated with risk for short-term and long-term negative consequences. Due to these

disciplinary expulsion or suspension risks, more preventative strategies geared toward student behavior should be a focus rather than reactive actions that take place once a misbehavior occurs. Overall, the use of school discipline in response to school violence and the impact discipline has on student development and the school community remains a current topic of discussion and research.

The Safe Schools Improvement Act of 2011 requires schools and districts that receive federal funding to ban bullying and harassment. This is specifically based on actual or perceived race, disability, sexual orientation, religion, or any other characteristic defined by local educational agencies (LEA). Additionally, states are required to report data on bullying to the Department of Education (Library of Congress, 2011).

The Supportive School Climate Act of 2015, which also amends the school improvement program under the Elementary and Secondary Education Act of 1965, was implemented as well. This initiative aimed to provide students with positive behavioral interventions and support. Particularly, a plan must be submitted that describes specified steps to create a positive school climate for all students, improve engagement for disconnected youths, create disciplinary policies that are fair and work to keep students in school, and enable those who are removed from school to resume their education upon returning to school (Library of Congress, 2015).

Overall, federal movements have great importance to school safety. One could argue that these laws and mandates would have never been implemented in the first place without the recognition by both state and federal governments that school safety can be a serious problem on school campuses across the nation. Essentially, there is a direct link between mandated federal laws and the assessment of school safety. Results of laws can lead to school safety assessment in an effort to provide supports to make schools safe for learning. Therefore, it is noteworthy to

mention these federal movements in this section of the literature review to provide a deeper understanding of the connection between school safety assessment outcomes and education law.

Summary of Literature Review

Schools were once regarded as picturesque locations where parents could send their children to learn in a safe, comfortable, and welcoming environment. Over the past several decades, those idyllic visions have transformed into a harsher reality of metal detectors, police officers, and continuous crisis response drills. Despite the rarity of school shootings and their downward trend, it would be neglectful to discount the long-lasting effects that any act of violence has on the school where it occurred, on the surrounding community, and on the nation as a whole. The research on what works in school-based crisis planning is essentially in its infancy stages. This is largely due to the fact that each crisis is different and unique in its own way, resulting in a lack of conformity across all schools in the country. Crises range in scope and intensity accompanied with varying needs, resources, and assets that the school has to offer. While a growing body of research and literature is available on crisis management for schools, there is little evidence to quantify best practices. Due to each individual school and crisis being unique and different, it is important to look at similarities and differences by location, respondent, and grade span. This information would likely be very useful in the promotion of school safety and the prevention of school violence.

Quantifying how safe a school is has proven to be quite challenging for researchers. Differences in definitions are associated with a breadth of diverse opinions. However, unsystematic portrayals of violence in schools undoubtedly contribute to a distorted perception of the reality of school violence (Furlong, 1994). Therefore, investigation in this area is warranted so we have a much more thorough and comprehensive understanding of school safety.

A safe environment is a prerequisite for productive learning. In accordance with Maslow's hierarchy of needs, students who are focused on meeting basic needs for safety and health cannot spare any ounce of attention to learning and academic success. Therefore, in order to create a safe environment that is conducive to learning, it is imperative to examine school safety, as part of a school climate, given that research documents the connection between feelings of safety and student achievement (Morrison et al., 1994; Kuperminc et al., 1997; Lehr, 2004; Gregory et al., 2010).

CHAPTER III

METHODS AND PROCEDURES

This chapter provides a review of the study's design, population, sample, measurement instruments, procedures, and proposed data analysis. First, it is important to note that Indiana University of Pennsylvania's Institutional Review Board (IRB) granted approval for this dissertation study (see Appendix A). The School Safety Survey (SSS), which was developed at the University of Oregon, is one instrument that schools use across the nation to assess the risk for and protection against school violence. The SSS asks respondents to rate the extent to which 17 risk and 16 protective factors exist in their schools using a rating scale of one (not at all) to four (extensive) (see Appendix B).

Protective factors are associated with a lower likelihood of problematic outcomes or reductions in the negative impact of a risk factor on problematic outcomes. Some protective factors include positive teacher-student relationships, parent involvement, student supervision, and high academic expectations. Conversely, risk factors are associated with a higher likelihood of problematic outcomes, such as substance abuse and school dropout. Some risk factors include poverty, child abuse, graffiti, bullying, and deteriorating physical facilities.

The psychometric merits of the SSS were examined in this study. Specifically, the aim of this study was to conduct a psychometric analysis of the validity and the reliability of the SSS completed by the following stakeholder groups: teachers, administrators, and parents / guardians. This study examined whether the constructs of protective and risk factors are similar or different by respondent group. Further, school location as well as grade span was also explored to examine whether the constructs of protective and risk factors are similar or different. As a result of this study, cooperative efforts toward more effective assessment of safety planning may result.

Results of this study may lead to a deeper understanding of the survey's validity and reliability and how schools can interpret results for action planning and program evaluation purposes. Additionally, results of this study will also lead to a deeper understanding of whether or not the constructs of risk and protective factors are universal across respondent group, school location, and grade span.

Design

First, the internal consistency of the SSS was established using Cronbach's alpha. Bracken (1987) recommends that screening measures should evidence reliabilities that meet or exceed .70, which was used in this study. An Exploratory Factor Analysis (EFA) was conducted to empirically derive the number of latent constructs assessed by the SSS. This approach was used as one indicator of validity. The EFA was aggregated across respondent, school location, and grade span and was conducted for each respondent group, each school location, and each grade span. Results of this study may lead to a deeper understanding of the survey's psychometric properties in addition to whether the constructs of risk and protective factors are universal across respondents, locations, and grade span.

Sample

Archival and anonymous data from the 2013-2014 year was examined in this study. These data were securely stored by the Educational and Community Supports (ECS) database at the University of Oregon. Therefore, no recruitment of subjects was necessary for this study. The ECS provided non-identifying school demographic information (i.e., location, grade span), with a unique school and district identification number instead of identifiable information provided in the data. The ECS then provided the item-level responses of the SSS in a de-identified manner. Constructs that were measured in this study included respondent (teachers,

administrators, and parents / guardians), school location (urban, suburban, rural, and town), and grade span (elementary school and secondary school). This study used both males and females and the estimated age range of participants was between 18 and 75 years of age. Elementary school was identified as kindergarten through fifth grade and secondary school was identified as ninth through twelfth grade, as suggested by the National Center for Education Statistics (National Center for Education Statistics, 2013).

Inclusion Criteria

Inclusion criteria for this study consisted of data from the respondent categories (i.e., teachers, administrators, and parents / guardians) from all elementary and secondary schools across the United States for the 2013-2014 school year. All data were anonymously archived in the ECS database. Additionally, only data from respondents who answered all 33 items on the SSS and for which complete location, grade span, and respondent category were used.

Exclusion Criteria

Exclusion criteria for this study consisted of archival, anonymous data from respondents from alternative / juvenile justice schools, private schools, and year-round schools. These criteria were excluded because these types of environments are comprised of different standards, procedures, and practices that are not necessarily affiliated with those that are within elementary and secondary public school districts. Additionally, this study excluded incomplete data, either due to missing answers on the SSS or missing demographic (i.e., location, grade span, and respondent) data.

Variables

The variables in this study are the items of the SSS, which consist of both protective and risk items. The survey asks respondents to rate the extent to which 17 risk and 16 protective

items exist in their schools using a Likert scale of one (not at all) to four (extensive). The risk factor item level data included: "illegal weapons; vandalism; high student mobility (i.e., frequent changes in school enrollment); graffiti; gang activity; truancy; student suspensions and / or expulsions; students adjudicated by the court; parents withdrawing students from school because of safety concerns; child abuse in the home; trespassing on school grounds; poverty; crimes (e.g., theft, extortion, hazing); illegal drug and alcohol use; fights, conflict, and assault; incidence of bullying, intimidation, and harassment; and, deteriorating condition of the physical facilities in the school" (Sprague et al., 1995, p. 2; see Appendix B).

The protective factor item level data included: "opportunity for extracurricular programs and sports activities; professional development and staff training; crisis and emergency response plans; consistently implemented school-wide discipline plans; student support services in school (e.g., counseling, monitoring, support team systems); parent involvement in our school (e.g., efforts to enhance school safety, student support); student preparation for crises and emergencies; supervision of students across all settings; suicide prevention / response plans; student participation and involvement in academic activities; positive school climate for learning; acceptance of diversity; response to conflict and problem solving; collaboration with community resources; high expectations for student learning and productivity; and, effective student-teacher relationships" (Sprague et al., 1995, p. 3; see Appendix B).

Of note, stakeholder group / respondent is considered nominal data and was categorized as teachers, administrators, and parents / guardians. School location is considered nominal data and was categorized as urban, suburban, rural, and town. Lastly, grade span is considered nominal data and was categorized as elementary school and secondary school.

Statistical Analyses

The Statistical Package for the Social Sciences (SPSS), Version 20 was used to analyze the data. First, a Cronbach's alpha reliability measure was conducted to evaluate the internal consistency of the SSS. An Exploratory Factor Analysis (EFA) was conducted to empirically derive the number of latent constructs assessed by the SSS. The EFA was aggregated across respondent, school location, and grade span and conducted for each respondent group, each school location, and each grade span.

Research Question 1

What is the internal consistency of the SSS? The internal consistency of the SSS was assessed using a Cronbach's alpha approach to measure internal consistency. This approach provided an overall reliability coefficient for all items on the SSS. It was hypothesized that items on the SSS all measured the same general constructs. It was believed that this reliability analysis was an adequate screener. Bracken (1987) recommends that screening measures should evidence reliabilities that meet or exceed .70, which will be used in this study.

Research Question 2

What is the underlying factor structure of the SSS? An Exploratory Factor Analysis (EFA) was conducted to empirically derive the number of latent constructs assessed by the SSS. The SSS purports to measure two discrete constructs, risk and protective factors. Therefore, it is important to investigate if the SSS does in fact, assess these two distinct areas. It was hypothesized that the SSS assesses two different factors: protective factors and risk factors. It was believed that the items on the SSS, as reported by its authors, would align with the obtained two-factor structure.

Research Question 3

Does the underlying factor structure vary by stakeholder group / respondent (i.e., teachers, administrators, and parents / guardians)? An EFA was conducted to empirically derive the number of latent constructs assessed by the SSS. The EFA used data disaggregated by respondent. Visual inspection was used to determine the extent to which the factor structure and item loadings were similar across respondent group. The visual inspection process occurred once the factors and loadings were empirically determined. It was hypothesized that a two-factor structure would be present across teachers, administrators, and parents / guardians. Further, all items would load on the same factors across teachers, administrators, and parents / guardians.

Research Question 4

Does the underlying factor structure vary by school location (i.e., urban, suburban, rural, town)? An EFA was conducted to empirically derive the number of latent constructs assessed by the SSS. The EFA used data disaggregated by school location. Visual inspection was used to determine the extent to which the factor structure and item loadings were similar across school location. The visual inspection process occurred once the factors and loadings were empirically determined. It was hypothesized that a two-factor structure would be present across urban, suburban, rural, and town locations. Further, all items would load on the same factors across urban, suburban, rural, and town locations.

Research Question 5

Does the underlying factor structure vary by grade span (i.e., elementary school, secondary school)? An EFA was conducted to empirically derive the number of latent constructs assessed by the SSS. The EFA used data disaggregated by grade span. Visual inspection was

used to determine the extent to which the factor structure and item loadings were similar across grade span. The visual inspection process occurred once the factors and loadings were empirically determined. It was hypothesized that a two-factor structure would be present across elementary and secondary grade spans. Further, all items would load on the same factors across elementary and secondary grade spans.

Summary of Methods

The methods and procedures used to answer five research questions evaluating the psychometric properties of the SSS were discussed in this chapter. An explanation of the purpose and design of the study was provided along with a description of the population, sample, and method of assignment. The procedures used for calculation were outlined in detail along with the statistical analyses that was used to answer each research question.

CHAPTER IV

RESULTS

The psychometric properties of the *School Safety Survey* (SSS) were examined in this study. This study also assessed whether the SSS measured two discrete constructs, risk and protective factors. Teachers, administrators, and parents / guardians completed the SSS, and this study explored whether the factor structure was similar or different by stakeholder group. Additionally, school location (i.e., urban, suburban, rural, and town) and grade span (i.e., elementary and secondary) were assessed to determine whether the factor structure was similar or different. These examinations helped to resolve whether the SSS is a psychometrically-sound instrument to accurately interpret its results for safety action planning and program evaluation purposes.

This chapter consists of results, which include descriptive statistics and data analyses that answer five research questions. Prior to conducting analyses, all data were screened for missing data, skewness, kurtosis, and any outliers that were present. Data were only used from respondents who answered all 33 items on the SSS and for which complete location, grade span, or respondent categories were provided, depending on the specific research question.

Research Question 1

What is the internal consistency of the SSS? The internal consistency of the SSS was conducted using a Cronbach's alpha approach. This approach provided an overall reliability coefficient for all items on the SSS. It was hypothesized that items on the SSS were all consistently measuring the same general constructs.

For this research question, there were a total of 4,260 completed surveys, in which all 33 protective and risk items were answered. Total number and sample percentage of respondent,

location, and grade span are displayed in Table 1. Inspection of descriptive statistics was conducted and is displayed in Table 2. Skewness and kurtosis statistics were also analyzed to determine normality. A range of -1 to 1 was pre-identified to represent an acceptable level of skewness (Breakwell, 2006; Greer, Dunlap, Hunter, & Berman, 2006). A range of -3 to 3 was also pre-identified to represent an acceptable level of kurtosis (Anastasi, 1982; Gaur & Gaur, 2006). Item 9 (withdrawn for safety) was positively skewed, with a value greater than 1.0 (1.28), which is suggestive of data that were overly skewed. Item 21 (implemented discipline plans), item 25 (supervision all settings), item 28 (positive learning climate), item 29 (diversity acceptance), item 32 (high learning expectations), and item 33 (student teacher relationships) were all negatively skewed, with skewness values greater than -1.0 (-1.01, -1.08, -1.32, -1.14, -1.45, and -1.40, respectively). However, kurtosis values for each item were all in the acceptable range, as they were between -3 and 3, which is considered mesokurtic.

Table 1

Descriptive Statistics by Demographic Variable for 33 Items on the School Safety Survey

Variable	*N*	% of Sample
Respondent	3,392	100.00
Teacher	2,989	88.10
Administrator	334	10.10
Parent/Guardian	59	1.70
Location	4,132	100.00
Town	1,257	30.40
Suburban	1,498	36.30
Urban	456	11.00
Rural	921	22.30
Grade Span	1,615	100.00
Elementary	1,182	73.20
Secondary	433	26.80

Table 2

Descriptive Statistics for 33 Items on the School Safety Survey

Item Number	*M*	*SD*	Skewness	Kurtosis
1	0.75	0.75	0.83	0.41
2	1.20	0.77	0.49	0.09
3	1.77	0.84	-0.08	-0.75
4	0.99	0.78	0.61	0.19
5	0.72	0.83	1.00	0.32
6	1.54	0.88	0.04	-0.72
7	1.30	0.69	0.53	0.32
8	0.89	0.76	0.64	0.26
9	0.45	0.62	1.28	1.65
10	1.27	0.67	0.46	0.37
11	0.78	0.71	0.73	0.60
12	2.17	0.81	-0.63	-0.39
13	1.15	0.83	0.44	-0.25
14	1.15	0.99	0.37	-0.96
15	1.37	0.81	0.37	-0.32
16	1.57	0.76	0.31	-0.49
17	1.06	0.95	0.61	-0.52
18	2.24	0.81	-0.77	-0.20
19	2.42	0.68	-0.93	0.36
20	2.40	0.69	-0.86	0.09
21	2.38	0.75	-1.01	0.37
22	2.44	0.69	-0.97	0.24
23	1.79	0.77	0.02	-0.67
24	2.16	0.75	-0.46	-0.46
25	2.48	0.67	-1.08	0.58
26	1.58	0.94	0.00	-0.92
27	2.31	0.71	-0.70	-0.06
28	2.53	0.65	-1.32	1.52
29	2.49	0.66	-1.14	0.96
30	2.34	0.68	-0.74	0.22
31	2.03	0.77	-0.34	-0.55
32	2.58	0.64	-1.45	1.74
33	2.59	0.60	-1.40	1.95

Note. $N = 4{,}260$

A Cronbach's Alpha approach was used to evaluate the internal consistency of the SSS and provide an overall reliability coefficient for all items on the survey. A Cronbach's alpha of 0.83 was reported, which indicates a high level of internal consistency for the SSS. When examining Cronbach's alpha, Kuijpers, Van der Ark, and Croon (2013) indicated that the reliability should be at least .80. Essentially, the closer the coefficient is to 1, the more reliable the instrument. Therefore, since the internal consistency for the survey items on the SSS was identified as 0.83, this is considered an acceptable level of internal reliability.

Process to Conduct an Exploratory Factor Analysis

When conducting an exploratory factor analysis (EFA), there are several steps to take as part of the EFA process. First, it is imperative to evaluate the appropriateness of the data to determine if a factor analysis is a suitable statistical method to use. Next, a factor extraction method must be selected. A researcher then must determine the number of factors to retain, which involves conducting a series of four tests: computation of eigenvalues, visual analysis of a scree plot of those eigenvalues, parallel analysis, and minimum average partials. Lastly, a rotation method must be selected as well as determining salient factor loadings. In this next section, these steps are discussed in further detail, as they are all key components in the EFA process.

Appropriateness of the Data for Exploratory Factor Analysis

It is important to verify that the variables in a data set are sufficiently intercorrelated to justify conducting an EFA (Watkins, 2018). Prior to the extraction of factors, several tests should be used to evaluate the suitability of such analyses. There are a number of various methods to use to determine if a factor analysis is the appropriate statistical method to use,

including: Bartlett's Test of Sphericity, Kaiser-Meyer-Olkin (KMO) measures of sampling adequacy, and the examination of the correlation matrix.

Bartlett's Test of Sphericity (Bartlett, 1954) is one method to assess the appropriateness of the data to conduct an EFA. Data that are appropriate for EFA should be computed from data that represent a noticeable pattern, not a random set of data. To do so, this objective test determines if the correlation matrix contains ones on the diagonal and zeroes on the off-diagonal (Watkins, 2018). This test elicits a chi-square value to justify the use of an EFA. The chi-square result should be statistically significant if the data are appropriate for EFA procedures.

According to Watkins (2018), KMO measures of sampling adequacy is the "ratio of correlations and partial correlations that reflects the extent to which correlations are a function of the variance shared across all variables rather than the variance shared by particular pairs of variables" (p. 226). KMO values range from 0.00 to 1.00; however, values that are ≥.70 are considered desirable, which is suggestive of variables that are deemed factorable (Watkins, 2018).

A visual inspection of the correlation matrix is a subjective method used to inspect the inter-relatedness of the variables. According to research, correlations above 0.3 indicate appropriate variable intercorrelations to then justify conducting a factor analysis (Watkins, 2018). Additionally, Watkins (2018) also argued that a sizable number of correlations should exceed 0.3. For the purposes of this study, correlations at or above 0.3 should represent at least 51% of the data set to determine appropriateness.

Research Questions 2 – 5 were analyzed per the aforementioned factor analytic procedures. The following is a review of each set of analytic results. For each research question,

Bartlett's Test of Sphericity, KMO statistics, and the examination of a correlation matrix were conducted.

Regarding Research Question 2, Bartlett's Test of Sphericity results when looking at the SSS indicated that the obtained data set was not random. This supports the conclusion that this data set was appropriate for factor analysis, Bartlett's Test of Sphericity $\chi^2 = 72142.180$; df = 528; $p < .001$. Additionally, the KMO statistic was .95, which is above the minimum value according to Watkins (2018). This finding indicates that the data set is appropriate for factor analysis. Lastly, the intercorrelation matrix of SSS items is presented in Appendix C. Of the 528 intercorrelations, 230 (or 44%) evidenced correlations at or above .30. This finding is slightly below the desired proportion of 51%, which is a small, yet reasonable limitation. In summary, Bartlett's Test of Sphericity and KMO measures of sampling adequacy were within appropriate standards to conduct factor analysis. The number of meaningful item inter-correlations however, was slightly below the desired criterion. Taken together, since two out of the three methods suggested data that appear to be a realistic sample of the population, it was determined that factor analysis is an appropriate statistical method to use.

Regarding Research Question 3, Bartlett's Test of Sphericity results disaggregated by respondent group (i.e., teachers, administrators, and parent / guardians) indicated that the obtained data set was not random. This supports the conclusion that this data set was appropriate for factor analysis (Bartlett's Test of Sphericity $\chi^2 = 56676.711$; df = 528; $p < .001$). Additionally, the KMO statistic was .95 when disaggregated by respondent group (i.e., teachers, administrators, and parent / guardian), a finding that is above the minimum value according to Watkins (2018). This indicates that the data set is appropriate for factor analysis as well. Lastly, the item inter-correlation disaggregated by respondent group (i.e., teachers, administrators, and

parent / guardian) is located in Appendix D. Of the 528 intercorrelations, 231 (or 44%) evidenced correlations at or above .30. This finding is slightly below the desired proportion of 51%, which is a small, yet reasonable limitation. In summary, Bartlett's Test of Sphericity and KMO measures of sampling adequacy were within appropriate standards to conduct factor analysis. The correlation matrix, however, was slightly below the desired population. Taken together, since two out of the three methods suggested random data that appear to be a realistic sample of the population, it was determined that factor analysis is an appropriate statistical method to use for EFA analyses disaggregated by respondent.

Regarding Research Question 4, Bartlett's Test of Sphericity results disaggregated by location (i.e., urban, suburban, rural, and town) indicated that the obtained data set was not random. This supports the conclusion that this data set was appropriate for factor analysis, Bartlett's Test of Sphericity $\chi^2 = 69365.722$; df = 528; $p < .001$. Additionally, the KMO statistic was .95, which is above the minimum value according to Watkins (2018). This finding indicates that the data set is appropriate for factor analysis. Lastly, the item inter-correlation matrix disaggregated by location is located in Appendix E. Of the 528 intercorrelations, 230 (or 44%) evidenced correlations at or above .30. This finding is slightly below the desired proportion of 51%, which is a small, yet reasonable limitation. In summary, Bartlett's Test of Sphericity and KMO measures of sampling adequacy were within appropriate standards to conduct factor analysis. The correlation matrix, however, was slightly below the desired population. Taken together, since two out of the three methods suggested random data that appear to be a realistic sample of the population, it was determined that factor analysis is an appropriate statistical method to use for EFA analyses disaggregated by location.

Regarding Research Question 5, Bartlett's Test of Sphericity results disaggregated by grade span (i.e., elementary and secondary) indicated that the obtained data set was not random. This supports the conclusion that this data set was appropriate for factor analysis, Bartlett's Test of Sphericity $\chi^2 = 27765.471$; df = 528; $p < .001$. Additionally, the KMO statistic was .95, which is above the minimum value according to Watson (2018). This finding indicates that the data set is appropriate for factor analysis. Lastly, the item inter-correlation matrix disaggregated by grade span is located in Appendix F. Of the 528 intercorrelations, 229 (or 43%) evidenced correlations at or above .30. This finding is slightly below the desired proportion of 51%, which is a small, yet reasonable limitation. In summary, Bartlett's Test of Sphericity and KMO measures of sampling adequacy were within appropriate standards to conduct factor analysis. The correlation matrix, however, was slightly below the desired population. Taken together, since two out of the three methods suggested random data that appear to be a realistic sample of the population, it was determined that factor analysis is an appropriate statistical method to use for EFA analyses disaggregated by grade span.

Factor Extraction Method

There are several factor analysis extraction methods that all have their respective strengths and weaknesses. Examples of extraction methods include unweighted least squares, generalized least squares, maximum likelihood, principal axis factoring, alpha factoring, and image factoring. Fabrigar, Wegener, MacCallum, and Strahan (1999), argued that if data appear to be relatively normally distributed, then maximum likelihood is the best extraction method to use because "it allows for the computation of a wide range of indexes of the goodness of fit of the model and permits statistical significance testing of factor loadings and correlations among

factors and the computation of confidence intervals" (p. 277). For these reasons, maximum likelihood was used as the extraction method in this study for all research questions.

Determining the Number of Factors to Retain

Four tests are recommended to determine the number of factors to retain for rotation. The first test is known as Kaiser's eigenvalue greater-than-one rule (Gordon & Courtney, 2013). An eigenvalue is an indicator of the amount of variance accounted for by a particular factor. Only the factors that have eigenvalues greater than one are retained according to this rule.

The second test is known as Cattell's scree test (Gordon & Courtney, 2013). This is another popular method for determining the number of factors to retain. A scree test involves examining the graph of eigenvalues and determining where there is a natural bend or break point in the data where the curve flattens out. The number of data points above the point at which the bend occurs is said to be the number of factors to retain (Costello & Osborne, 2005).

Horn's parallel analysis (PA) is a third method for determining the number of factors to retain (Gordon & Courtney, 2013). In a PA, a random dataset is created with the same number of observations and variables as the original data. Data are then computed from the randomly created dataset and eigenvalues are generated. Factors that demonstrated larger observed eigenvalues when compared to the randomly-generated eigenvalues are then retained for rotation. *Monte Carlo PCA for Parallel Analysis* (Watkins, 2000) was used in this study to calculate the random set of eigenvalues.

The fourth method is known as Velicer's minimum average partial (MAP) test (Velicer, 1976; Gordon & Courtney, 2013). In MAP, the average partial coefficient is computed after each factor is eliminated. As noted by Runge (2003), "the average partial correlation will continue to decrease until there is no more shared variance that can be extracted" (p. 180). At

that point, the average partial correlation will start to increase. It is at the point where the average partial increases that factors are no longer retained for rotation. In this study, when conducting MAP tests, the R-Menu for Ordinal Factor Analysis, v 2.4.3 was used in SPSS version 25 (Basto & Pereira, 2012).

Ideally, results from all four tests converge; however, this is often not the case (Watkins, 2018). When results from the tests are disparate, factor analytic experts suggest placing more confidence in the results obtained from PA and MAP (Watkins, 2018).

Rotation Method

There are many rotational methods that have been developed to facilitate the interpretation of retained factors. The goal of any rotational method is to simplify and clarify the data structure (Costello & Osborne, 2005). Of the various rotational methods that have been developed, two main techniques are used: orthogonal and oblique. Orthogonal rotations are used when it is believed the factors are not correlated; so orthogonal rotations result in 90 degree rotations in factor analytic space (Kline, 1994). Example methods of orthogonal rotations are Varimax, Quartimax, and Equamax. Experts in the field indicate that orthogonal rotations are considered the easiest to interpret and most desirable (Kline, 1994).

Oblique rotations are used when factors are assumed to be correlated; therefore, the factors are not rotated at 90 degrees in factor analytic space. Examples methods of oblique rotation include Quartimin, Direct Oblimin, Biquartmin, Oblimax, Covarmin, Binormamin, and Promax. Experts suggest that Direct Oblimin and Promax are considered the most appropriate oblique rotation to use (Kline, 1994). Since it is believed that the factors on the SSS are correlated, Direct Oblimin and Promax rotation methods were used in this study for all respondent groups, locations, and grade spans.

Factor Loadings

Kline (1994), recommended that salient loadings of 0.4 to 0.6 are considered moderate, loadings that are greater than 0.6 are considered high, and loadings that are below 0.4 should be ignored. Given this recommendation, saliency was established at 0.4 or higher in this study. Further, factor analysts indicate that a minimum of two variables is necessary to identify a factor, although at least three is preferable (Kline, 1994). Therefore, a factor cannot be identified by less than three variables.

Research Question 2

What is the underlying factor structure of the SSS? An EFA was conducted to empirically derive the number of latent constructs assessed by the SSS. It was hypothesized that the SSS assessed two different factors: protective factors and risk factors. It was believed that the items on the SSS, as reported by its authors, would align with the obtained two-factor structure.

For this research question, there were a total of 4,260 completed surveys, in which all 33 protective and risk items were answered. Again, total number and sample percentage of respondent, location, and grade span are displayed in Table 1. Inspection of descriptive statistics was conducted and is displayed in Table 2. Skewness and kurtosis statistics were also analyzed to determine normality. A range of -1 to 1 was pre-identified to represent an acceptable level of skewness (Breakwell, 2006; Greer et al., 2006). A range of -3 to 3 was also pre-identified to represent an acceptable level of kurtosis (Anastasi, 1982; Gaur & Gaur, 2006). Item 9 (*withdrawn for safety*) was positively skewed, with a value greater than 1.0 (1.28), which is suggestive of data that was overly skewed. Item 21 (*implemented discipline plans*), item 25 (*supervision all settings*), item 28 (*positive learning climate*), item 29 (*diversity acceptance*),

item 32 (*high learning expectations*), and item 33 (*student teacher relationships*) were all negatively skewed, with a skewness value greater than -1.0 (-1.01, -1.08, -1.32, -1.14, -1.45, and -1.40, respectively). However, kurtosis values for each item were all in the acceptable range, as they were between -3 and 3, which is considered mesokurtic. Subsequent to the inspection of descriptive statistics, there were four different tests that were conducted to determine the number of factors to retain. Following the recommendation of Velicer, Eaton, and Fava (2000) eigenvalues, scree plots, PA, and MAP tests were used to determine the number of factors to retain.

Number of Factors to Retain for the School Safety Survey

The following are results from the four methods that were conducted to determine the number of factors to retain for the School Safety Survey. These four methods were eigenvalue > 1, scree plot analysis, PA, and MAP correlations.

Eigenvalues for the School Safety Survey

Initial eigenvalues for the maximum number of components that could be retained from the data set are presented in Table 3. The percentage of variance of each eigenvalue as well as the cumulative percentage of variance are also presented. The first four factors had eigenvalues over 1.0. The same four factors cumulatively accounted for over half of the total variance.

Table 3

Initial Eigenvalues, Percentage of Variance, and Cumulative Percentage for All Possible Factors on the School Safety Survey

Factor	Eigenvalues	% of Variance	Cumulative %
1	10.50	31.82	31.82
2	5.09	15.41	47.23
3	1.45	4.38	51.61
4	1.15	3.49	55.09
5	0.97	2.93	58.03
6	0.88	2.68	60.71
7	0.85	2.57	63.28
8	0.81	2.45	65.73
9	0.71	2.16	67.88
10	0.69	2.10	69.98
11	0.65	1.96	71.95
12	0.64	1.93	73.88
13	0.59	1.80	75.67
14	0.56	1.70	77.37
15	0.53	1.61	78.98
16	0.53	1.59	80.57
17	0.51	1.56	82.13
18	0.49	1.48	83.60
19	0.47	1.42	85.03
20	0.46	1.38	86.41
21	0.44	1.33	87.74
22	0.43	1.29	89.03
23	0.41	1.25	90.28
24	0.39	1.19	91.47
25	0.38	1.14	92.61
26	0.36	1.08	93.69
27	0.35	1.05	94.73
28	0.34	1.02	95.75
29	0.31	0.94	96.69
30	0.30	0.92	97.61
31	0.29	0.86	98.47
32	0.26	0.80	99.27
33	0.24	0.73	100.00

Scree Test for the School Safety Survey

The Scree plot for the SSS data are presented in Figure 1. As previously mentioned, a scree test involves examining the graph of eigenvalues and determining where there is a natural bend or break point in the data where the curve flattens out. The number of data points above the point at which the bend occurs is said to be the number of factors to retain (Costello & Osborne, 2005). This method suggested that four factors be retained.

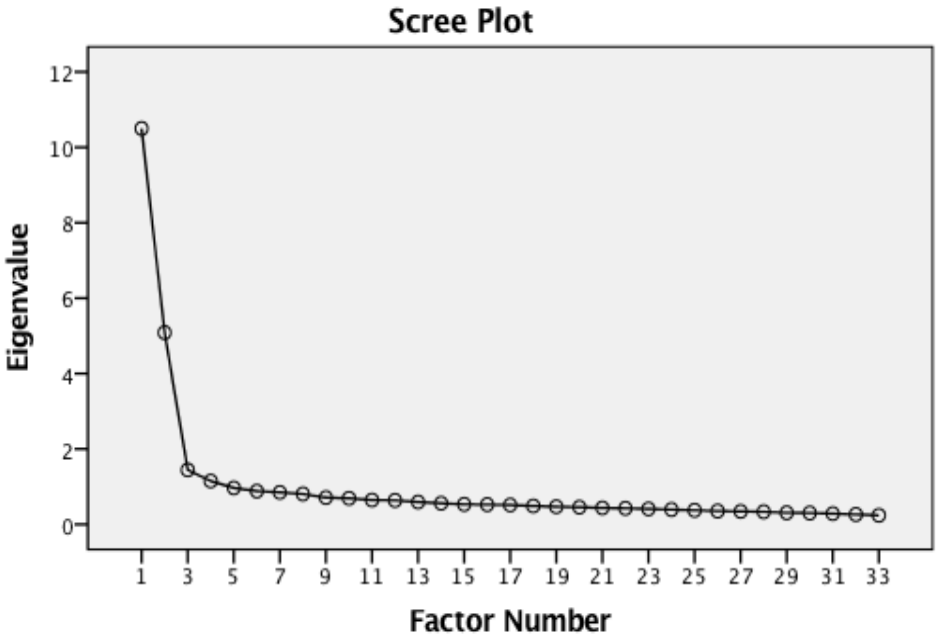

Figure 1. Scree plot for the School Safety Survey.

Parallel Analysis for the School Safety Survey

PA data analytic results for the SSS are presented in Table 4. When using this PA program, 33 variables, 2,500 subjects, and 100 replications were used in the computation of random eigenvalues. At the fourth factor, the random eigenvalue exceeded the observed eigenvalue. Therefore, results from the PA suggests that factor extraction should stop after the third factor.

Table 4

Observed and Randomly Generated Eigenvalues Used in Parallel Analysis for the School Safety Survey

Factor	Observed Eigenvalue	Random Eigenvalue
1	10.50	1.22
2	5.09	1.19
3	1.45	1.17
4	1.15	1.16
5	0.97	1.14
6	0.88	1.13
7	0.85	1.11
8	0.81	1.10
9	0.71	1.09
10	0.69	1.07
11	0.65	1.06
12	0.64	1.05
13	0.59	1.04
14	0.56	1.03
15	0.53	1.02
16	0.53	1.01
17	0.51	1.00
18	0.49	0.98
19	0.47	0.97
20	0.46	0.96
21	0.44	0.95
22	0.43	0.94
23	0.41	0.93
24	0.39	0.92
25	0.38	0.91
26	0.36	0.90
27	0.35	0.89
28	0.34	0.88
29	0.31	0.86
30	0.30	0.85
31	0.29	0.84
32	0.26	0.82
33	0.24	0.80

Note. Random eigenvalues calculated using n = 2,500, number of variables = 33, and 100 replications.

Minimum Average Partials for the School Safety Survey

MAP results for the SSS are depicted in Table 5. In MAP, the average partial coefficient is computed after each factor is eliminated. As noted by Runge (2003), "the average partial correlation will continue to decrease until there is no more shared variance that can be extracted" (p. 180). At that point, the average partial correlation will start to increase. It is at the point where the average partial increases that factors are no longer retained for rotation. Results indicate that four factors should be retained.

Table 5

Minimum Average Partials Results for the School Safety Survey

Factors	Squared average partial correlations
0	0.1630
1	0.0830
2	0.0140
3	0.0140
4	0.0130
5	0.0130
6	0.0140
7	0.0150
8	0.0160
9	0.0800
10	0.0200
11	0.0220
12	0.0250
13	0.0280
14	0.0310
15	0.0350
16	0.0400
17	0.0440
18	0.0510
19	0.0570
20	0.0670
21	0.0790
22	0.0850
23	0.0950
24	0.1110
25	0.1260
26	0.1490
27	0.1790
28	0.2180
29	0.2540
30	0.3410

Summary of Number of Factors to Retain for the School Safety Survey

Ideally, results from the eigenvalue, scree plot, PA and MAP tests would identify the same number of factors to retain. However, this was not the case for this data set. Results from the eigenvalue, scree plot, and MAP tests identified four factors to retain. Results from the PA test identified three factors to retain. When determining the number of factors to retain, it is suggested to look for consistency across the four tests (Velicer, 2000). Therefore, based on the results from these four tests, the most frequent number identified was four, and therefore, four factors were retained.

Factor Analysis Results for the School Safety Survey

Results of the pattern matrix of the four-factor solution with Promax rotation for the SSS are presented in Table 6. A simple solution was obtained. No item loaded on more than one factor. One item did not load on any factor: *student academic participation*. Further analysis of the pattern matrix indicated that there were two items that loaded onto the fourth factor, which was *high student mobility* and *poverty*. The factor structure, as revealed using Direct Oblimin rotation produced similar results. While there were a few differences in some of the loadings, overall, the results were similar. Due to an EFA's purpose of simplifying the structure, Promax rotation was selected and used.

Table 6

Pattern Coefficients for the Four-Factor Solution With Promax Rotation for the School Safety Survey

Factor	Observed Eigenvalue	Random Eigenvalue
1	10.50	1.22
2	5.09	1.19
3	1.45	1.17
4	1.15	1.16
5	0.97	1.14
6	0.88	1.13
7	0.85	1.11
8	0.81	1.10
9	0.71	1.09
10	0.69	1.07
11	0.65	1.06
12	0.64	1.05
13	0.59	1.04
14	0.56	1.03
15	0.53	1.02
16	0.53	1.01
17	0.51	1.00
18	0.49	0.98
19	0.47	0.97
20	0.46	0.96
21	0.44	0.95
22	0.43	0.94
23	0.41	0.93
24	0.39	0.92
25	0.38	0.91
26	0.36	0.90
27	0.35	0.89
28	0.34	0.88
29	0.31	0.86
30	0.30	0.85
31	0.29	0.84
32	0.26	0.82
33	0.24	0.80

Note. Salient ($\geq |0.4|$) loadings in bold.

Summary of Factor Analysis Results for the School Safety Survey

Factor analysis results revealed that there was a four-factor solution obtained from the SSS data. There were 15 items loaded onto the first factor, 10 items loaded onto the second factor, five items loaded onto the third factor, and two items loaded onto the fourth factor. Out of the 33 items, one item did not load onto any factor. Taken together, these data do not support the hypothesis that there would be a two-factor structure.

Research Question 3

Does the underlying factor structure vary by stakeholder group / respondent (i.e., teachers, administrators, and parents / guardians)? An EFA was conducted to empirically derive the number of latent constructs assessed by the SSS. The EFA used data disaggregated by respondent. Visual inspection was also used to determine the extent to which the factor structure and item loadings were similar across respondent group. The visual inspection process occurred once the factors and loadings were empirically determined. It was hypothesized that a two-factor structure was present across teachers, administrators, and parents / guardians. Further, it was hypothesized that all items loaded on the same factors across teachers, administrators, and parents / guardians.

For this research question, there were a total of 3,392 respondents. Of the 3,392 respondents, 2,989 represented teachers, 344 represented administrators, and 59 represented parents / guardians. Total number and sample percentage of respondent, location, and grade span are displayed in Table 7. Inspection of descriptive statistics was conducted and is displayed in Table 8. Skewness and kurtosis statistics were also analyzed to determine normality. Item 9 (*withdrawn for safety*) was positively skewed, with a skewness value greater than 1.0 (1.22). Item 25 (*supervision all settings*), item 28 (*positive learning climate*), item 29 (*diversity*

acceptance), item 32 (*high learning expectations*), and item 33 (*student teacher relationships*) were all negatively skewed, with a skewness value greater than -1.0 (-1.02, -1.26, -1.11, -1.39, and -1.32, respectively). However, kurtosis values for each item were all in the acceptable range, as they were between -3 and 3, which is considered mesokurtic.

Table 7

Descriptive Statistics by Demographic Variable for 33 Items on the School Safety Survey for Respondent

Variable	*N*	% of Sample
Respondent	3,392	100.00
Teacher	2,989	88.10
Administrator	334	10.10
Parent/Guardian	59	1.70
Location	3,313	100.00
Town	994	30.40
Suburban	1,236	37.30
Urban	380	11.50
Rural	703	21.20
Grade Span	1,278	100.00
Elementary	936	73.20
Secondary	342	26.80

Table 8

Descriptive Statistics for 33 Items on the School Safety Survey by Respondent

Item Number	*M*	*SD*	Skewness	Kurtosis
1	0.76	0.76	0.83	0.43
2	1.22	0.77	0.50	0.08
3	1.78	0.84	-0.07	-0.77
4	1.02	0.79	0.61	0.20
5	0.73	0.84	0.99	0.32
6	1.56	0.87	0.04	-0.71
7	1.30	0.69	0.57	0.36
8	0.90	0.75	0.64	0.34
9	0.46	0.62	1.22	1.42
10	1.28	0.66	0.51	0.43
11	0.80	0.71	0.72	0.59
12	2.21	0.78	-0.61	-0.47
13	1.18	0.83	0.43	-0.26
14	1.17	0.99	0.36	-0.96
15	1.38	0.81	0.39	-0.31
16	1.59	0.75	0.34	-0.53
17	1.09	0.95	0.58	-0.57
18	2.26	0.79	-0.78	-1.70
19	2.43	0.67	-0.86	0.15
20	2.40	0.68	-0.80	-0.09
21	2.39	0.74	-1.00	0.36
22	2.42	0.68	-0.87	0.02
23	1.78	0.76	0.05	-0.68
24	2.15	0.74	-0.41	-0.55
25	2.48	0.66	-1.02	0.33
26	1.54	0.94	0.05	-0.89
27	2.31	0.76	-0.64	-0.24
28	2.55	0.76	-1.26	1.25
29	2.50	0.76	-1.11	0.82
30	2.33	0.76	-0.66	0.07
31	2.01	0.76	-0.28	-0.59
32	2.60	0.76	-1.39	1.38
33	2.62	0.76	-1.32	1.49

Note. $N = 3{,}392$

Number of Factors to Retain for Teacher Respondent

The following are results from the four methods that were conducted to determine the number of factors to retain for the School Safety Survey, specific to teacher respondent. These four methods were eigenvalue > 1, scree plot analysis, PA, and MAP correlations.

Eigenvalues for Teacher Respondent

Initial eigenvalues for the maximum number of components that could be retained from the data set are presented in Table 9. The percentage of variance of each eigenvalue as well as the cumulative percentage of variance are also presented. The first four factors had eigenvalues over 1.0. The same four factors cumulatively accounted for over half of the total variance.

Table 9

Initial Eigenvalues, Percentage of Variance, and Cumulative Percentage for All Possible Factors for Teacher Respondent

Factor	Eigenvalue	% of Variance	Cumulative %
1	10.83	32.83	32.83
2	4.60	13.93	46.75
3	1.46	4.41	51.16
4	1.20	3.64	54.80
5	0.98	2.97	57.77
6	0.88	2.68	60.45
7	0.85	2.57	63.02
8	0.80	2.42	65.43
9	0.73	2.22	67.66
10	0.69	2.10	69.75
11	0.67	2.03	71.78
12	0.65	1.97	73.74
13	0.60	1.83	75.57
14	0.58	1.75	77.32
15	0.55	1.68	79.00
16	0.53	1.60	80.60
17	0.51	1.55	82.15
18	0.51	1.54	83.68
19	0.48	1.44	85.12
20	0.45	1.37	86.49
21	0.44	1.32	87.81
22	0.43	1.31	89.12
23	0.41	1.25	90.37
24	0.40	1.21	91.58
25	0.37	1.11	92.69
26	0.36	1.09	93.78
27	0.35	1.05	94.82
28	0.34	1.03	95.86
29	0.32	0.96	96.82
30	0.30	0.92	97.74
31	0.28	0.85	98.59
32	0.25	0.75	99.33
33	0.22	0.67	100.00

Note. $N = 2{,}989$

Scree Test for Teacher Respondent

The Scree plot for the teacher respondent data are presented in Figure 2. As previously mentioned, a scree test involves examining the graph of eigenvalues and determining where there is a natural bend or break point in the data where the curve flattens out. The number of data points above the point at which the bend occurs is said to be the number of factors to retain (Costello & Osborne, 2005). This method suggested that four factors be retained.

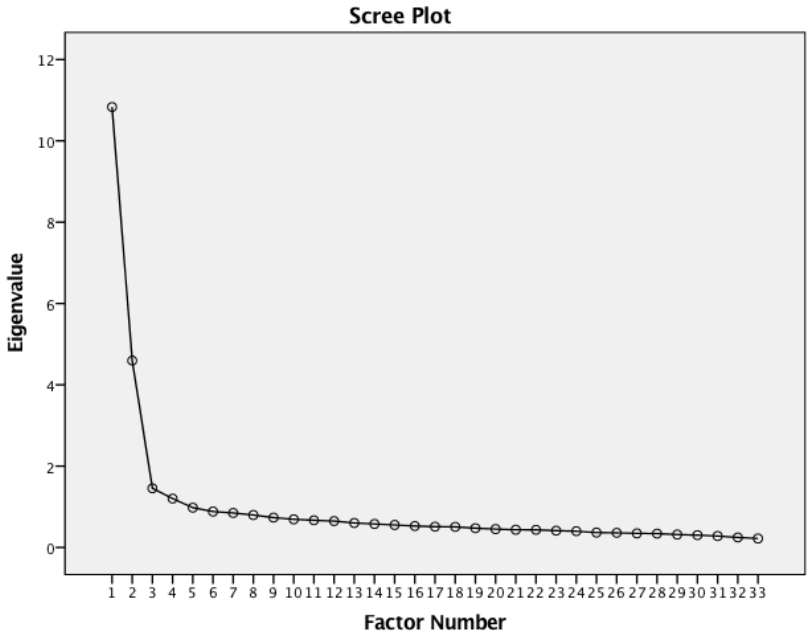

Figure 2. Scree plot for teacher respondent.

Parallel Analysis for Teacher Respondent

PA was used to determine the number of factors to retain. Monte Carlo PCA for Parallel Analysis (Watkins, 2000) was used to calculate the random set of eigenvalues. These data are presented in Table 10. When using this PA program, 33 variables, 2,500 subjects, and 100 replications were used in the computation of random eigenvalues. At the fifth factor, the random eigenvalue exceeded the observed eigenvalue. Therefore, results from the PA suggests that factor extraction should stop after the fourth factor.

Table 10

Observed and Randomly Generated Eigenvalues Used in Parallel Analysis for Teacher Respondent

Factor	Observed Eigenvalue	Random Eigenvalue
1	10.83	1.2193
2	4.60	1.1956
3	1.46	1.1721
4	1.20	1.1556
5	0.98	1.1392
6	0.88	1.1258
7	0.85	1.1129
8	0.80	1.0991
9	0.73	1.0864
10	0.69	1.0740
11	0.67	1.0621
12	0.65	1.0506
13	0.60	1.0401
14	0.58	1.0281
15	0.55	1.0175
16	0.53	1.0074
17	0.51	0.9970
18	0.51	0.9862
19	0.48	0.9754
20	0.45	0.9650
21	0.44	0.9537
22	0.43	0.9430
23	0.41	0.9315
24	0.40	0.9207
25	0.37	0.9091
26	0.36	0.8978
27	0.35	0.8864
28	0.34	0.8759
29	0.32	0.8643
30	0.30	0.8500
31	0.28	0.8367
32	0.25	0.8208
33	0.22	0.8009

Note. Random eigenvalues calculated using n = 2,500 number of variables = 33, and 100 replications.

Minimum Average Partials for Teacher Respondent

Minimum average partials results are depicted in Table 11. In MAP, the average partial coefficient is computed after each factor is eliminated. As noted by Runge (2003), "the average partial correlation will continue to decrease until there is no more shared variance that can be extracted" (p. 180). At that point, the average partial correlation will start to increase. It is at the point where the average partial increases that factors are no longer retained for rotation. Results indicate that four factors should be retained.

Table 11

Minimum Average Partials Results for Teacher Respondent

Factors	Squared average partial correlations
0	0.1670
1	0.0720
2	0.0150
3	0.0140
4	0.0130
5	0.0130
6	0.0140
7	0.0150
8	0.0170
9	0.0180
10	0.0200
11	0.0230
12	0.0250
13	0.0280
14	0.0310
15	0.0360
16	0.0390
17	0.0460
18	0.0510
19	0.0580
20	0.0670
21	0.0790
22	0.0940
23	0.0990
24	0.1080
25	0.1270
26	0.1550
27	0.1920
28	0.2200
29	0.2440
30	0.3460

Summary of Number of Factors to Retain for Teacher Respondent

Fortunately, there were consistent results from the eigenvalue, scree plot, PA, and MAP tests. All four tests identified to retain four factors. Therefore, four factors were retained.

Factor Analysis Results for Teacher Respondent

Results of the pattern matrix of the four-factor solution with Promax rotation for teacher respondent are presented in Table 12. A simple solution was obtained. There were 15 items that loaded onto the first factor, 9 items that loaded onto the second factor, 6 items that loaded onto the third factor, and 2 items that loaded onto the fourth factor, which were *high student mobility* and *poverty*. No item loaded on more than one factor. One item did not load on any factor: *supervision all settings*. The factor structure, as revealed using Direct Oblimin rotation produced similar results. While there were a few differences in some of the loadings, overall, the results were similar. Due to an EFA's purpose of simplifying the structure, Promax rotation was selected and used.

Table 12

Pattern Coefficients for the Four-Factor Solution With Promax Rotation for Teacher Respondent

	Factor			
Item	I	II	III	IV
IllegalWeapons	**0.80**	-0.01	0.04	-0.08
Vandalism	**0.83**	-0.04	0.06	-0.05
HighStudentMobility	0.31	-0.02	0.09	**0.50**
Graffiti	**0.81**	-0.05	0.08	-0.08
GangActivity	**0.81**	0.00	0.04	-0.09
Truancy	**0.55**	-0.04	0.01	0.24
SuspensionsExpulsions	**0.57**	0.11	-0.10	0.16
AdjudicatedByCourt	**0.61**	0.14	-0.14	0.12
WithdrawnForSafety	**0.58**	0.03	-0.10	-0.04
ChildAbuseHome	**0.41**	0.04	0.01	0.37
TrespassingSchool	**0.62**	-0.04	0.07	0.04
Poverty	0.29	-0.03	0.08	**0.57**
Crimes	**0.79**	0.02	0.02	0.07
IllegalDrugsAlcohol	**0.76**	0.07	-0.05	-0.04
FightsConflict	**0.73**	0.03	-0.01	0.15
BullyingHarassment	**0.59**	-0.03	-0.06	0.16
DeterioratingCondition	**0.46**	-0.12	0.01	0.08
ExtracurricularOpportunities	0.20	**0.43**	-0.05	-0.20
ProfessionalDevelopment	-0.03	**0.62**	-0.04	0.10
CrisisResponsePlans	-0.09	**0.82**	-0.13	0.12
ImplementedDisciplinePlans	-0.12	**0.53**	0.18	0.13
StudentSupportServices	0.00	**0.68**	0.04	0.04
ParentInvolvement	-0.10	**0.42**	0.11	-0.24
StudentCrisisPreparation	-0.09	**0.69**	-0.01	-0.02
SupervisionAllSettings	-0.11	0.36	0.31	0.07
SuicidePreventionResponse	0.25	**0.60**	-0.10	-0.22
StudentAcademicParticipation	0.05	0.25	**0.44**	-0.12
PositiveLearningClimate	-0.07	0.07	**0.72**	0.03
DiversityAcceptance	0.03	0.03	**0.65**	0.06
ResponseToConflict	0.03	0.32	**0.53**	-0.03
CommunityResources	0.06	**0.41**	0.30	-0.10
HighLearningExpectations	0.00	-0.04	**0.84**	0.07
StudentTeacherRelationships	0.00	-0.06	**0.83**	0.06

Note. Salient ($\geq |0.4|$) loadings in bold.

Number of Factors to Retain for Administrator Respondent

The following are results from the four methods that were conducted to determine the number of factors to retain for the School Safety Survey, specific to administrator respondent. These four methods were eigenvalue > 1, scree plot analysis, PA, and MAP correlations.

Eigenvalues for Administrator Respondent

Initial eigenvalues for the maximum number of components that could be retained from the data set are presented in Table 13. The percentage of variance of each eigenvalue as well as the cumulative percentage of variance are also presented. The first seven factors indicated eigenvalues over 1.0. The same seven factors cumulatively accounted for just over half of the total variance.

Table 13

Initial Eigenvalues, Percentage of Variance, and Cumulative Percentage for All Possible Factors for Administrator Respondent

Factor	Eigenvalue	% of Variance	Cumulative %
1	8.07	24.46	24.46
2	3.78	11.46	35.92
3	1.90	5.77	41.69
4	1.47	4.44	46.13
5	1.24	3.76	49.89
6	1.17	3.54	53.43
7	1.13	3.43	56.86
8	1.00	3.02	59.88
9	0.95	2.88	62.76
10	0.87	2.62	65.38
11	0.82	2.49	67.86
12	0.77	2.32	70.18
13	0.73	2.22	72.41
14	0.73	2.20	74.61
15	0.67	2.03	76.64
16	0.65	1.96	78.59
17	0.60	1.81	80.40
18	0.56	1.69	82.09
19	0.54	1.62	83.72
20	0.51	1.56	85.27
21	0.50	1.51	86.78
22	0.45	1.37	88.15
23	0.45	1.36	89.51
24	0.43	1.29	90.80
25	0.40	1.22	92.02
26	0.39	1.18	93.20
27	0.38	1.15	94.36
28	0.36	1.10	95.46
29	0.34	1.02	96.48
30	0.33	1.00	97.47
31	0.31	0.93	98.40
32	0.28	0.86	99.26
33	0.25	0.74	100.00

Note. $N = 344$

Scree Test for Administrator Respondent

The Scree plot for the administrator respondent data are presented in Figure 3. A scree test involves examining the graph of eigenvalues and determining where there is a natural bend or break point in the data where the curve flattens out. The number of data points above the point at which the bend occurs is said to be the number of factors to retain (Costello & Osborne, 2005). This method suggested that seven factors be retained.

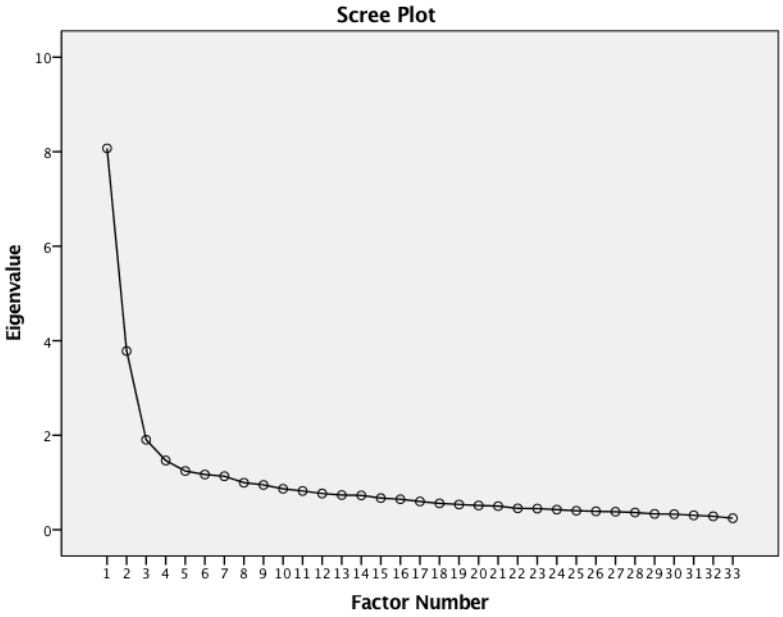

Figure 3. Scree plot for administrator respondent.

Parallel Analysis for Administrator Respondent

PA was also used to determine the number of factors to retain. Again, Monte Carlo PCA for Parallel Analysis (Watkins, 2000) was used to calculate the random set of eigenvalues. These data are presented in Table 14. When using this parallel analysis program, 33 variables, 344 subjects, and 100 replications were used in the computation of random eigenvalues. At the fifth factor, the random eigenvalue exceeded the observed eigenvalue. Therefore, results from the parallel analysis suggests that factor extraction should stop after the fourth factor.

Table 14

Observed and Randomly Generated Eigenvalues Used in Parallel Analysis for Administrator Respondent

Factor	Observed Eigenvalue	Random Eigenvalue
1	8.07	1.62
2	3.78	1.55
3	1.90	1.49
4	1.47	1.43
5	1.24	1.39
6	1.17	1.34
7	1.13	1.30
8	1.00	1.26
9	0.95	1.23
10	0.87	1.19
11	0.82	1.15
12	0.77	1.12
13	0.73	1.09
14	0.73	1.06
15	0.67	1.03
16	0.65	1.00
17	0.60	0.97
18	0.56	0.94
19	0.54	0.92
20	0.51	0.89
21	0.50	0.86
22	0.45	0.83
23	0.45	0.81
24	0.43	0.78
25	0.40	0.75
26	0.39	0.73
27	0.38	0.70
28	0.36	0.67
29	0.34	0.64
30	0.33	0.61
31	0.31	0.59
32	0.28	0.55
33	0.25	0.51

Note. Random eigenvalues calculated using $n = 334$, number of variables = 33, and 100 replications.

Minimum Average Partials for Administrator Respondent

MAP results are depicted in Table 15 for the administrator respondent. In MAP, the average partial coefficient is computed after each factor is eliminated. As noted by Runge (2003), "the average partial correlation will continue to decrease until there is no more shared variance that can be extracted" (p. 180). At that point, the average partial correlation will start to increase. It is at the point where the average partial increases that factors are no longer retained for rotation. Results indicate that three factors should be retained.

Table 15

Minimum Average Partials Results for Administrator Respondent

Factor	`Squared average partial correlations
0	0.1120
1	0.0520
2	0.0230
3	0.0220
4	0.0220
5	0.0220
6	0.0230
7	0.0240
8	0.0260
9	0.0280
10	0.0300
11	0.0320
12	0.0350
13	0.0390
14	0.0420
15	0.0450
16	0.0490
17	0.0550
18	0.0600
19	0.0670
20	0.0730
21	0.0810
22	0.0890
23	0.1030
24	0.1160
25	0.1370
26	0.1690
27	0.2170
28	0.2580
29	0.3510
30	0.5280
31	0.9990

Summary of Number of Factors to Retain for Administrator Respondent

Unfortunately, the different methods used to determine the number of factors to retain lacked consistency. For the administrator respondent group, the eigenvalues and scree plot identified seven factors to retain. Results from PA identified four factors to retain and results from MAP test identified three factors to retain. Given the lack of consistency among methods of determining the number of factors to retain, MAP results were used in subsequent analyses given the superiority of this method over others (Gordon & Courtney, 2013). Therefore, for this stakeholder group, three factors were retained.

Factor Analysis Results for Administrator Respondent

Results of the pattern matrix of the three-factor solution with Direct Oblimin rotation are presented in Table 16. Most of the items demonstrated salient loadings on the first factor. There were 17 items that loaded onto the first factor, 9 items that loaded onto the second factor, and 6 items that loaded onto the third factor. There was one item that did not get loaded onto any of the three factors: *supervision all settings*. There were no items that were loaded onto more than one factor. The factor structure, as revealed using Promax rotation produced similar results. While there were a few differences in some of the loadings, overall, the results were similar. Due to an EFA's purpose of simplifying the structure, Direct Oblimin rotation was selected and used.

Table 16

Pattern Coefficients for the Three-Factor Solution With Direct Oblimin Rotation for Administrator Respondent

	Factor		
Item	I	II	III
IllegalWeapons	**0.73**	0.07	0.05
Vandalism	**0.78**	0.04	0.02
HighStudentMobility	**0.54**	-0.13	-0.15
Graffiti	**0.75**	0.04	0.01
GangActivity	**0.74**	0.08	0.05
Truancy	**0.66**	-0.07	-0.02
SuspensionsExpulsions	**0.64**	0.07	0.07
AdjudicatedByCourt	**0.66**	0.12	0.11
WithdrawnForSafety	**0.56**	0.07	0.14
ChildAbuseHome	**0.58**	-0.05	-0.06
TrespassingSchool	**0.62**	0.00	-0.02
Poverty	**0.55**	-0.14	-0.15
Crimes	**0.80**	0.05	0.02
IllegalDrugsAlcohol	**0.72**	0.12	0.10
FightsConflict	**0.80**	0.02	0.02
BullyingHarassment	**0.67**	-0.05	0.06
DeterioratingCondition	**0.50**	-0.09	0.03
ExtracurricularOpportunities	0.07	**0.43**	0.03
ProfessionalDevelopment	-0.02	**0.48**	-0.12
CrisisResponsePlans	-0.08	**0.62**	-0.10
ImplementedDisciplinePlans	-0.11	**0.41**	-0.32
StudentSupportServices	-0.04	**0.56**	-0.18
ParentInvolvement	-0.26	**0.44**	-0.13
StudentCrisisPreparation	-0.15	**0.58**	-0.13
SupervisionAllSettings	-0.12	0.31	-0.38
SuicidePreventionResponse	0.09	**0.59**	0.05
StudentAcademicParticipation	-0.06	0.30	**-0.42**
PositiveLearningClimate	-0.10	0.11	**-0.69**
DiversityAcceptance	0.02	0.07	**-0.61**
ResponseToConflict	-0.05	0.34	**-0.53**
CommunityResources	-0.04	**0.42**	-0.31
HighLearningExpectations	-0.02	0.01	**-0.78**
StudentTeacherRelationships	-0.01	0.00	**-0.77**

Note. Salient (≥ |0.4|) loadings in bold.

Number of Factors to Retain for Parent Respondent

The following are results from the four methods that were conducted to determine the number of factors to retain for the School Safety Survey, specific to parent respondent. These four methods were eigenvalue > 1, scree plot analysis, PA, and MAP correlations.

Eigenvalues for Parent Respondent

Initial eigenvalues for the maximum number of components that could be retained from the data set are presented in Table 17. The percentage of variance of each eigenvalue as well as the cumulative percentage of variance are also presented. The first six factors indicated eigenvalues over 1.0. The same six factors cumulatively accounted for over two-thirds of the total variance.

Table 17

Initial Eigenvalues, Percentage of Variance, and Cumulative Percentage for All Possible Factors for Parent Respondent

Factor	Eigenvalue	% of Variance	Cumulative %
1	11.87	35.98	35.98
2	8.05	24.40	60.38
3	1.64	4.97	65.35
4	1.38	4.19	69.54
5	1.15	3.47	73.01
6	1.04	3.15	76.16
7	0.91	2.77	78.93
8	0.85	2.59	81.52
9	0.75	2.26	83.78
10	0.66	1.99	85.76
11	0.58	1.77	87.53
12	0.50	1.52	89.05
13	0.46	1.40	90.45
14	0.42	1.26	91.71
15	0.35	1.05	92.76
16	0.33	1.01	93.77
17	0.30	0.90	94.67
18	0.27	0.81	95.48
19	0.22	0.68	96.16
20	0.22	0.66	96.81
21	0.18	0.54	97.35
22	0.14	0.43	97.77
23	0.13	0.40	98.17
24	0.12	0.37	98.54
25	0.10	0.31	98.85
26	0.08	0.24	99.09
27	0.08	0.24	99.33
28	0.07	0.21	99.54
29	0.05	0.16	99.70
30	0.04	0.13	99.82
31	0.03	0.08	99.90
32	0.02	0.05	99.95
33	0.02	0.05	100.00

Note. $N = 59$

Scree Test for Parent Respondent

The Scree plot for the data are presented in Figure 4 for parent respondent. A scree test involves examining the graph of eigenvalues and determining where there is a natural bend or break point in the data where the curve flattens out. The number of data points above the point at which the bend occurs is said to be the number of factors to retain (Costello & Osborne, 2005). This method suggested that six factors be retained.

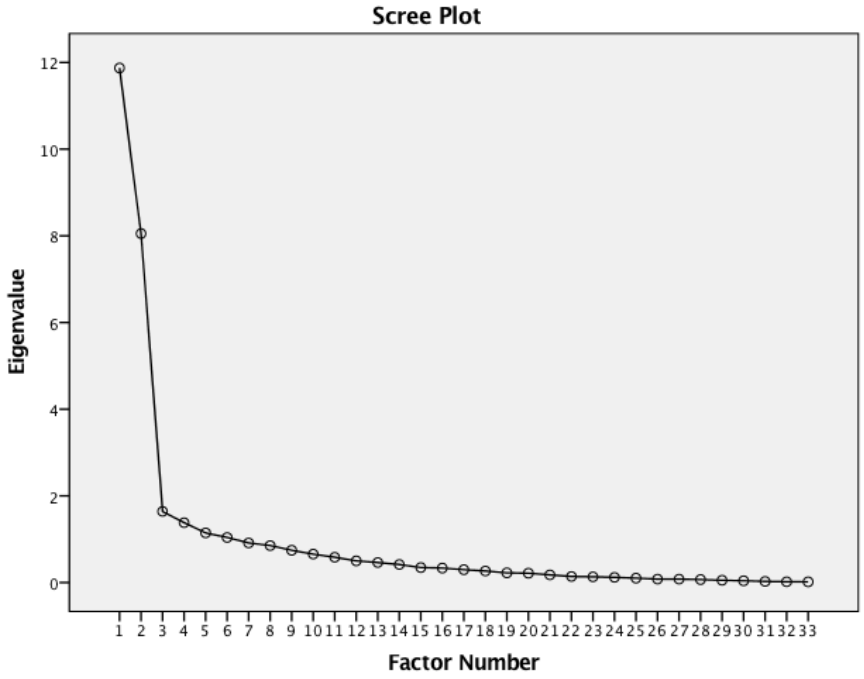

Figure 4. Scree plot of parent respondent.

Parallel Analysis for Parent Respondent

PA was used to determine the number of factors to retain. Again, Monte Carlo PCA for Parallel Analysis (Watkins, 2000) was used to calculate the random set of eigenvalues. These data are presented in Table 18. When using this parallel analysis program, 33 variables, 59 subjects, and 100 replications were used in the computation of random eigenvalues. At the third

factor, the random eigenvalue exceeded the observed eigenvalue. Therefore, results from the parallel analysis suggests that factor extraction should stop after the second factor.

Table 18

Observed and Randomly Generated Eigenvalues Used in Parallel Analysis for Parent Respondent

Factor	Observed Eigenvalue	Random Eigenvalue
1	11.87	2.76
2	8.05	2.50
3	1.64	2.29
4	1.38	2.11
5	1.15	1.96
6	1.04	1.83
7	0.91	1.70
8	0.85	1.59
9	0.75	1.48
10	0.66	1.38
11	0.58	1.29
12	0.50	1.20
13	0.46	1.12
14	0.42	1.04
15	0.35	0.96
16	0.33	0.88
17	0.30	0.82
18	0.27	0.76
19	0.22	0.70
20	0.22	0.64
21	0.18	0.58
22	0.14	0.52
23	0.13	0.47
24	0.12	0.42
25	0.10	0.38
26	0.08	0.33
27	0.08	0.29
28	0.07	0.25
29	0.05	0.22
30	0.04	0.18
31	0.03	0.14
32	0.02	0.11
33	0.02	0.08

Note. Random eigenvalues calculated using $n = 59$, number of variables = 33, and 100 replications.

Minimum Average Partials for Parent Respondent

MAP results are depicted in Table 19. In MAP, the average partial coefficient is computed after each factor is eliminated. As noted by Runge (2003), "the average partial correlation will continue to decrease until there is no more shared variance that can be extracted" (p. 180). At that point, the average partial correlation will start to increase. It is at the point where the average partial increases that factors are no longer retained for rotation. Results indicate that two factors should be retained.

Table 19

Minimum Average Partials Results for Parent Respondent

Factor	Squared average partial correlations
0	0.2470
1	0.2310
2	0.0670
3	0.0700
4	0.0740
5	0.0810
6	0.0840
7	0.0930
8	0.0960
9	0.1100
10	0.1250
11	0.1390
12	0.1530
13	0.1920
14	0.2180
15	0.2840
16	0.3610
17	0.5470
18	0.9460
19	0.0470
20	0.0540
21	0.0620
22	0.0720
23	0.0820
24	0.0970
25	0.1110
26	0.1320
27	0.1650
28	0.1990
29	0.2650
30	0.3640
31	0.5160

Summary of Number of Factors to Retain for Parent Respondent

Unfortunately, tests to determine the number of factors to retain were inconclusive. The eigenvalues and scree plot tests identified six factors to retain. Results from parallel analysis and minimum average partial test suggested to retain two factors. Of note, Tabachnick and Fidell (2013) stated that samples in the range of 100-200 area are acceptable to conduct this test and anything less, one should proceed with caution as it runs the computational risk of failure to accurately identify the number of factors to retain. Since the parent stakeholder group has a sample size of 59, these results should be interpreted with caution. Referencing Gordon's and Courtney's (2013) suggestion, which indicates that PA and MAP tests are used as superior methods over other methods, the number of factors to be retained for parent respondent is two.

Factor Analysis Results for Parent Respondent

Results of the pattern matrix of the two-factor solution with Direct Oblimin rotation for parent respondent are presented in Table 20. More items demonstrated salient loadings on the first factor, although it was almost an even split between the two factors. There were 17 items that loaded onto the first factor and 15 items that loaded onto the second factor. There was one item that did not load onto either factor, which was *extracurricular opportunities*. Lastly, there were no items that loaded onto both factors. The factor structure, as revealed using Promax rotation produced similar results. While there were a few differences in some of the loadings, overall, the results were similar. Due to an EFA's purpose of simplifying the structure, Direct Oblimin rotation was selected and used.

Table 20

Pattern Coefficients for the Two-Factor Solution With Direct Oblimin Rotation for Parent Respondent

	Factor	
Item	I	II
IllegalWeapons	**0.74**	0.02
Vandalism	**0.78**	0.01
HighStudentMobility	**0.50**	0.01
Graffiti	**0.75**	0.01
GangActivity	**0.75**	0.03
Truancy	**0.65**	-0.05
SuspensionsExpulsions	**0.65**	-0.01
AdjudicatedByCourt	**0.68**	0.00
WithdrawnForSafety	**0.58**	-0.07
ChildAbuseHome	**0.56**	0.01
TrespassingSchool	**0.62**	0.01
Poverty	**0.51**	0.00
Crimes	**0.81**	0.03
IllegalDrugsAlcohol	**0.74**	0.01
FightsConflict	**0.80**	0.00
BullyingHarassment	**0.67**	-0.10
DeterioratingCondition	**0.49**	-0.11
ExtracurricularOpportunities	0.12	0.36
ProfessionalDevelopment	0.02	**0.53**
CrisisResponsePlans	-0.01	**0.63**
ImplementedDisciplinePlans	-0.08	**0.65**
StudentSupportServices	0.02	**0.65**
ParentInvolvement	-0.21	**0.51**
StudentCrisisPreparation	-0.09	**0.63**
SupervisionAllSettings	-0.11	**0.61**
SuicidePreventionResponse	0.17	**0.48**
StudentAcademicParticipation	-0.06	**0.63**
PositiveLearningClimate	-0.15	**0.69**
DiversityAcceptance	-0.03	**0.59**
ResponseToConflict	-0.05	**0.77**
CommunityResources	-0.02	**0.65**
HighLearningExpectations	-0.09	**0.67**
StudentTeacherRelationships	-0.09	**0.65**

Note. Salient (≥ |0.4|) loadings in bold.

Summary of Factor Analysis Results for Respondent

Factor analysis results revealed that each respondent group had a different number of factors. There was a four-factor solution obtained from teachers' data, a three-factor solution from administrators' data, and a two-factor solution from parents' / guardians' data. Despite these differences, there were 15 items that loaded onto the first factor across all three respondent groups. These items included: "*illegal weapons*, *vandalism*, *graffiti*, *gang activity*, *truancy*, *suspensions expulsions*, *adjudicated by court*, *withdrawn for safety*, *child abuse home*, *trespassing school*, *crimes*, *illegal drugs alcohol*, *fights conflict*, *bullying harassment*, and *deteriorating condition"* (Sprague et al., 1995, p. 2). Additionally, there were eight items that loaded onto the second factor across all three respondent groups. These items included: "*professional development*, *crisis response plans*, *implemented discipline plans*, *student support services*, *parent involvement*, *student crisis preparation*, *suicide prevention response*, and *community resources"* (Sprague et al., 1995, p. 3). There were 10 items that were loaded on different factors across all three respondents, which included: "*high student mobility*, *poverty*, *extracurricular opportunities*, *supervision all settings*, *student academic participation*, *positive learning climate*, diversity *acceptance*, *response to conflict, high learning expectations*, and *student teacher relationships"* (Sprague et al., 1995, p. 3).

Consistent findings between teacher and administrator respondent groups identified six items that loaded onto the third factor, which included: "*student academic participation*, *positive learning climate*, *diversity acceptance*, *response to conflict*, *high learning expectation*, and *student teacher relationships"* (Sprague et al., 1995, p. 3). Also consistent between teacher and administrator respondents was that *supervision all settings* did not load onto any factor, while it loaded onto the second factor for the parent respondent group. The only item that did not load

onto any factor for parent respondent was *extracurricular opportunities*, which loaded onto the second factor for both teacher and administrator respondent. Additionally, consistent findings between administrator and parent respondent groups indicated that *high student mobility* and *poverty* loaded onto the first factor, whereas it loaded onto the fourth factor for teacher respondent. As previously stated, this was the only salient item that loaded onto that fourth factor. Taken together, these data do not support the hypothesis that the factor structure is the same across respondent groups.

Research Question 4

Does the underlying factor structure vary by school location (i.e., urban, suburban, rural, town)? An EFA was conducted to empirically derive the number of latent constructs assessed by the SSS. The EFA used data disaggregated by school location. Visual inspection was used to determine the extent to which the factor structure and item loadings were similar across school location. The visual inspection process occurred once the factors and loadings were empirically determined. It was hypothesized that a two-factor structure was present across urban, suburban, rural, and town locations. Further, it was hypothesized that all items loaded on the same factors across urban, suburban, rural, and town locations.

For this research question, there were a total of 4,132 respondents. Of the 4,132 respondents, 456 represented urban locations, 1,498 represented suburban locations, 921 represented rural locations, and 1,257 represented town locations. Total number and sample percentage of respondent, location, and grade span are displayed in Table 21. Inspection of descriptive statistics was conducted and is displayed in Table 22. Skewness and kurtosis statistics were also analyzed to determine normality. Item 9 (*withdrawn for safety*) was positively skewed, with a skewness value greater than 1.0 (1.29). Item 21 (*implemented*

discipline plans), item 25 (*supervision all settings*), item 28 (*positive learning climate*), item 29 (*diversity acceptance*), item 32 (*high learning expectations*), and item 33 (*student teacher relationships*) were all negatively skewed, with a skewness value greater than -1.0 (-1.02, -1.07, -1.36, -1.16, -1.48, and -1.42, respectively). However, kurtosis values for each item were all in the acceptable range, as they were between -3 and 3, which is considered mesokurtic. Despite some signs of non-normality to the data (i.e., negatively skewed), other indicators were within acceptable limits (i.e., kurtosis). Therefore, all items were retained for EFA procedures.

Table 21

Descriptive Statistics by Demographic Variable for 33 Items on the School Safety Survey for Location

Variable	*N*	% of Sample
Respondent	3,313	100.00
Teacher	2,924	88.20
Administrator	333	10.10
Parent/Guardian	58	1.80
Location	4,132	100.00
Town	1,257	30.40
Suburban	1,498	36.30
Urban	456	11.00
Rural	921	22.30
Grade Span	1,615	100.00
Elementary	1,182	73.20
Secondary	433	26.80

Table 22

Descriptive Statistics for 33 Items on the School Safety Survey by School Location

Item Number	*M*	*SD*	Skewness	Kurtosis
1	0.74	0.75	0.83	0.41
2	1.18	0.76	0.48	0.12
3	1.76	0.84	-0.06	-0.74
4	0.98	0.77	0.61	0.23
5	0.70	0.81	0.99	0.34
6	1.53	0.88	0.06	-0.71
7	1.28	0.68	0.53	0.38
8	0.87	0.74	0.63	0.29
9	0.44	0.61	1.29	1.71
10	1.26	0.66	0.48	0.41
11	0.78	0.70	0.72	0.62
12	2.16	0.81	-0.62	-0.41
13	1.14	0.82	0.44	-0.22
14	1.14	0.98	0.39	-0.93
15	1.35	0.81	0.39	-0.27
16	1.56	0.75	0.32	-0.45
17	1.05	0.94	0.62	-0.49
18	2.26	0.80	-0.79	-0.16
19	2.42	0.68	-0.96	0.42
20	2.40	0.69	-0.87	0.10
21	2.38	0.75	-1.02	0.42
22	2.44	0.69	-0.98	0.26
23	1.80	0.76	0.01	-0.68
24	2.17	0.74	-0.47	-0.43
25	2.48	0.67	-1.07	0.55
26	1.57	0.94	0.00	-0.91
27	2.32	0.70	-0.71	-0.03
28	2.54	0.65	-1.36	1.66
29	2.49	0.66	-1.16	1.02
30	2.35	0.68	-0.76	0.28
31	2.04	0.77	-0.33	-0.56
32	2.59	0.63	-1.48	1.87
33	2.60	0.60	-1.42	2.04

Note. $N = 4{,}132$

Number of Factors to Retain for Urban Location

The following are results from the four methods that were conducted to determine the number of factors to retain for the School Safety Survey, specific to urban location. These four methods were eigenvalue > 1, scree plot analysis, PA, and MAP correlations.

Eigenvalues for Urban Location

Initial eigenvalues for the maximum number of components that could be retained from the data set are presented in Table 23. The percentage of variance of each eigenvalue as well as the cumulative percentage of variance are also presented. The first five factors indicated eigenvalues over 1.0. The same five factors cumulatively accounted for almost two-thirds of the total variance.

Table 23

Initial Eigenvalues, Percentage of Variance, and Cumulative Percentage for All Possible Factors for Urban Location

Factor	Eigenvalue	% of Variance	Cumulative %
1	11.99	36.34	36.34
2	4.22	12.80	49.14
3	1.62	4.90	54.03
4	1.28	3.89	57.92
5	1.10	3.33	61.25
6	0.91	2.76	64.01
7	0.87	2.64	66.65
8	0.82	2.47	69.12
9	0.73	2.22	71.34
10	0.68	2.05	73.38
11	0.65	1.97	75.35
12	0.63	1.92	77.27
13	0.58	1.77	79.04
14	0.55	1.67	80.72
15	0.53	1.62	82.34
16	0.49	1.47	83.80
17	0.47	1.41	85.21
18	0.45	1.37	86.58
19	0.45	1.35	87.93
20	0.41	1.23	89.17
21	0.37	1.13	90.29
22	0.36	1.10	91.39
23	0.35	1.05	92.44
24	0.34	1.03	93.47
25	0.31	0.95	94.42
26	0.29	0.88	95.29
27	0.27	0.82	96.11
28	0.27	0.81	96.92
29	0.24	0.73	97.65
30	0.22	0.67	98.32
31	0.20	0.61	98.92
32	0.18	0.55	99.47
33	0.18	0.53	100.00

Note. $N = 456$

Scree Test for Urban Location

The Scree plot for the data are presented in Figure 5 for urban location. A scree test involves examining the graph of eigenvalues and determining where there is a natural bend or break point in the data where the curve flattens out. The number of data points above the point at which the bend occurs is said to be the number of factors to retain (Costello & Osborne, 2005). This method suggested that five factors be retained.

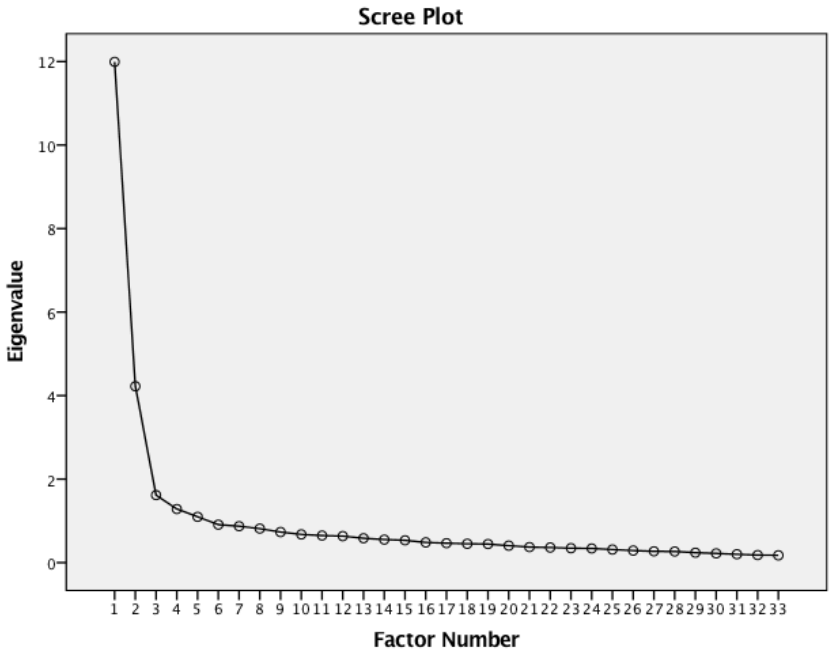

Figure 5. Scree plot for urban location.

Parallel Analysis for Urban Location

PA was used to determine the number of factors to retain. Monte Carlo PCA for Parallel Analysis (Watkins, 2000) was used to calculate the random set of eigenvalues. These data are presented in Table 24. When using this parallel analysis program, 33 variables, 456 subjects, and 100 replications were used in the computation of random eigenvalues. At the fourth factor, the random eigenvalue exceeded the observed eigenvalue. Therefore, results from the parallel analysis suggests that factor extraction should stop after the third factor.

Table 24

Observed and Randomly Generated Eigenvalues Used in Parallel Analysis for Urban Location

Factor	Observed Eigenvalue	Random Eigenvalue
1	11.99	1.5375
2	4.22	1.4719
3	1.62	1.4162
4	1.28	1.3715
5	1.10	1.3322
6	0.91	1.2937
7	0.87	1.2577
8	0.82	1.2286
9	0.73	1.1978
10	0.68	1.1702
11	0.65	1.1394
12	0.63	1.1106
13	0.58	1.0835
14	0.55	1.0560
15	0.53	1.0290
16	0.49	1.0020
17	0.47	0.9768
18	0.45	0.9539
19	0.45	0.9287
20	0.41	0.9029
21	0.37	0.8801
22	0.36	0.8569
23	0.35	0.8328
24	0.34	0.8083
25	0.31	0.7847
26	0.29	0.7622
27	0.27	0.7399
28	0.27	0.7156
29	0.24	0.6888
30	0.22	0.6636
31	0.20	0.6360
32	0.18	0.6030
33	0.18	0.5678

Note. Random eigenvalues calculated using $n = 456$ number of variables = 33, and 100 replications.

Minimum Average Partials for Urban Location

MAP results are depicted in Table 25. In MAP, the average partial coefficient is computed after each factor is eliminated. As noted by Runge (2003), "the average partial correlation will continue to decrease until there is no more shared variance that can be extracted" (p. 180). At that point, the average partial correlation will start to increase. It is at the point where the average partial increases that factors are no longer retained for rotation. Results indicate that four factors should be retained.

Table 25

Minimum Average Partials Results for Urban Location

Factors	Squared average partial correlations
0	0.198
1	0.074
2	0.022
3	0.022
4	0.020
5	0.021
6	0.021
7	0.023
8	0.025
9	0.026
10	0.029
11	0.030
12	0.033
13	0.036
14	0.040
15	0.044
16	0.048
17	0.053
18	0.059
19	0.066
20	0.073
21	0.084
22	0.094
23	0.105
24	0.121
25	0.139
26	0.149
27	0.164
28	0.208
29	0.261
30	0.322
31	0.511

Summary of Number of Factors to Retain for Urban Location

Unfortunately, the different methods used to determine the number of factors to retain lacked consistency. For the urban location group, the eigenvalues and scree plot identified five factors to retain. Results from parallel analysis identified three factors to retain and results from minimum average partial test identified four factors to retain. Given the lack of consistency among methods of determining the number of factors to retain, MAP results were used in subsequent analyses given the superiority of this method over others (Gordon & Courtney, 2013). Therefore, four factors were retained.

Factor Analysis Results for Urban Location

Results of the pattern matrix of the four-factor solution with Direct Oblimin rotation for urban location are presented in Table 26. A simple solution was achieved, as represented by no items demonstrating salient loadings on two or more factors. There were 14 items that loaded onto the first factor, 6 items that loaded onto the second factor, 8 items that loaded onto the third factor, and 3 items that loaded onto the fourth factor. Relatedly, only one item did not exhibit salient loadings on any factor, which was *community resources*. All four factors retained for rotation was identified by at least two salient items. The factor structure, as revealed using Promax rotation produced similar results. While there were a few differences in some of the loadings, overall, the results were similar. Due to an EFA's purpose of simplifying the structure, Direct Oblimin rotation was selected and used.

Table 26

Pattern Coefficients for the Four-Factor Solution With Direct Oblimin Rotation for Urban Location

	Factor			
Item	I	II	III	IV
IllegalWeapons	**0.79**	0.02	-0.02	-0.09
Vandalism	**0.83**	0.07	-0.07	-0.06
HighStudentMobility	0.31	0.06	-0.06	**0.43**
Graffiti	**0.81**	0.11	-0.09	-0.11
GangActivity	**0.81**	0.04	-0.01	-0.12
Truancy	**0.55**	-0.01	-0.03	0.25
SuspensionsExpulsions	**0.54**	-0.10	0.09	0.19
AdjudicatedByCourt	**0.58**	-0.16	0.14	0.13
WithdrawnForSafety	**0.56**	-0.13	0.05	-0.01
ChildAbuseHome	0.36	-0.04	0.03	**0.40**
TrespassingSchool	**0.59**	0.01	-0.03	0.05
Poverty	0.27	0.06	-0.04	**0.57**
Crimes	**0.74**	-0.02	0.02	0.10
IllegalDrugsAlcohol	**0.70**	-0.10	0.09	0.01
FightsConflict	**0.68**	-0.06	0.01	0.19
BullyingHarassment	**0.55**	-0.09	-0.03	0.22
DeterioratingCondition	**0.47**	-0.03	-0.12	0.10
ExtracurricularOpportunities	0.14	0.00	**0.43**	-0.10
ProfessionalDevelopment	-0.10	0.09	**0.54**	0.15
CrisisResponsePlans	-0.14	0.03	**0.70**	0.15
ImplementedDisciplinePlans	-0.19	0.27	**0.46**	0.14
StudentSupportServices	-0.09	0.16	**0.59**	0.09
ParentInvolvement	-0.14	0.19	**0.41**	-0.19
StudentCrisisPreparation	-0.14	0.13	**0.60**	0.01
SupervisionAllSettings	-0.15	0.39	0.31	0.08
SuicidePreventionResponse	0.16	0.02	**0.53**	-0.16
StudentAcademicParticipation	0.02	**0.48**	0.24	-0.10
PositiveLearningClimate	-0.07	**0.74**	0.07	0.02
DiversityAcceptance	0.05	**0.69**	0.00	0.02
ResponseToConflict	-0.01	**0.61**	0.25	-0.06
CommunityResources	0.00	0.37	0.35	-0.07
HighLearningExpectations	-0.01	**0.83**	-0.03	0.04
StudentTeacherRelationships	0.00	**0.82**	-0.05	0.04

Note. Salient ($\geq |0.4|$) loadings in bold.

Number of Factors to Retain for Suburban Location

The following are results from the four methods that were conducted to determine the number of factors to retain for the School Safety Survey, specific to suburban location. These four methods were eigenvalue > 1, scree plot analysis, PA, and MAP correlations.

Eigenvalues for Suburban Location

Initial eigenvalues for the maximum number of components that could be retained from the suburban location data set are presented in Table 27. The percentage of variance of each eigenvalue as well as the cumulative percentage of variance are also presented. The first four factors indicated eigenvalues over 1.0. The same four factors cumulatively accounted for over half of the total variance.

Table 27

Initial Eigenvalues, Percentage of Variance, and Cumulative Percentage for All Possible Factors for Suburban Location

Factor	Eigenvalue	% of Variance	Cumulative %
1	11.33	34.34	34.34
2	4.85	14.70	49.04
3	1.45	4.39	53.43
4	1.11	3.37	56.80
5	0.95	2.89	59.69
6	0.91	2.74	62.43
7	0.86	2.59	65.02
8	0.77	2.32	67.34
9	0.73	2.22	69.57
10	0.65	1.98	71.55
11	0.64	1.93	73.48
12	0.61	1.85	75.32
13	0.59	1.80	77.12
14	0.57	1.73	78.85
15	0.54	1.62	80.47
16	0.52	1.57	82.04
17	0.51	1.53	83.57
18	0.46	1.40	84.97
19	0.45	1.35	86.32
20	0.44	1.33	87.64
21	0.40	1.22	88.86
22	0.38	1.16	90.02
23	0.38	1.14	91.16
24	0.37	1.11	92.27
25	0.34	1.02	93.29
26	0.33	0.99	94.28
27	0.32	0.98	95.26
28	0.31	0.95	96.21
29	0.29	0.87	97.08
30	0.28	0.84	97.92
31	0.24	0.73	98.65
32	0.23	0.68	99.33
33	0.22	0.67	100.00

Note. $N = 1{,}498$

Scree test for Suburban Location

The Scree plot for the data are presented in Figure 6 for suburban location. A scree test involves examining the graph of eigenvalues and determining where there is a natural bend or break point in the data where the curve flattens out. The number of data points above the point at which the bend occurs is said to be the number of factors to retain (Costello & Osborne, 2005). This method suggested that four factors be retained.

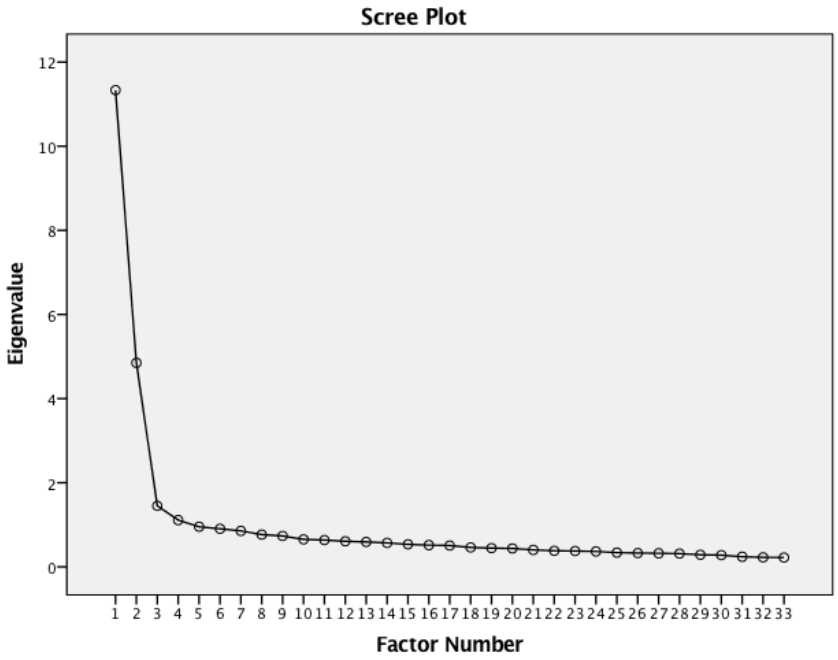

Figure 6. Scree plot for suburban location.

Parallel Analysis for Suburban Location

PA was used to determine the number of factors to retain. Again, Monte Carlo PCA for Parallel Analysis (Watkins, 2000) was used to calculate the random set of eigenvalues. These data are presented in Table 28. When using this parallel analysis program, 33 variables, 1,498 subjects, and 100 replications were used in the computation of random eigenvalues. At the fourth factor, the random eigenvalue exceeded the observed eigenvalue. Therefore, results from the parallel analysis suggests that factor extraction should stop after the third factor.

Table 28

Observed and Randomly Generated Eigenvalues Used in Parallel Analysis for Suburban Location

Factor	Observed Eigenvalue	Random Eigenvalue
1	11.33	1.2858
2	4.85	1.2493
3	1.45	1.2240
4	1.11	1.2016
5	0.95	1.1799
6	0.91	1.1621
7	0.86	1.1435
8	0.77	1.1259
9	0.73	1.1110
10	0.65	1.0934
11	0.64	1.0799
12	0.61	1.0659
13	0.59	1.0521
14	0.57	1.0356
15	0.54	1.0223
16	0.52	1.0070
17	0.51	0.9927
18	0.46	0.9783
19	0.45	0.9662
20	0.44	0.9522
21	0.40	0.9392
22	0.38	0.9265
23	0.38	0.9116
24	0.37	0.8976
25	0.34	0.8844
26	0.33	0.8704
27	0.32	0.8549
28	0.31	0.8409
29	0.29	0.8264
30	0.28	0.8098
31	0.24	0.7919
32	0.23	0.7705
33	0.22	0.7470

Note. Random eigenvalues calculated using n = 1,498, number of variables = 33, and 100 replications.

Minimum Average Partials for Suburban Location

MAP results are depicted in Table 29. In MAP, the average partial coefficient is computed after each factor is eliminated. As noted by Runge (2003), "the average partial correlation will continue to decrease until there is no more shared variance that can be extracted" (p. 180). At that point, the average partial correlation will start to increase. It is at the point where the average partial increases that factors are no longer retained for rotation. Results indicate that three factors should be retained.

Table 29

Minimum Average Partials Results for Suburban Location

Factors	Squared average partial correlations
0	0.184
1	0.083
2	0.016
3	0.015
4	0.015
5	0.016
6	0.017
7	0.017
8	0.018
9	0.020
10	0.022
11	0.024
12	0.027
13	0.030
14	0.032
15	0.036
16	0.041
17	0.046
18	0.052
19	0.058
20	0.062
21	0.071
22	0.081
23	0.092
24	0.108
25	0.121
26	0.150
27	0.179
28	0.188
29	0.236
30	0.325
31	0.485

Summary of Number of Factors to Retain for Suburban Location

Unfortunately, the different methods used to determine the number of factors to retain lacked consistency. For the suburban location group, the eigenvalues and scree plot identified four factors to retain. Results from PA and MAP tests identified three factors to retain. Given the lack of consistency among methods of determining the number of factors to retain, PA and MAP results were used in subsequent analyses given the superiority of these methods over others (Gordon & Courtney, 2013). Therefore, three factors were retained.

Factor Analysis Results for Suburban Location

Results of the pattern matrix of the three-factor solution with Direct Oblimin rotation for suburban location are presented in Table 30. A simple solution was achieved, as represented by no items demonstrating salient loadings on two or more factors. There were 17 items that loaded onto the first factor, 9 items that loaded onto the second factor, and 5 items that loaded onto the third factor. Relatedly, only two items did not exhibit salient loadings on any factor. These items were *supervision all settings* and *student academic participation*. All three factors retained for rotation was identified by at least two salient items. The factor structure, as revealed using Promax rotation produced similar results. While there were a few differences in some of the loadings, overall, the results were similar. Due to an EFA's purpose of simplifying the structure, Direct Oblimin rotation was selected and used.

Table 30

Pattern Coefficients for the Three-Factor Solution with Direct Oblimin Rotation for Suburban Location

	Factor		
Item	I	II	III
IllegalWeapons	**0.72**	0.07	0.06
Vandalism	**0.77**	0.01	0.01
HighStudentMobility	**0.53**	-0.11	-0.16
Graffiti	**0.73**	0.01	-0.01
GangActivity	**0.72**	0.08	0.06
Truancy	**0.67**	-0.05	-0.04
SuspensionsExpulsions	**0.64**	0.07	0.05
AdjudicatedByCourt	**0.66**	0.13	0.13
WithdrawnForSafety	**0.55**	0.07	0.16
ChildAbuseHome	**0.58**	-0.03	-0.07
TrespassingSchool	**0.61**	0.01	0.01
Poverty	**0.56**	-0.12	-0.19
Crimes	**0.79**	0.05	0.03
IllegalDrugsAlcohol	**0.70**	0.13	0.13
FightsConflict	**0.78**	0.01	0.02
BullyingHarassment	**0.67**	-0.06	0.03
DeterioratingCondition	**0.52**	-0.11	0.02
ExtracurricularOpportunities	0.09	**0.46**	0.03
ProfessionalDevelopment	-0.01	**0.49**	-0.15
CrisisResponsePlans	-0.05	**0.64**	-0.11
ImplementedDisciplinePlans	-0.11	**0.44**	-0.32
StudentSupportServices	-0.04	**0.57**	-0.19
ParentInvolvement	-0.24	**0.47**	-0.12
StudentCrisisPreparation	-0.13	**0.60**	-0.13
SupervisionAllSettings	-0.12	0.33	-0.39
SuicidePreventionResponse	0.07	**0.59**	0.05
StudentAcademicParticipation	-0.06	0.33	-0.40
PositiveLearningClimate	-0.09	0.15	**-0.68**
DiversityAcceptance	0.02	0.10	**-0.62**
ResponseToConflict	-0.06	0.34	**-0.53**
CommunityResources	-0.05	**0.42**	-0.31
HighLearningExpectations	-0.02	0.06	**-0.77**
StudentTeacherRelationships	-0.01	0.04	**-0.76**

Note. Salient ($\geq |0.4|$) loadings in bold.

Number of Factors to Retain for Rural Location

The following are results from the four methods that were conducted to determine the number of factors to retain for the School Safety Survey, specific to rural location. These four methods were eigenvalue > 1, scree plot analysis, PA, and MAP correlations.

Eigenvalues for Rural Location

Initial eigenvalues for the maximum number of components that could be retained from the data set are presented in Table 31. The percentage of variance of each eigenvalue as well as the cumulative percentage of variance are also presented. The first five factors indicated eigenvalues over 1.0. The same five factors cumulatively accounted for over half of the total variance.

Table 31

Initial Eigenvalues, Percentage of Variance, and Cumulative Percentage for All Possible Factors for Rural Location

Factor	Eigenvalues	% of Variance	Cumulative %
1	8.88	26.91	26.91
2	5.14	15.58	42.49
3	1.61	4.86	47.35
4	1.21	3.68	51.03
5	1.05	3.19	54.22
6	0.95	2.89	57.11
7	0.92	2.77	59.88
8	0.89	2.69	62.57
9	0.84	2.54	65.10
10	0.76	2.29	67.39
11	0.72	2.19	69.58
12	0.71	2.14	71.72
13	0.66	1.99	73.71
14	0.64	1.93	75.65
15	0.57	1.74	77.38
16	0.55	1.68	79.06
17	0.53	1.62	80.68
18	0.53	1.59	82.27
19	0.52	1.57	83.84
20	0.49	1.49	85.33
21	0.49	1.48	86.81
22	0.47	1.43	88.23
23	0.45	1.36	89.59
24	0.44	1.33	90.93
25	0.42	1.26	92.19
26	0.40	1.21	93.40
27	0.38	1.14	94.54
28	0.33	1.01	95.54
29	0.32	0.97	96.51
30	0.30	0.92	97.43
31	0.30	0.91	98.33
32	0.28	0.86	99.19
33	0.27	0.81	100.00

Note. $N = 921$

Scree Test for Rural Location

The Scree plot for the data are presented in Figure 7 for rural location. A scree test involves examining the graph of eigenvalues and determining where there is a natural bend or break point in the data where the curve flattens out. The number of data points above the point at which the bend occurs is said to be the number of factors to retain (Costello & Osborne, 2005). This method suggested that four factors be retained.

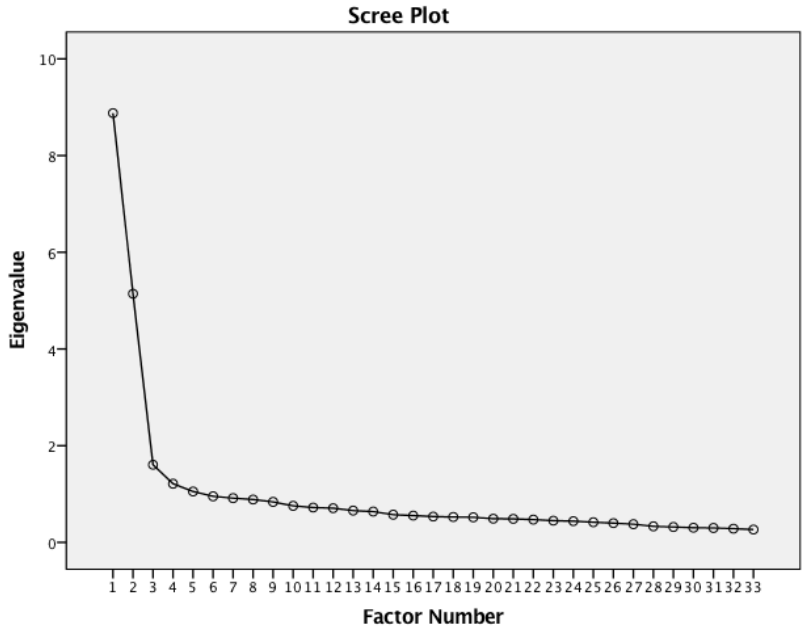

Figure 7. Scree plot for rural location.

Parallel Analysis for Rural Location

PA was used to determine the number of factors to retain. Again, Monte Carlo PCA for Parallel Analysis (Watkins, 2000) was used to calculate the random set of eigenvalues. These data are presented in Table 32. When using this parallel analysis program, 33 variables, 921 subjects, and 100 replications were used in the computation of random eigenvalues. At the fourth factor, the random eigenvalue exceeded the observed eigenvalue. Therefore, results from the parallel analysis suggests that factor extraction should stop after the third factor.

Table 32

Observed and Randomly Generated Eigenvalues Used in Parallel Analysis for Rural Location

Factor	Observed Eigenvalue	Random Eigenvalue
1	8.88	1.3716
2	5.14	1.3258
3	1.61	1.2931
4	1.21	1.2619
5	1.05	1.2330
6	0.95	1.2068
7	0.92	1.1844
8	0.89	1.1626
9	0.84	1.1421
10	0.76	1.1177
11	0.72	1.0990
12	0.71	1.0791
13	0.66	1.0619
14	0.64	1.0441
15	0.57	1.0251
16	0.55	1.0071
17	0.53	0.9893
18	0.53	0.9712
19	0.52	0.9534
20	0.49	0.9359
21	0.49	0.9193
22	0.47	0.9022
23	0.45	0.8852
24	0.44	0.8664
25	0.42	0.8489
26	0.40	0.8325
27	0.38	0.8143
28	0.33	0.7965
29	0.32	0.7785
30	0.30	0.7577
31	0.30	0.7382
32	0.28	0.7140
33	0.27	0.6818

Note. Random eigenvalues calculated using $n = 921$, number of variables = 33, and 100 replications.

Minimum Average Partials for Rural Location

MAP results are depicted in Table 33. In MAP, the average partial coefficient is computed after each factor is eliminated. As noted by Runge (2003), "the average partial correlation will continue to decrease until there is no more shared variance that can be extracted" (p. 180). At that point, the average partial correlation will start to increase. It is at the point where the average partial increases that factors are no longer retained for rotation. Results indicate that four factors should be retained.

Table 33

Minimum Average Partials Results for Rural Location

Factors	Squared average partial correlations
0	0.131
1	0.079
2	0.016
3	0.015
4	0.014
5	0.015
6	0.016
7	0.017
8	0.018
9	0.020
10	0.022
11	0.024
12	0.026
13	0.029
14	0.032
15	0.036
16	0.040
17	0.045
18	0.051
19	0.057
20	0.063
21	0.073
22	0.085
23	0.093
24	0.108
25	0.129
26	0.147
27	0.162
28	0.201
29	0.242
30	0.317
31	0.486

Summary of Number of Factors to Retain for Rural Location

Unfortunately, the different methods used to determine the number of factors to retain lacked consistency. For the rural location group, the eigenvalues identified five factors to retain. Results from scree plot and MAP test identified four factors to retain. Lastly, results from PA identified three factors to retain. Given the lack of consistency among methods of determining the number of factors to retain, MAP results were used in subsequent analyses given the superiority of this method over others (Gordon & Courtney, 2013). Therefore, four factors were retained.

Factor Analysis Results for Rural Location

Results of the pattern matrix of the four-factor solution with Promax rotation for rural location are presented in Table 34. Again, a simple solution was obtained. There were 15 items that loaded onto the first factor, 10 items that loaded onto the second factor, 5 items that loaded onto the third factor, and 2 items that loaded onto the fourth factor. No item loaded on more than one factor. One item did not load on any factor: *student academic participation*. All four factors retained for rotation was identified by at least two salient items, although the fourth factor was only minimally identified with two salient loadings. The factor structure, as revealed using Direct Oblimin rotation produced similar results. While there were a few differences in some of the loadings, overall, the results were similar. Due to an EFA's purpose of simplifying the structure, Promax rotation was selected and used.

Table 34

Pattern Coefficients for the Four-Factor Solution with Promax Rotation for Rural Location

	Factor			
Item	I	II	III	IV
IllegalWeapons	**0.80**	0.00	0.04	-0.09
Vandalism	**0.83**	-0.06	0.10	-0.06
HighStudentMobility	0.34	-0.05	0.10	**0.42**
Graffiti	**0.81**	-0.08	0.13	-0.10
GangActivity	**0.81**	0.01	0.05	-0.13
Truancy	**0.57**	-0.03	0.03	0.24
SuspensionsExpulsions	**0.57**	0.10	-0.09	0.17
AdjudicatedByCourt	**0.62**	0.15	-0.15	0.10
WithdrawnForSafety	**0.57**	0.05	-0.12	-0.03
ChildAbuseHome	**0.40**	0.04	-0.01	0.39
TrespassingSchool	**0.60**	-0.02	0.04	0.04
Poverty	0.31	-0.04	0.10	**0.56**
Crimes	**0.77**	0.03	0.00	0.09
IllegalDrugsAlcohol	**0.73**	0.10	-0.09	-0.01
FightsConflict	**0.71**	0.02	-0.03	0.18
BullyingHarassment	**0.57**	-0.03	-0.05	0.21
DeterioratingCondition	**0.47**	-0.13	0.02	0.10
ExtracurricularOpportunities	0.19	**0.50**	-0.09	-0.13
ProfessionalDevelopment	-0.02	**0.63**	-0.03	0.11
CrisisResponsePlans	-0.04	**0.81**	-0.12	0.10
ImplementedDisciplinePlans	-0.12	**0.57**	0.16	0.12
StudentSupportServices	-0.01	**0.70**	0.02	0.05
ParentInvolvement	-0.10	**0.49**	0.07	-0.20
StudentCrisisPreparation	-0.06	**0.71**	-0.02	-0.03
SupervisionAllSettings	-0.11	**0.40**	0.29	0.07
SuicidePreventionResponse	0.21	**0.62**	-0.11	-0.20
StudentAcademicParticipation	0.04	0.33	0.38	-0.10
PositiveLearningClimate	-0.06	0.16	**0.66**	0.05
DiversityAcceptance	0.05	0.08	**0.63**	0.04
ResponseToConflict	0.02	0.36	**0.50**	-0.05
CommunityResources	0.04	**0.45**	0.26	-0.08
HighLearningExpectations	-0.01	0.06	**0.77**	0.07
StudentTeacherRelationships	0.00	0.04	**0.77**	0.07

Note. Salient (≥ |0.4|) loadings in bold.

Number of Factors to Retain for Town Location

The following are results from the four methods that were conducted to determine the number of factors to retain for the School Safety Survey, specific to town location. These four methods were eigenvalue > 1, scree plot analysis, PA, and MAP correlations.

Eigenvalues for Town Location

Initial eigenvalues for the maximum number of components that could be retained from the data set are presented in Table 35. The percentage of variance of each eigenvalue as well as the cumulative percentage of variance are also presented. The first five factors indicated eigenvalues over 1.0. The same five factors cumulatively accounted for over half of the total variance.

Table 35

Initial Eigenvalues, Percentage of Variance, and Cumulative Percentage for All Possible Factors for Town Location

Factor	Eigenvalues	% of Variance	Cumulative %
1	9.42	28.53	28.53
2	5.67	17.17	45.70
3	1.51	4.57	50.27
4	1.36	4.13	54.40
5	1.02	3.08	57.47
6	0.96	2.92	60.39
7	0.86	2.61	63.00
8	0.79	2.40	65.40
9	0.74	2.25	67.64
10	0.70	2.11	69.75
11	0.68	2.05	71.79
12	0.61	1.86	73.65
13	0.59	1.78	75.43
14	0.58	1.76	77.19
15	0.55	1.67	78.86
16	0.54	1.63	80.49
17	0.52	1.59	82.07
18	0.49	1.48	83.55
19	0.48	1.46	85.01
20	0.46	1.39	86.39
21	0.45	1.37	87.77
22	0.43	1.30	89.06
23	0.41	1.25	90.31
24	0.41	1.24	91.55
25	0.39	1.18	92.73
26	0.38	1.15	93.87
27	0.34	1.04	94.91
28	0.33	0.99	95.91
29	0.30	0.90	96.81
30	0.29	0.88	97.69
31	0.27	0.82	98.51
32	0.26	0.79	99.30
33	0.23	0.71	100.00

Note. $N = 1,257$

Scree Test for Town Location

The Scree plot for the data are presented in Figure 8 for town location. A scree test involves examining the graph of eigenvalues and determining where there is a natural bend or break point in the data where the curve flattens out. The number of data points above the point at which the bend occurs is said to be the number of factors to retain (Costello & Osborne, 2005). This method suggested that four factors be retained.

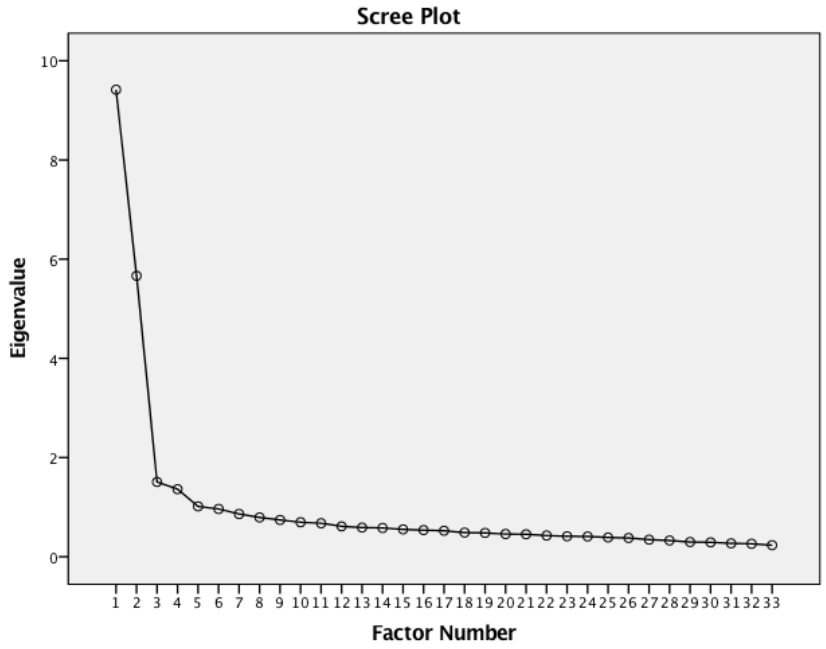

Figure 8. Scree plot for town location.

Parallel Analysis for Town Location

PA was used to determine the number of factors to retain. Again, Monte Carlo PCA for Parallel Analysis (Watkins, 2000) was used to calculate the random set of eigenvalues. These data are presented in Table 36. When using this parallel analysis program, 33 variables, 1,257 subjects, and 100 replications were used in the computation of random eigenvalues. At the fifth factor, the random eigenvalue exceeded the observed eigenvalue. Therefore, results from the parallel analysis suggests that factor extraction should stop after the fourth factor.

Table 36

Observed and Randomly Generated Eigenvalues Used in Parallel Analysis for Town Location

Factor	Observed Eigenvalue	Random Eigenvalue
1	9.42	1.3196
2	5.67	1.2772
3	1.51	1.2473
4	1.36	1.2235
5	1.02	1.1995
6	0.96	1.1782
7	0.86	1.1585
8	0.79	1.1386
9	0.74	1.1215
10	0.70	1.1036
11	0.68	1.0882
12	0.61	1.0699
13	0.59	1.0544
14	0.58	1.0389
15	0.55	1.0234
16	0.54	1.0076
17	0.52	0.9925
18	0.49	0.9787
19	0.48	0.9632
20	0.46	0.9464
21	0.45	0.9314
22	0.43	0.9164
23	0.41	0.9024
24	0.41	0.8870
25	0.39	0.8718
26	0.38	0.8559
27	0.34	0.8400
28	0.33	0.8251
29	0.30	0.8082
30	0.29	0.7896
31	0.27	0.7695
32	0.26	0.7490
33	0.23	0.7228

Note. Random eigenvalues calculated using n = 1,257, number of variables = 33, and 100 replications.

Minimum Average Partials for Town Location

MAP results are depicted in Table 37. In MAP, the average partial coefficient is computed after each factor is eliminated. As noted by Runge (2003), "the average partial correlation will continue to decrease until there is no more shared variance that can be extracted" (p. 180). At that point, the average partial correlation will start to increase. It is at the point where the average partial increases that factors are no longer retained for rotation. Results indicate that four factors should be retained.

Table 37

Minimum Average Partials Results for Town Location

Factors	Squared average partial correlations
0	0.145
1	0.092
2	0.017
3	0.016
4	0.014
5	0.014
6	0.014
7	0.015
8	0.017
9	0.018
10	0.021
11	0.024
12	0.026
13	0.029
14	0.032
15	0.035
16	0.040
17	0.046
18	0.052
19	0.059
20	0.066
21	0.076
22	0.086
23	0.098
24	0.114
25	0.134
26	0.161
27	0.190
28	0.213
29	0.242
30	0.325
31	0.505

Summary of Number of Factors to Retain for Town Location

Unfortunately, the different methods used to determine the number of factors to retain lacked consistency. For the town location group, the eigenvalues identified five factors to retain. Results from scree plot, PA, and MAP tests identified four factors to retain. Given the lack of consistency among methods of determining the number of factors to retain, PA and MAP results were used in subsequent analyses given the superiority of these methods over others (Gordon & Courtney, 2013). Moreover, when determining the number of factors to retain, it is also suggested to look for consistency across the four tests (Velicer, 2000). Therefore, based on the results from these four tests, the most frequent number identified was four, and therefore, four factors were retained.

Factor Analysis Results for Town Location

Results of the pattern matrix of the four-factor solution with Promax rotation for town location are presented in Table 38. Again, a simple solution was obtained. There were 15 items that loaded onto the first factor, 10 items that loaded onto the second factor, 5 items that loaded onto the third factor, and 2 items that loaded onto the fourth factor. No item loaded on more than one factor. One item did not load on any factor: *student academic participation*. Further analysis of the pattern matrix indicated that there were two items that loaded onto the fourth factor, which was *high student mobility* and *poverty*. The factor structure, as revealed using Direct Oblimin rotation produced similar results. While there were a few differences in some of the loadings, overall, the results were similar. Due to an EFA's purpose of simplifying the structure, Promax rotation was selected and used.

Table 38

Pattern Coefficients for the Four-Factor Solution With Promax Rotation for Town Location

	Factor			
Item	I	II	III	IV
IllegalWeapons	**0.80**	0.00	0.04	-0.09
Vandalism	**0.83**	-0.06	0.10	-0.06
HighStudentMobility	0.34	-0.05	0.10	**0.42**
Graffiti	**0.81**	-0.08	0.13	-0.10
GangActivity	**0.81**	0.01	0.05	-0.13
Truancy	**0.57**	-0.03	0.03	0.24
SuspensionsExpulsions	**0.57**	0.10	-0.09	0.17
AdjudicatedByCourt	**0.62**	0.15	-0.15	0.10
WithdrawnForSafety	**0.57**	0.05	-0.12	-0.03
ChildAbuseHome	**0.40**	0.04	-0.01	0.39
TrespassingSchool	**0.60**	-0.02	0.04	0.04
Poverty	0.31	-0.04	0.10	**0.56**
Crimes	**0.77**	0.03	0.00	0.09
IllegalDrugsAlcohol	**0.73**	0.10	-0.09	-0.01
FightsConflict	**0.71**	0.02	-0.03	0.18
BullyingHarassment	**0.57**	-0.03	-0.05	0.21
DeterioratingCondition	**0.47**	-0.13	0.02	0.10
ExtracurricularOpportunities	0.19	**0.50**	-0.09	-0.13
ProfessionalDevelopment	-0.02	**0.63**	-0.03	0.11
CrisisResponsePlans	-0.04	**0.81**	-0.12	0.10
ImplementedDisciplinePlans	-0.12	**0.57**	0.16	0.12
StudentSupportServices	-0.01	**0.70**	0.02	0.05
ParentInvolvement	-0.10	**0.49**	0.07	-0.20
StudentCrisisPreparation	-0.06	**0.71**	-0.02	-0.03
SupervisionAllSettings	-0.11	**0.40**	0.29	0.07
SuicidePreventionResponse	0.21	**0.62**	-0.11	-0.20
StudentAcademicParticipation	0.04	0.33	0.38	-0.10
PositiveLearningClimate	-0.06	0.16	**0.66**	0.05
DiversityAcceptance	0.05	0.08	**0.63**	0.04
ResponseToConflict	0.02	0.36	**0.50**	-0.05
CommunityResources	0.04	**0.45**	0.26	-0.08
HighLearningExpectations	-0.01	0.06	**0.77**	0.07
StudentTeacherRelationships	0.00	0.04	**0.77**	0.07

Note. Salient (≥ |0.4|) loadings in bold.

Summary of Factor Analysis Results for Location

Factor analysis results revealed that there were different factor structures across urban, suburban, rural and town locations, with a four-, three-, four-, and four-factor solution obtained, respectively. There were 14 items that loaded onto the first factor across all four locations. These items included: "*illegal weapons*, *vandalism*, *graffiti*, *gang activity*, *truancy*, *suspensions expulsions*, *adjudicated by court*, *withdrawn for safety*, *trespassing school*, *crimes*, *illegal drugs alcohol*, *fights conflict*, *bullying harassment*, and *deteriorating conditions"* (Sprague et al., 1995, p. 2). Additionally, there were seven items that loaded onto the second factor for rural, suburban, and town locations, while these same seven items loaded on the third factor for urban location. These items included: "*extracurricular opportunities*, *professional development*, *crisis response plans*, *implemented discipline plans*, *student support services*, *parent involvement*, and *student crisis preparation"* (Sprague et al., 1995, p. 3). There were five items that loaded onto the third factor for rural, suburban, and town locations, while these same five items loaded onto the second factor for urban location. These items included: "*positive learning climate*, *diversity acceptance*, *response to conflict*, *high learning expectations*, and *student teacher relationships*" (Sprague et al., 1995, p. 3).

A consistent finding between urban and suburban locations was that *supervision all settings* did not load onto any factor. A consistent finding between rural and town locations was that *student academic participation* did not load onto any factor. The only other item that did not load onto any factor across all four locations was *community resources* obtained from the urban location data. While the item, *child abuse home*, loaded onto the first factor across rural, suburban, and town locations, this item loaded onto the third factor for urban location, along with the items, *high student mobility* and *poverty*. *High student mobility* and *poverty* were the only

two items that loaded onto the fourth factor for rural and town locations, whereas they loaded onto the first factor for suburban location. *Supervision all settings* and *suicide prevention response* were the two items that loaded onto different factors across all four locations. Taken together, these data do not support the hypothesis that the factor structure is the same across locations.

Research Question 5

Does the underlying factor structure vary by grade span (i.e., elementary school, secondary school)? Elementary school was identified as kindergarten through fifth grade and secondary school was identified as ninth through twelfth grade, as suggested by the National Center for Education Statistics (National Center for Education Statistics, 2013). An EFA was conducted to empirically derive the number of latent constructs assessed by the SSS. The EFA used data disaggregated by grade span. Visual inspection was used to determine the extent to which the factor structure and item loadings are similar across grade span. The visual inspection process occurred once the factors and loadings were empirically determined. It was hypothesized that a two-factor structure was present across elementary and secondary grade spans. Further, it was hypothesized that all items loaded on the same factors across elementary and secondary grade spans.

For this research question, there were a total of 1,604 respondents used for grade span. Of the 1,604 respondents, 1,176 represented elementary grades and 428 represented secondary grades. Total number and sample percentage of respondent, location, and grade span are displayed in Table 39. Inspection of descriptive statistics was conducted and is displayed in Table 40. Skewness and kurtosis statistics were also analyzed to determine normality. Item 5 (*gang activity*) and item 9 (*withdrawn for safety*) were positively skewed, with a skewness value

greater than 1.0 (1.01 and 1.38, respectively). Item 21 (*implemented discipline plans*), item 22 (*student support services*), item 25 (*supervision all settings*), item 28 (*positive learning climate*), item 29 (*diversity acceptance*), item 32 (*high learning expectations*), and item 33 (*student teacher relationships*) were all negatively skewed, with a skewness value greater than -1.0 (-1.09, -1.01, -1.22, -1.43, -1.16, -1.55, and -1.59, respectively). However, kurtosis values for each item were all in the acceptable range, as they were between -3 and 3, which is considered mesokurtic. Despite some signs of non-normality to the data (i.e., negatively skewed), other indicators were within acceptable limits (i.e., kurtosis). Therefore, all items were retained for EFA procedures.

Table 39

Descriptive Statistics by Demographic Variable for 33 Items on the School Safety Survey for Grade Span

Variable	*N*	% of Sample
Respondent	1,271	100.00
Teacher	1,130	88.90
Administrator	133	10.50
Parent/Guardian	8	0.60
Location	1,604	100.00
Town	433	27.00
Suburban	647	40.30
Urban	197	12.30
Rural	327	20.40
Grade Span	1,604	100.00
Elementary	1,176	73.30
Secondary	428	26.70

Table 40

Descriptive Statistics for 33 Items on the School Safety Survey by Grade Span

Item Number	*M*	*SD*	Skewness	Kurtosis
1	0.73	0.76	0.82	0.24
2	1.11	0.73	0.50	0.31
3	1.75	0.83	0.00	-0.78
4	0.89	0.71	0.65	0.71
5	0.65	0.76	1.01	0.50
6	1.51	0.90	0.08	-0.77
7	1.22	0.67	0.52	0.53
8	0.86	0.78	0.71	0.24
9	0.42	0.60	1.38	2.10
10	1.24	0.65	0.48	0.49
11	0.77	0.70	0.70	0.55
12	2.11	0.82	-0.47	-0.26
13	1.08	0.83	0.47	-0.26
14	1.13	1.04	0.38	-1.11
15	1.25	0.78	0.44	-0.06
16	1.49	0.73	0.36	-0.26
17	1.03	0.94	0.65	-0.44
18	2.22	0.83	-0.77	-0.27
19	2.43	0.68	-0.99	0.60
20	2.43	0.68	-0.92	0.19
21	2.41	0.73	-1.09	0.64
22	2.46	0.67	-1.01	0.36
23	1.87	0.77	-0.04	-0.77
24	2.21	0.74	-0.59	-0.26
25	2.52	0.66	-1.22	0.99
26	1.60	0.97	-0.05	-0.99
27	2.34	0.69	-0.76	0.17
28	2.56	0.65	-1.43	1.98
29	2.50	0.66	-1.16	0.93
30	2.36	0.68	-0.78	0.25
31	2.06	0.75	-0.31	-0.54
32	2.60	0.64	-1.55	1.97
33	2.63	0.59	-1.59	2.55

Note. $N = 1{,}604$

Number of Factors to Retain for Elementary Grade Span

The following are results from the four methods that were conducted to determine the number of factors to retain for the School Safety Survey, specific to elementary grade span. These four methods were eigenvalue > 1, scree plot analysis, PA, and MAP correlations.

Eigenvalues for Elementary Grade Span

Initial eigenvalues for the maximum number of components that could be retained from the elementary data set are presented in Table 41. The percentage of variance of each eigenvalue as well as the cumulative percentage of variance are also presented. The first five factors indicated eigenvalues over 1.0. The same five factors cumulatively accounted for over half of the total variance.

Table 41

Initial Eigenvalues, Percentage of Variance, and Cumulative Percentage for All Possible Factors for Elementary Grade Span

Factor	Eigenvalues	% of Variance	Cumulative %
1	9.78	29.63	29.63
2	5.14	15.57	45.20
3	1.53	4.64	49.84
4	1.26	3.82	53.66
5	1.04	3.14	56.80
6	0.94	2.84	59.64
7	0.86	2.60	62.23
8	0.81	2.47	64.70
9	0.75	2.26	66.96
10	0.73	2.22	69.18
11	0.69	2.10	71.28
12	0.67	2.02	73.29
13	0.64	1.93	75.22
14	0.60	1.81	77.03
15	0.56	1.69	78.72
16	0.54	1.65	80.37
17	0.53	1.60	81.97
18	0.52	1.56	83.53
19	0.49	1.48	85.01
20	0.48	1.44	86.45
21	0.45	1.37	87.82
22	0.43	1.30	89.12
23	0.41	1.24	90.36
24	0.41	1.23	91.59
25	0.39	1.17	92.76
26	0.36	1.09	93.86
27	0.34	1.03	94.89
28	0.32	0.96	95.84
29	0.31	0.95	96.79
30	0.28	0.85	97.64
31	0.27	0.83	98.47
32	0.26	0.79	99.26
33	0.25	0.74	100.00

Note. $N = 1{,}176$

Scree Test for Elementary Grade Span

The Scree plot for the data are presented in Figure 9 for elementary grade span. A scree test involves examining the graph of eigenvalues and determining where there is a natural bend or break point in the data where the curve flattens out. The number of data points above the point at which the bend occurs is said to be the number of factors to retain (Costello & Osborne, 2005). This method suggested that five factors be retained.

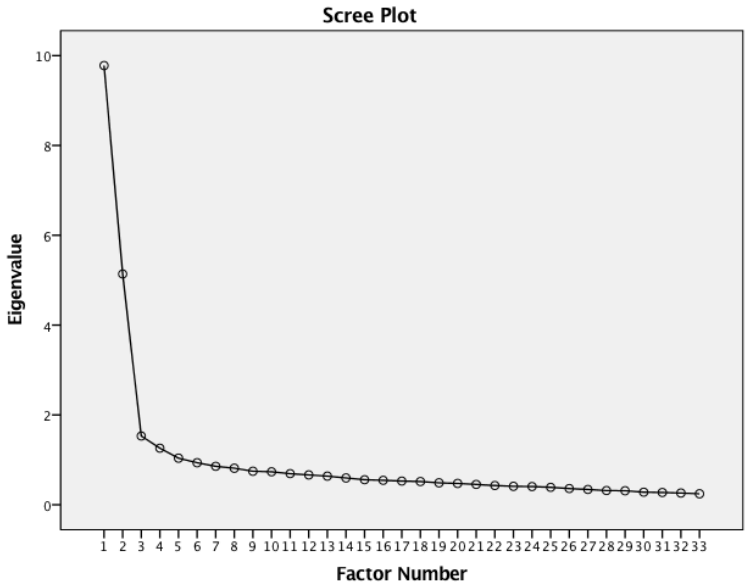

Figure 9. Scree plot for elementary grade span.

Parallel Analysis for Elementary Grade Span

PA was used to determine the number of factors to retain. Again, Monte Carlo PCA for Parallel Analysis (Watkins, 2000) was used to calculate the random set of eigenvalues. These data are presented in Table 42. When using this parallel analysis program, 33 variables, 1,176 subjects, and 100 replications were used in the computation of random eigenvalues. At the fifth factor, the random eigenvalue exceeded the observed eigenvalue. Therefore, results from the parallel analysis suggests that factor extraction should stop after the fourth factor.

Table 42

Observed and Randomly Generated Eigenvalues Used in Parallel Analysis for Elementary Grade Span

Factor	Observed Eigenvalue	Random Eigenvalue
1	9.78	1.3262
2	5.14	1.2856
3	1.53	1.2570
4	1.26	1.2312
5	1.04	1.2078
6	0.94	1.1823
7	0.86	1.1631
8	0.81	1.1439
9	0.75	1.1240
10	0.73	1.1059
11	0.69	1.0900
12	0.67	1.0722
13	0.64	1.0545
14	0.60	1.0392
15	0.56	1.0240
16	0.54	1.0070
17	0.53	0.9923
18	0.52	0.9760
19	0.49	0.9608
20	0.48	0.9443
21	0.45	0.9289
22	0.43	0.9141
23	0.41	0.8995
24	0.41	0.8822
25	0.39	0.8661
26	0.36	0.8511
27	0.34	0.8371
28	0.32	0.8201
29	0.31	0.8038
30	0.28	0.7855
31	0.27	0.7651
32	0.26	0.7425
33	0.25	0.7164

Note. Random eigenvalues calculated using n = 1,176, number of variables = 33, and 100 replications.

Minimum Average Partials for Elementary Grade Span

MAP results are depicted in Table 43. In MAP, the average partial coefficient is computed after each factor is eliminated. As noted by Runge (2003), "the average partial correlation will continue to decrease until there is no more shared variance that can be extracted" (p. 180). At that point, the average partial correlation will start to increase. It is at the point where the average partial increases that factors are no longer retained for rotation. Results indicate that five factors should be retained.

Table 43

Minimum Average Partials Results for Elementary Grade Span

Factors	Squared average partial correlations
0	0.156
1	0.088
2	0.018
3	0.017
4	0.015
5	0.014
6	0.015
7	0.017
8	0.018
9	0.020
10	0.023
11	0.025
12	0.027
13	0.030
14	0.033
15	0.038
16	0.043
17	0.048
18	0.055
19	0.062
20	0.068
21	0.075
22	0.085
23	0.096
24	0.108
25	0.124
26	0.138
27	0.165
28	0.189
29	0.249
30	0.341
31	0.534

Summary of Number of Factors to Retain for Elementary Grade Span

Data for elementary grade span did not yield consistent results across the four tests. The eigenvalues, scree plot, and MAP tests all identified to retain five factors. PA, however, only identified to retain four factors. When determining the number of factors to retain, it is suggested to look for consistency across the four tests (Velicer, 2000). Therefore, based on the results from these four tests, the most frequent number identified was five, and therefore, five factors were retained.

Factor Analysis Results for Elementary Grade Span

Results of the pattern matrix of the five-factor solution with Direct Oblimin rotation for elementary grade span are presented in Table 44. A simple solution was achieved, as represented by no items demonstrating salient loadings on two or more factors. There were 6 items that loaded onto the first factor, 6 items that loaded onto the second factor, 2 items that loaded onto the third factor, 6 items that loaded onto the fourth factor, and 8 items that loaded onto the fifth factor. Relatedly, only five items did not exhibit salient loadings on any factor. These items were *adjudicated by court*, *deteriorating condition*, *supervision all settings*, *suicide prevention response*, and *community resources*. All five factors retained for rotation were identified by at least two salient items, although the third factor was only minimally identified with two salient loadings. The factor structure, as revealed using Promax rotation produced similar results. While there were a few differences in some of the loadings, overall, the results were similar. Due to an EFA's purpose of simplifying the structure, Direct Oblimin rotation was selected and used.

Table 44

Pattern Coefficients for the Five-Factor Solution With Direct Oblimin Rotation for Elementary Grade Span

	Factor				
Item	I	II	III	IV	V
IllegalWeapons	**0.64**	0.00	0.13	-0.13	-0.07
Vandalism	**0.79**	-0.05	-0.06	0.01	-0.05
HighStudentMobility	0.17	0.05	-0.20	0.07	**-0.55**
Graffiti	**0.88**	0.01	-0.16	0.04	0.03
GangActivity	**0.71**	0.02	0.08	-0.09	-0.02
Truancy	0.24	-0.06	0.12	-0.07	**-0.45**
SuspensionsExpulsions	0.18	-0.14	0.19	0.05	**-0.43**
AdjudicatedByCourt	0.21	-0.16	0.27	0.00	-0.39
WithdrawnForSafety	**0.41**	-0.14	0.16	0.01	-0.13
ChildAbuseHome	0.03	-0.05	0.05	0.02	**-0.62**
TrespassingSchool	**0.42**	-0.07	0.05	-0.03	-0.21
Poverty	-0.06	0.07	-0.09	0.03	**-0.78**
Crimes	0.35	0.02	0.26	-0.13	**-0.40**
IllegalDrugsAlcohol	0.28	0.00	**0.50**	-0.26	-0.28
FightsConflict	0.25	0.01	0.25	-0.13	**-0.49**
BullyingHarassment	0.16	-0.08	0.10	-0.05	**-0.52**
DeterioratingCondition	0.26	-0.11	0.01	-0.03	-0.26
ExtracurricularOpportunities	-0.07	0.04	**0.53**	0.09	0.02
ProfessionalDevelopment	-0.06	0.03	0.03	**0.58**	-0.11
CrisisResponsePlans	-0.01	-0.05	-0.01	**0.81**	-0.06
ImplementedDisciplinePlans	-0.05	0.29	-0.08	**0.50**	-0.02
StudentSupportServices	-0.05	0.14	0.11	**0.58**	0.00
ParentInvolvement	0.04	0.14	0.10	**0.41**	0.29
StudentCrisisPreparation	-0.02	0.07	0.00	**0.64**	0.05
SupervisionAllSettings	-0.07	0.39	-0.01	0.31	-0.03
SuicidePreventionResponse	0.08	0.08	0.38	0.29	0.13
StudentAcademicParticipation	0.03	**0.51**	0.14	0.15	0.08
PositiveLearningClimate	-0.06	**0.80**	0.02	-0.01	0.03
DiversityAcceptance	0.09	**0.67**	-0.10	0.05	0.00
ResponseToConflict	0.08	**0.63**	0.08	0.19	0.13
CommunityResources	0.07	0.34	0.19	0.29	0.14
HighLearningExpectations	-0.08	**0.84**	-0.01	-0.04	-0.07
StudentTeacherRelationships	-0.05	**0.80**	0.02	-0.05	-0.08

Note. Salient ($\geq |0.4|$) loadings in bold.

Number of Factors to Retain for Secondary Grade Span

The following are results from the four methods that were conducted to determine the number of factors to retain for the School Safety Survey, specific to secondary grade span. These four methods were eigenvalue > 1, scree plot analysis, PA, and MAP correlations.

Eigenvalues for Secondary Grade Span

Initial eigenvalues for the maximum number of components that could be retained from the secondary data set are presented in Table 45. The percentage of variance of each eigenvalue as well as the cumulative percentage of variance are also presented. The first six factors indicated eigenvalues over 1.0. The same six factors cumulatively accounted for over half of the total variance.

Table 45

Initial Eigenvalues, Percentage of Variance, and Cumulative Percentage for All Possible Factors for Secondary Grade Span

Factor	Eigenvalues	% of Variance	Cumulative %
1	10.00	30.30	30.30
2	5.50	16.68	46.98
3	1.25	3.78	50.76
4	1.17	3.53	54.29
5	1.03	3.11	57.40
6	1.01	3.06	60.46
7	0.89	2.71	63.16
8	0.77	2.33	65.49
9	0.75	2.26	67.75
10	0.70	2.13	69.87
11	0.68	2.05	71.92
12	0.64	1.95	73.87
13	0.63	1.92	75.78
14	0.60	1.81	77.59
15	0.56	1.69	79.29
16	0.54	1.62	80.91
17	0.52	1.59	82.49
18	0.52	1.57	84.06
19	0.47	1.43	85.49
20	0.45	1.38	86.86
21	0.45	1.36	88.22
22	0.43	1.30	89.52
23	0.41	1.23	90.75
24	0.38	1.15	91.90
25	0.37	1.11	93.01
26	0.35	1.06	94.07
27	0.32	0.97	95.04
28	0.31	0.93	95.97
29	0.30	0.91	96.88
30	0.29	0.87	97.74
31	0.28	0.85	98.59
32	0.24	0.74	99.33
33	0.22	0.67	100.00

Note. $N = 428$

Scree Test for Secondary Grade Span

The Scree plot for the data are presented in Figure 10 for secondary grade span. A scree test involves examining the graph of eigenvalues and determining where there is a natural bend or break point in the data where the curve flattens out. The number of data points above the point at which the bend occurs is said to be the number of factors to retain (Costello & Osborne, 2005). This method suggested that two factors be retained.

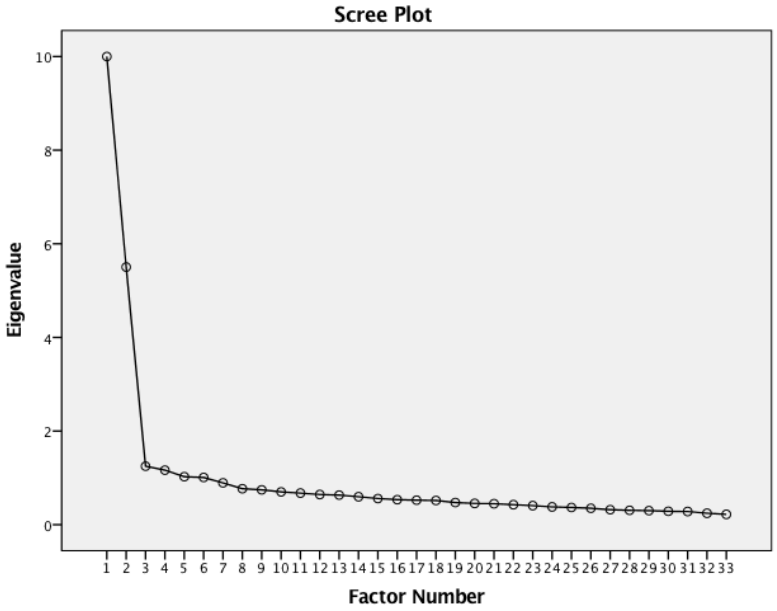

Figure 10. Scree plot for secondary grade span.

Parallel Analysis for Secondary Grade Span

PA was used to determine the number of factors to retain. Again, Monte Carlo PCA for Parallel Analysis (Watkins, 2000) was used to calculate the random set of eigenvalues. These data are presented in Table 46. When using this parallel analysis program, 33 variables, 428 subjects, and 100 replications were used in the computation of random eigenvalues. At the third factor, the random eigenvalue exceeded the observed eigenvalue. Therefore, results from the parallel analysis suggests that factor extraction should stop after the second factor.

Table 46

Observed and Randomly Generated Eigenvalues Used in Parallel Analysis for Secondary Grade Span

Factor	Observed Eigenvalue	Random Eigenvalue
1	10.00	1.5689
2	5.50	1.4886
3	1.25	1.4344
4	1.17	1.3851
5	1.03	1.3446
6	1.01	1.3075
7	0.89	1.2691
8	0.77	1.2347
9	0.75	1.2029
10	0.70	1.1739
11	0.68	1.1440
12	0.64	1.1135
13	0.63	1.0856
14	0.60	1.0575
15	0.56	1.0299
16	0.54	1.0038
17	0.52	0.9761
18	0.52	0.9504
19	0.47	0.9252
20	0.45	0.9008
21	0.45	0.8743
22	0.43	0.8489
23	0.41	0.8229
24	0.38	0.8002
25	0.37	0.7748
26	0.35	0.7521
27	0.32	0.7291
28	0.31	0.7031
29	0.30	0.6772
30	0.29	0.6506
31	0.28	0.6245
32	0.24	0.5938
33	0.22	0.5521

Note. Random eigenvalues calculated using $n = 428$, number of variables = 33, and 100 replications.

Minimum Average Partials for Secondary Grade Span

MAP results are depicted in Table 47. In MAP, the average partial coefficient is computed after each factor is eliminated. As noted by Runge (2003), "the average partial correlation will continue to decrease until there is no more shared variance that can be extracted" (p. 180). At that point, the average partial correlation will start to increase. It is at the point where the average partial increases that factors are no longer retained for rotation. Results indicate that three factors should be retained.

Table 47

Minimum Average Partials Results for Secondary Grade Span

Factors	Squared average partial correlations
0	0.15
1	0.09
2	0.02
3	0.02
4	0.02
5	0.02
6	0.02
7	0.02
8	0.02
9	0.02
10	0.03
11	0.03
12	0.03
13	0.03
14	0.04
15	0.04
16	0.04
17	0.05
18	0.05
19	0.06
20	0.06
21	0.07
22	0.08
23	0.09
24	0.10
25	0.11
26	0.13
27	0.16
28	0.20
29	0.27
30	0.35
31	0.49

Summary of Number of Factors to Retain for Secondary Grade Span

Data for elementary grade span did not yield consistent results across the four tests. The eigenvalues identified to retain six factors. PA and scree plot tests identified to retain two factors and MAP identified to retain three factors. When determining the number of factors to retain, it is suggested to look for consistency across the four tests (Velicer, 2000). Therefore, based on the results from these four tests, the most frequent number identified was two, and therefore, two factors were retained.

Factor Analysis Results for Secondary Grade Span

Results of the pattern matrix of the two-factor solution with Direct Oblimin rotation for secondary grade span are presented in Table 48. A simple solution was achieved, as represented by no items demonstrating salient loadings on two or more factors. There were 17 items that loaded onto the first factor and 15 items that loaded onto the second factor. Relatedly, only one item did not exhibit salient loadings on either factor. This item was *extracurricular opportunities*. Both factors retained for rotation was identified by at least two salient items. The factor structure, as revealed using Promax rotation produced similar results. While there were a few differences in some of the loadings, overall, the results were similar. Due to an EFA's purpose of simplifying the structure, Direct Oblimin rotation was selected and used.

Table 48

Pattern Coefficients for the Two-Factor Solution with Direct Oblimin Rotation for Secondary Grade Span

	Factor	
Item	I	II
IllegalWeapons	**0.73**	-0.04
Vandalism	**0.75**	-0.03
HighStudentMobility	**0.51**	0.04
Graffiti	**0.71**	0.00
GangActivity	**0.72**	0.00
Truancy	**0.69**	-0.06
SuspensionsExpulsions	**0.65**	0.00
AdjudicatedByCourt	**0.69**	-0.03
WithdrawnForSafety	**0.60**	-0.04
ChildAbuseHome	**0.59**	0.00
TrespassingSchool	**0.62**	-0.05
Poverty	**0.55**	0.06
Crimes	**0.82**	0.02
IllegalDrugsAlcohol	**0.76**	-0.04
FightsConflict	**0.79**	0.00
BullyingHarassment	**0.66**	-0.06
DeterioratingCondition	**0.49**	-0.11
ExtracurricularOpportunities	0.18	0.31
ProfessionalDevelopment	0.03	**0.54**
CrisisResponsePlans	0.00	**0.65**
ImplementedDisciplinePlans	-0.12	**0.68**
StudentSupportServices	-0.04	**0.67**
ParentInvolvement	-0.19	**0.52**
StudentCrisisPreparation	-0.10	**0.63**
SupervisionAllSettings	-0.10	**0.63**
SuicidePreventionResponse	0.13	**0.47**
StudentAcademicParticipation	-0.02	**0.65**
PositiveLearningClimate	-0.16	**0.72**
DiversityAcceptance	-0.05	**0.62**
ResponseToConflict	-0.07	**0.77**
CommunityResources	-0.01	**0.64**
HighLearningExpectations	-0.12	**0.71**
StudentTeacherRelationships	-0.06	**0.68**

Note. Salient (≥ |0.4|) loadings in bold.

Summary of Factor Analysis Results for Grade Span

Factor analysis results revealed that there were different factor structures between elementary and secondary grade spans, with a five- and two-factor solution obtained, respectively. There were six items that loaded onto the first factor between grade spans. These items included: "*illegal weapons*, *vandalism*, *high student mobility*, *gang activity*, *withdrawn for safety*, and *trespassing school"* (Sprague et al., 1995, p. 2). There were six items that loaded onto the second factor between grade spans. These items included: "*student academic participation*, *positive learning climate*, *diversity acceptance*, *response to conflict*, *high learning expectations*, and *student teacher relationships*" (Sprague et al., 1995, p. 3). The remaining 21 items loaded onto different factors between elementary and secondary grade spans. Taken together, these data do not support the hypothesis that the factor structure would be the same between grade spans.

Summary of Chapter 4

This chapter summarized the descriptive data obtained from the SSS and also summarized data disaggregated by respondent, location, and grade span. The factor analytic results used to test each research question hypothesis were also reviewed. Overall, it was first determined that the SSS has a high level of internal consistency, indicating that it is a reliable tool. Factor analytic results revealed a four-factor solution obtained from the SSS data, which did not support the hypothesis that there is a two-factor structure to the instrument. When disaggregated by respondent, each group had a different number of factors. There was a four-factor solution obtained from teachers' data, a three-factor solution from administrators' data, and a two-factor solution from parents' data. Therefore, results did not support the hypothesis that the factor structure is the same across respondent group. When disaggregated by location, there were different factor structures across urban, suburban, rural and town locations, with a

four-, three-, four-, and four-factor solution obtained, respectively. Therefore, results did not support the hypothesis that the factor structure is the same across locations. Lastly, when disaggregated by grade span, there were different factor structures between elementary and secondary grade spans, with a five- and two-factor solution obtained, respectively. Therefore, results did not support the hypothesis that the factor structure is the same between grade spans.

CHAPTER V

DISCUSSION

The purpose of this study was to explore the psychometric properties of the School Safety Survey (SSS). As part of this study, archival and anonymous data from the 2013-2014 school year were examined. Data were obtained from the University of Oregon's Educational and Community Supports, and included data from schools across the United States. Inclusion criteria were respondents (i.e., teachers, administrators, and parents / guardians) who answered all 33 items on the SSS and for which complete respondent, location, and grade span categories were provided. Not only were the survey's psychometric properties explored, but also whether the factor structure of the SSS was universal across respondents, locations, and grade span.

Accurate measurement yields accurate results, which subsequently supports effective program planning and intervention. Without understanding the survey's psychometric properties, data may not be valid, which could result in unknown impacts on the thousands of schools that use the SSS. Consistent with ethical and responsible assessment practices, it is important to empirically establish the validity and reliability of all instruments that are used in schools today, including the SSS.

This chapter will discuss the results presented in Chapter 4. These results will be interpreted in relation to each of the research questions. This chapter will additionally discuss the survey's implications for the field of education and aligned disciplines (e.g., positive behavioral interventions and supports, school psychology). The limitations of the study will be addressed as well as suggestions for future research.

Research Questions and Hypotheses

Five research questions were answered in this study. The following outlines the five research questions and its respective hypothesis and findings.

Research Question 1

What is the internal consistency of the SSS? It was hypothesized that items on the SSS would all measure the same general constructs. The reliability of the SSS was examined using Cronbach's alpha coefficient, which is a measure of internal consistency. Findings from this study indicated that there was, in fact, a high level of internal consistency among the survey items. Results indicated that items on the SSS measure the same general construct and produced similar scores. Overall, the SSS is found to be a reliable screening measure for school safety. Therefore, results produced from the SSS indicate the items are generally measuring the same construct and can be used for diagnostic, evaluation, and planning purposes.

Research Question 2

What is the underlying factor structure of the SSS? It was hypothesized that the SSS assessed two different factors: risk factors and protective factors. It was further believed that the items on the SSS, as reported by its authors, aligned with the obtained two-factor structure. However, results from this sample of data revealed a four-factor solution to the SSS. Therefore, the results did not support the hypothesis that only a two-factor structure would be present.

According to data analytic results, the SSS did not produce two different factors of risk and protection, but rather produced four different factors (refer to Table 6). When interpreting the results, the first factor appeared to be related to a destructive school community. This includes the physical condition of the building as well as any destructive activities that occur on school property. The second factor appeared to be related to constructive support services. This

encompasses response, preparation, and prevention planning. The third factor appeared to be related to a positive school climate. More specifically, this factor considers the implementation of a safe, comfortable, and inclusive school environment. Finally, the fourth factor appeared to be related to adverse personal living conditions. It should be noted that the first factor (destructive school community) accounted for almost 32% of the variance and the second factor (constructive support services) accounted for 15% of the variance. Therefore, aspects related to a destructive school community and constructive support services are viewed as most salient and weighted more heavily than the third and fourth factors. While a positive school climate and adverse personal living conditions are identified as existing factors, they did not account for a large percentage of variance; and therefore, they are not as meaningful as the first two factors.

Of particular note, the first three factors (the first two of which accounted for the majority of the variance) are malleable constructs. In other words, schools and communities have the ability to actually change these aspects of school safety. Responding to a destructive school community, implementing support services, and creating a positive school climate are all things that are in the control of schools and communities, whereas adverse personal living conditions are not as malleable and are more challenging for school systems to directly change.

Previous research has concluded that school violence and school safety are multidimensional constructs that do not have definitive statements about their specific dimensions (Furlong & Morrison, 2000). There continues to be a multitude of definitions, which contributes to the difficulty of establishing a universal consensus on what actually constitutes school violence and school safety. However, according to the results of this study, it was concluded that the SSS is far more complex and requires a deeper understanding than just considering risk and protective factors. Rather, this tool may actually measure a four-

dimensional construct that encompasses aspects related to a destructive school community (e.g., physical condition of the building and destructive activities that occur on school property), constructive support services (e.g., response, preparation, and prevention planning), a positive school climate (e.g., implementation of a safe, comfortable, and inclusive school environment), and adverse personal living conditions (e.g., homelessness).

Research Question 3

Does the underlying factor structure vary by stakeholder group / respondent (i.e., teachers, administrators, and parents / guardians)? It was hypothesized that a two-factor structure would be present across teachers, administrators, and parents / guardians. Further, it was hypothesized that all items would load on the same factors across teachers, administrators, and parents / guardians. Results revealed that each respondent group had a different number of factors. There was a four-factor solution obtained from teachers' data, a three-factor solution from administrators' data, and a two-factor solution from parents' / guardians' data. Therefore, results did not support the hypothesis that the factor structure would be the same across all three respondent groups. Noteworthy is that the factor loadings for these stakeholder groups were very similar to results in Research Question 2. In fact, the factor structure of the SSS and the factor structure when looking at the SSS specific to teacher respondent, produced the exact same factor structure. However, this finding is not surprising given that the large majority of respondents for Research Question 2 were teachers. Therefore, consistent results across Research Questions 2 and 3 was expected given the substantial overlap of data used to evaluate each Research Question.

According to teacher respondents, the SSS did not produce two different factors, but rather produced four (refer to Table 12). When interpreting the results, the first factor appeared

to be related to a destructive school community. Again, this factor includes the physical condition of the building as well as any destructive activities that occur on school property. The second factor appeared to be related to constructive support services, which include response, preparation, and prevention planning. The third factor appeared to be related to a positive school climate and the implementation of a safe, comfortable, and inclusive school environment. Finally, the fourth factor appeared to be related to adverse personal living conditions. The first factor (destructive school community) accounted for almost 33% of the variance and the second factor (constructive support services) accounted for almost 14% of the variance. In other words, a destructive school community and constructive support services are most salient to teachers and weighted more heavily than the third and fourth factors. While a positive school climate and adverse personal living conditions were identified as existing factors, they did not account for a large percentage of variance; and therefore, are not as meaningful to teachers as the first two factors.

As previously mentioned, the first three factors (the first two of which accounted for the majority of the variance) are malleable. Responding to a destructive school community, implementing support services, and creating a positive school climate are all things that are in the control of schools and communities, whereas adverse personal living conditions are much more difficult for schools to directly change.

According to administrator respondents, the SSS produced three different factors (refer to Table 15). The first factor appeared to be related to a destructive community, both inside and outside of school. Similar to teacher respondent, the second factor appeared to be related to constructive support services, which include response, preparation, and prevention planning. Lastly, the third factor appeared to be related to a positive school climate, which refers to the

implementation of a safe, comfortable, and inclusive school environment. The first factor (destructive community) accounted for 24% of the variance, the second factor (constructive support services) accounted for 11% of the variance, and the third factor (positive school climate) accounted for almost 6% of the variance. Simply stated, a destructive community (both inside and outside of school) is most salient to administrators on the SSS. Constructive support services are also very important; however, accounted for a lower percentage of variance. While a positive school climate exists as a factor, this factor is not as meaningful to administrators when compared to the first two dimensions. Similar to results from Research Question 2 and results when looking at teacher respondents, results from administrators' data were comparable with regard to order of factor saliency. The first three factors (the first two of which accounted for the majority of the variance) are all areas on which schools and communities can intervene and change.

According to parent respondents, the SSS produced two factors (refer to Table 19). As previously mentioned, Tabachnick and Fidell (2013) stated that samples in the range of 100-200 area are acceptable to conduct an EFA and anything less, one should proceed with caution as it runs the computational risk of failure to accurately identify the number of factors to retain. Since the parent stakeholder group had a sample size of 59, these results should be interpreted with caution. Similar to what the survey's authors originally identified, the first factor is related to all risk factors inside and outside of school and the second factor is related to all protective factors inside and outside of school. The first factor accounted for almost 36% of the variance and the second factor accounted for 24% of the variance. Therefore, results indicated that both factors were salient to parents and are viewed as meaningful dimensions. It is quite possible that a two-factor solution was obtained because parents are not as familiar with the daily operation and

functioning of a school. Parents, when compared to teachers and administrators, have a lack of familiarity with schools and do not share the same knowledge as the other two stakeholder groups in this study. This lack of familiarity may result in parents having different perceptions, which are then manifested on the SSS as a two-factor solution.

Overall, results from this research question, according to teacher and administrator respondents, concluded that we cannot interpret the SSS as having only two factors. Instead, it is more appropriate to interpret SSS results as representing four inter-related factors. Results showed that the factor structure between these two stakeholder groups were very similar to each other. Essentially, teachers and administrators view a destructive school community, constructive support services, and a positive school climate as important factors on the SSS. While the parent respondent data concluded that the SSS is comprised of a two-factor structure (risk and protective factors), it is quite possible that because parents have a lack of familiarity in schools, particularly when compared to teachers and administrators, only a two-factor solution was identified.

Research Question 4

Does the underlying factor structure vary by school location (i.e., urban, suburban, rural, and town)? It was hypothesized that a two-factor structure was present across urban, suburban, rural, and town locations; and further, that all items would load on the same factors across all locations. Results, however, revealed that there were different factor structures across urban, suburban, rural, and town locations, with a four-, three-, four-, and four-factor solution obtained, respectively. Therefore, results did not support the hypothesis that the factor structure would be exactly the same across locations, despite the extreme similarity among the four.

According to urban locations, the SSS did not produce a two-factor structure, but rather produced four different factors (refer to Table 25). Similar to previous research questions in this study, the first factor appeared to be related to a destructive school community. This factor includes the physical condition of the building as well as any destructive activities that occur on school property. The second factor appeared to be related to a positive school climate. More specifically, this factor includes the implementation of a safe, comfortable, and inclusive school environment. The third factor appeared to constructive support services, which include response, preparation, and prevention planning. Lastly, the fourth factor appeared to be related to adverse personal living conditions. The first factor accounted for 35% of the variance and the second factor accounted for almost 13% of the variance. Essentially, a destructive school community and a positive school climate are most salient in urban locations and are weighted more heavily than the third and fourth factors. While constructive support services and adverse personal living conditions were identified as existing factors, they did not account for a large percentage of variance. Therefore, they are not as meaningful in urban locations with regard to school safety as the first two factors. Again, it is noteworthy to indicate that the most important dimensions on the SSS are areas that can be addressed and changed by school communities.

According to suburban locations, the SSS produced three different factors (refer to Table 29). The first factor appeared to be related to a destructive community, both inside and outside of school. The second factor appeared to be related to constructive support services, including response, preparation, and prevention planning. Lastly, the third factor appeared to be related to a positive school climate, which refers to the implementation of a safe, comfortable, and inclusive school environment. The first factor accounted for 34% of the variance, the second factor accounted for almost 15% of the variance, and the third factor accounted for 4% of the

variance. In other words, a destructive community (both inside and outside of school) is most important in suburban locations. Constructive support services are also important, but accounted for a lower percentage of variance. While a positive school climate exists as a factor, this dimension is not as meaningful when compared to the first two factors. Findings indicate that the first two factors (which accounted for the largest percentage of variance) are the two most salient areas, and critically, they are malleable so they can be changed by schools and communities. Noteworthy then, is that schools and communities can develop plans and focus on implementing efforts to improve a destructive community and implement constructive support services.

For rural locations, there was a four-factor structure obtained (refer to Table 33). The first factor appeared to be related to a destructive school community, which includes the physical condition of the building as well as any destructive activities that occur on school property. The second factor appeared to be related to constructive support services, which again, includes response, preparation, and prevention planning. The third factor appeared to be related to a positive school climate, which includes implementing a safe, comfortable, and inclusive school environment. Lastly, the fourth factor appeared to be related to adverse personal living conditions. The first factor accounted for almost 27% of the variance and the second factor accounted for almost 16% of the variance. Essentially, aspects related to a destructive school community and constructive support services are most salient in rural locations and are weighted more heavily than the third and fourth factors. While a positive school climate and adverse personal living conditions were identified as existing factors, they did not account for a large percentage of variance; and therefore, are not as meaningful in rural locations as compared to the first and second factors. Again, the two most important factors (which accounted for the largest

percentage of variance) are areas that can be reformed and improved by schools and communities. Based on concluded survey data, efforts can focus on addressing aspects related to a destructive school community as well as employing constructive support services to enhance school safety in rural locations.

Results from town location data identified a four-factor structure (refer to Table 37). Town location results were exactly the same as results from rural locations. The first factor appeared to be related to a destructive school community, which includes the physical condition of the building as well as any destructive activities that occur on school property. The second factor appeared to be related to constructive support services, which includes response, preparation, and prevention planning. The third factor appeared to be related to a positive school climate, which includes implementing a safe, comfortable, and inclusive school environment. Lastly, the fourth factor appeared to be related to adverse personal living conditions. The first factor accounted for almost 29% of the variance and the second factor accounted for 17% of the variance. Essentially, aspects related to a destructive school community and constructive support services are most salient in town locations and weighted more heavily than the third and fourth factors. While a positive school climate and adverse personal living conditions were identified as existing factors, they did not account for a large percentage of variance; and therefore, they are not as meaningful in rural locations. Again, the two most important factors (which accounted for the largest percentage of variance) are aspects that schools and communities have the power to improve.

Overall, results from this research question concluded that a two-factor solution to the SSS is not appropriate across any school location (i.e., urban, suburban, rural, and town). Results concluded that the factor loadings were very similar across all four locations. Results

further concluded that the factor structure among suburban, rural, and town locations were similar and even exactly the same between rural and town locations. This study found that suburban, rural, and town locations view a destructive school community, constructive support services, and a positive school climate as critical factors on the SSS. These factors are also listed in order of importance. While data from urban locations produced similar factor loadings, the order of importance differed. There were similar loadings on the first factor with regard to a destructive school community; however, the second factor identified a positive school climate, which came before constructive support services. A hypothesis to support these findings is that since urban violence most likely reflects the reasoning that many schools are located in an inner city and populated with lower socio-economic families (Shelton, 2009), these urban districts may not receive adequate funding to implement constructive support services. This is particularly the case when compared to suburban locations, which are viewed as more prosperous and have newer support capabilities (Shelton, Owens, & Song, 2009). Furthering this point, since suburban communities are considered more prosperous with higher socio-economic families, this could be an attributing reason why suburban data obtained a three-factor structure and did not identify adverse personal living conditions as a fourth dimension on the SSS. While familial difficulties still do exist within suburban communities, it may not be to the degree that these difficulties exist within other communities (i.e., urban locations). Therefore, adverse personal living conditions may not be as of a common occurrence in suburban locations as in other locations.

Research Question 5

Does the underlying factor structure vary by grade span (i.e., elementary school, secondary school)? It was hypothesized that a two-factor structure would be present across

elementary and secondary grade spans. Further, all items would load on the same factors across elementary and secondary grade spans. Results, however, indicated that there were different factor structures between elementary and secondary grade spans, with a five- and two-factor solution obtained, respectively. Therefore, results did not support the hypothesis that the factor structure would be the same across grade spans.

According to elementary grade spans, the SSS produced a five-factor structure (refer to Table 43). The first factor appeared to be related to a destructive school community, which again, includes the physical condition of the building as well as any destructive activities that occur on school property. The second factor appeared to be related to a positive school climate, which includes the implementation of a safe, comfortable, and inclusive school environment. The items that loaded onto the third factor were rather unclear as commonalities among the items were difficult to identify. However, items that did load onto the third factor appeared to be related to non-scholastic activities. The fourth factor appeared to be related to constructive support services. Finally, the fifth factor appeared to be related to student truancy and adverse personal living conditions. Of note, the items that loaded onto all of the factors were not as conclusive as in the factor loadings in previous research questions. Commonalities among the items for elementary grade span were more difficult to identify. The first factor accounted for almost 30% of the variance and the second factor accounted for almost 16% of the variance, which indicated saliency. The third, fourth, and fifth factors accounted for almost 5%, almost 4%, and 3% of the variance, respectively. In other words, these factors were identified as being less meaningful in elementary grade spans compared to the first two factors.

According to secondary grade spans, the SSS produced two factors (refer to Table 47). Similar to what the survey's authors originally identified, the first factor was related to all risk

factors inside and outside of school and the second factor was related to all protective factors inside and outside of school. The first factor accounted for 30% of the variance and the second factor accounted for almost 17% of the variance. Therefore, results indicated that both factors are viewed as meaningful dimensions in secondary grade spans.

Overall, results from this research question concluded that according to elementary grade spans, we cannot interpret the SSS as only having two factors, as this study found that the survey measures additional factors as well. Inconsistent with elementary grade spans, secondary grade spans identified a two-factor structure. Between the two grade spans, item loadings for secondary grades were significantly more apparent and comprehensible in comparison to item loadings for elementary grades.

Implications

Results from this study found that the SSS measures more than just two factors when looking at respondent (teachers and administrators), location (urban, suburban, rural, and town), and elementary grade span. Rather, results from this study indicate the SSS measures different factors associated with school safety. While different factor solutions were obtained among respondents, locations, and grade spans, results provided insight into the four most prevalent dimensions of school safety, which include (a) destructive school community, (b) constructive support services, (c) positive school climate, and (d) adverse personal living conditions. It is now understood that school safety is predominantly comprised of multiple dimensions that were previously thought to be related to solely risk and protective factors. It is possible that a two-factor structure is more nuanced for certain contexts, which is why results from this study predominantly found different factor structures across all constructs. Depending on the contexts in which this instrument is being used, the concept of safety can be related to just risk and

protection or it can be related to more unique specific dimensions of safety, that go beyond just risk and protection. It is important that results from this instrument should be interpreted based on local context and not just looked at as either a two-factor instrument or more than a two-factor instrument. Again, it is critical to have contextual knowledge and understanding in how this instrument is being used. With this knowledge, researchers and practitioners can incorporate this empirical evidence as part of their screening of school safety; and ultimately, implement meaningful and useful interventions and programs to enhance the safety of all individuals.

As previously stated, schools that implement SWPBIS are encouraged to use the SSS; and currently, there are over 21,000 schools that have initiated SWPBIS efforts in their buildings (Horner, n.d.). Due to the large number of schools using the SSS nationwide, it is troubling to think that schools have been potentially misusing and misinterpreting this instrument. Now, with this incremental knowledge, it becomes imperative for users of this instrument to consider alternate interpretations of this measure based on these factor analytic results. Findings from this study provide evidence to infer that a comprehensive picture of school safety includes four unique dimensions, which again are a destructive school community, constructive support services, positive school climate, and adverse living conditions. Schools that implement SWPBIS should focus on creating and implementing interventions and programs targeting these four specific areas of school safety. The results of this study can now inform school personnel on how to plan appropriate and effective school safety programs that more fully consider these newly-identified dimensions. These programs can also be created and implemented in a multi-tiered system of support framework to help teachers, administrators, families, and communities feel more safe and secure.

While there are four different dimensions of school safety, findings from this study indicated that the most heavily weighted school safety factors are a destructive school community and constructive support services. This is a noteworthy and exciting implication for the educational field because these two dimensions are malleable and which both schools and communities have the power to change. Responding to a destructive school community and implementing constructive support services are issues that are in the control of schools and communities. Additionally, the third most important factor according to most respondents, locations, and grade spans is creating a positive school climate. Again, this is a malleable factor that schools and communities have the power to reform and improve.

A concrete example of how schools and communities can address a destructive school community is by implementing safety and security measures in an effort to decrease the presence of illegal weapons, vandalism, gang activity, crimes, and illegal drugs/alcohol use, that may be occurring on school property. These measures can be in the form of updating camera security or strengthening visitor identification procedures. Implementing anti-bullying programs is another great example of how schools and communities can address and respond to any bullying behavior that may occur on school property. Federal laws have now mandated that schools develop and implement safety plans and procedures (Council of State Governments Justice Center, 2014), which is further validated by the results of this study. Additionally, programs that aim to help keep schools clean is another example of how to target this dimension of school safety. As part of a SWPBIS initiative, there can be cafeteria awards given to a grade or class, for instance, that recognize how and when students help keep their lunchroom clean and orderly. Another area that can and should be addressed within this dimension is truancy. Schools can form a committee that identifies truant students and provide necessary support programs for

those individuals. This outreach also strengthens the school-home partnership by showing families that schools care about having their children attend school every day. All the aforementioned examples are procedures that can help target this destructive school community dimension, which is now understood to be a very critical factor in school safety.

Creating and implementing constructive support services is considered another important dimension in school safety. Introducing a variety of different programs is a great way for schools and communities to enhance this area. For example, a curriculum that helps teachers target and address behavioral and emotional regulation skills would be beneficial (DiPerna & Elliott, 2002). With this type of curriculum, teachers would feel more equipped and prepared to handle behavioral or emotional instances throughout the day. With any new initiative, schools should also provide professional development opportunities to teach staff on how to implement these programs with fidelity. These professional development trainings are essential for fidelity purposes. Moreover, any opportunities for parent involvement additionally enhances this dimension of school safety (Griffith, 1998; Brookmeyer et al., 2006). For example, schools that offer parent workshops (i.e., homework help, dealing with behaviors, good hygiene, etc.) not only provide parents with knowledge and information on child development, but also strengthens the home-school partnership, communication, and collaboration (Christenson & Sheridan, 2001). As part of these parent programs, schools can also provide child care, meals/snacks, and/or transportation in an effort to make it easier and more desirable for parents to attend these various workshops, particularly in lower income communities. We know that parent perceptions of school climate highly influences their child's attitudes, motivation, behavior, and academic performance (Roeser & Eccles, 1998; Cohen et al., 2009; Harackiewicz et al., 2012). Given that family engagement with their child's learning is strongly correlated with academic achievement,

it is important to involve parents in their child's education as much as possible. Increased communication and collaboration between school and home will also provide parents with more information about education, which in turn, will help to improve their familiarity with schools.

Results from this study further identified that a positive school climate is another important dimension of school safety. This is another malleable area that schools have the power to control and change. Examples of addressing a positive school climate could include the implementation of interventions and programs that focus on diversity acceptance, discipline fairness, high learning expectations, and student-teacher relationships (Hamre & Pianta, 2001; O'Malley et al., 2015). More concrete examples might be to implement a diversity day where staff and parent volunteers create stations to highlight differences (i.e., being blind, deaf, in a wheelchair, etc.) to bring awareness to and acceptance of diverse individuals. Additionally, administrators and / or a leadership team should look at policy and develop a code of student conduct that includes policies governing student discipline, rights, and responsibilities. The consistent application of rules and regulations strengthens feelings of school safety and ultimately enhances a positive school climate. Students should be held accountable for their actions and for their responsibilities as they relate to the school community, which again, supports the overall climate of a school **(**Thapa et al., 2012). Providing any opportunities for teachers and students to work collectively also helps to form positive teacher-student relationships. The quality of interpersonal relationships between and among students, teachers, and staff are highly influential when it comes to school climate (Hamre & Pianta, 2001). Overall, the importance of a positive school climate helps to promote skills for healthy emotional development for all individuals (Shochet et al., 2006).

Lastly, a fourth dimension of school safety includes adverse personal living conditions (i.e., poverty, high student mobility from school to school). Schools and communities are less in control of this dimension and have very little, if any ability to directly change a student's living situation. However, schools and communities can and should put forth efforts to address the other three dimensions of school safety (i.e., destructive school community, constructive support services, and positive school climate), since this focus will only help to enhance and strengthen feelings of safety among all individuals involved in the educational community.

Results from this study have also helped to define the term school safety. There are many existing definitions of school safety that vary from one another. Since school safety is comprised of many different components, there has not been a definitive statement about its specific dimensions. This factor analytic study has helped to shape the definition of school safety. A more contemporary definition, given results of this study, should include four unique dimensions: a destructive school community, constructive support services, a positive school climate, and adverse personal living conditions. With this amended definition of school safety, schools and communities can more easily identify specific areas of need to target and address.

Limitations

A limitation to this study involves potential external factors at the time of completion of the SSS. For example, a school shooting that occurred around the time respondents completed the SSS may have influenced their perception of safety. Furthering this point, respondents who completed the SSS at different times throughout the 2013-2014 school year may have elicited different perceptions, depending on varying external factors that were current at that time of survey completion.

Another limitation to this study is that perceptions are subjective and can be extremely difficult to accurately measure. This limitation naturally poses a threat to the validity of this study. Surveys may lead to unclear data because respondents interpret certain questions and answers differently.

The small number of parent respondents is another limitation to this study. Samples in the range of 100-200 are acceptable to conduct a factor analysis and anything less, should be interpreted with caution, as it runs the computational risk of failure to accurate identify the number of factors to retain (Tabachnick & Fidell, 2013). Since the parent respondent group had a sample size of 59, this is a limitation to the study.

Lastly, a limitation in this study were results from the correlation matrices for all research questions. A sizable number of correlations should represent at least 51% of the data set to determine appropriateness to conduct a factor analysis (Watkins, 2018). However, data from all correlation matrices were just below the desired population, which is a small, yet reasonable limitation to note.

Recommendations for Future Research

The present study provided insight into school safety. School safety is continuously being influenced and shaped by events that occur within our schools and across our nation. New occurrences always brings forth new information on how we can strengthen school safety and reduce school violence. As school safety continues to shift based on various occurrences, continued research is encouraged for educators to stay current and updated in an effort to strive for enhanced school safety. Additionally, this will also help to inform school personnel on what to address and implement. Given the evidence that school safety is linked to academic

achievement, it is important that future research continues to build on the results of the present study.

It is strongly recommended for schools to use reliable and valid assessment tools, which undoubtedly leads to more evidence-based interventions and programs. Interventions, programs, and curricula based on evidence-based research are critical since they are strongly supported by evidence from well-conducted research studies. Evidence-based practices demonstrates a statistically significant effect on improving student outcomes. When practices are not evidence-based, educators and practitioners run the risk of obtaining unreliable or invalid results. We can presume that schools have been incorrectly or inappropriately using the SSS, since there has not been research conducted to date on the survey's psychometric properties. Now, this study can conclude that the SSS is a psychometrically-sound tool that assesses various unique dimensions of school safety and is not just solely assessing risk or protective factors, as reported by its authors.

Based on the findings from this study, another recommendation would be to revise the SSS by removing those survey items that did not or rarely loaded onto a factor. This adjustment would strengthen and enhance the instrument by placing more emphasis and focus on the significant items on the SSS and less emphasis on the insignificant items. Additionally, the removal of insignificant items would make the instrument shorter in length, which may add to the appeal of survey completion from a time and effort perspective.

It would also be of interest to conduct a stratified sample across multiple years as future research. This type of research would yield to greater precision of the sample and highlight the differences between specific subgroups (i.e., respondent, location, and grade span) within the population. Since the current study only used data from the 2013-2014 school year, stratified

sampling across multiple years would be recommended to see if there are any differences from year to year.

It is also recommended that future research replicate this study with a larger sample size for the parent stakeholder group. The parent stakeholder group in this study had a sample size of 59. Tabachnick and Fidell (2013) stated that samples in the range of 100-200 area are acceptable to conduct this test and anything less, one should proceed with caution as it runs the computational risk of failure to accurately identify the number of factors to retain. Therefore, it is recommended to conduct further investigation with a larger sample size, which may lead to more conclusive findings. This will allow results to generalize more to the population. With a larger sample size, it would be of interest to see if those results are similar to the other respondent stakeholder groups.

Future research is also recommended to further investigate elementary grade spans. Results from this study were unclear regarding the items that loaded onto the third factor. Even the items that loaded on the other four factors were more difficult to identify the commonalities and relatedness among them. Therefore, further examination in this area is warranted to gain a better understanding of the different dimensions; particularly, clarification of the third factor when looking at elementary grade span.

Since this study conducted an exploratory factor analysis (EFA), another recommendation for future research is to conduct a confirmatory factor analysis (CFA) for all research questions. CFA is another data-reduction technique that is used to validate the previous exploratory factor analytic study. Essentially, it attempts to validate an already determined factor structure that was concluded from an EFA. A CFA will either confirm or reject the results that were found in previous research.

Conclusion

The purpose of this study was to explore the psychometric properties of the SSS. Accurate measurement yields to accurate results, which subsequently supports effective program planning and intervention. Without thoroughly understanding the survey's psychometric properties, data may not be valid, which can create an adverse impact on the thousands of schools that use the SSS today.

Results from this study indicated that the SSS, as written and marketed, is rather imprecise because it purports to measure two different domains: risk and protection. Results from this study indicate that this two-factor solution is not accurate. For the majority of research questions, this study concluded that the factor structure of the SSS includes four unique dimensions of school safety: destructive school community occurrences, constructive support services, a positive school climate, and adverse personal living conditions.

The hope of this present study is to provide insight into the factor structure of the SSS and what unique school safety dimensions exist, according to respondents (i.e., teachers, administrators, and parents), locations (i.e., urban, suburban, rural, and town) and grade spans (i.e., elementary and secondary). Findings from this present study provide evidence to infer that a comprehensive picture of school safety includes four unique dimensions. With this knowledge, researchers and practitioners can incorporate this empirical evidence as part of their screening of school safety; and ultimately, implement meaningful and useful interventions and programs to enhance the safety of all individuals. Of particular note, a major implication from this study is that the factors that accounted for the largest percentage of variance are factors that schools and communities have the ability to address and change. Responding to a destructive school community, implementing constructive support services, and creating a positive school climate

are all things that schools and communities can control. Additionally, this study has hopefully helped shift our focus and attention toward a more accurate assessment of school safety. Accurate assessment is the first step in the creation and implementation of effective safety interventions and also enables the development of appropriate programs to address any specific area of need.

Continued research is imperative to further examine and explore the subject of school safety. This is because school safety is not a static construct. It is constructed and shaped by tragic events that unfortunately continue to occur. It is imperative for educators and practitioners to stay current and updated in an effort to strive for enhanced school safety for all individuals. Additionally, further exploration with regard to parent stakeholder group and elementary grade spans are encouraged. This research is recommended due to the small sample size of parent respondents and the perplexity of the elementary grade span factor structure. Lastly, it is recommended for all of the EFA results (i.e., respondents, locations, and grade spans) to be validated by a CFA. It would be beneficial to know if the factor structures found in this study are either accepted or rejected by conducting this confirmatory analysis.

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Appendix A

Institutional Review Board Approval Letter

Indiana University of Pennsylvania
www.iup.edu

Institutional Review Board for the
Protection of Human Subjects
School of Graduate Studies and Research
Stright Hall, Room 113
210 South Tenth Street
Indiana, Pennsylvania 15705-1048

P 724-357-7730
F 724-357-2715
irb-research@iup.edu
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January 12, 2017

Lisa M. Lack
Dept of Educational and School Psychology
246 Stouffer Hall

Dear Ms. Lack:

Thank you for submitting your research site approval from the University of Oregon for your proposed research project "A Psychometric Analysis of the Validity of the School Safety Survey,"(Log No. 15-291). On behalf of the IRB, I have approved your project. In accordance with 45CFR46.101 and IUP Policy, your project is exempt from continuing review. This approval does not supersede or obviate compliance with any other University requirements, including, but not limited to, enrollment, degree completion deadlines, topic approval, and conduct of university-affiliated activities.

You should read all of this letter, as it contains important information about conducting your study.

Now that your project has been approved by the IRB, there are elements of the Federal Regulations to which you must attend. IUP adheres to these regulations strictly:

1. You must conduct your study exactly as it was approved by the IRB.
2. Any additions or changes in procedures must be approved by the IRB before they are implemented.
3. You must notify the IRB promptly of any events that affect the safety or well-being of subjects.
4. You must notify the IRB promptly of any modifications of your study or other responses that are necessitated by any events reported in items 2 or 3.

The IRB may review or audit your project at random *or* for cause. In accordance with IUP Policy and Federal Regulation (45CFR46.113), the Board may suspend or terminate your project if your project has not been conducted as approved or if other difficulties are detected.

Although your human subjects review process is complete, the School of Graduate Studies and Research requires submission and approval of a Research Topic Approval Form (RTAF) before you can begin your research. If you have not

yet submitted your RTAF, the form can be found at http://www.iup.edu/page.aspx?id=91683 .

While not under the purview of the IRB, researchers are responsible for adhering to US copyright law when using existing scales, survey items, or other works in the conduct of research. Information regarding copyright law and compliance at IUP, including links to sample permission request letters, can be found at http://www.iup.edu/page.aspx?id=165526.

I wish you success as you pursue this important endeavor.

Sincerely,

Jennifer Roberts, Ph.D.
Chairperson, Institutional Review Board for the Protection of Human Subjects
Professor of Criminology

JLR:jeb

Cc: Dr. Timothy Runge, Dissertation Advisor
Dr. Joseph Kovaleski, Graduate Coordinator
Ms. Brenda Boal, Secretary

Appendix B

The School Safety Survey

The School Safety Survey

Jeffrey Sprague, Geoffrey Colvin, & Larry Irvin

The Institute on Violence and Destructive Behavior
University of Oregon College of Education

For further information contact Jeffrey Sprague, Ph.D. at 541-346-3592
jeffs@oregon.uoregon.edu

Essential Questions for School Safety Planning

Choose a minimum of 5 staff, including 1 administrator, 1 custodial staff member, 1 supervisory/classified member, 1 certified member and 1 office staff member, to complete this survey. Please place a check (**X**) next to the item that best reflects your opinion for each question. Your responses will be valuable in determining training and support needs related to school safety and violence prevention.

School Name: _____ Date: ___/___/___

District: _____ State: _____

Your Role:

1. Administrator _____.
2. Teacher _____.
3. Special Education Teacher _____.
4. Educational Assistant _____.
5. Office Staff _____.
6. Custodial Staff _____.
7. Related Service Provider _____.
8. Student _____.
9. Parent _____.
10. Community Member _____.
11. Other ____

Section One: Assessment of Risk Factors for School Safety and Violence

Indicate the extent to which these factors exist in your school and neighborhood:	**Rating**				
	not at all	minimally	moderately	extensively	don't know
Illegal weapons.					
Vandalism.					
High student mobility (i.e. frequent changes in school enrollment).					
Graffiti.					
Gang activity.					
Truancy.					
Student suspensions and/or expulsions.					
Students adjudicated by the court.					
Parents withdrawing students from school because of safety concerns.					
Child abuse in the home.					
Trespassing on school grounds.					
Poverty.					
Crimes (e.g. theft, extortion, hazing).					
Illegal drug and alcohol use.					
Fights, conflict, and assault.					
Incidence of bullying, intimidation, and harassment.					
Deteriorating condition of the physical facilities in the school.					

Section Two: Assessment of Protection Factors for School Safety and Violence

Indicate the extent to which these factors exist in your school and neighborhood:	**Rating**				
	not at all	minimally	moderately	extensively	don't know

Appendix B *(continued)*

Opportunity for extracurricular programs and sports activities.					
Professional development and staff training.					
Crisis and emergency response plans.					
Consistently implemented school-wide discipline plans.					
Student support services in school (e.g. counseling, monitoring, support team systems).					
Parent involvement in our school (e.g. efforts to enhance school safety, student support).					
Student preparation for crises and emergencies.					
Supervision of students across all settings.					
Suicide prevention/response plans.					
Student participation and involvement in academic activities.					
Positive school climate for learning.					
Acceptance of diversity.					
Response to conflict and problem solving.					
Collaboration with community resources.					
High expectations for student learning and productivity.					
Effective student-teacher relationships.					

Section Three: Your Comments on School Safety and Violence

1. What is the most pressing safety need in your school?

2. What school safety activities does your school do best?

3. What topics are most important for training and staff development?

4. What are the biggest barriers to improved school safety measures?

5. What other comments do you have regarding school safety?

6. What other factors not included in this survey do you believe affect school safety?

Appendix C

Intercorrelations for the 33 Items on the School Safety Survey

	Illegal Weapons	Vandalism	High Student Mobility	Graffiti	Gang Activity	Truancy	Suspensions Expulsions	Adjudicated By Court	Withdrawn For Safety
IllegalWeapons		0.64	0.35	0.56	0.65	0.45	0.43	0.49	0.44
Vandalism			0.39	0.72	0.60	0.51	0.47	0.48	0.43
HighStudentMobility				0.36	0.34	0.45	0.35	0.36	0.26
Graffiti					0.63	0.49	0.46	0.45	0.43
GangActivity						0.47	0.46	0.49	0.46
Truancy							0.55	0.50	0.37
SuspensionsExpulsions								0.53	0.40
AdjudicatedByCourt									0.49

(table continues)

Appendix C (*continued*)

	Child Abuse Home	Trespassing School	Poverty	Crimes	Illegal Drugs Alcohol	Fights Conflict	Bullying Harassment	Deteriorating Condition
IllegalWeapons	0.39	0.44	0.33	0.58	0.60	0.55	0.45	0.34
Vandalism	0.37	0.48	0.35	0.61	0.54	0.59	0.52	0.42
HighStudentMobility	0.37	0.29	0.49	0.35	0.28	0.39	0.33	0.27
Graffiti	0.32	0.48	0.32	0.56	0.47	0.54	0.47	0.42
GangActivity	0.32	0.43	0.32	0.57	0.55	0.54	0.46	0.34
Truancy	0.38	0.37	0.42	0.49	0.46	0.54	0.48	0.36
SuspensionsExpulsions	0.36	0.35	0.34	0.49	0.43	0.57	0.50	0.36
AdjudicatedByCourt	0.43	0.43	0.34	0.54	0.55	0.50	0.43	0.35

(table continues)

Appendix C (*continued*)

	Extracurricular Opportunities	Professional Development	Crisis Response Plans	Implemented Discipline Plans	Student Support Services	Parent Involvement	Student Crisis Preparation	Supervision All Settings
IllegalWeapons	0.00	-0.14	-0.14	-0.20	-0.14	-0.25	-0.20	-0.20
Vandalism	-0.03	-0.11	-0.15	-0.22	-0.16	-0.27	-0.21	-0.23
HighStudentMobility	-0.11	-0.02	-0.05	-0.08	-0.06	-0.25	-0.11	-0.09
Graffiti	-0.03	-0.11	-0.15	-0.21	-0.14	-0.25	-0.18	-0.22
GangActivity	-0.03	-0.12	-0.13	-0.20	-0.13	-0.26	-0.20	-0.21
Truancy	-0.04	-0.12	-0.14	-0.21	-0.14	-0.31	-0.20	-0.21
SuspensionsExpulsions	0.03	-0.07	-0.11	-0.18	-0.09	-0.26	-0.18	-0.20
AdjudicatedByCourt	0.03	-0.07	-0.12	-0.19	-0.11	-0.26	-0.20	-0.21

(table continues)

Appendix C (*continued*)

	Suicide Prevention Response	Student Academic Participation	Positive Learning Climate	Diversity Acceptance	Response To Conflict	Community Resources	High Learning Expectations	Student Teacher Relationships
IllegalWeapons	0.00	-0.18	-0.25	-0.13	-0.19	-0.16	-0.21	-0.20
Vandalism	-0.03	-0.19	-0.26	-0.15	-0.22	-0.18	-0.22	-0.19
HighStudentMobility	-0.08	-0.15	-0.14	-0.02	-0.12	-0.12	-0.09	-0.08
Graffiti	-0.02	-0.16	-0.24	-0.12	-0.19	-0.18	-0.18	-0.18
GangActivity	0.04	-0.18	-0.25	-0.10	-0.17	-0.15	-0.21	-0.20
Truancy	-0.03	-0.19	-0.22	-0.12	-0.19	-0.17	-0.20	-0.18
SuspensionsExpulsions	0.02	-0.17	-0.23	-0.12	-0.17	-0.14	-0.19	-0.19
AdjudicatedByCourt	0.03	-0.20	-0.26	-0.17	-0.21	-0.13	-0.23	-0.21

(table continues)

Appendix C (*continued*)

	Child Abuse Home	Trespassing School	Poverty	Crimes	Illegal Drugs Alcohol	Fights Conflict	Bullying Harassment	Deteriorating Condition
WithdrawnForSafety	0.37	0.44	0.23	0.46	0.42	0.44	0.42	0.36
ChildAbuseHome		0.43	0.48	0.47	0.43	0.45	0.43	0.27
TrespassingSchool			0.30	0.51	0.42	0.44	0.39	0.37
Poverty				0.44	0.35	0.42	0.38	0.30
Crimes					0.66	0.67	0.56	0.41
IllegalDrugsAlcohol						0.59	0.48	0.32
FightsConflict							0.68	0.44
BullyingHarassment								0.43

(table continues)

Appendix C (*continued*)

	Extracurricular Opportunities	Professional Development	Crisis Response Plans	Implemented Discipline Plans	Student Support Services	Parent Involvement	Student Crisis Preparation	Supervision All Settings
WithdrawnForSafety	-0.02	-0.14	-0.17	-0.21	-0.17	-0.19	-0.19	-0.23
ChildAbuseHome	-0.04	-0.04	-0.09	-0.10	-0.09	-0.20	-0.15	-0.11
TrespassingSchool	-0.01	-0.11	-0.13	-0.17	-0.15	-0.18	-0.17	-0.19
Poverty	-0.06	-0.03	-0.04	-0.07	-0.08	-0.27	-0.14	-0.08
Crimes	0.03	-0.11	-0.15	-0.23	-0.14	-0.28	-0.23	-0.23
IllegalDrugsAlcohol	0.13	-0.11	-0.14	-0.23	-0.15	-0.26	-0.23	-0.20
FightsConflict	0.00	-0.12	-0.16	-0.23	-0.14	-0.31	-0.24	-0.25
BullyingHarassment	-0.01	-0.13	-0.18	-0.26	-0.16	-0.28	-0.24	-0.25

(table continues)

Appendix C (*continued*)

	Suicide Prevention Response	Student Academic Participation	Positive Learning Climate	Diversity Acceptance	Response To Conflict	Community Resources	High Learning Expectations	Student Teacher Relationships
WithdrawnForSafety	0.01	-0.20	-0.27	-0.19	-0.23	-0.14	-0.23	-0.23
ChildAbuseHome	-0.06	-0.14	-0.15	-0.12	-0.17	-0.11	-0.13	-0.11
TrespassingSchool	-0.02	-0.14	-0.18	-0.13	-0.18	-0.13	-0.17	-0.17
Poverty	-0.08	-0.13	-0.10	-0.03	-0.13	-0.11	-0.08	-0.07
Crimes	0.00	-0.20	-0.25	-0.15	-0.22	-0.16	-0.21	-0.20
IllegalDrugsAlcohol	0.06	-0.18	-0.25	-0.21	-0.23	-0.15	-0.23	-0.19
FightsConflict	-0.01	-0.20	-0.28	-0.15	-0.24	-0.19	-0.23	-0.22
BullyingHarassment	-0.08	-0.23	-0.28	-0.20	-0.28	-0.22	-0.23	-0.22

(table continues)

Appendix C (*continued*)

	Extracurricular Opportunities	Professional Development	Crisis Response Plans	Implemented Discipline Plans	Student Support Services	Parent Involvement	Student Crisis Preparation	Supervision All Settings
DeterioratingCondition	-0.09	-0.16	-0.20	-0.22	-0.17	-0.24	-0.22	-0.25
ExtracurricularOpportunities		0.32	0.26	0.17	0.27	0.25	0.22	0.18
ProfessionalDevelopment			0.51	0.44	0.44	0.33	0.37	0.35
CrisisResponsePlans				0.54	0.51	0.37	0.60	0.44
ImplementedDisciplinePlans					0.57	0.41	0.47	0.50
StudentSupportServices						0.40	0.48	0.46
ParentInvolvement							0.46	0.38
StudentCrisisPreparation								0.50

(table continues)

Appendix C (*continued*)

	Suicide Prevention Response	Student Academic Participation	Positive Learning Climate	Diversity Acceptance	Response To Conflict	Community Resources	High Learning Expectations	Student Teacher Relationships
DeterioratingCondition	-0.05	-0.19	-0.26	-0.14	-0.22	-0.18	-0.21	-0.18
ExtracurricularOpportunities	0.26	0.31	0.25	0.13	0.21	0.24	0.20	0.20
ProfessionalDevelopment	0.23	0.35	0.38	0.30	0.40	0.37	0.37	0.35
CrisisResponsePlans	0.32	0.38	0.43	0.36	0.46	0.39	0.40	0.39
ImplementedDisciplinePlans	0.25	0.41	0.53	0.36	0.55	0.42	0.50	0.46
StudentSupportServices	0.35	0.39	0.45	0.36	0.52	0.43	0.42	0.41
ParentInvolvement	0.28	0.44	0.43	0.29	0.43	0.49	0.39	0.37
StudentCrisisPreparation	0.39	0.44	0.44	0.38	0.50	0.43	0.43	0.41

(table continues)

Appendix C (*continued*)

	Suicide Prevention Response	Student Academic Participation	Positive Learning Climate	Diversity Acceptance	Response To Conflict	Community Resources	High Learning Expectations	Student Teacher Relationships
SupervisionAllSettings	0.27	0.46	0.52	0.42	0.51	0.40	0.50	0.48
SuicidePreventionResponse		0.31	0.22	0.22	0.37	0.36	0.22	0.21
StudentAcademicParticipation			0.56	0.42	0.51	0.44	0.50	0.48
PositiveLearningClimate				0.55	0.63	0.47	0.64	0.62
DiversityAcceptance					0.59	0.41	0.51	0.51
ResponseToConflict						0.57	0.59	0.56
CommunityResources							0.46	0.44
HighLearningExpectations								0.69
StudentTeacherRelationships								

Appendix D

Intercorrelations for the 33 Items on the School Safety Survey for Respondent

	Illegal Weapons	Vandalism	High Student Mobility	Graffiti	Gang Activity	Truancy	Suspensions Expulsions	Adjudicated By Court	Withdrawn For Safety
IllegalWeapons		0.64	0.35	0.56	0.65	0.45	0.43	0.48	0.45
Vandalism			0.39	0.74	0.61	0.52	0.47	0.47	0.44
HighStudentMobility				0.36	0.35	0.44	0.34	0.36	0.26
Graffiti					0.64	0.49	0.46	0.46	0.44
GangActivity						0.48	0.46	0.48	0.46
Truancy							0.54	0.50	0.37
SuspensionsExpulsions								0.54	0.40
AdjudicatedByCourt									0.49

(table continues)

Appendix D (*continued*)

	Child Abuse Home	Trespassing School	Poverty	Crimes	Illegal Drugs Alcohol	Fights Conflict	Bullying Harassment	Deteriorating Condition
IllegalWeapons	0.39	0.45	0.32	0.58	0.60	0.55	0.46	0.34
Vandalism	0.37	0.49	0.35	0.61	0.55	0.60	0.53	0.42
HighStudentMobility	0.39	0.29	0.50	0.36	0.28	0.39	0.35	0.28
Graffiti	0.32	0.49	0.32	0.57	0.48	0.55	0.48	0.43
GangActivity	0.33	0.44	0.33	0.58	0.57	0.55	0.46	0.35
Truancy	0.38	0.37	0.41	0.49	0.45	0.54	0.48	0.36
SuspensionsExpulsions	0.36	0.36	0.33	0.50	0.43	0.57	0.50	0.37
AdjudicatedByCourt	0.44	0.44	0.35	0.53	0.54	0.50	0.43	0.36

(table continues)

Appendix D (*continued*)

	Extracurricular Opportunities	Professional Development	Crisis Response Plans	Implemented Discipline Plans	Student Support Services	Parent Involvement	Student Crisis Preparation	Supervision All Settings
IllegalWeapons	0.00	-0.14	-0.17	-0.22	-0.16	-0.26	-0.22	-0.22
Vandalism	-0.03	-0.12	-0.18	-0.24	-0.17	-0.29	-0.24	-0.25
HighStudentMobility	-0.13	-0.04	-0.08	-0.11	-0.09	-0.28	-0.13	-0.12
Graffiti	-0.04	-0.12	-0.18	-0.23	-0.15	-0.27	-0.20	-0.24
GangActivity	-0.02	-0.12	-0.17	-0.22	-0.15	-0.28	-0.22	-0.23
Truancy	-0.05	-0.15	-0.19	-0.24	-0.17	-0.33	-0.23	-0.25
SuspensionsExpulsions	0.02	-0.08	-0.14	-0.20	-0.11	-0.28	-0.21	-0.23
AdjudicatedByCourt	0.04	-0.08	-0.15	-0.21	-0.12	-0.27	-0.21	-0.22

(table continues)

Appendix D (*continued*)

	Suicide Prevention Response	Student Academic Participation	Positive Learning Climate	Diversity Acceptance	Response To Conflict	Community Resources	High Learning Expectations	Student Teacher Relationships
IllegalWeapons	0.01	-0.19	-0.28	-0.15	-0.21	-0.17	-0.23	-0.22
Vandalism	-0.02	-0.21	-0.30	-0.18	-0.24	-0.20	-0.25	-0.23
HighStudentMobility	-0.11	-0.18	-0.18	-0.04	-0.16	-0.15	-0.13	-0.11
Graffiti	-0.01	-0.19	-0.29	-0.15	-0.22	-0.20	-0.22	-0.22
GangActivity	0.04	-0.20	-0.28	-0.12	-0.20	-0.17	-0.24	-0.23
Truancy	-0.05	-0.21	-0.27	-0.15	-0.23	-0.20	-0.24	-0.22
SuspensionsExpulsions	0.02	-0.19	-0.27	-0.16	-0.20	-0.16	-0.23	-0.23
AdjudicatedByCourt	0.05	-0.21	-0.28	-0.18	-0.23	-0.13	-0.24	-0.23

(table continues)

Appendix D (*continued*)

	Child Abuse Home	Trespassing School	Poverty	Crimes	Illegal Drugs Alcohol	Fights Conflict	Bullying Harassment	Deteriorating Condition
WithdrawnForSafety	0.37	0.45	0.24	0.47	0.43	0.45	0.42	0.35
ChildAbuseHome		0.44	0.48	0.46	0.43	0.45	0.42	0.26
TrespassingSchool			0.31	0.52	0.43	0.46	0.40	0.38
Poverty				0.44	0.35	0.42	0.37	0.30
Crimes					0.66	0.67	0.56	0.42
IllegalDrugsAlcohol						0.60	0.49	0.33
FightsConflict							0.69	0.44
BullyingHarassment								0.43

(table continues)

Appendix D (*continued*)

	Extracurricular Opportunities	Professional Development	Crisis Response Plans	Implemented Discipline Plans	Student Support Services	Parent Involvement	Student Crisis Preparation	Supervision All Settings
WithdrawnForSafety	-0.02	-0.15	-0.18	-0.22	-0.19	-0.21	-0.19	-0.24
ChildAbuseHome	-0.04	-0.07	-0.13	-0.13	-0.13	-0.22	-0.17	-0.14
TrespassingSchool	-0.01	-0.12	-0.16	-0.18	-0.15	-0.20	-0.19	-0.19
Poverty	-0.10	-0.06	-0.09	-0.11	-0.12	-0.31	-0.18	-0.13
Crimes	0.03	-0.12	-0.19	-0.25	-0.16	-0.29	-0.25	-0.25
IllegalDrugsAlcohol	0.14	-0.12	-0.17	-0.23	-0.16	-0.27	-0.24	-0.22
FightsConflict	0.00	-0.12	-0.19	-0.25	-0.16	-0.32	-0.25	-0.27
BullyingHarassment	-0.02	-0.15	-0.21	-0.28	-0.18	-0.31	-0.26	-0.28

(table continues)

Appendix D (*continued*)

	Suicide Prevention Response	Student Academic Participation	Positive Learning Climate	Diversity Acceptance	Response To Conflict	Community Resources	High Learning Expectations	Student Teacher Relationships
WithdrawnForSafety	0.02	-0.20	-0.29	-0.20	-0.24	-0.14	-0.24	-0.25
ChildAbuseHome	-0.06	-0.16	-0.19	-0.15	-0.20	-0.12	-0.16	-0.15
TrespassingSchool	-0.01	-0.16	-0.20	-0.14	-0.19	-0.15	-0.18	-0.19
Poverty	-0.09	-0.18	-0.17	-0.07	-0.17	-0.15	-0.14	-0.14
Crimes	0.02	-0.21	-0.28	-0.17	-0.24	-0.17	-0.24	-0.23
IllegalDrugsAlcohol	0.07	-0.19	-0.27	-0.24	-0.25	-0.15	-0.25	-0.21
FightsConflict	0.00	-0.21	-0.31	-0.17	-0.26	-0.20	-0.25	-0.25
BullyingHarassment	-0.08	-0.25	-0.33	-0.24	-0.31	-0.24	-0.26	-0.26

(table continues)

Appendix D (*continued*)

	Extracurricular Opportunities	Professional Development	Crisis Response Plans	Implemented Discipline Plans	Student Support Services	Parent Involvement	Student Crisis Preparation	Supervision All Settings
DeterioratingCondition	-0.08	-0.16	-0.22	-0.24	-0.17	-0.25	-0.24	-0.25
ExtracurricularOpportunities		0.27	0.24	0.14	0.25	0.24	0.20	0.16
ProfessionalDevelopment			0.49	0.41	0.41	0.31	0.36	0.31
CrisisResponsePlans				0.52	0.50	0.37	0.59	0.43
ImplementedDisciplinePlans					0.54	0.40	0.45	0.48
StudentSupportServices						0.40	0.46	0.43
ParentInvolvement							0.46	0.37
StudentCrisisPreparation								0.48

(table continues)

Appendix D (*continued*)

	Suicide Prevention Response	Student Academic Participation	Positive Learning Climate	Diversity Acceptance	Response To Conflict	Community Resources	High Learning Expectations	Student Teacher Relationships
DeterioratingCondition	-0.04	-0.20	-0.28	-0.15	-0.23	-0.19	-0.23	-0.20
ExtracurricularOpportunities	0.27	0.28	0.22	0.09	0.20	0.24	0.16	0.16
ProfessionalDevelopment	0.21	0.31	0.32	0.24	0.38	0.36	0.33	0.29
CrisisResponsePlans	0.31	0.36	0.41	0.34	0.45	0.38	0.36	0.36
ImplementedDisciplinePlans	0.23	0.38	0.51	0.32	0.54	0.41	0.47	0.43
StudentSupportServices	0.34	0.37	0.42	0.33	0.50	0.42	0.39	0.37
ParentInvolvement	0.27	0.45	0.43	0.28	0.44	0.49	0.38	0.36
StudentCrisisPreparation	0.38	0.43	0.42	0.36	0.49	0.43	0.40	0.39

(table continues)

Appendix D (*continued*)

	Suicide Prevention Response	Student Academic Participation	Positive Learning Climate	Diversity Acceptance	Response To Conflict	Community Resources	High Learning Expectations	Student Teacher Relationships
SupervisionAllSettings	0.25	0.44	0.50	0.39	0.49	0.38	0.46	0.45
SuicidePreventionResponse		0.30	0.19	0.20	0.35	0.35	0.19	0.18
StudentAcademicParticipation			0.55	0.39	0.50	0.42	0.47	0.47
PositiveLearningClimate				0.52	0.61	0.46	0.62	0.60
DiversityAcceptance					0.57	0.39	0.48	0.47
ResponseToConflict						0.57	0.56	0.54
CommunityResources							0.44	0.43
HighLearningExpectations								0.67

Appendix E

Intercorrelations for the 33 Items on the School Safety Survey for Location

	Illegal Weapons	Vandalism	High Student Mobility	Graffiti	Gang Activity	Truancy	Suspensions Expulsions	Adjudicated By Court	Withdrawn For Safety
IllegalWeapons		0.63	0.34	0.55	0.64	0.45	0.42	0.49	0.43
Vandalism			0.38	0.71	0.59	0.51	0.46	0.47	0.42
HighStudentMobility				0.35	0.33	0.44	0.33	0.34	0.25
Graffiti					0.62	0.48	0.44	0.44	0.43
GangActivity						0.46	0.44	0.48	0.45
Truancy							0.54	0.48	0.36
SuspensionsExpulsions								0.52	0.39
AdjudicatedByCourt									0.48

(table continues)

Appendix E (*continued*)

	Child Abuse Home	Trespassing School	Poverty	Crimes	Illegal Drugs Alcohol	Fights Conflict	Bullying Harassment	Deteriorating Condition
IllegalWeapons	0.38	0.44	0.32	0.57	0.60	0.54	0.44	0.34
Vandalism	0.37	0.48	0.34	0.60	0.53	0.58	0.51	0.42
HighStudentMobility	0.37	0.28	0.49	0.34	0.27	0.38	0.32	0.27
Graffiti	0.31	0.48	0.31	0.55	0.46	0.53	0.46	0.42
GangActivity	0.32	0.43	0.32	0.56	0.54	0.53	0.44	0.36
Truancy	0.38	0.37	0.42	0.48	0.45	0.53	0.47	0.37
SuspensionsExpulsions	0.35	0.35	0.33	0.48	0.41	0.57	0.49	0.37
AdjudicatedByCourt	0.43	0.44	0.34	0.53	0.54	0.49	0.42	0.36

(table continues)

Appendix E (*continued*)

	Extracurricular Opportunities	Professional Development	Crisis Response Plans	Implemented Discipline Plans	Student Support Services	Parent Involvement	Student Crisis Preparation	Supervision All Settings
IllegalWeapons	0.01	-0.14	-0.14	-0.21	-0.15	-0.24	-0.19	-0.20
Vandalism	-0.01	-0.11	-0.14	-0.22	-0.16	-0.26	-0.20	-0.23
HighStudentMobility	-0.10	-0.02	-0.05	-0.08	-0.06	-0.24	-0.10	-0.09
Graffiti	-0.01	-0.11	-0.14	-0.21	-0.14	-0.24	-0.17	-0.22
GangActivity	0.00	-0.11	-0.12	-0.19	-0.13	-0.25	-0.18	-0.21
Truancy	-0.02	-0.11	-0.14	-0.21	-0.13	-0.29	-0.19	-0.21
SuspensionsExpulsions	0.05	-0.06	-0.11	-0.18	-0.08	-0.24	-0.17	-0.20
AdjudicatedByCourt	0.07	-0.06	-0.12	-0.19	-0.11	-0.23	-0.18	-0.20

(table continues)

Appendix E (*continued*)

	Suicide Prevention Response	Student Academic Participation	Positive Learning Climate	Diversity Acceptance	Response To Conflict	Community Resources	High Learning Expectations	Student Teacher Relationships
IllegalWeapons	0.00	-0.16	-0.24	-0.13	-0.19	-0.16	-0.20	-0.20
Vandalism	-0.03	-0.18	-0.25	-0.14	-0.21	-0.18	-0.21	-0.19
HighStudentMobility	-0.08	-0.13	-0.13	-0.02	-0.12	-0.11	-0.08	-0.07
Graffiti	-0.02	-0.15	-0.23	-0.11	-0.19	-0.17	-0.17	-0.17
GangActivity	0.04	-0.16	-0.23	-0.09	-0.17	-0.15	-0.20	-0.19
Truancy	-0.03	-0.18	-0.21	-0.11	-0.18	-0.16	-0.19	-0.18
SuspensionsExpulsions	0.02	-0.15	-0.22	-0.12	-0.17	-0.14	-0.18	-0.18
AdjudicatedByCourt	0.03	-0.17	-0.24	-0.16	-0.20	-0.12	-0.21	-0.20

(table continues)

Appendix E (*continued*)

	Child Abuse Home	Trespassing School	Poverty	Crimes	Illegal Drugs Alcohol	Fights Conflict	Bullying Harassment	Deteriorating Condition
WithdrawnForSafety	0.36	0.44	0.23	0.45	0.41	0.44	0.41	0.36
ChildAbuseHome		0.43	0.48	0.46	0.42	0.44	0.42	0.27
TrespassingSchool			0.30	0.51	0.42	0.44	0.39	0.37
Poverty				0.43	0.35	0.42	0.38	0.30
Crimes					0.65	0.66	0.55	0.42
IllegalDrugsAlcohol						0.59	0.47	0.32
FightsConflict							0.68	0.44
BullyingHarassment								0.44

(table continues)

Appendix E (*continued*)

	Extracurricular Opportunities	Professional Development	Crisis Response Plans	Implemented Discipline Plans	Student Support Services	Parent Involvement	Student Crisis Preparation	Supervision All Settings
WithdrawnForSafety	0.00	-0.13	-0.16	-0.20	-0.17	-0.17	-0.18	-0.23
ChildAbuseHome	-0.03	-0.04	-0.09	-0.10	-0.10	-0.19	-0.14	-0.11
TrespassingSchool	0.00	-0.11	-0.13	-0.17	-0.16	-0.18	-0.17	-0.18
Poverty	-0.06	-0.02	-0.03	-0.06	-0.07	-0.26	-0.13	-0.07
Crimes	0.05	-0.10	-0.15	-0.22	-0.14	-0.26	-0.22	-0.22
IllegalDrugsAlcohol	0.16	-0.11	-0.14	-0.22	-0.15	-0.24	-0.22	-0.20
FightsConflict	0.02	-0.11	-0.16	-0.23	-0.14	-0.30	-0.23	-0.25
BullyingHarassment	0.01	-0.13	-0.18	-0.25	-0.16	-0.27	-0.23	-0.25

(table continues)

Appendix E (*continued*)

	Suicide Prevention Response	Student Academic Participation	Positive Learning Climate	Diversity Acceptance	Response To Conflict	Community Resources	High Learning Expectations	Student Teacher Relationships
WithdrawnForSafety	0.01	-0.18	-0.26	-0.18	-0.22	-0.14	-0.22	-0.22
ChildAbuseHome	-0.06	-0.13	-0.14	-0.11	-0.17	-0.10	-0.11	-0.11
TrespassingSchool	-0.02	-0.13	-0.18	-0.12	-0.18	-0.13	-0.16	-0.17
Poverty	-0.07	-0.13	-0.10	-0.02	-0.12	-0.10	-0.08	-0.07
Crimes	0.00	-0.18	-0.24	-0.14	-0.21	-0.15	-0.20	-0.20
IllegalDrugsAlcohol	0.06	-0.16	-0.23	-0.21	-0.23	-0.14	-0.22	-0.18
FightsConflict	-0.02	-0.18	-0.27	-0.14	-0.24	-0.18	-0.22	-0.21
BullyingHarassment	-0.08	-0.21	-0.27	-0.20	-0.28	-0.21	-0.22	-0.21

(table continues)

Appendix E (*continued*)

	Extracurricular Opportunities	Professional Development	Crisis Response Plans	Implemented Discipline Plans	Student Support Services	Parent Involvement	Student Crisis Preparation	Supervision All Settings
DeterioratingCondition	-0.09	-0.15	-0.20	-0.23	-0.17	-0.24	-0.23	-0.24
ExtracurricularOpportunities		0.32	0.27	0.17	0.27	0.24	0.22	0.18
ProfessionalDevelopment			0.51	0.44	0.45	0.32	0.38	0.35
CrisisResponsePlans				0.54	0.51	0.38	0.60	0.44
ImplementedDisciplinePlans					0.57	0.41	0.48	0.51
StudentSupportServices						0.41	0.48	0.46
ParentInvolvement							0.46	0.38
StudentCrisisPreparation								0.50

(table continues)

Appendix E (*continued*)

	Suicide Prevention Response	Student Academic Participation	Positive Learning Climate	Diversity Acceptance	Response To Conflict	Community Resources	High Learning Expectations	Student Teacher Relationships
DeterioratingCondition	-0.05	-0.19	-0.26	-0.14	-0.22	-0.18	-0.21	-0.18
ExtracurricularOpportunities	0.27	0.30	0.24	0.12	0.21	0.24	0.18	0.19
ProfessionalDevelopment	0.23	0.34	0.37	0.30	0.40	0.37	0.37	0.35
CrisisResponsePlans	0.32	0.38	0.43	0.36	0.46	0.39	0.40	0.38
ImplementedDisciplinePlans	0.26	0.41	0.53	0.36	0.55	0.43	0.50	0.47
StudentSupportServices	0.35	0.40	0.46	0.36	0.52	0.43	0.43	0.42
ParentInvolvement	0.29	0.44	0.43	0.29	0.44	0.48	0.39	0.38
StudentCrisisPreparation	0.39	0.44	0.44	0.38	0.50	0.43	0.43	0.41

(table continues)

Appendix E (*continued*)

	Suicide Prevention Response	Student Academic Participation	Positive Learning Climate	Diversity Acceptance	Response To Conflict	Community Resources	High Learning Expectations	Student Teacher Relationships
SupervisionAllSettings	0.26	0.46	0.52	0.42	0.51	0.40	0.50	0.49
SuicidePreventionResponse		0.32	0.23	0.23	0.37	0.37	0.22	0.21
StudentAcademicParticipation			0.56	0.41	0.51	0.44	0.49	0.47
PositiveLearningClimate				0.55	0.63	0.47	0.64	0.62
DiversityAcceptance					0.59	0.42	0.51	0.51
ResponseToConflict						0.57	0.59	0.56
CommunityResources							0.47	0.45
HighLearningExpectations								0.69

Appendix F

Intercorrelations for the 33 Items on the School Safety Survey for Grade Span

	Illegal Weapons	Vandalism	High Student Mobility	Graffiti	Gang Activity	Truancy	Suspensions Expulsions	Adjudicated By Court	Withdrawn For Safety
IllegalWeapons		0.65	0.35	0.54	0.65	0.48	0.44	0.50	0.47
Vandalism			0.38	0.69	0.58	0.54	0.45	0.49	0.45
HighStudentMobility				0.37	0.33	0.42	0.33	0.36	0.25
Graffiti					0.60	0.50	0.44	0.44	0.44
GangActivity						0.48	0.44	0.48	0.49
Truancy							0.56	0.54	0.39
SuspensionsExpulsions								0.56	0.41
AdjudicatedByCourt									0.50

(table continues)

Appendix F (*continued*)

	Child Abuse Home	Trespassing School	Poverty	Crimes	Illegal Drugs Alcohol	Fights Conflict	Bullying Harassment	Deteriorating Condition
IllegalWeapons	0.40	0.48	0.34	0.59	0.62	0.57	0.46	0.35
Vandalism	0.41	0.50	0.35	0.60	0.56	0.58	0.50	0.41
HighStudentMobility	0.37	0.30	0.49	0.38	0.27	0.39	0.34	0.27
Graffiti	0.35	0.48	0.33	0.55	0.48	0.51	0.46	0.41
GangActivity	0.36	0.45	0.36	0.58	0.58	0.52	0.43	0.36
Truancy	0.40	0.41	0.43	0.53	0.56	0.58	0.50	0.39
SuspensionsExpulsions	0.35	0.36	0.35	0.51	0.46	0.56	0.45	0.37
AdjudicatedByCourt	0.43	0.46	0.35	0.56	0.58	0.53	0.42	0.38

(table continues)

Appendix F (*continued*)

	Extracurricular Opportunities	Professional Development	Crisis Response Plans	Implemented Discipline Plans	Student Support Services	Parent Involvement	Student Crisis Preparation	Supervision All Settings
IllegalWeapons	0.04	-0.15	-0.17	-0.27	-0.21	-0.29	-0.24	-0.24
Vandalism	0.01	-0.11	-0.15	-0.26	-0.21	-0.27	-0.24	-0.22
HighStudentMobility	-0.10	-0.03	-0.07	-0.11	-0.09	-0.25	-0.12	-0.13
Graffiti	0.00	-0.10	-0.14	-0.22	-0.17	-0.21	-0.20	-0.20
GangActivity	0.03	-0.12	-0.14	-0.24	-0.21	-0.25	-0.22	-0.22
Truancy	0.05	-0.15	-0.18	-0.26	-0.19	-0.34	-0.23	-0.22
SuspensionsExpulsions	0.12	-0.05	-0.10	-0.21	-0.09	-0.25	-0.19	-0.19
AdjudicatedByCourt	0.11	-0.08	-0.13	-0.26	-0.17	-0.26	-0.21	-0.22

(table continues)

Appendix F (*continued*)

	Suicide Prevention Response	Student Academic Participation	Positive Learning Climate	Diversity Acceptance	Response To Conflict	Community Resources	High Learning Expectations	Student Teacher Relationships
IllegalWeapons	-0.02	-0.20	-0.30	-0.18	-0.22	-0.16	-0.29	-0.24
Vandalism	-0.05	-0.19	-0.31	-0.19	-0.25	-0.16	-0.28	-0.23
HighStudentMobility	-0.08	-0.11	-0.15	0.00	-0.14	-0.12	-0.11	-0.06
Graffiti	-0.06	-0.13	-0.26	-0.14	-0.21	-0.17	-0.22	-0.17
GangActivity	0.05	-0.16	-0.27	-0.14	-0.18	-0.12	-0.26	-0.21
Truancy	-0.04	-0.17	-0.29	-0.19	-0.25	-0.20	-0.27	-0.21
SuspensionsExpulsions	0.02	-0.14	-0.25	-0.17	-0.21	-0.16	-0.23	-0.17
AdjudicatedByCourt	0.04	-0.17	-0.30	-0.20	-0.24	-0.15	-0.27	-0.22

(table continues)

Appendix F (*continued*)

	Child Abuse Home	Trespassing School	Poverty	Crimes	Illegal Drugs Alcohol	Fights Conflict	Bullying Harassment	Deteriorating Condition
WithdrawnForSafety	0.38	0.45	0.25	0.49	0.45	0.46	0.40	0.36
ChildAbuseHome		0.47	0.51	0.49	0.42	0.47	0.49	0.30
TrespassingSchool			0.31	0.52	0.45	0.47	0.42	0.38
Poverty				0.45	0.36	0.42	0.41	0.33
Crimes					0.68	0.67	0.54	0.40
IllegalDrugsAlcohol						0.63	0.49	0.36
FightsConflict							0.64	0.41
BullyingHarassment								0.40

(table continues)

Appendix F (*continued*)

	Extracurricular Opportunities	Professional Development	Crisis Response Plans	Implemented Discipline Plans	Student Support Services	Parent Involvement	Student Crisis Preparation	Supervision All Settings
WithdrawnForSafety	0.07	-0.09	-0.17	-0.21	-0.17	-0.16	-0.18	-0.24
ChildAbuseHome	-0.03	-0.04	-0.12	-0.16	-0.17	-0.19	-0.17	-0.15
TrespassingSchool	0.02	-0.12	-0.16	-0.22	-0.21	-0.22	-0.20	-0.23
Poverty	-0.06	-0.02	-0.04	-0.10	-0.13	-0.27	-0.13	-0.07
Crimes	0.10	-0.09	-0.16	-0.24	-0.18	-0.27	-0.22	-0.23
IllegalDrugsAlcohol	0.22	-0.13	-0.18	-0.31	-0.20	-0.28	-0.26	-0.24
FightsConflict	0.08	-0.12	-0.16	-0.26	-0.18	-0.28	-0.23	-0.23
BullyingHarassment	0.05	-0.11	-0.16	-0.25	-0.17	-0.25	-0.22	-0.20

(table continues)

Appendix F (*continued*)

	Suicide Prevention Response	Student Academic Participation	Positive Learning Climate	Diversity Acceptance	Response To Conflict	Community Resources	High Learning Expectations	Student Teacher Relationships
WithdrawnForSafety	0.03	-0.17	-0.28	-0.20	-0.22	-0.11	-0.25	-0.19
ChildAbuseHome	-0.05	-0.15	-0.22	-0.14	-0.21	-0.10	-0.17	-0.15
TrespassingSchool	-0.03	-0.14	-0.27	-0.17	-0.25	-0.14	-0.21	-0.22
Poverty	-0.08	-0.12	-0.13	-0.04	-0.15	-0.11	-0.09	-0.07
Crimes	0.00	-0.17	-0.28	-0.18	-0.22	-0.15	-0.24	-0.20
IllegalDrugsAlcohol	0.08	-0.19	-0.30	-0.26	-0.25	-0.14	-0.29	-0.21
FightsConflict	-0.01	-0.17	-0.28	-0.16	-0.23	-0.18	-0.24	-0.20
BullyingHarassment	-0.12	-0.17	-0.28	-0.22	-0.29	-0.18	-0.23	-0.19

(table continues)

Appendix F (*continued*)

	Extracurricular Opportunities	Professional Development	Crisis Response Plans	Implemented Discipline Plans	Student Support Services	Parent Involvement	Student Crisis Preparation	Supervision All Settings
DeterioratingCondition	-0.02	-0.11	-0.19	-0.25	-0.18	-0.22	-0.22	-0.24
ExtracurricularOpportunities		0.23	0.19	0.10	0.22	0.22	0.14	0.12
ProfessionalDevelopment			0.50	0.43	0.43	0.33	0.36	0.34
CrisisResponsePlans				0.53	0.52	0.38	0.60	0.45
ImplementedDisciplinePlans					0.57	0.43	0.47	0.51
StudentSupportServices						0.46	0.48	0.46
ParentInvolvement							0.48	0.39
StudentCrisisPreparation								0.48

(table continues)

Appendix F (*continued*)

	Suicide Prevention Response	Student Academic Participation	Positive Learning Climate	Diversity Acceptance	Response To Conflict	Community Resources	High Learning Expectations	Student Teacher Relationships
DeterioratingCondition	-0.05	-0.19	-0.30	-0.16	-0.24	-0.16	-0.23	-0.17
ExtracurricularOpportunities	0.27	0.26	0.15	0.06	0.15	0.23	0.12	0.14
ProfessionalDevelopment	0.19	0.32	0.35	0.27	0.38	0.34	0.34	0.34
CrisisResponsePlans	0.31	0.39	0.42	0.36	0.47	0.41	0.41	0.38
ImplementedDisciplinePlans	0.25	0.41	0.55	0.41	0.59	0.42	0.53	0.48
StudentSupportServices	0.37	0.43	0.46	0.39	0.53	0.45	0.45	0.43
ParentInvolvement	0.28	0.43	0.42	0.30	0.44	0.50	0.41	0.36
StudentCrisisPreparation	0.35	0.43	0.45	0.39	0.50	0.43	0.43	0.41

(table continues)

Appendix F (*continued*)

	Suicide Prevention Response	Student Academic Participation	Positive Learning Climate	Diversity Acceptance	Response To Conflict	Community Resources	High Learning Expectations	Student Teacher Relationships
SupervisionAllSettings	0.25	0.46	0.53	0.42	0.49	0.36	0.51	0.47
SuicidePreventionResponse		0.32	0.23	0.20	0.38	0.38	0.22	0.22
StudentAcademicParticipation			0.57	0.40	0.50	0.44	0.51	0.47
PositiveLearningClimate				0.56	0.64	0.45	0.65	0.60
DiversityAcceptance					0.59	0.40	0.51	0.50
ResponseToConflict						0.56	0.60	0.55
CommunityResources							0.44	0.42
HighLearningExpectations								0.68