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To Tell or Not to Tell: An Analysis of Students' Willingness to Report School Weapons Possession to School Authorities

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Abstract: This study builds on the small number of studies on students' willingness to report weapons possession at school by examining their willingness to report weapons possession at school under the following conditions: (1) if they heard another student had a gun or another weapon, (2) if they saw another student with a gun or other weapon, and (3) if they knew their best friend had a gun or other weapon. The findings largely support those of previous studies. However, we also find that while students' willingness to report weapons possession by their peers is a highly nuanced behavior, efforts to develop a positive reporting climate in schools, develop relationships between staff and students and enhance students' self-efficacy are likely to overcome many students' reticence to report weapons possession and produce safer schools.

Keywords: school weapons possession, school safety, school climate, social bonding, social capital, self-efficacy

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INTRODUCTION

According to the *Indicators of School Crime and Safety: 2010*, in 2009, 6% of students indicated that they had carried a weapon at school in the past 30 days (Robers, Zhang &Truman, 2010). Although this percentage is not large, weapons possession can occur at any school, and its consequences are significant. Instances of weapons-related violence and the fear produced by peoples' perceptions that weapons are present at school can lead to a variety of negative outcomes, including loss of life and serious physical injuries that produce trauma in victims that extends well beyond the school. In addition, school weapons possession can lead to school avoidance or avoidance of certain places at school (Dinkes, Kemp, Baum & Snyder, 2009), self-presentations by students that suggest to others that they are capable of defending themselves (e.g., putting on a "tough front") (Lockwood, 1997), carrying weapons at school for protection (May, 1999), development of school "cliques" prone to aggressive actions designed to discourage potential offenders (Welsh, 2000), decreased quality of the learning experiences of students and the work experiences of school staff, reduction in positive relationships between people in the community and schools, and unfavorable media attention (Cao, Zhang, & He, 2008). Moreover, responses to the safety concerns of students and staff can produce school environments that alienate students, increase student mistrust, inhibit learning (Beger, 2003; Farmer, 1999; Verdugo & Schneider, 1999), decrease students' perceptions of safety (Mayer & Leone, 1999), and hamper the development of a positive school environment (Scheckner, Rollins, Kaiser-Ulrey, & Wagner, 2002).

The possession of weapons at schools poses a variety of threats to students, school staff, and others. There is, however, evidence that students' willingness to report weapons possession by their peers could play an important role in preventing instances of serious school violence. For example, research on school shootings indicates that such events are rarely impulsive, usually involve planning, and that other people, including students, are often aware of the attacker's intentions. Unfortunately, other students who know about the attacker's plans sometimes fail to inform persons who could intervene (Vossekuil, Fein, Reddy, Borum, & Modzeleski, 2002).

Although students' willingness to report weapons possession is a key element of school safety, few studies have examined factors related to willingness to report. Moreover, most studies (see, for example, Bailey, Flewelling, & Rosenbaum, 1997; DuRant, Getts, Candenhead, & Woods, 1995; Forrest, Zychowski, Stuhldreher, & Ryan, 2000; Kulig, Valentine, Griffith, & Ruthazer, 1998; Rountree, 2000; Simon, Crosby, & Dahlberg, 1999; Wilcox & Clayton, 2001) have failed to differentiate between firearms and other weapons because the processes of carrying out violent acts with various types of weapons and the outcomes of their use are different (Cao et al., 2008). With less lethal weapons, the act tends to be slow, possibly even preventable depending on the circumstances, and less likely to be fatal. In contrast, with firearms, the act is almost always quick and the potential for serious injury or death is increased.

In the present study, we build on previous studies and extend the nascent theory on students' willingness to report gun and other weapons possession at school to authorities by examining a range of predictors drawn from social bonding, rational choice, lifestyles, social learning, and subcultural theories. We do this by examining specific components of concepts

like social bonding and school climate in order to develop a clearer understanding of those aspects of social bonding and school climate that may be critical in encouraging students' willingness to report weapons possession at school. Our most significant contribution to the literature, however, comes in the exploration of the nuanced decision making related to students' willingness to report weapons possession at school by examining models that explore varying relationships between potential reporters and youths who possess different types of weapons. In addition, we examine the potential effects of several factors that have not been examined to date-- involvement in school misbehavior, youth alienation, students' self-efficacy (i.e., their use of positive means to resolve problems) and youth victimization at school—on willingness to report.

Students' Willingness to Report Weapons Possession at School

Previous studies on students' willingness to report weapons possession (Brank et al., 2007; Brinkley & Saarino, 2006; Wylie et al., 2010) contained hypotheses derived from three theoretical frameworks rooted in criminology and social development: social bonding, social learning, and rational choice theories. For example, research by Wylie et al. (2010), Brank et al. (2007) and Brinkley and Saarino (2006) employed a bonding framework by (1) incorporating concepts derived from a social organizational/ecological framework, and/or (2) exploring the relationship between school climate and the willingness to report weapons possession in school. In this work, we have added to that literature by including variables that ask respondents' perceptions of both their school and individual experiences across various theoretical models. We have organized the literature reviewed below with that strategy in mind.

School Factors

The examination of the relationship between school social climate and willingness to report revolves around the quality of relationships between students and the school. For example, it is believed that schools that encourage collective identity, student cohesiveness, mutual respect, order, fairness and clarity in the enforcement of rules, and discipline are more likely to foster stronger informal controls and exhibit lower levels of problem behavior (see Gottfredson, Gottfredson, Payne, & Gottfredson, 2005; Payne, 2008; Payne, Gottfredson, & Gottfredson, 2003). With respect to weapons carrying, Wilcox and Clayton (2001) found that lower SES schools were more likely to contain students who carried weapons, however, the impact of SES on weapons carrying was mediated by schools' social capital. Thus, schools possessing more positive climates should be expected to encourage reporting because they reflect a social organizational environment that is conducive to positive social relations between students and school staff.

The importance of school climate in providing a context where reporting is more likely is also supported by both studies that have examined the impact of school climate on students' perceptions of school safety and studies that have explored school victimization. Studies of school climate indicate that feelings of safety are promoted among students in schools where teachers challenge students, where students enjoy school, where teachers maintain discipline and where there are clear school rules (Kitsantas, Ware, & Martinez-Aris, 2004; Welsh, 2000). As the studies by Brinkley and Saarino (2006) and Wylie et al. (2010) indicate, school climate does influence students' willingness to report students' weapons possession at school. In contrast, research on school victimization indicates

that students who have been victimized are less likely to feel safe at school (Wallace & May, 2005) and this may influence their willingness to report weapons possession. The influence of students' victimization experiences on their willingness to report weapons possession in school, however, has not been examined to date.

Individual Factors

The social bonding approach examined by Brinkley and Saarino (2006) and Brank et al. (2007) suggests that weak bonds between youths and conventional adults and institutions may lead to exposure to deviant peers and discourage students' willingness to report weapons in school. Previous research on the relationship between exposure to deviant peers and weapons possession in schools has produced results consonant with some versions of social bonding theory. Specifically, exposure to deviant peers increases the likelihood a student will have knowledge of a weapon in school (Estell, Farmer, Cairns, & Clemmer, 2003), and such exposure indicates a weaker social bond to conventional others (Erikson, Crosnoe, & Dornbusch, 2000). Thus, deviant peer associations are likely to inhibit students' willingness to report weapons possession by other students to school authorities. As a result, Brank and her colleagues (2007) predicted that students who were closely connected to trusted adults at home, at school, or in the community would be more likely to report weapons possession. These researchers also predicted that students' who associated with delinquent peers and who were involved in delinquency would be less likely to report weapons possession by classmates. Importantly, these predictions were supported by their analysis. These findings, however, would also be predicted by social learning theories because it is through such associations that youths are likely to learn

attitudes favorable or unfavorable to reporting weapons possession by other students and to learn nuances related to the appropriateness of reporting different types of weapons under varying circumstances (see Akers & Sellers, 2004).[1]

Brank and her colleagues (2007) also used rational choice theory to develop their hypotheses. Specifically, they borrowed from the literature on tattling or reporting friends contemplating suicide, snitching, and whistle-blowing, which is mostly embedded within a rational choice cost-benefit analysis framework. Previous research on reporting on the behavior of friends and peers in general indicates the social costs of tattling increase with age, and by adolescence these costs are substantial (Greiger, Kauffman, & Greiger, 1976; Lancellota & Vaughn, 1989). Where this research takes a rational choice cost-benefit analysis approach, researchers argue that the benefits of tattling accrue to the larger unit (e.g., class, school, organization) and the costs of it accrue to the individual in terms of social rejection (Friman et al., 2004).

Little research, however, has examined the social costs of tattling by adolescents (Friman et al., 2004). The research that has been performed indicates that delinquents are more likely than non-delinquents to report that informing on others is morally wrong (Stein, Sarbin, Chu, & Kulik, 1967). Similarly, other researchers have found that youths in a residential setting perceived tattling unfavorably and rated those who tattled as less likeable. They also noted a general unwillingness of youths to report on peers (Friman et al., 2004). In a study of suburban high school students, Kalafat and Elias (1992) found that about one-third of their sample had talked to a peer who was definitely considering suicide but only about 25% reported such information to an adult.

The act of informing carries social costs among other populations as well. In the

criminal world, a police informant, or snitch, is often described as "the worst thing that you can be" (Rosenfeld, Jacobs, & Wright, 2003, p. 298). Likewise, corporate and government whistle-blowers are typically viewed as being disloyal to the company or agency, and their fellow employees (Fitzgerald & Ferrara, 2008; MacNamara, 1991), may be subjected to blacklisting, dismissal from jobs, work transfers, personal harassment, sexual exploitation (Fitzgerald & Ferrrara, 2008; Glazer & Glazer, 1989), and denied promotions and the support needed to effectively do their jobs (Fitzgerald & Ferrrara, 2008). Loyalty to a friend is noted as the primary factor cited by cadets of the U.S. Naval Academy when they considered whether or not to inform on fellow cadets (Pershing, 2002). Furthermore, lawyers appear to have a general antipathy towards turning in fellow attorneys for misbehavior (Toomey, 2004), and police have a code of silence and are critical of those who inform on fellow officers (Westmarland, 2005). Again, similar arguments would be made by a social learning perspective because costs or benefits may be viewed as representing forms of social and nonsocial reinforcement for reporting or not reporting other students' weapons possession (see Akers & Sellers, 2004).

Based on the knowledge gained from the research above, Brank and colleagues (2007) hypothesized that students would be more likely to report other students' weapons possession "(a) when their relationship to the target is unspecified versus specified as friendship, (b) under conditions of anonymity rather than giving their name, and (c) when they do not perceive risk of physical or social consequences from the target student or the large peer group" (p.129). Their results indicated that the great majority of students would report weapons possession; however, factors such

as anonymity, gender (females were more willing to report), age (younger students were more willing), and academic performance (those with better grades) influenced reporting. They also found that negative peer associations and greater levels of involvement in delinquency were associated with a decreased likelihood of reporting, while a positive relationship with adults, particularly the presence of a trusted adult in the school, was associated with increased reporting.

Outside of the criminological literature, there is evidence to suggest that the psychological process through which a "bystander" or "whistle-blower" decides to intervene is similar across emergency situations, regardless of the context in which those situations occur. Darley & Latane (1968) suggest that there are two types of intervention one might have in an emergency situation: direct (e.g., physically intervening to break up a fight, jumping in water and swimming out to save a drowning individual) and reportorial (reporting the emergency situation to one qualified to handle the situation), the type of intervention examined here. They suggest that the decision to engage in reportorial intervention in an emergency situation is based on a decision-making process whereby the bystander must know about the event, decide that the event is an emergency and that he or she is responsible for helping intervene to diffuse the situation. The bystander then must choose an appropriate method of intervention and successfully implement that intervention (Dozer & Micelli, 1985). Consequently, then, for weapon reporting in a school context, the student must first know another student has a weapon, decide that weapon poses a risk to others, make an individual decision to tell a responsible school authority about that weapon, and then actually intervene in the situation by reporting to an adult.

Overall, the literature indicates that younger students, females, high achievers, and youths who avoid significant association with negative peers and who are closely bonded with adults are more likely to report weapons at school to school authorities. In addition, the literature indicates that schools with positive social climates, where there are anonymous reporting systems, and where students believe that they have some responsibility for taking action, are likely to encourage weapons reporting at school. Moreover, it seems reasonable to expect that youths who experience victimization at school or believe that there is a problem with delinquency at their school may be inclined to report weapons possession as a form of self-protection. Also, those who indicate high levels of self-efficacy may report weapons possession because they feel empowered to take action to resolve problems. Conversely, those who report higher levels of school misbehavior may be less inclined to report weapons possession due to the poor quality of their relationships with school authorities, their lack of attachment to school, and their association with negative peers.

METHODS

The data were collected in one public middle school and one public high school in a predominately rural county in the Appalachian region of the U.S. (population approximately 73,000) during the first week of May 2006. The middle school was comprised of sixth, seventh, and eighth grades while the high school contained ninth through twelfth grades.

Survey Administration

The survey instruments were developed by university researchers at the request of school system administrators. After the survey instruments were finalized, packets containing instructions for administering the surveys and the survey instruments were delivered to the schools. The instruments were administered to each student in attendance on the day the survey was conducted with the exception of students in special education classes. Surveys were self-administered and the survey administration was supervised by teachers who provided a brief introduction to the survey and its purpose. Survey administration took approximately 30 to 45 minutes and no major problems with the administration were reported.

Students participated on a voluntary basis. Prior to the survey, letters were mailed to students' homes by the schools. These letters explained the purpose of the survey and indicated that students would be omitted from the research at the request of the parent or guardian. Also, prior to survey administration, students were reminded that their participation was voluntary and that they could cease participation at any time. All subjects were assured of their anonymity and the confidentiality of the information they provided. After subjects completed the surveys, they were instructed to place the forms in an envelope that accompanied the survey and to seal the envelope. Surveys were then placed in collection boxes and given to the researchers.

Of the 2,192 students enrolled at the two schools, a total of 1,521 students (approximately 70% of the students enrolled) returned usable surveys to the research team. Because of the school district's insistence that the surveys be administered by classroom teachers, and because we did not have a classroom roster for each teacher, we do not know how many students were absent at the time of the survey administration nor how many were given the opportunity to complete the survey but chose not to do so. Nevertheless, the high response rate and the similarity of our sample to the schools' population suggests

Table 1. Percent of Youths in the Sample and Youths Enrolled in the Schools at the Time of the Survey with Various Demographic Characteristics

	Study Sample	Enrolled in Schools
Gender		
Females	58.00%	48.40%
Race		
White	85.00%	86.00%
African American	6.90%	10.30%
Hispanic	2.10%	1.80%
Other	5.90%	1.90%
*Grade Level**		
Middle school	38.00%	28.10%
High school	61.40%	71.90%

*Note: 0.6% of the middle and high school respondents indicated that they were in a grade other than 6 through 12.

that the small number of youths who chose not to respond or were absent on the day of the survey administration have minimal impact on the generalizability of the findings presented here.

A number of educational and social psychological researchers have demonstrated that respondents to self-report instruments often engage in social desirability bias, over-reporting behaviors that frame them or their reference group in a more positive light (Rubin & Babbie, 2009). This over-reporting may be particularly acute in educational settings among middle- and high-school students (Baird & Ozler, 2012). To reduce the impact of social desirability bias in this study, a screening question was used at the conclusion of the survey that asked students how often (never, some of the time, most of the time, all of the time) they had given honest responses on the survey. We conducted chi-square tests comparing the percentage of students who

indicated that they would or would not tell a teacher or other adult about other students' possession of a weapon at school by whether or not they reported providing honest responses "all of the time" on the survey.

The chi-square results indicated that students who would tell about others' weapons possession were significantly more likely to report providing honest responses on all survey items. Consequently, only respondents who indicated that they had provided honest responses all of the time were used in the analysis.[2] We believe that restricting our analysis to only students who reported honest responses on each of the survey items improves the accuracy of the findings, although it may provide a more conservative estimate of students' knowledge of weapons possession and a more liberal estimate of students' willingness to report. Thus, the final sample used for this paper totals 895 respondents and consists of 334 middle school

respondents, which comprised 54.2% of the middle school students enrolled in that school at the time of the survey administration, and 561 high school subjects, or 35.6% of the high school students enrolled in the high school. In Table 1, we present the descriptive statistics for both the sample and the students enrolled in the school district at the time of the data collection. The descriptive statistics suggest that the majority (58.0%) of the students were female and most (85.0%) were white. Compared to students enrolled in the schools studied, thesample used in the following analysis contained proportionally more females, Hispanics, and youths who identified themselves as other than black, white, or Hispanic. The sample under study also had fewer AfricanAmerican youths. In addition, our sample contained proportionally more middle school students and fewer high school youths than the school district.

Study Measures

Six items on the survey served as the outcome measures. These items asked respondents to indicate if they would tell a teacher, administrator, or another adult at school about other students' weapon possession under six conditions. Response options for each item were "Would not tell" (coded 0) and "would tell" (coded 1). The conditions presented were (1) "Saw another student with a gun," (2) "Knew my best friend had a gun," (3) "Heard another student had a gun," (4) "Saw another student with a weapon (other than a gun)," (5) "Knew my best friend had a weapon (other than a gun)," (6) "Heard that another student had a weapon (other than a gun)."

Five items constituted demographic measures used in the analysis. These items included: "Do you qualify for" (coded 0 = full price lunch, 1 = free or reduced lunch), "What is your gender?" (coded 0 = male, 1 = female), "Do you consider yourself:"

(coded 0 = Nonwhite, 1 = White), "Do you live with:" (coded 0 = some other parental arrangement, 1 = both natural parents). In addition, one dichotomous variable was constructed to identify students' school level (coded 0 = middle school and 1 = high school).

Seventeen scales from the survey were chosen for use in the analysis because they were felt to reflect the theoretical focus of the study and were not highly correlated with one another. These measures were informed by criminological theory and borrow heavily from that literature. Nevertheless, because the purpose of the current project is not to test these theoretical perspectives but to identify individual level and school level variables that contribute to the decision to report weapons, none of the theoretical measures should be viewed as a "pure" measure of the theoretical perspectives that they represent.

Because the original survey items employed various response formats such as "no" or "yes", Likert type options, and "none", "1", "2", "3", "4 or more" which was used on items asking about respondents' involvement in delinquency, we conducted contingency table analysis to screen for cells with expected frequencies less than five. Due to the size of our sample, several scales contained small expected frequencies. As a result, response categories were collapsed into dichotomous measures coded "0" or "1" for most measures. This eliminated large numbers of cells with expected frequencies less than five and made possible the use of the goodness-of-fit tests calculated by logistic regression (Tabachnick & Fidell, 2007). Reliability and factor analyses of the scales indicated that each had fair to very good reliability and each represented a unidimensional construct. Descriptive data for each of the measures used in the analysis can be seen in Table 2. The theoretical constructs and their associated predictors are

discussed below. The coding scheme for each scale is included in parentheses after its description.

School Factors
School Climate

Three measures representing different dimensions of school climate were used in this analysis. These measures were: (1) positive school climate, a five-item scale that measured the respondents' belief that students understand school rules, are treated fairly when they break the rules, and respect teachers (positive climate=high score); (2) teacher/staff bias toward outsider groups, a three-item scale that measured students' belief that students are not treated fairly, and are singled out due to fashion preferences (negative climate=high score); and (3) school guardianship, a six-item scale that measured respondents' perception of whether or not teachers supervise hallways and restrooms (high guardianship=high score).

School Strain

Two measures of strain were used in this study. They were (1) students' perceived risk of victimization at school, which was a seven-item scale that asked respondents' to rate the chance that they could be the victim of actions such as having their locker broken into, being attacked by someone with a weapon, being bullied, being subjected to inappropriate sexual touching, or being threatened with harm (high risk=high score); and (2) a measure of the respondent's perception of delinquency problems at school. The six-item scale included measures of the students' assessment of the seriousness of problems at school such as kids damaging property, fighting, gangs, bullying, and bringing weapons to school was used (high problems=high score).

School Safety

One seven-item measure of students' perceptions of school safety was used in the analysis. This scale measured students' perceptions of safety in various areas of the school such as school classrooms, hallways, restrooms, cafeteria, gym, parking lots, and locations outside school buildings such as recreation areas and entrances (high safety=high score).

Individual Factors
Social Bonding/Social Capital

Four measures representing different dimensions of social bonding/social capital were used in the analysis. These measures were: (1) family attachment, consisting of four items that measure youths' affinity for their family and parents (high attachment=high score); (2) adult social capital, a five-item measure that represented youths' belief that various adults could be counted on to help them with a problem (high capital=high score); (3) school connectedness, comprised of four items that examined students' perceptions of whether they have a number of friends and acquaintances at school, whether or not they know a number of teachers, and whether or not they will be helped by peers if they are upset (high connectedness=high score); and (4) alienation, consisting of six items that measured respondents' reports that they spend much of their time alone and are disconnected from others (high alienation=high score).

School Misbehavior

One measure examined school misbehavior. This 11-item scale measured youths' self-reported involvement in various activities such as calling other students names; bumping, pushing, kicking, or hitting another student; making fun of another student; getting into a serious argument with a student, teacher or another adult; being sent out of class; or being suspended (high misbehavior=high score).

Table 2. Descriptive Statistics for Variables Used in the Analyses

Scale	N	Mean	SD	Score Range	Alphas
Outcome variables					
Tell-saw another student with gun	890	0.88	0.324	0-1	----
Tell-knew best friend had gun	891	0.7	0.458	0-1	----
Tell-heard another student had gun	890	0.72	0.449	0-1	----
Tell-saw another student with weapon*	883	0.70	0.459	0-1	----
Tell-knew best friend had weapon*	887	0.57	0.496	0-1	----
Tell-heard other student had weapon*	883	0.61	0.489	0-1	----
Demographic variables					
Gender (1 = female)	890	0.58	0.492	0-1	----
Race (1 = White)	887	0.85	0.355	0-1	----
Free lunch (1 = free or reduced)	883	0.31	0.462	0-1	----
Living arrangement (1 = bio. parents)	887	0.59	0.492	0-1	----
School (0 = middle school)	891	1.37	0.484	0-1	----
School Factors					
School Climate					
Positive school climate	854	3.50	1.489	0-5	0.69
Teacher/staff bias toward outsider groups	857	1.04	1.112	0-3	0.68
School guardianship	875	3.62	1.775	0-6	0.62
School Strain					
School problems-delinquency	873	4.51	1.618	0-6	0.75
Perceived risk of victimization at school	891	1.50	1.923	0-7	0.82
School safety	774	5.76	1.756	0-7	0.81
Individual Factors					
School Bonding/Social Capital					
Family attachment	877	3.54	1.030	0-4	0.83
Adult social capital	869	3.54	1.600	0-5	0.77
School connectedness	871	3.33	1.050	0-4	0.62
Alienation	859	2.25	2.237	0-6	0.85
School misbehavior	877	3.24	3.155	0-11	0.92
Self-efficacy	887	2.67	2.009	0-3	0.68
Self-reported Academic Performance	885	2.51	0.928	0-3	----

*other than a gun

Self-Efficacy

One three-item measure of self-efficacy was used. This scale measures students' use of positive means to resolve anger, including talking things out with others, seeking the advice of an adult about how to handle problems, and seeking the advice of a friend (high self-efficacy=high score).

Self-Reported Academic Performance

Finally, the analysis included one measure of self-reported academic

performance. This item asked students "What grades do you usually get?" Response options were collapsed from nine categories into the following, "Mostly Fs" to "Mostly Fs and Ds" (coded 0), "Mostly Ds" to "Mostly Ds and Cs" (coded 1), "Mostly Cs" to "Mostly Cs and Bs" (coded 3), and "Mostly Bs" to "Mostly As (coded 3). Descriptive statistics for each of the study measures can be seen in Table 2.

Analytic Plan

Because the outcomes of interest consist of dichotomous variables, binary logistic regression was used to assess relationships between each of the predictors and willingness of students to report weapons possession to school personnel. Although logistic regression is a robust technique that does not require assumptions about the distributions of predictors for purposes of analysis, it does assume a linear relationship between continuous predictors and the logit transformation of the outcome variables. Moreover, the power of the test is likely to be improved when there is multivariate normality and linearity among the predictors (Tabachnick & Fidell, 2007).

Consequently, a number of steps were taken to screen the data prior to running the final models. We computed tolerance statistics for each of the continuous predictors, all of which exceeded .68, thus indicating that multicollinearity was not present. To test for linearity between continuous predictors and the logit transformation of the outcome variables, we computed interaction terms consisting of each continuous predictor and its natural log and conducted a logistic regression with the continuous predictors and the interaction terms. This test revealed that the assumption of linearity in the logit was violated in the case of four of the predictors.

As a result, a square root transformation of school misbehavior, a reflect and square

root transformation of positive school climate and adult social capital, and a reflect and inverse transformation of family attachment was computed. A subsequent test of linearity of the logit revealed that the assumption was no longer violated. In addition, we screened the data for univariate outliers through plots of standardized residuals and for multivariate outliers by calculating Mahalanobis distances and evaluating extreme cases using the chi-square distribution (χ^2 (17) = 40.790, $p.$ = .001). As a final step prior to conducting the analysis, we computed DFBETAS to check for cases that might exert extreme influence on the regression coefficients. ***Together, these efforts led to the identification of 15 cases that were considered for removal from the database. Models were then estimated both with and without these cases. Minor changes in three of the models were found.[3] Consequently, the following analysis is the result of the models run without the 15 outliers. Because none of the predictors used in this study contained more than 3% missing data and because various procedures for handling missing data are likely to produce similar results when less than 5% of cases are missing in large data sets (Tabachnick & Fidell, 2007), we employed listwise deletion of cases with missing data.

Results

In Table 3, we use multivariate logistic regression to examine the demographic, contextual, and theoretical predictors of whether or not a student would report the presence of a firearm at school under three conditions: when they heard another student had a gun (Model 1); when they saw another student with a gun (Model 2); and when their best friend had a gun at school (Model 3).

Table 3. Logistic Regression Results Regressing Whether Student Would Report the Presence of a Gun at School Across Three Situational Contexts

	Model 1		Model 2		Model 3	
	Whether Student Would Report if They Heard Another Student Had a Gun (N=756)		Whether Student Would Report if They Saw Another Student with a Gun (N=751)		Whether Student Would Report if Their Best Friend Had a Gun (N=757)	
Variable	B/S.E.	Exp(B)	B/S.E.	Exp(B)	B/S.E.	Exp(B)
Demographic Factors						
Males	-.260/.181	0.77	-.593/.272	0.55*	-.510/.186	0.60***
Nonwhite	-.145/.250	0.87	-.364/.338	0.70	-.403/.349	0.67
Free lunch recipient	.102/.210	1.11	.013/.309	1.01	.109/.214	1.12
Living arrangement	.054/.186	1.06	-.470/.275	0.63	-.167/.190	0.85
School Level	-.286/.199	0.75	-.922/.316	0.40**	-.409/.206	0 .66*
School Factors						
Positive school climate[1]	.609/.213	.54**	-.941/.321	0.39**	.658/.218	0.52**
Teacher/staff bias	.017/.084	1.02	-.077/.123	0.93	-.072/.085	0.93
School guardianship	.082/.054	1.09	.074/.075	1.08	.024/.054	1.02
School Problems-Delinquency	.054/.056	1.06	.264/.082	1.30**	.065/.055	1.07
School safety	-.089/.057	0.92	-.002/.080	0.10	-.111/.058	0.90
Perceived risk of victimization	.003/.052	1.00	-.095/.074	0.91	-.002/.053	1.00
Individual Factors						
Family attachment[2]	.673/.330	1.96*	.468/.455	1.60	.384/.338	1.47
Adult social capital[1]	.259/.197	0.77	.267/.287	0.77	.426/.202	0.65*
School connectedness	.021/.090	1.02	-.228/.138	0.80	-.020/.093	0.98
Alienation	.022/.042	1.02	-.021/.060	0.98	.009/.042	1.01
Self-efficacy	.142/.047	1.15**	.230/.076	1.26**	.178/.049	1.20***
Academic performance	-.168/.164	0.85	.266/.219	1.30	.167/.190	0.85
School Misbehavior	-.276/.091	0.76**	-.426/.142	0.65**	-.440/.095	0.64***
Constant	2.087/.902	8.06*	4.305/1.337	74.06***	3.085/.931	21.86**
Chi-square (18 df)	72.49***		106.61***		128.23***	
Nagelkerke R-Square	0.13		0.26		0.22	
-2 Log Likelihood	830.25		420.83		788.87	

*p<.05, **p<.01, ***p<.001

[1]Reflect and square root transformation , [2]Reflect and inverse transformation

The logistic regression results presented in Table 3, Model 1 indicate that students who were least likely to misbehave at school, those students who felt that the school climate was most positive, and those

with higher levels self-efficacy and family attachment were significantly more likely than their counterparts to report if they had heard another student had a gun. None of the other variables had a significant association with the decision to report in this model. The variables included in the model explained slightly more than 10% (Nagelkerke R-square=.131) of the variance in the decision to report.

The logistic regression results presented in Model 2 suggest that those students who were least likely to misbehave at school, those students who felt that the school climate was most positive, and those with higher levels self-efficacy remained significantly more likely than their counterparts to report that they had seen another student with a gun. Additionally, those who perceived that their school had more delinquency problems, females, and middle school students were also significantly more likely to report if they had seen another student with a gun at school. The variables included in the model explained slightly more than one quarter (Nagelkerke R-square=.262) of the variance in the decision to report.

The logistic regression results presented in Model 3 suggest that females, middle school students, students who were least likely to misbehave at school, those students who felt that the school climate was most positive, and those with higher levels self-efficacy remained significantly more likely than their counterparts to report if their best friend had a gun. Similarly, students that indicated adults were willing to help them with a problem when needed were significantly more likely than their counterparts to report if their best friend had a gun. The variables included in the model explained slightly more than one fifth (Nagelkerke R-square=.222) of the variance in the decision to report in this model.

Table 4 about here

In Table 4, we use multivariate logistic regression to examine the demographic, contextual, and theoretical predictors of whether or not a student would report the presence of a weapon other than a firearm at school under three conditions: when they heard another student had a weapon other than a gun (Model 1); when they saw another student with a weapon other than a gun (Model 2); and when their best friend had a weapon other than a gun at school (Model 3).

The logistic regression results presented in Table 4, Model 1 suggest that females, middle school students, students who were least likely to misbehave at school, and students with higher levels self-efficacy were significantly more likely to report that they had heard a student had a weapon other than a gun. Additionally, students that indicated adults were willing to help them with a problem when needed and students with higher levels of alienation were also significantly more likely than their counterparts to report if they had heard another student had a weapon other than a gun at school. The variables included in the model explained approximately 21% (Nagelkerke R-square=.211) of the variance in the decision to report.

In the second model in Table 4, we regressed students' decisions to report if they saw another student with a weapon other than a gun to an adult on the demographic, contextual, and theoretical variables described earlier. The logistic regression results presented in the second model closely follow those in the first model in Table 4; females, middle school students, those students who reported lower levels of school misbehavior, and those who felt the school climate was most positive were significantly more likely to report the presence of a weapon than their counterparts.

Table 4. Logistic Regression Results Regression Whether Student Would Report the Presence of a Weapon Other than a Gun at School Across Three Situational Contexts

Variable	Model 1 Whether Student Would Report if They Heard Another Student Had a Gun (N=756)		Model 2 Whether Student Would Report if They Saw Another Student with a Gun (N=751)		Model 3 Whether Student Would Report if Their Best Friend Had a Gun (N=757)	
	B/S.E.	Exp(B)	B/S.E.	Exp(B)	B/S.E.	Exp(B)
Demographic Factors						
Males	-.427/.175	0.65*	-.703/.189	0.50***	-.726/.178	0.48***
Nonwhite	.064/.248	1.07	-.193/.262	0.83	-.344/.249	0.71
Free lunch recipient	-.125/.206	0.88	.164/.223	1.18	-0.710144928	0.86
Living arrangement	.071/.180	1.07	.295/.196	1.34	-.011/.181	0.99
School Level	-.875/.197	0.42***	-1.173/.224	0.31***	-.637/.196	0.53**
School Factors						
Positive school climate[1]	.425/.207	0.65*	.573/.223	0.56*	.643/.209	0.53**
Teacher/staff bias	.205/.081	1.03	.107/.088	1.11	.030/.081	1.03
School guardianship	.076/.053	1.08	.002/.057	1.00	.024/.054	1.02
School Problems-Delinquency	.022/.054	1.02	.138/.059	1.15*	.083/.054	1.09
School safety	-.069/.055	0.93	.025/.058	1.03	-.111/.056	0.90*
Perceived risk of victimization	-.034/.050	0.97	.022/.055	0.98	-.019/.052	0.98
Individual Factors						
Family attachment[2]	.449/.328	1.57	.651/.339	1.92	.725/.339	2.07*
Adult social capital[1]	.731/.191	0.48***	.834/.206	0.43***	.737/.194	0.48***
School connectedness	.007/.088	1.01	-.192/.096	0.83*	-.072/.090	0.93
Alienation	.081/.041	1.09*	.002/.044	1.00	.054/.041	1.06
Self-efficacy	.118/.045	1.13*	.149/.050	1.16**	.181/.045	1.20***
Academic performance	.098/.158	1.1	.001/.169	1.00	-.007/.161	0.99
School Misbehavior	-.375/.088	0.69***	-.378/.096	0.69***	-.450/.089	0.64***
Constant	2.534/.881	12.60**	3.392/.945	29.72***	3.092/.895	22.02**
Chi-square (18 df)	127.03***		151.15***		166.55***	
Nagelkerke R-Square	0.21		0.26		0.27	
-2 Log Likelihood	878.42		766.65		863.74	

*p<.05, **p<.01, ***p<.001

[1]Reflect and square root transformation , [2]Reflect and inverse transformation

Additionally, students that indicated adults were willing to help them with a problem when needed, students who felt their school had the most delinquency problems, and

students with higher levels of self-efficacy were significantly more likely than their counterparts to report that they had seen another student with a weapon other than a gun. Students with lower levels of school connectedness were also significantly more likely than their counterparts to report that they had seen another student with a weapon other than a gun at school. The variables included in the model explained approximately one quarter of the variance (Nagelkerke R-square=.258) in the model.

The logistic regression results presented in Table 4, Model 3 suggest that, similar to the previous models, females, middle school students, and students who reported lower levels of school misbehavior were more likely to report if their best friend had a weapon other than a gun. Moreover, those reporting higher levels of school safety, positive school climate, self-efficacy, and family attachment were significantly more likely than their counterparts to report if their best friend had a weapon other than a gun. Additionally, students that indicated adults were willing to help them with a problem when needed and students that reported higher levels of delinquency problems at their school were also more likely to report that their best friend had a weapon other than a gun than their counterparts. The variables included in this model explained the most variation in reporting among the six models presented here (Nagelkerke R-square=.266).

DISCUSSION

Consistent with previous studies, we found that the vast majority of middle and high school students who had information that another student had a weapon on campus (whether the weapon was a gun or some other type of weapon) would report the student to school administrators (Brank et al., 2007; Brinkley & Saarino, 2006; Wylie et al., 2010). This suggests that

students are willing to take an active part in protecting the safety of their own school. This finding is particularly encouraging and reaffirms the less publicized fact that many acts of violence are averted in schools each year because students are willing to report those who either threaten to bring or actually bring a weapon to school. Like previous studies, however, we also found that willingness to report declines when those who possess weapons are close friends and in many instances, willingness to report also declines with age. This decline points to the importance students attach to being accepted by their peers and the need for school officials to develop strategies that help students understand that reporting weapons possession is paramount, even when those weapons are possessed by one's friends.

Second, despite the finding that most students will report weapons possession, there were also a number of students who would not report the presence of a weapon at school. Depending on the scenario, between 11.1% (when students saw another student with a gun) and 43.2% (when a student's best friend had a weapon other than a gun) indicated that they would not report the presence of weapons to administrators and 8.6% of the students indicated that they would not report weapons possession under any of the situations we presented. Similar to other studies, we found the likelihood of reporting varied by a number of different factors, including the type of weapon brought to school and the relationship of the students who were aware of the weapon's presence at school (Brank et al., 2007; Brinkley & Saarino, 2006; Wylie et al., 2010). Several of these factors are discussed in detail below.

Similarities in Reporting the Presence of Weapons at School

Students who reported that they were involved in lower levels of school

misbehavior were significantly more likely than their counterparts to report the presence of a weapon to an adult, regardless of how they became aware of the presence of the weapon, the type of weapon, or the relationship between the student and the student with the weapon. This finding is identical to that of Brank and her colleagues (2007) and it supports arguments by social bonding, learning, and rational choice theories that youths with deviant peer associations are less inclined to report weapons possession at school to authorities. This finding suggests that efforts to lower levels of school misbehavior and address negative peer groups, coupled with efforts to reduce youth cultural beliefs that reporting represents unacceptable behavior, can play a critical role in encouraging youths to report weapons possession. This is likely to be an important component in ensuring school safety because youths with negative peer associations may be better situated to have knowledge of youths who possess weapons.

Students who had the highest levels of self-efficacy were also significantly more likely to report the presence of a weapon in every situation. Recall that these students report the use of more positive strategies for solving conflicts. Consequently, empowering students with the skills and knowledge to talk about their problems and resolve them in constructive ways should indirectly affect weapon reporting across all contexts.

Students who perceived that the climate at their school was most positive were also more likely to report the presence of a weapon in each of the situations presented to them. The direct relationship between positive school climate and willingness to report weapons possession is consonant with previous research by Wylie et al. (2010) and Brinkley and Saarnio (2006) who found a positive relationship between these measures, although Wylie et al. (2010)

concluded that school climate is less important under conditions of anonymous reporting.

Differences in Weapon Reporting by Type of Weapon

None of the other measures had a statistically significant association with the reporting of a weapon in all situations. Consequently, the impact of the other theoretical variables depends on the weapon that was brought to school and/or the relationship the student has with the weapon carrier. For example, students who felt that there were more delinquency problems at their school would report the presence of a weapon when they saw a student with a weapon, regardless of the type of weapon, but were not significantly more likely to report either second-hand knowledge of the presence of a weapon or when their best friend had a weapon at school, regardless of the type of weapon. These students, perhaps because of the negative relationships they perceive in the school environment, are not willing to assist the school by reporting unless they feel it will immediately impact them. Students with higher levels of family attachment, on the other hand, were significantly more likely to report when they heard a student had a gun and if they knew their best friend had a weapon other than a gun.

Other important differences were also present. Only two demographic variables, gender and grade level, had a significant impact on weapon reporting in this study. Similar findings have been uncovered in earlier studies that have examined these predictors (Brank et al., 2007; Brinkley & Saarnio, 2006; Wylie et al., 2010). Female and middle school students were significantly more likely to report the presence of a weapon when they had direct knowledge of that weapon's presence at school (e.g., when they saw a student with a

weapon or when they knew their best friend had a weapon) and when they heard that a student had a weapon other than a gun. Both groups were also more likely to report that they heard another student had a weapon other than a gun but were not significantly more likely than their counterparts to report when they heard another student had a gun. Consequently, it appears that (1) the "culture of snitching" (that discourages reporting of deviant acts) is much more prevalent among males than females and (2) this culture may be weapon specific. In this case, school administrators should develop programming and policies to encourage reporting among males and high school students, and they should stress the potential harm that can be caused by various types of weapons even when those weapons are possessed by close friends and even when those weapons are not firearms.

Our findings regarding the relationships between students' willingness to report weapons possession at school and adult social capital mirror those of Brank and associates (2007), although our findings provide a more nuanced view of this relationship. Context clearly matters in reporting weapons to adults, but so does the nature of the weapon. For example, our results indicate that students with higher levels of perceived adult social capital were significantly more likely to report to an adult when they heard a student had a weapon other than a gun, when they saw another student with a weapon other than a gun, and when they knew their best friend had a weapon of any type. Thus, those students who trusted in adults to help them when they needed it were more likely to report the presence of a weapon other than a gun in every situation, and to report the presence of a gun when it was in the possession of their best friend. This suggests that bonds of trust with adults make students more likely to report weapons other than guns and they

appear to overcome some of the reticence that many students have about reporting guns that are possessed by their friends.

Nonsignificant Predictors of Weapon Reporting

Although the relationships discussed previously are important, there were a number of nonsignificant relationships uncovered in this study that are important as well. Among the demographic variables, students who received free lunch, performed poorly in school, were from single-parent homes, or were nonwhite were no more or less likely than their counterparts to report the presence of weapons at school to an adult. This calls into question a commonly held stereotype that only the "good" students (e.g., the middle class white students who perform well academically and live in homes where both biological parents live together) will report problems at school to teachers and administrators. These findings indicate that properly developed strategies to build trust and an "open reporting climate" will be successful or unsuccessful across all demographics and, when students do not report the presence of weapons, it is because of factors other than demographics.

Additionally, variables that intuitively would have a relationship with reporting the presence of weapons did not have an association with weapon reporting in this sample. Students with elevated levels of perceived risk of victimization and lower levels of perceived school safety and school guardianship were generally not more likely to report the presence of a weapon at school than their counterparts. This finding suggests that efforts to reduce fear and risk of victimization at school more generally may have little impact on encouraging weapon reporting among students, and school administrators need to target, and advertise as such, any efforts to encourage weapon reporting among students.

Finally, despite the extant literature suggesting otherwise, student alienation, school connectedness, and perceptions of teacher/staff bias toward outsider groups had little to do with weapon reporting among the youths in this sample and in those instances where significant relationships were found the findings were counterintuitive. These findings are important because they suggest that differing components of multidimensional concepts such as social bonding and school climate may operate in different ways on students' willingness to report weapons possession.

CONCLUSIONS

In this paper, we used data from 895 middle and high school students in the Appalachian region of the U. S. to examine predictors of reporting weapons of various types to school authorities. Because we have not examined a representative sample of schools, our results cannot be generalized to other schools. Nevertheless, our findings are consonant with those found in previous studies with some notable exceptions and reveal a number of interesting findings that are relevant for both policy and future research.

First, and perhaps most importantly, our results suggest that efforts to encourage an "open reporting climate" where students feel empowered to report the presence of a weapon at school (and, intuitively, other actions that threaten the school environment) could be successful if properly designed and targeted. These efforts should begin with encouraging students to take ownership of their school, developing positive relationships between students and adults in the school, and building self-efficacy among students. Including students in the decision-making efforts of school administrators is a logical, yet often overlooked, step that can begin to accomplish this task. Inviting students to

participate in assessments of school safety and crisis response planning is also essential; having these students report back to the larger student body and solicit feedback from their peers should create a larger sense of "buy-in" from the entire student body. Just as disgruntled voters often accuse their elected representatives of having a larger agenda that ignores the voters' needs, students who are not asked to provide feedback to administrators about their schools may feel ignored by school decision-makers. Because they feel the school administrators do not value their feedback, they may feel the administrators will not respond to their reports of weapons and other harmful behaviors and become apathetic about the efforts of teachers and administrators to improve the school. Student empowerment will produce ownership; students who feel they own the space will not be apathetic. Although Wylie et al. (2010) argue that improving school climate may not be the most effective way to increase students' willingness to report weapons possession, and call for providing students with an anonymous avenue for reporting, we think it is too early to suggest that school climate improvement efforts will not produce significant results.

A second finding from this study needs future attention. Students who felt that the teachers and administrators were not helpful and created an environment of unfair and often nonexistent punishment for rule-breaking were less likely to report the presence of all weapons than those who felt school administrators and teachers treated students fairly and punished them when they broke the rules. Also, students who reported that they knew a number of other students and teachers at school was found to be significantly related to willingness to report in only one model and knowing many other students and teachers was inversely related to willingness to report. In contrast,

students who reported that there were several adults they could turn to when they were having problems were more likely to report weapons possession in several of our models. Thus, schools exert considerable influence over the extent to which students are encouraged to report weapons possession. Importantly, with effort, schools can take steps to develop close bonds between students and staff and to create a supportive school climate likely to increase levels of school safety.

Our findings, in conjunction with earlier studies on this topic, indicate that students' willingness to report weapons possession is a highly nuanced phenomenon that is influenced by a variety of factors. These factors include the reporting climate of the school, students' perceptions of the potential consequences to themselves and others of reporting, the types of weapons involved, and the conditions under which reporting takes place. Moreover, previous research in this area (Brank et al., 2007; Wylie et al., 2010) indicates that allowing students an anonymous way to report weapons possession may be an important factor in encouraging student reporting. Unfortunately, we were not able to test this measure. Future studies, however, should examine how anonymity interacts with a variety of factors including those explored in this paper.

The developing body of research in this area provides a starting point for understanding students' willingness to report weapons possession at school and can serve as a basis for policies designed to enhance school safety. Moreover, our findings support and build on previous studies in this area that highlight the relevance of school climate, social bonding, and the development of social capital and self-efficacy in the development of safe schools. Moreover, our research indicates that specific components of multi-dimensional constructs like school climate and social bonding are more important than others. Thus, it will be important for future studies to examine these relationships more carefully and determine what forms of social bonding and what aspects of school climate are likely to have the most impact on students' willingness to report weapons possession. Clearly, additional research is needed to more fully understand the circumstances and factors that will be the most efficacious in encouraging students to report weapons possession in schools. This research is important, however, because it can play a major role in developing strategies for reducing some of the most serious forms of violence that affect children and communities.

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NOTES

1. We introduce social learning theory because the hypotheses explored by Brank et al., 2007 and Wylie et al., 2010 are compatible with the social learning perspective, although this is not noted in either study.

2. Because the school system collected the data for this project, we were concerned that some students might not take the questionnaire as seriously as they might if outside researchers were collecting the data. In addition to including a protocol providing teachers step-by-step instructions regarding how the questionnaires should be administered, we also included an item asking students how honest they were during the completion of the questionnaire. The chi-square tests to examine the relationship between respondent honesty and reporting the presence of a weapon suggested that, compared to those students who indicated they provided honest responses all the time, larger percentages of respondents who indicated that they never gave honest responses, were honest some of the time, or were honest most of the time indicated that they would not tell about the presence of a weapon. These percentage differences ranged from 9.9% to 13% and each was statistically significant ($p < .001$).

3. In three of the six models, the final model with outliers removed resulted in one predictor either being added to or being removed from the initial model. In the final model regressing Heard Another Student had a Weapon on the predictors, alienation did not reach significance when it was found to be significant in the initial model. When Knew Best friend had a Weapon (other than a gun) was regressed on the predictors, family attachment reached significance; it was not significant in the initial model. Finally, with outliers removed, when Saw Another Student With a Weapon was regressed on the predictors, family attachment did not reach statistical significance when it was significant in the initial model.