Prevalence of Drugs and Alcohol in U.S. Secondary Schools: Do Security Measures Matter in School Communities?

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Abstract

Despite the common perception of a decline over recent decades of adolescents' use of illicit drugs and alcohol, the recent exponential rise in teenage vaping has spotlighted how local and school communities must address this endemic public problem. Since use of illicit substance adversely affects adolescent development, it is imperative that educators assess the prevalence of drugs and alcohol and curtail access in secondary schools. We examined the association between drug and alcohol availability and school security measures, using data from the 2015 National Criminal Victimization Survey School Crime Supplement. Logistic regression determined whether school security measures (inclusive, exclusive, and ambiguous) reduce student-perceived drug and alcohol availability in U.S. secondary schools. Our findings indicated that students in secondary schools with school resource officers perceived greater drug and alcohol availability, while locked doors were associated with lower perceived availability. No inclusive security measures were associated with increased or decreased drug and alcohol availability. Only one exclusive measure – locker checks – in a single model related to perceived marijuana availability was significantly associated with perceived lower substance availability. School leaders and policy makers should consider the effectiveness of security measures to reduce substance use, while ascertaining the likelihood of detrimental effects.

Keywords: School Community, Drug and Alcohol Availability, school safety, security measures, Risky Behaviors

A resounding chorus of parent, educator and community voices has resonated across the U.S., imploring political leaders to update polices related to prescription opioid misuse and adolescent access to vaping devices. Despite a decline of substance abuse and availability in U.S. secondary public schools over the past fifty years, more recently,

researchers have reported that increasing rates of illicit drug and alcohol accessibility and prescription opioid misuse have raised concern among parents and educators (Abramoski et al., 2018; Jozaghi & Dadakhah-Chimeh, 2018; National Institute on Drug Abuse (NIDA), 2018). In an extensive overview of adolescent drug use and availability from 1975 to 2018, Johnston et al. (2019) found that vaping of all substances increased exponentially in 2018. According to the 2018 Monitoring the Future Survey (NIDA), teens vaping nicotine, or marijuana, or flavoring increased across all grades 8-12. Further, "nearly 2 in 5 students in 12th grade report past-year vaping" (NIDA, 2018). Notably, Johnston et al. (2019) concluded that adolescents "associate little risk of harm with vaping. Levels of perceived risk for these behaviors rank near the lowest of all substances, with little change in recent years" (p. 4). Perceived availability declined for illicit drugs, while marijuana and alcohol availability persisted for 8th, 10th, and 12th graders, with alcohol remaining the most widely used substance by teens. School-age adolescents can obtain and use substances if they elect to do so, thus requiring school leaders to institute measures to counteract. The paucity of studies that have investigated drug and alcohol availability in schools is problematic because educators remain under-informed about which safety measure may curtail availability. Earlier, Kitsantas (2004) and Finn (2006) and more recently, Tanner-Smith and Fisher (2016) illuminated this lack of direction and have encouraged the research community to address it.

In reaction to tragic acts of school violence, federal and state legislators and policy makers have enacted school safety policies to reduce victimization and risky behaviors (Addington, 2009; Aronowitz et al., 2021; Brown, 2005; Garcia, 2003;

Nickerson & Martens, 2008). Subsequently, school boards have directed administrators to use safety processes to protect students from physical and emotional harm (Akiba, 2010; Biag, 2014; Lindle, 2008) and principals have implemented security measures, such as security cameras, school resource officers (SROs), and metal detectors (Hope, 2015; Gottfredson & Gottfredson, 2001) to quell concerns of parents, teachers, school staff and students. Despite the presence of well-intended safety precautionary processes, students' access to illegal drugs or alcohol in school settings remain a disconcerting issue for educators (Brown, 2005; Portillos et al., 2012; Musu-Gillette et al., 2017; Theriot, 2009). More specific research was warranted to understand how school security measures may or may not impact secondary school students' perception of drug and alcohol availability.

The purpose of this study was to explore an association between students' perceived access to drugs or alcohol within school bounds and the approaches that school leaders have implemented for school security. During the past decade, few studies have investigated students' perception of the availability of drugs and alcohol in schools (Kuntsche, 2010). Researchers have examined the impact of school safety measures by inclusionary discipline (e.g., hallway monitoring, ID badges, and in-school suspension), and exclusionary discipline (Kupchik & Ward, 2014) (e.g., suspension or expulsion) on a school's academic performance (Aronowitz et al., 2021), on school attendance, i.e., interruptions to schooling (Gregory et al., 2010; Hughes et al., 2015), and on students' perceptions of school safety (Biag, 2014; Fisher et al., 2017). Despite the recent expansion of school security measures, researchers have not attempted to analyze how

security approaches may influence students' procurement of drugs and alcohol on school premises. The following research questions guided this study:

1. Is there a relationship between school security approaches and availability of alcohol and drugs in schools serving students in grades 6-12?

2. Are different school security approaches, specifically inclusive or exclusive better predictors of students' perception of alcohol and drug availability within a secondary school?

Conceptual Analysis

General Drug and Alcohol Availability

Researchers with The Substance Abuse and Mental Health Services Administration (2014) analyzed data from the 2013 National Survey on Drug Use and Health and concluded drug availability in general and certain drug use (e.g., marijuana, heroin, alcohol) remained stable or increased when compared to the rate calculated from the previous survey administration a decade earlier. Availability to a few drugs such as cocaine and LSD steadily declined over this same time. These results also showed children and adolescents are at greater risk than adults of becoming addicted when exposed to drugs. Similarly, McCabe et al. (2017) reported that opioid use among adolescents was common over the past four decades. In their study of youth in rural and small urban settings, Monnnat and Rigg (2015) found similar rates of opioid abuse, although rural adolescents had greater odds for using substances despite less overall availability. Their findings demonstrated the importance of considering social and community environment factors, above and beyond adolescents' own individual

circumstances, when examining rural/urban differences in prescription opioid misuse (POM)" (p. 214). According to National Institute for Drug Addiction's (NIDA) annual Monitoring the Future Survey of 8th, 10th, and 12th graders, the use rate of one popular prescription opioid, Vicodin® has decreased since 2009 (Johnston et al., 2019). In 2019, 1.1% of 12th graders misused this drug, but the use of illicit drugs among 12th graders remained steady. This decline likely reflects the diligence of parents and local community public health experts who attend to all aspects of the teen environment—home, school, and community. Opioid misuse rates however increased after the age of 18, signaling the importance of continuing education as young adults prepare to leave home (Dart, 2015; Johnston et al., 2019). McCabe et al. (2013) examined opioid use among U.S. high school seniors and estimated that nearly 13% of graduating students reported nonmedical, substance abuse of the drug. Likewise, Oxycontin®, a popular alternative to other illicit drugs was increasingly available and used by adolescents across the United States (Katz & Hays, 2004). These findings showcased the widespread availability of drugs and alcohol to adolescents.

Marijuana and Alcohol Availability

Marijuana (Substance Abuse and Mental Health Services Administration, 2014) and alcohol (Harding et al., 2016; Johnston et al., 2015) remained the most available drugs for adolescents. Azofeifa et al. (2016) reported that the overall use of marijuana by individuals aged 12–17 increased from 2002 to 2014. During the same time, the perceived availability of the drug in its traditional delivery style declined, despite its availability remaining a concern for educators, parents, and communities. Rosenbaum

(2016) claimed that the recent legalization of marijuana in some U.S. states has created a new cultural context for drug availability. Statistics from the recent Teen Drug Abuse Monitoring the Future (NIDA, 2019) reported teens vaping nicotine or using marijuana daily increased significantly for students in Grades 8 and 10 during 2019. Although marijuana sales are illegal for underage youth, the American College of Pediatricians (2017) expressed concern about how broader legalization of marijuana contributed to the public's perception that marijuana was harmless, despite its adverse effects on the adolescent brain. Scientific "evidence indicates limited legalization of marijuana has already raised rates of unintended marijuana exposure among young children and may increase adolescent use" (American College of Pediatricians, 2017, p. 1). Following the same trend, the 2018 Monitoring the Future College Students and Young Adults Survey (NIDA, 2018b) found that marijuana vaping doubled among college students from 5.2% (2017) to 10.9% (2018). Researchers noted nicotine vaping showed the largest one-year increase of 6.1% (2017) to 15.5% (2018) evidenced in any substance since the first iteration of the survey.

Likewise, the public, educational community, and policy makers should address how best to regulate adolescents' access to alcohol. Shih et al. (2015) reported adolescents residing within communities with greater numbers of liquor stores were more likely to assert increased perceived availability of alcohol and alcohol use in one's lifetime. Milam et al. (2016) associated the number of liquor stores in a community with high school females' perception that alcohol was more readily available and accessible. In contrast, findings from a study conducted by Jackson et al. (2015) noted a low

percentage of sampled students had easy access to alcohol. However, those students with greater access to alcohol were associated with increased aggressive and noncompliant behaviors and were less likely to engage at school. While binge drinking among teens has dropped significantly over the past five years across all grades 8-12 (NIDA, 2019), the ease with which adolescents obtained marijuana and alcohol exposed students to the negative effects of substance use.

Effects of Drug and Alcohol Availability

The availability of drugs and alcohol has contributed to adolescent substance use, specifically when public school students perceived that they were readily accessible (Kuntsche, 2010). According to Hawkins et al. (1992), the availability of drugs and alcohol and their misuse affected individual traits (e.g., mood disorders, lack of motivation, diminished cognitive functioning) and communities (e.g., expanded costs for health care, increased crime). Substance abuse in formative years affected brain development, academic success during adolescence (Lynskey & Hall, 2000; Spear, 2002; Winters & Arria, 2011), and neuropsychological workings in adulthood (Hanson et al., 2011). Notably, adolescents recovering from alcohol dependency were associated with poorer verbal and nonverbal retention in learning situations (Brown et al., 2000). Balsa et al. (2011) found that increases in consumption of alcohol for adolescent males resulted in lower GPAs, whereas females reported having greater difficulty learning at school. Likewise, use of marijuana during adolescence negatively influenced school performance and reduced long-term educational attainment (Lynskey & Hall, 2000). Martins and Alexandra (2009) described how alcohol, marijuana, and ecstasy use were associated

with lower academic achievement. Findings from these studies have affirmed that access to and use of illicit substances adversely affected adolescents' academic development.

Although adolescents' substance abuse disorders declined between 2003 to 2010, Mericle et al. (2015) noted that a substantial gap between those with disorders and those who received treatment for their disorders persisted throughout the seven-year period under study. Further, failure to seek assistance for a disorder was even more problematic if drugs and alcohol were easily available. Over the past decade, researchers have designated educators responsible for informing adolescents of the risks associated with use of drugs and alcohol and implementing prevention programs to limit adolescent substance use early in their educational experiences (Barry et al., 2016; Hopfer et al., 2010). Despite implementation of early intervention programs, drugs and alcohol remained available to students at school (Musu-Gillette et al., 2017), mostly in middle and high schools. The task of assessing the prevalence of drugs and alcohol in schools and ascertaining which strategies can reduce their availability falls to administrators.

Drug and Alcohol Availability in Schools

Historically, researchers have analyzed data collected annually from various national surveys (e.g., Monitoring the Future, Indicators of School Crime and Safety, Youth Risk Behavior Survey) to assess any association between the availability of drugs and alcohol to adolescents and various risky behaviors of students in secondary and tertiary education institutions (Finn, 2006). More recently, researchers have provided insights about drug and alcohol availability in schools and offered recommendations for practitioners. Musu-Gillette et al. (2017) claimed a decrease in the number of high school

students who reported drug availability from 52% 1995 to 22% in 2015. This finding aligns with results from a study conducted by Johnston et al. (2015) who found an overall decline in illicit drugs that were accessible by adolescents. Although adolescents described a reduction in procurement of drugs within the physical boundary of a school, at least 1 in 5 students perceived that they had access to drugs or alcohol during the school day, if desired. Secondary school students perceived marijuana and alcohol were the most easily accessible items and identified exterior school spaces (play areas) and interior locations (bathrooms) as the least conspicuous sites to obtain these substances (Finn, 2006).

Even as rates for drug and alcohol availability in schools have trended down, district administrators have acknowledged the need for a more proactive and coordinated strategy that eliminates students procuring drugs while on school premises. Clearly, reducing adolescents' use of drugs and alcohol in the general community demands due diligence. This translates to urgent action by school leaders, since youth and adolescents who use drugs on school grounds are associated with increased negative outcomes, such as violence and poor academic performance (Morgan, 2001; Venturelli, 2016; Wong et al., 2014).

Researchers have questioned whether individual- or school-level factors contribute more to drug and alcohol availability and use for students (O'Malley et al., 2006; Swaim, 2003; Voelkl & Frone, 2000). Swaim studied patterns of drug use in high school settings and revealed that students' perception of marijuana availability within a school's perimeter led to greater marijuana use by 12th grade students. An overwhelming

majority of the variance (97%) in marijuana use was explained by individual-level factors that included perceived harm and perceived availability. Any difference between schools contributed minimally to an individual's decision to use marijuana. In a comparable study, O'Malley et al. (2006) also noted little between-school variability in drug and alcohol availability. School leaders should direct their prevention efforts toward understanding why students seek banned substances. Voelkl and Frone (2000) recommended that administrators implement strategies such as adult supervision of the school hallways to reduce opportunity for students to share or use drugs and alcohol. In some cases, these strategies may deter an action that might otherwise lead a student to engage in risky behavior.

Theoretical Framework

Over the past two decades, researchers have postulated that school security and disciplinary practices have become increasingly criminalized over recent decades, suggesting a school's environment resembles that of a prison (Hirschfield, 2008, 2010; Hirschfield & Celinska 2011; Aronowitz et al., 2021). The attacks at Columbine High School (Addington, 2009) and September 11, 2001 (Saltman, 2004) expanded and amplified the use of security measures such as security cameras, SROs, metal detectors, and ID badges (Hope, 2015; Gottfredson & Gottfredson, 2001; Musu-Gillette et al., 2017). School leaders and policy makers criminalized schools, particularly urban ones, by enforcing strict disciplinary codes to maintain order and adopting zero-tolerance policies to deal with misbehavior (Aronowitz et al., 2021; Hirschfield, 2008). School leaders who have adopted these approaches aim to reprimand students for misbehavior and/or drug

possession by inflicting punitive consequences, including exclusion from classes and school (Mowen, 2014; Servoss & Finn, 2014). Noguera (1995) explained that such actions frame schools as prisons, devoid of a welcoming or safe learning environment. As part of this theory, Hirschfield (2008) described the strategies school leaders have introduced as institutionalized hardened methods—for example, investing in school surveillance and relying on exclusionary discipline to track and punish students. Hirschfield based his theoretical framework on Simon's (2007) 'governing-through-crime narrative' which postulates that if crime and violence occur in a school, then all schools are likely to experience similar tendencies and therefore, school security measures and strict disciplinary systems are necessary. School leaders and policy makers who subscribe to this ideology may inadvertently convey to students the message that behavior requires rigid control to prevent further deviant conduct. Hirschfield (2008) has lamented that school criminalization, particularly exclusive measures, may have drastic long-term consequences for students, such as preparing them for similar tendencies when they enter the workforce, as well as labeling students from urban, impoverished schools as lower skilled or destined for jail. The public, legislators, and policy makers, however, have advocated these measures because they feel these approaches can restrict and regulate harmful behaviors (Hirschfield, 2008; Kupchik & Ward, 2014).

In his theory, Hirschfield's (2010) proposed that security measures may have an inclusive or exclusive approach. Specifically, inclusive security measures aim to minimize differences between individuals, whereas exclusive measures highlight the differences and target individuals for punishment. For example, a surveillance camera is

an inclusive security measure because individual students are not singled out, despite constant monitoring (Hirschfield, 2010; Kupchik & Ward, 2014). Other examples of inclusive measures include adult supervision of hallways and student ID badges. School leaders can employ these approaches without focusing on any one student or behavior in their attempts to confine students within the school's boundary. In contrast, a metal detector is an exclusive security measure, used primarily (Hirschfield, 2010) for screening students to catch those with weapons or drugs (Astor, Meyer, & Behre, 1999; Brown, 2005). The process of screening sends a message to students that they are untrustworthy (Hyman & Perone, 1998). Another example of an exclusive measure is the process of checking lockers, such as with the use of drug-sniffing dogs, to determine if students are keeping illicit materials inside (Kupchik & Ward, 2014). Hirschfield (2010) and Kupchik and Ward (2014) have acknowledged that security measures can be either inclusive or exclusive, depending on how a school leader elects to use them.

Since some security measures are not definitely either inclusive or exclusive, Kupchik and Ward (2014) created a third category, 'ambiguous' for measures that do not align with either measure. For example, from one standpoint, administrators may lock gates or doors to restrict all movement in and out of school buildings to protect the general school community. From another, this action may also serve to prevent excluded students from entering the building or isolating perceived offenders from the school community (Kupchik & Ward, 2014). The most notable difference between recommendations from studies conducted by Hirschfield (2010) and Kupchik and Ward (2014) related to the use of SROs. While Hirschfield (2010) proposed that SROs who

conducted their responsibilities beyond patrolling hallways could offer a safer learning space to support students' academic success, Kupchik and Ward (2014), Reingle Gonzalez et al. (2016) and Sullivan and Hausman (2017) have explained the presence of an SRO may conjure students' concern about potential arrest for misbehavior or misconstrued students' perception of the severity of their action. For these reasons, SROs may fit into the ambiguous category. In this study, we classified school security measures into these three categories and then explored the association with drug and alcohol availability.

Methodology

Approval to conduct this study was obtained from the Institutional Review Board of The Ohio State University. The procedures used in this study adhered to the tenets of the Declaration of Helsinki. Data were analyzed from the 2015 School Crime Supplement (SCS) of the National Criminal Victimization Survey. The SCS is completed every other year through face-to-face interviews with students aged 12–18 who have also completed the National Criminal Victimization Survey. Questions in the SCS relate to school and individual characteristics, victimization experiences, fighting and bullying, avoidance behaviors, and presence of gangs and weapons (U.S. Department of Justice, Bureau of Labor Statistics, 2015). In 2015, 5,726 participants completed the SCS. For this study, the initial sample consisted of 4,772 elementary, middle, and high school students. After retaining only those survey completers who were Grade 6 through Grade 12, the final sample was 4,703 participants.

Research Design

The following research questions guided this study:

1. Is there a relationship between school security approaches and the availability of alcohol and drug in schools?

2. Are different school security approaches, specifically inclusive or exclusive, more predictive of alcohol and drug availability within schools?

To answer these questions, a series of logistic regressions was conducted. Each logistic regression examined the association among the different types of security measures and the availability of alcohol and three different types of illicit drugs. The research design also accounted for individual student and school characteristics. The logistic regressions were used to determine the likelihood of students perceiving their school environment as one where drugs and alcohol were more easily available when considering the use (or lack thereof) of different school security measures.

Dependent Variable

The outcome variables in this study were the perceived availability of drugs and alcohol at the school. The SCS asked students four questions about the availability of alcohol, marijuana, prescription drugs such as Oxycontin®, and other illegal drugs such as cocaine. First, for alcohol the question asked was, "Is it possible for students at your school to get alcoholic beverages?" Second, for marijuana the question asked was, "Is it possible for students at your school to get marijuana, also known as pot, weed or mary jane?" Third, for prescription drugs the question asked was, "Is it possible for students at your school to get prescription drugs illegally obtained without a prescription, such as

Oxycontin, Ritalin, or Adderall?" Last, for other illegal drugs the question asked was, "Is it possible for students at your school to get other illegal drugs, such as cocaine, uppers, or heroin?" Participants were asked to respond "yes" or "no" to each of the four questions. For this study, each of the four variables was treated dichotomously.

Independent Variables

The independent variables in the study related to school security measures. Students responded to questions on the SCS that asked if their school made use of the following types of school security measures: school resource officers or guards, adult supervision of school locations, metal detectors, locked doors, locker checks, student identification badges, security cameras, or a student code of conduct. These variables were dichotomously coded (0 = no, 1 = yes). They were grouped as inclusive (security cameras, student identification badges, student code of conduct, adult supervision), exclusive (metal detectors, locker checks), and ambiguous (SROs, locked doors) based on Hirschfield's (2010) concepts of inclusive versus exclusive disciplinary measures and incorporating the ambiguous concepts that Kupchik and Ward (2014) detailed.

Covariates

The first set of covariates related to student characteristics. Student's age, continuous variables, measured age at the time of survey administration. The second covariate, gender, was measured as a dichotomous variable (0 = male, 1 = female). The next covariate, race, was coded categorically into three separate categories—White, Black, and other—with White serving as the reference group. A variable assessing a student's ethnicity (Hispanic or not Hispanic) was also measured dichotomously (0 = no,

1 = yes). The fifth covariate measured a student's grade level, with responses grouped into one of four categories: fifth grade or below, sixth through eighth, ninth through 12th, or other grade level. Finally, the last covariate, academic achievement, was measured as a continuous variable from students' grades (1 = Fs to 5 = As).

The second set of covariates described the school characteristics. School location (0 = urban, 1 = rural) and school type (0 = public, 1 = private) were measured as dichotomous variables within the SCS and maintained as such for inclusion in the models. The next school covariate, grade configuration, was measured as a categorical variable and divided into four categories: elementary (Grade 5 or below), middle (Grades 6–8), high (Grades 9–12), and other. Next, the variable for school size was coded into six categories: less than 300 students, 300–599 students, 600–999 students, 1,000–1,499 students, 1,500–1,999 students, and more than 2,000 students. Schools with less than 300 students served as the reference group. The fifth covariate assessed the percentage of minority students attending the school, coded into four categories: less than 5%, 5% to less than 20%, 20% to less than 50%, and greater than 50%. Schools with less than 5% minority students served as the reference group. The sixth and final covariate measured the percentage of students on free and reduced lunch and was coded into four categories: 0 to less than 20%, 20% to less than 50%, greater than 50%, and private schools.

Analytic Plan

Using SPSS software, four logistic regressions were conducted. Inclusive, exclusive (Hirschfield, 2008, 2010), and ambiguous (Kupchik and Ward, 2014) measures for school security, type of substance, and the types of school security measures were

regressed. These models supported a close examination of the association between risky behaviors, characterized by alcohol and drug availability, and the different school security approaches. The coefficient values represented the change in log-odds for a one-unit increase in each independent variable. Missing cases were removed from analysis through listwise deletion. The lack of school-level identifiers within the SCS did not allow for multilevel modeling. Therefore, single-level analysis was utilized as the analytic technique.

Results

Descriptive statistics for each of the outcome and independent variables were tabulated. Three findings were noted that relate to the outcome variables. First, respondents reported alcohol (23%), marijuana (34.4%), and prescription drugs (20.2%) were available at school, with a smaller percentage (12.9%) stating that other types of illegal drugs were accessible. The sample was primarily composed of White students (80.1%) with approximately equal proportion of males and females. Black students (12.6%) made up the second largest racial/ethnic group. About three-quarters of the student respondents identified as non-Hispanic (75%). Second, an overwhelming majority of students ($N = 4{,}703$) reported being in the middle and high school grades, which was expected because of the age range (12–18) for survey participants. As previously stated, students who indicated they were in grades K–5 ($N = 60$) or in other grades ($N = 9$) were removed from the sample before analysis because of the relatively small number of participants in these grade levels. Last, students in the sample reported

high academic achievement with a mean GPA equal to 4.24. Table 1 reports the descriptive statistics for each of the independent variables.

Table 1

Descriptive Statistics

Variables		N	Mean (SD) or Frequency (%)
Drug and Alcohol Availability			
Alcohol		4,611	
	Yes		1,062 (23%)
	No		3,549 (77%)
Marijuana		4,580	
	Yes		1,574 (34.4%)
	No		3,006 (65.6%)
Prescription Drugs		4,516	
	Yes		911 (20.2%)
	No		3,605 (79.8%)
Other Illegal Drugs		4,524	
	Yes		583 (12.9%)
	No		3,941 (87.1%)
Age		4,717	14.69 (1.87)
Gender		4,772	
	Male		2,447 (51.3%)
	Female		2,325 (48.7%)
Race		4,772	
	White		3,730 (80.1%)
	Black		600 (12.6%)
	Other		442 (9.3%)
Hispanic		4,769	
	No		3,577 (75%)
	Yes		1,192 (25%)
Grade		4,772	
	Fifth or Under		60 (1.3%)
	Sixth through Eighth		1,946 (40.8%)
	Ninth through Twelfth		2,757 (57.8%)
	Other Grade		9 (0.2%)
Grades		4,610	4.24 (.79)
School Location		4,772	
	Urban		3,833 (80.3%)
	Rural		939 (19.7%)
School Type		4,708	
	Public		4,389 (92%)
	Private		319 (6.7%)
Grade Configuration		4,473	
	Elementary		278 (6.2%)
	Middle		1,426 (31.9%)
	High		2,496 (55.8%)
	Other		273 (5.7%)

Table 1

Descriptive Statistics (continued)

Variables		N	Mean (SD) or Frequency (%)
School Size		4,492	
	Less than 300		438 (9.2%)
	301-559		877 (19.5%)
	600-999		1,137 (25.3%)
	1000-1499		848 (17.8%)
	1500-1999		572 (12.7%)
	2000 or More		620 (13.8%)
Percent Minority		4,772	
	Less than 5%		308 (6.5%)
	5 to less than 20%		1,038 (23.3%)
	20 to less than 50%		1,335 (28%)
	50% or greater		1,768 (37%)
Free and Reduced Lunch		4,772	
	0 to less than 20%		641 (13.4%)
	20 to less than 50%		1,619 (33.9%)
	50% or greater		1,948 (40.8%)
	Private School		276 (5.8%)
Security Cameras		4,169	
	No		326 (7.8%)
	Yes		3,843 (92.2%)
Student ID Badges		4,637	
	No		3,555 (76.7%)
	Yes		1,082 (23.3%)
Adult Supervision		4,601	
	No		415 (9.0%)
	Yes		4,186 (91.0%)
Code of Conduct		4,580	
	No		111 (2.4%)
	Yes		4,469 (97.6%)
Metal Detectors		4,196	
	No		3,655 (87.1%)
	Yes		541 (12.9%)
Locker Checks		3,585	
	No		1,340 (37.4%)
	Yes		2,245 (62.6%)
School Resource Officers		4,508	
	No		1,258 (27.9%)
	Yes		3,250 (72.1%)
Locked Doors		4,391	
	No		727 (16.6%)
	Yes		3,664 (83.4%)

For school characteristics, 80% of schools in the sample were urban and over 90% were public schools. More than 50% of sampled schools served a high school population, with the second largest group serving middle school students (31.9%). Schools serving 600–999 students constituted the largest group in the sample (25.3%). For the final two covariates, schools serving greater than 50% of minority students (37%) and students qualifying for free and reduced lunch (40.8%) comprised the largest groups in the sample.

For the main predictor variables related to school security measures, the most widely used approaches were the inclusive and ambiguous methods. Students indicated that security cameras (92.2%), adult supervision (91%), and codes of conduct (97.6%) were inclusive measures widely used in their schools. For exclusive measures students noted that locker checks (62.6%) were prevalent in school systems. Relative to ambiguous measures, SROs (72.1%) and locked doors (83.4%) were targeted by students as commonly utilized practices. Student ID badges (23.3%) and metal detectors (12.9%) were adopted less frequently by schools than all other measures.

Next, logistic regressions were conducted to determine the association between perceived drug and alcohol availability and school security measures. Model 1 tested the perceived availability of alcohol and school security approaches, considering student and school covariates. Related to the predictor variables, only the two ambiguous security measures had a significant association with perceived drug and alcohol availability. Students who attended schools with SROs were associated with increased log-odds (β =

0.26, $p < .05$) while locked doors were associated with decreased log-odds (β = -0.33, $p < .05$) for perceived alcohol availability.

Five of the student covariates were significantly associated with perceived drug and alcohol availability. First, age (β = 0.11, $p < .01$) of a student was associated with increased log-odds for perceived alcohol availability. Next, when compared to White students, both Black (β = -0.60, $p < .001$) and other races (β = -0.70, $p < .001$) were associated with decreased log-odds for perceived alcohol availability. Additionally, Hispanic students (β = -0.40, $p < .01$) were associated with decreased log-odds for perceived alcohol availability. The last significant student covariate, academic achievement (β = -0.17, $p < .01$), was associated with decreased log-odds for perceived alcohol availability. Only two school covariates were significantly associated with the first outcome variable, alcohol. Students in rural schools (β = -0.36, $p < .05$) were associated with decreased log-odds for perceived alcohol availability. Further, when compared to elementary schools, students attending high schools (β = 1.01, $p < .01$) were associated with increased log-odds for perceived alcohol availability.

Model 2 examined the association between perceived marijuana availability and school security measures, considering student and school covariates. Related to the predictor variables, one exclusive measure, students in schools with locker checks (β = 0.20, $p < .05$), were associated with increased log-odds for perceived marijuana availability. Both ambiguous approaches were significantly associated with student beliefs about marijuana accessibility. Students in schools with resource officers (β = 0.41

$p < .001$) were associated with increased log-odds, while those in schools with locked doors were associated with decreased log-odds ($\beta = -0.27$, $p < .05$) for perceived marijuana availability. Several student covariates were significantly associated with marijuana availability. Age ($\beta = 0.15$, $p < .001$) was associated with increased log-odds for perceived marijuana availability. Like the previous model, when compared to White students, Blacks ($\beta = -0.51$, $p < .001$) and other races ($\beta = -0.38$, $p < .05$) were associated with decreased log-odds for perceived marijuana availability. Additionally, Hispanic students ($\beta = -0.33$, $p < .01$) were associated with decreased log-odds for perceived marijuana availability. Finally, academic achievement ($\beta = -0.19$, $p < .001$) was associated with decreased log-odds for perceived marijuana availability. There were four school covariates significantly associated with students' beliefs regarding marijuana accessibility. When compared to students in elementary schools, high school students ($\beta = 0.73$, $p < .05$) were associated with increased log-odds for perceived marijuana availability. The remaining significant covariates related to school size; when compared to students in schools with less than 300 students, students in schools with 600-999 students ($\beta = 0.60$, $p < .01$), 1,000-1,499 students ($\beta = 0.67$, $p < .001$), and more than 2,000 students ($\beta = 0.57$, $p < .05$) were associated with increased log-odds for perceived marijuana availability. Results from the logistic regressions for perceived alcohol and marijuana availability are displayed in Table 2.

Table 2

Logistic Regression Models Predicting Odds of Perceived Alcohol and Marijuana Availability by Security Measures

	Model 1 - Alcohol		Model 2 - Marijuana	
Variable	β (SE)	OR	β (SE)	OR
Constant	-2.59 (1.04)*	.08	-3.56 (.99)***	.03
Age	.11 (.04)**	1.11	.15 (.04)***	1.16
Gender	.06 (.10)	1.06	.14 (.09)	1.15
Black	-.60 (.16)***	.55	-.51 (.15)***	.60
Other Races	-.70 (.19)***	.50	-.38 (.17)*	.69
Hispanic	-.40 (.13)**	.67	-.33 (.12)**	.72
9th through 12th Grade	-.03 (.26)	.97	.27 (.23)	1.31
Grades	-.17 (.06)**	.84	-.19 (.06)***	.83
School Location	-.36 (.14)*	.70	-.23 (.13)	.79
School Type	-.34 (.30)	.71	-.31 (.29)	.73
Grade Configuration				
Middle	.39 (.33)	1.48	.22 (.28)	1.25
High	1.01 (.38)**	2.74	.73 (.32)*	2.08
Other School Configuration	.47 (.41)	1.60	.34 (.35)	1.40
School Size				
301-599	.17 (.22)	1.19	.31 (.19)	1.37
600-999	.39 (.22)	1.47	.60 (.20)**	1.82
1,000-1,499	.41 (.23)	1.50	.67 (.21)***	1.96
1,500-1,999	.13 (.25)	1.14	.41 (.22)	1.51
2,000+	.37 (.25)	1.45	.57 (.23)*	1.76
Percent Minority				
5 to less than 20%	-.09 (.21)	.92	-.18 (.19)	.84
20 to less than 50%	.17 (.21)	1.18	.04 (.19)	1.05
50%+	.10 (.24)	1.10	.01 (.22)	1.00
Free and Reduced Lunch %				
20 to less than 50%	-.07 (.14)	.94	.05 (.14)	1.05
50%+	-.24 (.17)	.78	.09 (.16)	1.10
Private School	.41 (.87)	1.50	.02 (.85)	1.02
Security Cameras	.22 (.23)	1.25	.12 (.20)	1.13
Student ID Badges	.19 (.12)	1.21	-.12 (.11)	.89
Adult Supervision	.06 (.19)	1.06	-.13 (.17)	.88
Code of Conduct	-.33 (.35)	.72	.22 (.35)	1.25
Metal Detectors	-.22 (.15)	.81	-.24 (.13)	.79
Locker Checks	.13 (.10)	1.14	.20 (.10)*	1.23
School Resource Officers	.26 (.13)*	1.29	.41 (.12)***	1.50
Locked Doors	-.33 (.13)*	.72	-.27 (.12)*	.77

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

Model 3 explored the association between perceived prescription drug availability and school security measures, considering student and school covariates. Only ambiguous security measures were significantly associated with perceived prescription drug availability. Students in schools with SROs ($\beta = 0.35$, $p < .05$) were associated with increased log-odds, whereas students in schools with locked doors ($\beta = -0.33$, $p < .05$) were associated with decreased log-odds with perceived prescription drug availability. Several student covariates were significantly associated with perceived prescription drug availability. First, age ($\beta = 0.15$, $p < .001$) was associated with increased log-odds for perceived prescription drug availability. For race, when compared to White students, Black ($\beta = -0.55$, $p < .01$) and other races ($\beta = -0.99$, $p < .001$) students were associated with decreased log-odds for perceived prescription drug availability. Likewise, Hispanic students ($\beta = -0.52$, $p < .001$) were associated with decreased log-odds for perceived prescription drug availability. Last, students with higher academic achievement ($\beta = -0.24$, $p < .001$) were associated with decreased log-odds for perceived drug and alcohol availability. For school covariates, four variables were statistically significant. Related to school size, when compared to students in schools with less than 300 students, students in schools with 600-999 students ($\beta = 0.72$, $p < .01$), 1,000-1,499 students ($\beta = 0.87$, $p < .001$), and more than 2,000 students ($\beta = 0.94$, $p < .001$) were associated with increased log-odds for perceived prescription drug availability. Finally, when compared to students in schools with less than 5% minority enrollment, students in schools with greater than

50% minority enrollment (β = -0.53, $p < .05$) were associated with decreased log-odds for perceived prescription drug availability.

Model 4 surveyed the association between student perceived availability of other illegal drugs and school security approaches. Only one ambiguous measure was significantly associated with perceived availability of other illegal drugs. Students in schools with resource officers (β = 0.52, $p < .01$) were associated with increased log-odds for perceived availability of other illegal drugs. Student-level covariates were also significantly associated with the perceived availability of other illegal drugs. First, age (β = 0.11, $p < .05$) was associated with increased log-odds for perceived availability of other illegal drugs. Also, females (β = 0.38, $p < .01$) were associated with increased log-odds for perceived availability of other illegal drugs. Further, when compared to Whites, Blacks (β = -0.42, $p < .05$) were associated with decreased log-odds with perceived availability of other illegal drugs. Like previous models, Hispanics (β = -0.34, $p < .05$) were associated with decreased log-odds with perceived availability of other illegal drugs). Last, students with higher achievement (β = -0.24, $p < .001$) were associated with decreased log-odds for perceived availability of other illegal drugs. Five school-level covariates were significantly associated with perceived availability of other illegal drugs. Students in rural schools (β = -0.40, $p < .05$) were associated with decreased log-odds for perceived availability of other illegal drugs. Related to school size, when compared to students in schools with less than 300 students, students in schools with 600-999 students (β = 0.75, $p < .05$), 1,000-1,499 students (β = 0.79, $p < .05$), 1,500-1,999 students (β =

0.76, $p < .05$) and more than 2,000 students ($\beta = 1.18$, $p < .05$) were associated with increased log-odds for perceived prescription drug availability. Results from Models 3 and 4 are displayed in Table 3.

Table 3

Logistic Regression Models Predicting Odds of Perceived Prescription and Other Illegal Drug Availability by Security Measures

	Model 3 – Prescription Drugs		Model 4 – Other Illegal Drugs	
Variable	β (SE)	OR	β (SE)	OR
Constant	-5.32 (1.31)***	.01	-2.78 (1.32)*	.06
Age	.15 (.04)***	1.17	.11 (.05)*	1.12
Gender	.16 (.10)	1.18	.38 (.12)**	1.47
Black	-.55 (.18)**	.58	-.42 (.20)*	.66
Other Races	-.99 (.23)***	.37	-.45 (.24)	.64
Hispanic	-.52 (.15)***	.60	-.34 (.17)*	.71
9th through 12th Grade	.28 (.30)	1.33	-.28 (.34)	.76
Grades	-.24 (.07)***	.79	-.24 (.08)***	.78
School Location	-.24 (.15)	.79	-.40 (.18)*	.67
School Type	-.18 (.37)	.83	-.34 (.58)	.71
Grade Configuration				
Middle	-.17 (.37)	.85	-.33 (.41)	.72
High	.61 (.42)	1.84	.62 (.48)	1.86
Other School Configuration	-.17 (.48)	.85	-.26 (.55)	.78
School Size				
301-599	.37 (.25)	1.45	.45 (.33)	1.58
600-999	.72 (.25)**	2.06	.75 (.33)*	2.11
1,000-1,499	.87 (.26)***	2.39	.79 (.34)*	2.18
1,500-1,999	.53 (.28)	1.70	.76 (.35)*	2.14
2,000+	.94 (.28)***	2.57	1.18 (.35)***	3.26
Percent Minority				
5 to less than 20%	-.09 (.22)	.92	-.27 (.26)	.77
20 to less than 50%	.03 (.22)	1.03	-.20 (.26)	.82
50%+	-.53 (.25)*	.59	-.49 (.30)	.61
Free and Reduced Lunch %				
20 to less than 50%	.06 (.16)	1.06	-.11 (.17)	.89
50%+	.34 (.19)	1.41	-.19 (.21)	.83
Private School	-.17 (1.07)	.84	-.29 (1.58)	.75
Security Cameras	.15 (.26)	1.16	-.39 (.27)	.68
Student ID Badges	-.02 (.13)	.98	.20 (.14)	1.22
Adult Supervision	-.10 (.20)	.91	-.19 (.23)	.83
Code of Conduct	.71 (.51)	2.02	.06 (.48)	1.06
Metal Detectors	.02 (.15)	1.02	.04 (.18)	1.04
Locker Checks	.19 (.12)	1.21	.16 (.13)	1.18
School Resource Officers	.35 (.14)*	1.42	.52 (.18)**	1.69
Locked Doors	-.33 (.14)*	.72	-.26 (.16)	.77

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

Discussion

In our study, four types of illicit substances and their perceived availability in schools were examined when considering three categories of school security measures. In Model 1, only security measures identified as ambiguous had an association with students' perceived alcohol availability, and the results were mixed. Students in schools with locked doors perceived a decrease in availability of alcohol, while students with SROs perceived an increase in availability. For Model 2, three types of security measures – both ambiguous and one exclusive – were associated with perceived marijuana availability. Students in schools with locker checks and SROs perceived increased marijuana availability, while students in schools with locked doors perceived less availability. In Model 3, again only ambiguous security measures had an association with perceived prescription drug availability. Similar to findings from the model that examined perceived alcohol availability, students in schools with locked doors perceived a decrease in availability of prescription drugs, whereas students in schools with SROs perceived an increase in availability. Finally, in Model 4 only one security measure had a significant association with prohibited drug availability. Students in schools with SROs perceived increased availability of other illegal substances.

In contrast to Cheurprakobkit and Bartsch's (2005) study which found no correlation between security measures and school drug crime, our results indicated that security measures do play a role in students' perceptions of substance availability. Across each model, students believed it was more likely they could obtain illicit substances at schools that employ SROs. Additionally, students perceived marijuana was readily

available in schools where locker checks were utilized. Findings from other studies also support this claim. For example, Brown (2005) noted that students discussed the ease with which they could bring drugs or weapons onto campus if they chose to try, despite the prevalence of any form of security measure, particularly SROs. In support of this claim, Portillos, Gonzalez, and Peguero (2012) reported that students creatively found ways to skirt security measures and bring unlawful items into the school building. Tanner-Smith and Fisher (2016) suggested that students have grown accustomed to the existence of various security approaches and have found ways to counter safety steps. Consequently, it is plausible that a student's decision to access an illicit item within the school is no longer affected by the presence of a security measure. Possibly, the increased proliferation of school security in recent times enables students to observe and leverage any flaw in each safety approach. Moreover, security measures within school systems cannot peruse the entire physical space, often leaving portions of the building either unsupervised by adults or not viewable by technology (Astor et al., 1999). These unoccupied spaces within the school building likely concede opportunities for students to engage in risky behaviors if they so choose, making it plausible that these are areas where students obtain drugs or alcohol. In support of Cheurprakobkit and Bartsch's (2005) findings, our study also found inclusive security measures had no association in either direction with the perceived availability of drugs or alcohol.

With reference to exclusive measures, Brown (2005) found that students perceived this approach to be the most effective in preventing drug crimes in schools. Results from our study suggested otherwise. Only one exclusive measure, locker checks

in a single model related to marijuana availability significantly associated with lower perceived substance availability. Notably, locker checks also associated with increased likelihood of accessibility of illegal drugs. Without doubt, U.S. school leaders and policy makers largely assumed the presence of exclusive measures reduced student misbehavior and enhanced school safety (Kupchik & Ward, 2014). Researchers have asserted that such approaches harmed learning environments (Fabelo et al., 2011; Hirschfield, 2008, 2010; Kupchik, 2010; Kupchik & Ward, 2014) and disproportionately punished minority students (Payne & Welch, 2010; Servoss & Finn, 2014; Skiba, Michael, Nardo, & Peterson, 2002; Welch & Payne, 2010, 2012). Findings from our study offered evidence to argue against the use of exclusive measures, as they do not detract from the likelihood that students are able to obtain drugs and alcohol in school.

Implications for Practitioners

Using data from a nationally representative data set from public schools, we investigated the role of security measures and drug and alcohol availability in schools from the students' viewpoint. For three of the substances, alcohol, marijuana, and prescription drugs, over 20% of students believed they were accessible within the school which is greater than or approximates findings in a recent analysis (Musu-Gillete et al., 2017). While this is only one study related to drug and alcohol availability, this statistical indicator should cause concern for school leaders and policy makers, as it represents a sharp increase at a time when reported adolescent drug and alcohol use is perceived by the public to be declining (Johnston et al., 2015; Mericle et al., 2015). Even more concerning for the educational community should be the increase in perceived drug and

alcohol availability despite the increasing number of schools that employ security measures designed to reduce crime, misbehavior, and substance availability (Addington, 2009; Lindle, 2008; Musu-Gillete et al., 2017). School leaders should urge school leaders to address these concerns, knowing the harmful effects of illicit substances on adolescent development (Hanson et al., 2011; Lynskey & Hall, 2000; Winters & Arria, 2011).

School leaders often unquestioningly have adopted security measures in urban schools in response to the misassumption that security curbs students' misbehavior (Devine, 1996; Kupchik & Ward, 2014; Williams et al, 2018). Moreover, *these* students are often treated as offenders in need of stringent regulation (Aronowitz et al., 2021). As previously stated, minority or low-income students' academic performance has suffered disproportionately from the presence of school security approaches in these schools (Kupchik & Ward, 2014; Welch & Payne, 2010, 2012; Williams et al., 2018). Yet evidence from our study informs administrators that schools with greater proportions of low-income students and underserved minority groups show no greater inclination for the availability of substances that allow students to engage in risky behavior. Consequently, district leaders should re-consider the use of security measures.

Implications for Principal and Teacher Leader Preparation Programs

Principal and teacher leader preparation programs should advance future school leaders' awareness of the changing landscape of best practice for crafting appropriate school safety and emergency plans, while upholding the reality that violence is not limited to poor, urban neighborhoods. Preparation programs can also help principals and teacher leaders construct informed understandings of how to effectively maintain a safe,

learning environment for adults and children, “especially in times when fears about student safety that follow mass school shootings can put principals in a difficult position” (Blad, 2018, p. 5). Although decisions about safety procedures, school police, and equipment are often shaped by mandates set by state legislatures, superintendents' offices, and school boards, principals are closest to the fear and angst of parents, students, and teachers. They are most often the ones being questioned about how safe their buildings are and if their staff is prepared for the unimaginable. Prospective principals and superintendents should understand how to collaborate with school safety experts in ways that both protect and advance the rights of adults and students. Further, school leaders need exposure to best practices for keeping their schools safe, for clearly explain how those safety-related decisions are made, and for inviting feedback from parents and the public. While a response is never going to happen where or how or when a school leader expects, a comprehensive plan enables each potential contributor to rehearse important action should it become necessary. Our study’s outcomes support many principals’ claim that “school safety shouldn't be reduced to a scramble to buy expensive metal detectors and equipment after a deadly incident somewhere else in the country grabs headlines” (Blad, 2018, p. 7).

Implications for Policy Makers

School leaders and policy makers should consider the impact of school security measures on adolescent development. Students may act out in negative ways if they feel like they are being treated unfairly or considered ‘criminals’ even when their behavior suggests the opposite. Kayama et al. (2015) found that minority students have often

subscribed to this belief and possessed lower self-esteem because of how they heard themselves talked about in schools that instituted more exclusionary discipline and security measures. This is a critically important concern for policy makers, as students must be comfortable at school to focus on their education. After exposure to high security environments employing police officers, security cameras, and metal detectors, students reported negative effects such as increased levels of fear (Schreck & Miller, 2003), feeling of powerlessness (Bracy, 2011; Perumean-Cheney & Sutton, 2012), and unsafe spaces to learn (Williams et al., 2018). Our findings show that school security measures did not reduce the perceived availability of drugs and alcohol for students. Moreover, Greene (2005) has asserted that educators in their efforts to create safe school environments should refrain from changing security plans at least until an adequate evaluation occurs. Policy makers should consider whether the costs of these approaches which are often quite high (Garcia, 2003) are worthwhile given the harmful outcomes that are associated with them.

Implications for Research and Limitations

As previously noted, there were few studies that examined the availability and use of drugs and alcohol within school systems (Finn, 2006; Milam et al., 2016). Although researchers have claimed that school leaders believe they use security measures to create a climate of safety for students and employees (Biag, 2014; Williams et al., 2018), there was a lack of empirical studies related to school security and students' perceived access to banned substances. Researchers should continue to evaluate the effects of security measures in school settings, specifically whether security measures reduce the

availability of illegal substances to students. If, as our claims suggest security measures do not reduce the likelihood that students can obtain drugs on campus, then this is 'good' reason to rethink how and why security approaches are implemented.

Several limitations are inherent to our study. First, the data did not explicitly reveal how school administrators applied each security measure within a designated school (Hirschfield, 2010; Kupchik & Ward, 2014). Therefore, each security measure was categorized by evidence from existing studies and current practices which describe how each measure is typically implemented in schools. Second, because the data did not provide unique school identifiers, we were unable to conduct multilevel models to determine the between-school variance in perceived drug and alcohol availability. Multilevel models allowed for greater exploration into the role of student- and school-level variables and covariates and the contributions to overall variance in the outcome variable. Third, the SCS did not provide data about students' parents or guardians and therefore restricted how a specific factor such as socioeconomic status influenced the outcomes of each model. Last, SCS did not ask students if their school provides any other type of drug or alcohol prevention program. These programs may prove more valuable than school security measures in reducing drug and alcohol availability for adolescents. Future studies should seek to address these limitations and should further examine methods and procedures school systems utilize to ensure safety, in relation to substance availability and use. While these security measures are instituted to create a level of safety and security for students, teachers, and parents, researchers regularly have noted negative outcomes associated with them. Future studies should also examine the types of

anti-drug programs schools are implementing with their students in conjunction with security measures to determine if these proactive measures are more impactful than punitive security approaches.

Declarations

Ethics Approval

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Institutional Review Board of The Ohio State University (7/5/2017/No2017E0485).

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