ARE METAL DETECTORS EFFECTIVE AT MAKING SCHOOLS SAFER?

by Jaclyn Schildkraut and Kathryn Grogan

Like other high-profile school shootings before, the 2018 attack at Marjory Stoneman Douglas High School in Parkland, Florida, ignited calls for increased safety and security in the nation's educational institutions. Numerous proposals entered the discourse, from having armed guards and arming teachers to having more security cameras. A popular recommendation is to use metal detectors in schools. To address questions about what impact such devices could have on day-to-day safety and on what happens during school violence events, this research brief summarizes what is known about the use of metal detectors in schools and in other settings.[1]

The Prevalence of Metal Detectors in Schools

In the 1980s, schools across the United States began employing metal detector technologies as a method of violence prevention — installing fixed walk-through devices and/or using handheld wands (Addington, 2009; Borum, Cornell, Modzeleski, & Jimerson, 2010; Crews & Counts, 1997). The use of these devices was largely concentrated in more urban communities, such as New York City and Chicago, where school violence was of high concern and a "get tough on crime" strategy was employed (Crews & Counts, 1997). By 1994, approximately 1 in every 10 schools in the nation had metal detectors (Birkland & Lawrence, 2009). While a slight uptick in usage was observed after both the 1999 Columbine High School (Lewis, 2003) and 2012 Sandy Hook Elementary School (Winn, 2018) shootings, the use of metal detectors in educational institutions has either held steady or slightly decreased since the 1990s (see, generally, Musu-Gillette et al., 2018; Snell, Bailey, Carona, & Mebane, 2002; U.S. Department of Education, 2007). Specifically, in the 2015–16 school year, just 4.5 percent of schools used random metal detector checks (down from 7.2 percent in the academic year following Columbine) and only 1.8 percent used daily searches (a 1-percent increase since 1999–2000; see Musu-Gillette et al., 2018). On the whole, random checks of students (e.g., locker searches, pat-downs) are more common, even in schools that also use metal detectors (Garcia, 2003; Musu-Gillette et al., 2018; Schwartz et al., 2016). Still, since the Parkland shooting, renewed calls to employ metal detectors in schools have been raised in the interest of preventing similar attacks (Mazzei, 2018; Travis, 2018).

The (In)Effectiveness of Metal Detectors

Part of the draw of metal detectors is their visibility — they are a symbolic barrier that signals a presence of security. The question remains, however, as to whether these devices are effective in deterring or preventing violence. Looking beyond schools to airports, where such devices are used in larger quantities and at a greater frequency, there is evidence challenging metal detectors' effectiveness (Schildkraut & Muschert, 2019). As recently as 2017, some airports had fail rates as high as 95 percent on screening checks for weapons (Blake, 2017). On the whole, the Transportation Security Administration (TSA) averaged around 80 percent in failing to identify weapons during metal detector searches that same year (Lardieri, 2017).

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[1] This review was developed as the third in a series of school safety briefs from WestEd's Justice & Prevention Research Center in order to provide a condensed synopsis of current research on the use and effectiveness of metal detectors in schools. The brief is based on a review of relevant research and related information published or otherwise available during the period from the 1990s through the present.

While anecdotal evidence suggests that metal detectors are effective at screening out weapons at schools (see, for example, Algar, 2016; Corcoran, 2015), there is a lack of accurate statistics to support the claims. Moreover, the available data suggest that schools with metal detectors are actually more successful in identifying weapons during searches of students without scanning devices. New York City schools, for example, reported that of the weapons they confiscated in a single school year, 57 percent were found without using scanning devices (Winn, 2017). Comparatively, other data indicate that for every 23,034 students scanned in the five boroughs, just one dangerous item (including, but not limited to, firearms) was found (WNYC, 2015).[2]

The human element is one important factor contributing to how effective metal detectors are (or are not), as with other types of school security. Often, school personnel lack the necessary training in how to correctly use metal detectors. In some cases, metal detectors have been found to be run in ways that are not in accordance with industry standards. In other cases, they have been operated even while known to be broken, or students have been allowed to pass through metal detectors that have been turned off completely (Daniels, Royster, & Vecchi, 2007; National School Safety and Security Services, n.d.).

Further, two mass shootings exemplify how metal detectors can be insufficient at stopping such attacks (Nedzel, 2014). At Red Lake High School in Minnesota, the school had a standing metal detector present on March 21, 2005, but a student arrived at the school and shot and killed the unarmed security guard who was operating the metal detector. The perpetrator then brought three weapons into the school, walking directly through the device (Connolly & Harris, 2005). Seven people, including the guard, were killed and five others injured before the perpetrator committed suicide.[3] On November 1, 2013, a gunman entered Terminal 3 at Los Angeles International Airport and made his way to the security checkpoint. There, among the numerous metal detectors and security personnel, he shot a TSA agent, bypassed the checkpoint, and continued firing within the terminal before being taken into police custody (Associated Press, 2013). The TSA agent died, and three others were injured in the attack.

The Price of Safety and Security

In addition to potential issues with effectiveness, the cost associated with employing metal detectors must also be considered. For the equipment alone, the cost may range from $1,000 to $30,000 or more per unit for the initial purchase, though devices best suited for schools fall in the range of $4,000 to $5,000 (Green, 1999; Schwartz et al., 2016). Many schools, however, cannot afford the initial cost of a single unit for the front entryway, let alone multiple units for the numerous entry points in a school (Winn, 2018). Moreover, the initial purchase cost does not include additional expenditures for equipment maintenance, repairs, and the replacement of outdated units (Total Security Solutions, 2017).

In addition to considering the cost to purchase and maintain the equipment, schools must budget for the personnel to operate them (Green, 1999; Hankin, Hertz, & Simon, 2011; Lohman, 2006). Each individual scanning station typically requires multiple people: One person acts as the screener on the initial check; another is responsible for performing backup screens (e.g., with a wand or pat-down) if the first is failed; an additional individual conducts bag checks, while someone else — typically a security guard or armed officer — oversees the entire process (Schneider, 2001; Winn, 2018). Moreover, in addition to covering the cost of employing these individuals to operate metal detection stations, schools must budget for ongoing training for both the security personnel and other members of the institution's staff to be able to properly use the technology (Total Security Solutions, 2017).

The time investment, while not directly related to cost, also must be factored into the decision to utilize metal detectors. The overall screening process can be particularly slow to complete (Lohman, 2006), which may lead to additional issues for larger schools. Some may have to utilize delayed start times to accommodate getting all students through the screening process, while other schools may rely on creative scheduling such as staggered first periods

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[2] From these particular data, it is impossible to determine whether the presence of metal detectors may have a deterrent effect whereby some students may choose not to bring firearms or other weapons to schools due to the presence of metal detectors. These data can be used only to indicate those weapons that are discovered.

[3] Prior to the shooting, the perpetrator also had killed his grandfather and his grandfather's girlfriend at their home.

to address this issue (Green, 1999; Schneider, 2001). New York City schools, for example, stagger their first periods, as more than 91,000 students each day pass through metal detectors spread across 68 buildings of the city's 193 public high schools (WNYC, 2015). Though few school districts see this level of foot traffic in their buildings, the time component still is a factor. Further, to avoid possible perceptions of weakness, vulnerability, or lax security, these checkpoints may need to be utilized throughout the full school day, rather than only at school start times (Green, 1999; Winn, 2018).

Metal Detectors and Perceptions of Safety at School

A final consideration related to metal detectors must be the potential impact that the presence of such devices has on students and the learning environment as a whole. On one hand, metal detectors provide visual evidence that something is being done to address security at school. On the other hand, some have argued that the presence of these devices may unintentionally be sending the wrong message to students and others in the school community (Hankin, Hertz, & Simon, 2011; Schwartz et al., 2016; Winn, 2018). In fact, a number of researchers have found that students report feeling *less* safe in schools where metal detectors are present, compared to students in schools

without such devices (Cornell, 2015; Gastic, 2011; Perumean-Chaney & Sutton, 2013). Similarly, students are more likely to perceive violence and disorder at their schools when such devices are used (Mayer & Leone, 1999). Questions even have been raised as to the constitutionality of metal detectors in schools, with some researchers suggesting that searches using these devices infringe upon students' Fourth Amendment protections against unlawful search and seizure (Berger, 2002; Nance, 2014).

Further, concern exists about the possibility that the use of metal detectors is a discriminatory practice because such devices typically are installed in schools with greater proportions of students of color (Nance, 2017). In New York City schools, for example, 48 percent of Black high school students and 38 percent of Hispanic high school students, compared to just 14 percent of White students, pass through metal detectors each day (WNYC, 2015). The locations of the devices also bear noting: More students in the Bronx and Brooklyn, boroughs with more non-White residents, walk through metal detectors than do students in Manhattan, Queens, or Staten Island, boroughs with higher proportions of White residents (WNYC, 2015). Another study utilizing the School Crime Supplement of the National Crime Victimization Survey yielded similar results: Compared to White students, Black and Latino/a students were 4.8 and

2.7 times, respectively, more likely to pass through a metal detector at their schools (Toldson, 2011).

Conclusion

School districts across the United States are currently grappling with state mandates to increase physical security after the Parkland shooting. In this context, there has been renewed interest in funding "hardware" approaches, such as using metal detectors, for improving school safety. While metal detectors may provide a visible response to concerns about school safety, there is little evidence to support their effectiveness at preventing school shootings or successfully detecting weapons at schools. Metal detectors also are expensive to purchase, staff, and maintain. Equally concerning are potential unintended negative consequences associated with the use of metal detectors. Students in schools with metal detectors, which typically are schools with greater proportions of students of color, are more likely to perceive violence and disorder and less likely to feel safe than students in schools without metal detectors. School districts that are considering the use of metal detectors — especially those that are considering using metal detectors in lieu of funding other prevention efforts, such as increased access to mental and behavioral health services — should consider this range of evidence.

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