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Illicit juvenile weapon possession: The role of serious sanctioning in future behavior

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Introduction

On October 24th, 2014, Jaylen Fryberg, a 15-year-old high school freshman, shot five other students at Marysville Pilchuck High School in Marysville, Washington, before fatally shooting himself (Johnson, 2014). Though this shooting did not receive the same degree of media attention as those at Sandy Hook Elementary, Virginia Tech, Columbine High School, and several notable others, it raised many of the same questions. Where did the student get the gun? Why did he bring it to school? What motivated his violence? Although it often takes events like these to bring concerns with juveniles, weapons, and violence to the forefront, the reality is that weapons make their way into schools and classrooms every day.

According to the Centers for Disease Control (2014), more than 5% of respondents to the 2013 High School Youth Risk Behavior Survey reported carrying a gun, knife, or club to school in the past 30 days (Centers for Disease Control, 2014). The U.S. is not alone. In a study of adolescents in 35 countries, between 10% and 22% of males and between 2% and 5% of females reported carrying a weapon in the past 30 days (Pickett et al., 2005). Though these percentages, at least in the U.S., have declined substantially since the early 1990's, repeated incidents of mass violence have continued to illustrate the potential for juvenile weapon possession, particularly of firearms, to result in violence. Violence, itself, also contributes to weapon carrying by youth. Past research has found gang membership, drug use, delinquency, and victimization all to be significant predictors of adolescent weapon carrying (Lizotte, Krohn, Howell, Tobin, & Howard, 2000; Stickley et al., 2015).

Given high levels of public concern with gun violence in the 1990's, most states and schools developed specific policies, largely based on the principles of deterrence theory, barring juveniles from carrying firearms on school property and elsewhere. Federal legislation including the Gun-Free Schools Act of 1994 and 2002 as well as the Gun-Free School Zones Act of 1990 made Federal funding contingent on zero tolerance firearms policies in school districts (U.S. Department of Education, 2005). However, these laws were specific to firearms. Less is known about other weapons that juveniles may carry to school. Also, juvenile weapon carrying may go undetected unless the weapons are used in a reported threat or act of violence. Little is known about how differential involvement with school

discipline or the juvenile justice system among juvenile weapon carriers might affect future delinquent behavior.

To address this gap in the literature, the present paper has two aims. First, this study will identify how juvenile weapon carriers subject to serious school discipline (suspension and expulsion) or juvenile justice system involvement differ from other students who report carrying a weapon to school. This paper examines sanctioning irrespective of whether the sanctioning was for a weapons offense or for some other behavior. Second, the present paper explores the role of school discipline and juvenile justice system involvement in the future behavior of youth who carry weapons to school. Namely, this paper examines whether youth who report suspension, expulsion, or juvenile justice system involvement are more likely to desist from further weapon-related violations and behaviors than other juveniles who carry weapons to school. These forms of sanctioning are considered because they are the most serious available, and also because they are the sanctions most typically applied for weapons violations.

Juvenile weapon carrying

Past research has identified some of the key demographic, social, and behavioral characteristics of juveniles who carry weapons. As with many other forms of delinquent behavior, males are more likely to carry weapons than females (Centers for Disease Control, 2014; Hemenway, Prothrow-Stith, Bergstein, Ander, & Kennedy, 1996; Lizotte et al., 2000). However, there is some variation in type of weapon preferred. Males, in research by Pickett and colleagues (2005) tended to carry proactive weapons (like guns and clubs), while females tended to carry more reactive or protective weapons (like pepper spray). The authors attributed these differences to cross-national variation in the acceptability of certain weapon types, attitudes towards violence, and weapon accessibility (Pickett et al., 2005).

Other predictors include delinquent behavior and gang membership. Lizotte and colleagues (2000), using the Rochester Youth Development Survey, examined illegal gun carrying among young urban males. For respondents in early adolescence, gang membership was strongly predictive of gun carrying (Lizotte et al., 2000). For older adolescents, heavy drug use and involvement in the drug trade were significant predictors of gun carrying (Lizotte et al., 2000). In a study of Czech, Russian, and U.S. adolescents, substance use was associated with male weapon carrying at school in all three countries (Stickley et al., 2015). In Europe, membership in a deviant peer group (i.e. gang) was associated with a variety of delinquent behaviors, including weapon carrying, in a study by Gatti, Haymoz, and Schadee (2011). In a sample of African American adolescents ages 13 to 19, Lane, Cunningham, and Ellen (2004) found that a history of delinquency was positively associated with future intentions to carry a knife among both males and females, while it was not associated with fear of victimization.

Lizotte et al (2000) explained the connection between gangs and gun carrying as a desire for protection from dangerous situations. Illegal drug trade and rival gangs present the potential for violence; gang members may not feel protected by more traditional forces of social control, like police, and use guns as a form of social control instead (Lizotte et al., 2000). In

past studies with U.S. adolescents, personal protection was the primary reason adolescents expressed for owning or carrying firearms (May, 1999; Sheley & Wright, 1993). Likewise, Saukkonen et al (2015) found that higher levels of perceived security and safety in a sample of Finnish adolescents were associated with reduced gun carrying, though were not associated with other forms of weapon carrying.

It is important to note that not all juveniles who carry weapons are involved in gangs or illegal activity. Lizotte and colleagues (1994) identified two categories of adolescent gun owners: protection gun owners and sport gun owners. Sport gun owners carried guns less frequently and had only a slight increase in delinquent activity compared to adolescents without guns (Lizotte et al., 1994). Victimization experiences are also associated with weapon carrying. In a study of Czech, Russian, and U.S. adolescents, Stickley and colleagues (2015) found that violent behavior, as either offender or victim, was linked to school weapon carrying across the three populations. Webster, Gainer, and Champion (1993) found that knowing many victims of violence was associated with both knife carrying and gun carrying in the U.S., while serious delinquency was only associated with gun carrying. Dijkstra and colleagues also found that peer-reported victimization increased the likelihood of weapon carrying (2012). Unfortunately, the extant literature does not take into account differential involvement with school discipline or the juvenile justice system among juvenile weapon carriers.

Detecting juvenile weapon carrying

One reason juvenile gun carriers may find themselves subject to juvenile justice or school-based sanctioning is detection of their weapon carrying behavior. Schools employ a variety of security methods that might detect weapon carrying by students. During the 2011–2012 school year, 7.9% of high schools reported the use of random metal detector sweeps of students; 4.6% of high schools used metal detectors routinely for all students on a daily basis (Robers, Kemp, Rathbun, Morgan, & Snyder, 2014). Approximately 26% of high schools performed random searches for contraband (Robers et al., 2014). Most high schools reported the use of security cameras (81.2%) and daily police or security presence (57.6%) (Robers et al., 2014). Roughly 9% of high schools banned book bags or required them to be clear, addressing one avenue by which weapons might be concealed (Robers et al., 2014).

In spite of these practices, unless a weapon is displayed, used, or someone makes a report, weapon carrying by juveniles can go undetected. Even if a student is disciplined for other delinquent behavior, there is no guarantee that a hidden weapon will be noticed. If a student is found in possession of a weapon on school property, however, the consequences can be quite severe. As a condition of the Gun-Free Schools Act of 1994, states receiving Federal funding were required to pass legislation mandating a minimum one-year expulsion for a student determined to have brought a firearm to school (U.S. Department of Education, 2005). Further, each school must have a policy requiring referral to the criminal justice or juvenile delinquency system for any student who brings a firearm to school (U.S. Department of Education, 2005). These policies serve as a form of general deterrence, aiming to prevent this problem behavior through strict sanctioning of violators.

Disciplinary referrals from schools to law enforcement authorities are not unusual and can serve as a form of specific deterrence for known violators. In 2012, schools referred 260,000 students to law enforcement; 92,000 students were subject to school-related arrests (Civil Rights Data Collection, 2014). Detection of juvenile weapon carrying may also occur outside of the school context, resulting in arrest or conviction through the juvenile justice system. According to the Uniform Crime Reports (UCR), 16,683 juveniles were arrested for weapons law violations in 2013 (Federal Bureau of Investigation, 2013, p. 38). These figures do not reflect all crimes in which juveniles illegally used or possessed firearms, however.

As with schools, perfect detection by law enforcement is impossible; some juvenile weapon carrying will go undetected by formal authorities. However, whether due to other delinquent behavior or the weapon itself, some weapon carrying youth are sanctioned by their schools and/or the juvenile justice system. This study will identify how juvenile weapon carriers subject to serious school discipline (suspension and expulsion) or juvenile justice system involvement differ from other students who report carrying a weapon to school. However, the second aim of the present study is to address the effects of sanctioning on future behavior. The theoretical backdrop for this investigation relies on the notion of deterrence.

Deterrence

Deterrence is the idea that sanctions prescribed by schools and juvenile justice authorities will prevent future crime by either setting an example for would-be offenders or making the consequences of crime so undesirable that a given offender will not reoffend. This study focuses on the latter, specific deterrence. Formal detection of weapons violations or other delinquent behaviors may result not only in sanctioning, but possibly in treatment-oriented services that can lead a youth to change behavior. Although this paper considers sanctioning broadly (i.e. it does not have to be attributable to a weapons violation), this study focuses on possible deterrent effects for adult weapon carrying at school or work and adult handgun ownership.

Existing research has determined that criminal justice actions that target illicit gun carrying are associated with a decrease in crime. The Baton Rouge Partnership, for example, identified youth adjudicated and on probation for gun-related offenses for a targeted set of services designed to prevent future gun crime (Lizotte & Sheppard, 2001). The program was associated with a decrease in probation violations. Some areas have also had success with juvenile gun courts (Sheppard & Kelly, 2002). Beyond evaluations of more specialized programs like these, there is little in existing research addressing gun possession/carrying offenses specifically. Much of the literature does not distinguish effects for future weapons violations from other crime outcomes.

Although this paper considers serious sanctioning broadly, existing research on deterrence suggests that serious sanctioning may have a deterrent effect on weapon-related behaviors, even if the sanction was applied as a result of some other offense. In order for sanctions to be an effective deterrent, students must be aware of the policies and view them as strict or undesirable. Apel and colleagues (2009) found that a school's disciplinary practices were indeed associated with students' perceptions of rule enforcement. Other research found that

serious school sanctions reduced the negative impact of thinking processes that might otherwise motivate adolescents to engage in violent behavior (Maimon, Antonaccio, & French, 2012). This might include motivations from the social context. Dijkstra and colleagues (2010), in a longitudinal study of high-risk middle school and high school students, found that weapon carrying was associated with an increase in the number of students who indicated the respondent as a friend. In other words, weapon carrying was viewed as socially desirable. If harsh sanctions interrupt these social processes in some way (Maimon et al., 2012), then sanctioning, even for unrelated offenses, has the potential to reduce weapon carrying behavior.

In contrast to expectations from Deterrence theory, some authors have argued that involvement with the juvenile justice system can be toxic, exacerbating rather than resolving problematic behavior. Gatti, Tremblay, and Vitaro (2009) argued that separation from school, labeling, and other practices may contribute to rather than deter criminal behavior for some youth. Similar problems have been observed with the use of zero tolerance policies in schools (Mongan & Walker, 2012). Bernberg and Krohn (2003) also found that official intervention with youth increased likelihood of adult criminal behavior. However, the authors found that this effect was mediated by positive factors in a youth's life, like education and employment. For this reason, the role of serious sanctioning for weapon carriers remains unclear.

The pages to follow detail 1) differences in the demographic and behavioral characteristics of seriously sanctioned weapon carriers and other weapon carriers; and 2) predictive models assessing whether serious sanctioning as a juvenile is associated with lower odds of handgun ownership or weapon carrying in adulthood. Given prior literature, focus will be placed on demographic differences, delinquency, and victimization. While no a priori hypotheses are presented for differences by sanctioning status, Deterrence theory leads to the expectation that serious sanctioning as a juvenile will be associated with a decrease in weapon carrying and related behaviors (handgun ownership).

Data and method

This study uses data from The National Longitudinal Study of Adolescent to Adult Health (Add Health), an ongoing study of a nationally representative, school-based sample of individuals who were in grades 7 through 12 in 1994 (Harris, 2009). While the primary focus of Add Health is on adolescent health and related behaviors, the data also incorporate measures of delinquency, victimization, criminal justice system involvement, and weapon use/access. The present paper uses the first three waves of data collection, spanning adolescence and early adulthood. Respondents range from age 18 to 26 in the third wave of data collection.

The Add Health sample is based on 80 high schools selected as representative of the United States in 1994 (Harris, 2009). An additional 52 middle schools, selected with probability proportional to the number of students contributed to the high school, were included in the study (Harris, 2009). In addition to in-school questionnaires, a stratified random subsample of about 200 students from each of the 80 school pairs was selected for detailed home

interviews (n = 20,745) in 1994/95 (Harris, 2011). Wave Two interviews were administered in 1996 (n = 14,738) and Wave Three interviews were administered in 2001/2002 (n = 15,197) (Harris, 2011).

Examination of differences between weapon carriers with and without school suspension, expulsion, or juvenile justice involvement is based on descriptive analyses of group differences. Tests of the effects of serious sanctioning on adulthood handgun ownership utilize logistic regression since the measure of handgun ownership is dichotomous. Tests of the effects of serious sanctioning on later firearms violations utilize logistic regression since the outcome measure is also dichotomous. Analyses are weighted to account for the Add Health design. Analyses are based on 10,828 respondents; these are respondents with non-missing design weights at Wave Three and sufficient data for imputation. Missing values are imputed using *Stata*'s multiple imputation procedure with 40 imputed datasets (Little & Rubin, 2002).

Measures

Weapon carrying and ownership—In Waves One and Two, respondents were asked: During the past 30 days, on how many days did you carry a weapon—such as a gun, knife, or club—to school? Response options were never, one day, two or three days, four or five days, or six or more days. Since over 90% of respondents in the sample reported none, these variables are dichotomized as never or at least once. Respondents were also asked what type of weapon they brought to school. At Wave Three, respondents were asked: How often in the past 12 months did you carry a handgun at school or work? Response categories were never, one or two times, three or four times, or five or more times. These responses were dichotomized as never or at least once. At Wave Three, respondents were asked if they owned a handgun (yes/no).

Serious sanctioning—Dichotomous measures of whether the respondent was suspended or expelled from school in the years preceding Waves Two and Three were used to indicate serious sanctioning by school officials. Sanctioning by criminal justice authorities for Waves One and Two was measured as a dichotomous indicator of adjudication.

Delinquency and crime—Delinquency in Waves One and Two was measured using a 15-item delinquency scale asking respondents to report how often they engaged in certain behaviors during the past 12 months. Behaviors included vandalism, lying to parents or guardians, theft of varying amounts, fighting, running away from home, joyriding, burglary, robbery, selling drugs, and being overly loud in a public place. In Wave Three, 10 items were used to make a comparable measure. Behaviors included vandalism, theft of varying amounts, burglary, robbery, selling drugs, fighting, involvement with stolen property, and bank fraud. A summative scale of these items, however, would be problematic. The modal score for delinquency items is 0 and items tend to be highly correlated, leading to poor distribution of the overall sum (Osgood, McMorris, & Potenza, 2002). Analyses, instead, use Item Response Theory (IRT) scaled delinquency measures. IRT uses mathematical models that map item-level responses for a set of items to a position on a latent, continuous, equal-interval variable with a mean of 0 (Osgood et al., 2002). Post-estimation produces Empirical

Bayes predicted values on this latent variable. These measures were generated using Samejima's Graded Response Model implemented using the GLAMM module in the *Stata* software (Samejima, 1997).

Other controls—Other controls include sex, age, race (white versus nonwhite), resident mother's education (at least some college vs. no college education), and urban neighborhood (yes/no) at Wave One. Analyses also control for gang membership (yes/no) at Waves Two and Three and victimization history. During the in-home interview respondents were asked: During the past 12 months, how often did each of the following things happen? Among this series of items are "someone pulled a knife or gun on you," "someone shot you," "someone cut or stabbed you," and "you were jumped." Given the severity of these forms of victimization, they were uncommon in the sample. Consequently, the present paper uses a dichotomous measure of whether the respondent reported any of these four forms of violent victimization in the past year.

Results

Descriptive statistics for the sample, prior to imputation, are shown in Table i. The first set of columns displays means and proportions on each predictor and outcome for the overall sample ($n = 10,828$). Most of the sample is white while about half of respondents report having a biological mother with at least some college education. About a third of respondents reported living in an urban area in the first wave. In regards to behavior, few respondents report membership in a named gang, approximately 16% of the sample in Wave Three. Violent victimization is also relatively uncommon, reported by less than 20% of respondents in Waves One and Two. Less than 6% of the sample reported bringing a weapon to school in either Wave One or Wave Two, with only 1% reporting bringing a firearm to school. Approximately 1% of respondents reported bringing a gun to school or work in adulthood. However, 8% of respondents reported owning a handgun in adulthood. Juvenile or adult criminal convictions for any offense type were quite rare in the sample. Roughly 2% of respondents reported a juvenile conviction, while 5% reported an adult conviction. School suspensions and expulsions were more common, although still affecting at most 20% of the sample.

Descriptive statistics for those weapon carriers exposed to serious sanctioning are shown in the second set of columns in Table i. Those for weapon carriers who do not report experiencing a serious sanction are shown in the final set of columns in Table i. T-tests were used to determine if differences between the two group means on each variable were statistically significant. As shown in Table i, several key differences are apparent. Seriously sanctioned weapon carriers are more likely to be non-white and have mothers without college education in comparison to other weapon carriers. Seriously sanctioned weapon carriers are also more likely to be gang members and have a history of violent victimization, on average. What is striking from this table is one key similarity between the two groups; they do not significantly differ in terms of frequency of weapon carrying. Both groups carry weapons to school equally often, on average. Those who report serious sanctioning, however, are more likely to report bringing a gun to school, as opposed to some other weapon type. In terms of later behavior, weapon carriers who report serious sanctioning as

juveniles are more likely to report adult criminal convictions, are marginally more likely to own a handgun, and are marginally more likely to bring a gun to school or work in adulthood than are other juvenile weapon carriers.

Table ii displays descriptive statistics for juvenile weapon carriers who report gang membership at either Wave Two or Wave Three. As before, T-tests were used to test for statistically significant differences between group means for each variable. Similar to before, gang-affiliated weapon carriers who report serious sanctioning are less like to be white and more likely to have experienced violent victimization than other gang-affiliated weapon carriers. They are also marginally more delinquent in adulthood and marginally more likely to report an adult criminal conviction. Though they are significantly more likely to report carrying a gun to school in Wave 1, this difference is not significant in Wave 2. As with weapon carriers overall, there is no significant difference in frequency of bringing a weapon to school between the two groups.

Results of logistic regression models predicting whether a respondent reports carrying a weapon to school or work in adulthood are displayed in Table iii. The first set of columns show results for the full sample, both gang members and non-members. As shown, juvenile weapon carrying at school nearly triples one's odds of adult school or workplace weapon carrying. Those respondents who do not report experiencing a serious sanction are actually less likely to report adult school or workplace weapon carrying. This main effect persists in the presence of control variables. However, the interaction between serious sanctioning and weapon carrying is non-significant. This indicates that the likelihood of adult weapon carrying by those who previously carried as juveniles does not vary between those who experienced some form of serious sanctioning and those who did not. The final set of columns in Table iii introduce interaction terms to assess whether early gang membership (Wave Two) modifies the links among juvenile weapon carrying, serious sanctioning, and adulthood weapon carrying. No interactions with early gang membership emerged as statistically significant, indicating that this is not the case for the adult weapon carrying outcome.

Results of logistic regression models predicting adult handgun ownership are displayed in Table iv. The first set of columns show results for the full sample, both gang members and non-members. As shown, juvenile weapon carrying at school nearly doubles one's odds of adult handgun ownership. Those respondents who do not report experiencing a serious sanction are less likely to report adult handgun ownership. This main effect persists in the presence of control variables. However, the interaction between serious sanctioning and weapon carrying is non-significant. This indicates that the likelihood of adult handgun ownership by those who previously carried as juveniles does not vary between those who experienced some form of serious sanctioning and those who did not.

The remaining columns in Table iv introduce interaction terms to assess whether early gang membership (Wave Two) modifies the links among juvenile weapon carrying, serious sanctioning, and adulthood handgun ownership. These models show a marginally significant interaction between early gang membership and serious sanctioning. Gang members who do not experience some form of serious sanctioning as juveniles are nearly twice as likely to

own handguns as adults. There is no significant interaction between gang membership and juvenile weapon carrying, which shows that adult handgun ownership among juvenile weapon carriers does not vary by early gang membership status. However, the final model in Table iv shows a statistically significant three-way interaction among juvenile weapon carrying, serious sanctioning, and early gang membership. For juvenile weapon carriers with early gang membership, failure to experience a serious sanction actually reduces one's likelihood of adult handgun ownership. Possible explanations for this result are detailed in the pages to follow.

Discussion

The present paper set out to address two aims. First, this study identified how juvenile weapon carriers who have experienced serious sanctioning (suspension, expulsion, etc.) differ from other juveniles who report carrying weapons to school. Second, the present paper explored the role of school discipline and juvenile justice system involvement in the future behavior of youth who carry weapons to school. Results show that weapon carriers who experienced serious sanctioning as juveniles differed from other weapon carriers through their involvement in a delinquent or risky lifestyle. Gang membership, delinquency, and violent victimization were more prevalent among those who experienced a form of serious sanctioning. Seriously sanctioned weapon carriers were also more likely to be non-white, have less educated parents, and reside in more urban environments. The two groups did not significantly differ in frequency of weapon carrying. In contrast to expectations from Deterrence theory, results show that avoiding serious sanctioning is associated with a reduced likelihood of adult weapon carrying and adult handgun ownership.

Addressing the descriptive differences between subgroups first, a contributing factor may be racial disparity in school discipline. One key difference between the seriously sanctioned weapon carriers and other weapon carriers was the proportion of whites versus non-whites, a 12% difference (see Table i). As has been well-documented in the literature, minorities are over-represented among students expelled and suspended (Krezmien, Leone, & Achilles, 2006; Skiba, Michael, Nardo, & Peterson, 2002). Though a number of explanations have been offered, the existing evidence does not suggest that this is simply a by-product of minorities engaging in more delinquent behavior. Rather, it appears that school officials are more likely to make referrals for minority students (Skiba et al., 2002) and sanction minorities more harshly, on average, even for the same problem behaviors (McFadden, Marsh, Price, & Hwang, 1992).

An interesting observation from the descriptive analyses is that frequency of school weapon carrying did not significantly vary between those who reported serious sanctioning and those who did not. Though students who are seriously sanctioned may be "more" delinquent in other ways, it does not appear that they are those who carry weapons to school more frequently than others. This is an important consideration for policy. Programs that focus on only the most delinquent youth, often identified through school discipline, may be missing a key intervention opportunity with other youth who carry weapons. Out-of-school suspension was reported by school administrators in the Add Health study as the minimum sanction for

any weapons violation, suggesting that weapon carriers who do not report serious sanctioning may have gone undetected.

The second aim of the present paper was to determine whether weapon carrying youth experiencing serious sanctioning were more likely to desist from further firearm-related behavior than other weapon carrying youth. Contrary to what one might expect from Deterrence theory, results did not indicate any significant interaction between sanctioning and juvenile weapon carrying, at least for the overall sample. Given these findings, a re-examination of the assumptions of Deterrence theory might shed light on why deterrence would fail for these offenders. Deterrence theory is generally framed as assuming (1) that offenders are rational actors, (2) that offenders are aware of the potential sanctions for their crimes, (3) that these sanctions are undesirable; and (4) that the sanction is applied quickly and with certainty (Gibbs, 1968; Piliavin, Gartner, Thornton, & Matsueda, 1986).

These assumptions can sometimes be problematic with juvenile offenders, particularly for weapon carrying. First, juveniles have incomplete cognitive development and may, as a result, make choices that seem irrational or short-sighted (Blakemore & Choudhury, 2006). Second, it is unclear to what extent juveniles are aware that weapon carrying and other serious behaviors can result in suspension, expulsion, or criminal sanctions. Third, though most would view these consequences as unpleasant, certain subgroups of offenders may not. Previous research has shown that weapon carrying is associated with popularity, a social reward that may outweigh the perceived costs for some juveniles (Dijkstra et al., 2010, 2012). Lastly, the results of the present study make it clear that detection is not certain. As seen in table i, almost as many weapon carriers avoided serious sanctioning as experienced it. Though some deterrence-oriented programs have demonstrated promising results (Lizotte & Sheppard, 2001; Sheppard & Kelly, 2002), addressing all of these assumptions in regards to juvenile weapon carrying is a challenge.

A competing explanation for the lack of support for deterrence is that this sample may simply be exhibiting the common pattern of desistance. Though some behaviors persist through early adulthood, participation in most crimes peaks in the mid-to-late teens and declines as individuals reach and pass through their 20's (Steffensmeier, Allan, Harer, & Streifel, 1989). Since this is the pattern for most offenders, one might expect a decline in weapon carrying behavior with time, irrespective of sanctioning. Wallace (2015) indeed found this to be the case. As seen in Table i, by the time both groups entered early adulthood there was no significant difference in the delinquent behavior of the two groups. Further, their rates of delinquent behavior were lower than at prior waves, suggesting that both groups had largely desisted from delinquent behavior.

Another possible explanation is the toxicity of criminal justice system contact for youth. Although there was no significant interaction between sanctioning and juvenile weapon carrying in the overall sample, main effects showed that youth who avoided serious sanctioning were less likely to carry weapons to school or work in adulthood and less likely to own a handgun in adulthood. For juvenile weapon carriers with early gang membership, avoiding serious sanctioning was also associated with a decrease in likelihood of adult handgun ownership. Both of these results are consistent with existing literature that suggests

official sanctions may exacerbate delinquent behavior for some youth (Bernburg & Krohn, 2003; Gatti et al., 2009). Although it may also be the case that there is something distinct about the sorts of youth who avoid serious sanctioning, this outcome remains concerning.

Policy implications

The results of this study suggest two key considerations for policy. First, as noted previously, descriptive analyses show that weapon carrying youth who experience serious sanctioning do not carry weapons more frequently, on average, than weapon carrying youth who avoid these sanctions. Nearly 50% of the juvenile weapon carriers examined in the present study did not report being suspended, expelled, or sanctioned by the juvenile justice system for weapon carrying or any other behavior. As a result, it is important that gun-related interventions focus on youth more broadly, not just “high-risk” youth.

A second observation is that youth who avoided serious sanctioning were less likely to engage in illicit weapon carrying as adults. For juvenile weapon carriers with early gang membership, avoiding sanctioning was also associated with more positive outcomes. Together, these results highlight the importance of a prevention or treatment-based approach to juvenile weapon carrying rather than an exclusive focus on deterrence. One popular program, developed in the 1990’s, is Straight Talk About Risks (STAR), a K-12 curriculum aiming to prevent youth gun violence (Office of Juvenile Justice and Delinquency Prevention, 2015). One goal of the program is to teach children to resist peer pressure towards carrying weapons or using them to solve conflict. Unlike deterrence-based prevention strategies, programs like these teach youth behavioral alternatives that may prevent a variety of problem behaviors.

Future research

As noted previously, the Add Health data did not detail the reasons for a given respondent’s suspension or expulsion for school. Future investigation is needed to separate suspensions and expulsions for weapons violations from sanctions imposed strictly for other behaviors. It may be the case that sanctioning specific to weapons behaviors is more effective for future weapons-related behaviors than sanctioning overall. Further, only very serious forms of sanctioning were considered. Future research is needed to better examine the role of lesser or more treatment-oriented sanctions for weapon-related behavior. It would also be useful to determine what other behaviors were engaged in while carrying a weapon, something Add Health only measures for a few select behaviors.

An additional avenue for further research lies in the notion of detection itself. The present study relied on indicators of formal sanctioning, including juvenile adjudication, expulsion, and suspension. It is important to note, though, that not all detection of juvenile behavior is so formal. Parents, coaches, siblings, peers, and others may have the opportunity to detect weapon carrying and other behavior by juveniles. Yet, detection by these individuals may never come to the attention of schools or law enforcement officials. This form of detection, however, may still play a pivotal role in the current and future behaviors of a given juvenile, particularly since family members and friends may be perceived as more salient role models than others.

Limitations

The present study is the first to address how seriously sanctioned weapon carriers differ from other weapon carriers. However, Add Health is a self-report study without corroborating official data for measures of crime. As a result, the accuracy of this study relies on accuracy in juvenile reporting both of delinquent behavior overall and weapon carrying behavior specifically. Rates of school weapon carrying in the sample used by this study are lower than those reported in the High School Youth Risk Behavior Survey (Centers for Disease Control, 2014), where more than 5% of respondents indicated carrying a weapon to school in the past month. However, Add Health surveyed students in grades 7 through 12 while the High School Youth Risk Behavior Survey targets those in grades 9 through 12. Inclusion of younger respondents in Add Health may account for the lower rates.

A second concern is the segment of the life course examined by the present study. Respondents ranged from age 18 to 26 at Wave Three. As a result, younger respondents have had only a limited amount of time to establish an adult history of delinquent and criminal behavior. Since Federal law prohibits handgun purchases by those under age 21, younger respondents may not be able to purchase handguns, which were the specific type of weapon addressed in Wave Three survey questions. Further, the Add Health data are nationally representative of all students in grades 7 through 12 in 1994. The 1990's were a time when rates of juvenile crime were peaking, and results may not necessarily be representative of secondary students today. As a result, research with a more current cohort of students is needed for context.

Conclusion

In spite of these limitations, the present study highlights a key concern for youth violence. Youth who carry weapons to school, and thus have the means and potential for violence, may not be detected by schools or other officials unless they are involved in other forms of delinquency. Additionally, seriously sanctioned youth who carry weapons do not carry their weapons any less frequently than other weapon carrying youth. As a result, it is important that weapons-related interventions focus on youth more broadly, not exclusively on "high risk" youth. The present study also finds that serious sanctioning does not seem to have its expected deterrent effect. Rather, weapon carrying youth who avoided serious sanctioning were less likely to carry weapons in adulthood and less likely to report adult handgun ownership. These findings highlight the persistent need for prevention and treatment-based programming for problem behaviors among youth.

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Table i

Selected descriptive statistics of sample (n=3,844) prior to imputation, unweighted

	Full sample		Possibly detected weapon carriers		Undetected weapon carriers	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
Male	3844	0.46 (0.50)	145	0.66 (0.47)	152	0.73 (0.45)
Age W1	3843	14.57 (1.60)	145	14.8 (1.48)	152	14.77 (1.47)
White	3835	0.68 (0.47)	145	0.59* (0.49)	152	0.69* (0.46)
Urban area W1	3814	0.33 (0.47)	141	0.45* (0.50)	151	0.34* (0.47)
Mom college educated W1	3528	0.52 (0.50)	124	0.41* (0.49)	136	0.51* (0.50)
Gang member W2	3826	0.04 (0.20)	142	0.20* (0.40)	152	0.13* (0.33)
Gang member W3	3811	0.15 (0.36)	142	0.26* (0.44)	152	0.17* (0.38)
Violent victimization W1	3823	0.18 (0.39)	144	0.66** (0.48)	152	0.36** (0.48)
Violent victimization W2	3827	0.14 (0.35)	144	0.53** (0.50)	151	0.36** (0.48)
School weapon W1	3824	0.05 (0.23)				
School gun W1	3821	0.01 (0.09)				
School weapon frequency W1	3824	0.12 (0.57)	144	1.67+ (1.45)	151	1.40+ (1.44)
School weapon W2	3844	0.04 (0.19)				
School gun W2	3844	0.01 (0.08)				
School weapon frequency W2	3844	0.10 (0.55)	145	1.16 (1.54)	152	1.34 (1.57)
School/work gun W3	3810	0.01 (0.10)	143	0.03 (0.17)	152	0.05 (0.21)
Juvenile firearm violation	3837	0.001 (0.03)				
Adult firearm violation	3839	0.002 (0.04)	143	0.00 (0.00)	152	0.00 (0.00)
Adult handgun owner	3814	0.08 (0.28)	141	0.20 (0.40)	152	0.19 (0.39)
Suspended W1	3838	0.20 (0.40)				
Suspended W2	3844	0.10 (0.30)				
Expelled W1	3839	0.03 (0.16)				
Expelled W2	3844	0.01 (0.11)				
IRT delinquency W1	3829	-0.003 (0.77)	145	0.99** (0.84)	152	0.55** (0.81)
IRT delinquency W2	3830	0.001 (0.75)	144	0.81* (1.06)	152	0.61* (0.89)
IRT delinquency W3	3829	-0.003 (0.71)	144	0.29 (0.88)	152	0.19 (0.85)

Notes:

θ Significant differences between detected and undetected weapon carriers, indicated by a t-test, denoted by ^{**} $p < 0.01$, ^{*} $p < 0.05$, ⁺ $p < 0.10$.
 η Detection refers to juvenile arrest or conviction, suspension or expulsion at W1 or W2.

Table ii

Selected descriptive statistics of detected and undetected gun carriers prior to imputation, unweighted

	Possibly detected gun carriers		Undetected gun carriers	
	n	Mean (SD)	n	Mean (SD)
Male	31	0.90 (0.30)	15	0.87 (0.35)
Age W1	31	15.03 (1.64)	15	14.87 (1.64)
White	31	0.45 ⁺ (0.51)	15	0.67 ⁺ (0.49)
Urban area W1	29	0.41 (0.50)	15	0.60 (0.51)
Mom college educated W1	26	0.35 [*] (0.49)	14	0.64 [*] (0.50)
Gang member W2	29	0.38 (0.49)	15	0.20 (0.41)
Gang member W3	31	0.39 (0.50)	15	0.27 (0.46)
Violent victimization W1	30	0.67 (0.48)	15	0.53 (0.52)
Violent victimization W2	30	0.70 [*] (0.47)	14	0.43 [*] (0.51)
School weapon frequency W1	30	1.67 (1.45)	15	1.67 (1.40)
School weapon frequency W2	31	1.52 (1.71)	15	1.80 (1.74)
School/work gun W3	31	0.00 ^{**} (0.00)	15	0.27 ^{**} (0.46)
Adult firearm violation	31	0.00 (0.00)	15	0.00 (0.00)
Adult handgun owner	29	0.21 (0.41)	15	0.33 (0.49)
IRT delinquency W1	31	1.16 (1.01)	15	0.92 (1.12)
IRT delinquency W2	30	0.89 (1.19)	15	1.00 (1.33)
IRT delinquency W3	31	0.34 (0.99)	14	0.15 (0.94)

Notes:

^a Significant differences between detected and undetected gun carriers, indicated by a t-test, denoted by ^{**} p<0.01, ^{*} p<0.05, ⁺ p<0.10.

^b Detection refers to juvenile arrest or conviction, suspension or expulsion at W1 or W2.

Logistic and OLS regression models predicting adult delinquency and crime by juvenile weapon carrying and detection (n = 3,844)

Table iii

	Adult weapon carrying (Odds ratios)			Adult delinquency/crime (OLS)			
Weapon carrier	2.18 *	(0.82)	3.44 *	(1.78)	2.10 (1.06)	0.25 ** (0.06)	-0.04 (0.09)
Suspension, expulsion, or juvenile record	2.13 **	(0.62)	2.47 **	(0.75)	1.63 (0.55)	0.16 ** (0.03)	0.01 (0.03)
Detection * Weapon carrier			0.44	(0.31)	0.58 (0.44)		0.05 (0.12)
Male					1.62 (0.55)		0.31 ** (0.03)
Age W1					1.01 (0.08)		-0.05 ** (0.01)
White					0.60 + (0.19)		-0.060 + (0.03)
Urban area W1					0.48 * (0.17)		0.004 (0.03)
Mom college educated W1					0.68 (0.19)		0.06 * (0.03)
Gang member W2					1.03 (0.67)		-0.12 (0.08)
Gang member W3					0.98 (0.38)		-0.06 (0.04)
Violent victimization W1					1.38 (0.49)		-0.06 (0.04)
Violent victimization W2					1.66 (0.68)		0.14 * (0.06)
IRT delinquency W1					0.86 (0.18)		0.11 ** (0.02)
IRT delinquency W2					0.79 (0.16)		0.16 ** (0.03)
IRT delinquency W3					2.92 ** (0.48)		
Constant	0.01 **	(0.003)	0.01 **	(0.003)	0.01 ** (0.01)	-0.04 ** (0.01)	0.54 ** (0.12)

Notes:

^a** p<0.01. * p<0.05. + p<0.10.

^b Detection refers to juvenile arrest or conviction, suspension or expulsion at W1 or W2.

^c Odds ratios displayed, standard errors in parentheses.

Logistic regression models predicting adult handgun ownership by juvenile weapon carrying and detection (n = 3,844)

Table iv

	Weapon carrying			Gun carrying		
Weapon carrier	2.30 ** (0.41)	2.61 ** (0.64)	1.93 * (0.55)	2.725 ** (1.05)	2.89 (2.09)	
Suspension, expulsion, or juvenile record	1.70 ** (0.24)	1.78 ** (0.28)	1.28 (0.23)	1.82 ** (0.25)	1.27 (0.21)	
Detection * Weapon carrier			0.78 (0.28)	0.88 (0.34)	0.47 (0.40)	
Male			2.32 ** (0.36)		2.37 ** (0.36)	
Age W1			1.05 (0.04)		1.05 (0.04)	
White			1.14 (0.19)		1.15 (0.19)	
Urban area W1			0.68 * (0.11)		0.69 * (0.11)	
Mom college educated W1			0.91 (0.13)		0.91 (0.13)	
Gang member W2			1.29 (0.40)		1.33 (0.40)	
Gang member W3			3.25 ** (0.51)		3.23 ** (0.50)	
Violent victimization W1			1.25 (0.23)		1.27 * (0.23)	
Violent victimization W2			1.54 * (0.31)		1.61 * (0.32)	
IRT delinquency W1			1.03 (0.11)		1.06 (0.12)	
IRT delinquency W2			0.71 ** (0.09)		0.74 * (0.09)	
IRT delinquency W3			1.33 ** (0.13)		1.33 ** (0.13)	
Constant	0.08 ** (0.01)	0.08 (0.01)	0.02 ** (0.01)	0.09 ** (0.01)	0.02 ** (0.01)	

Notes:

^a** p<0.01. * p<0.05. +p<0.10.^bDetection refers to juvenile arrest or conviction, suspension or expulsion at W1 or W2.^cOdds ratios displayed, standard errors in parentheses.