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EMPIRICAL RESEARCH

From the School Yard to the Squad Car: School Discipline, Truancy, and Arrest

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Abstract Since the 1990's, implementation of *zero tolerance* policies in schools has led to increased use of school suspension and expulsion as disciplinary techniques for students with varying degrees of infractions. An unintended consequence of zero tolerance policies is that school suspension or expulsion may increase risk for contact with the juvenile justice system. In the present study, we test how forced absence from school via suspension or expulsion and chosen absence from school (truancy) are associated with the likelihood of being arrested. Using month-level data from 6,636 months from a longitudinal study of delinquent adolescents (N = 1,354; 13.5 % female; 41.5 % Black, 33.5 % Hispanic-American, 20.2 % White), we compare the likelihood of being arrested, within individuals, for months when youth were and were not suspended or expelled from school and for months when youth were and were not truant. Finally, we test if these associations were moderated by stable demographic characteristics (sex, race, age, history of problem behaviors) and time-varying contextual factors (peer delinquency, parental monitoring, and commitment to school). Being suspended or expelled from school increased the likelihood of arrest in that same month and this effect was stronger among youth who did not have a history of behavior problems and when youth associated with less delinquent peers. Truancy independently contributed to the likelihood of arrest, but this association was explained by differences in parental monitoring and school commitment. Thus, school disciplinary action places youth at risk for involvement in the juvenile justice system and this may be especially true for less risky youth.

Keywords School suspension · School expulsion · Truancy · Arrest · Zero tolerance

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Introduction

Nearly all U.S. middle and high schools have policies that allow students who threaten the safety of classmates or students who compromise the quality of the educational experience to be removed—either temporarily (suspension) or permanently (expulsion). Since the 1990's, use of suspension and expulsion as punishment have fallen under schools' commitment to *zero tolerance*, a broad term that generally reflects rigid, mandated-response approaches to school discipline (American Psychological Association Zero Tolerance Task Force 2008). One unintended consequence of zero tolerance polices is that students who violate school rules, and who are therefore punished harshly with suspensions or expulsions, may be at an increased risk for having juvenile justice system contact. Researchers have identified this connection as the *school-to-prison pipeline,* a term that emphasizes that problems at school can place some youth at risk for school removal (through suspension and expulsion) which, in turn, places these youth at risk for involvement in the juvenile justice system (Wald and Losen 2003). Indeed, much evidence suggests

that youth involved in the juvenile justice system have a history of troubled behavior in school (Snyder and Sickmund 2006) and, conversely, that individuals who are suspended or expelled from school are more likely to become involved in the justice system (Costenbader and Markson 1998). As research suggests that involvement in the juvenile justice system is associated with strong and negative residual effects on youth development and adaptation (Mennis and Harris 2011; Steinberg 2009), research is necessary to explore the mechanisms by which school disciplinary policies may affect the likelihood of juvenile justice involvement.

Though we know a relationship between school discipline and contact with the justice system exists, it is unclear *how* school suspension and expulsion may alter the likelihood that individuals are arrested and whether certain individuals may be particularly likely to be channeled down the school-to-prison pipeline. It is also unclear whether school discipline actually increases the probability of arrest or whether the relationship is spurious, owing to individual characteristics that predict both school misconduct, which leads to school discipline, and illegal behavior, which leads to contact with law enforcement. The present study fills this void by looking within individuals to investigate the potential mechanisms that may explain *why* or *how* an individual may be more likely to be arrested in the same month that he or she is suspended or expelled, compared to months when he or she is not suspended or expelled. We also compare forced school removal (school suspension or expulsion) to voluntary absence (truancy).

Zero tolerance polices first appeared in 1989 and were intended to send unequivocal messages that violence and drug use, in any extent, would not be tolerated on school property. These policies originally *required* schools to expel students suspected of involvement with on-campus drug use (or possession), violence, or gang-related activity (Skiba and Knesting 2001). Over the years, the policies have been applied to a broader range of behavioral problems, such as cigarette smoking and other forms of school misconduct (e.g., such as cheating, swearing, or disrupting the class). One of the criticisms of zero tolerance polices is that these "get tough" policies have led some students who could have otherwise been disciplined by school officials to be referred to law enforcement (Casella 2003). These school disciplinary actions are not rare: a 2007 survey of public school students in grades 9 through 12 indicated that approximately 25 % had been suspended and 3 % had been expelled in their lifetime (Aud et al. 2011). Reflected in these percentages, expulsion is generally reserved for school-based offenses of moderate to high severity, although not always for students who are the most troublesome or dangerous. In contrast, school suspension is among the most widely used disciplinary techniques and is used as a response to moderate offenses such as fighting and physical aggression. However, research suggests that school suspensions are also frequently applied to much less serious transgressions, including disobedience, disrespect, attendance problems, and general classroom disruptions (Dupper and Bosch 1996; Skiba and Knesting 2001).

The application of these disciplinary approaches has wide reaching consequences. Suspension and expulsion from school are correlated with higher rates of subsequent antisocial and illegal behavior, including drug use, increased likelihood of future suspension, and, most relevant for the present study, contact with the criminal justice system (American Psychological Association Zero Tolerance Task Force 2008; McCrystal et al. 2007; Raffaele-Mendez and Knoff 2003; Tobin et al. 1996). A number of potential mechanisms—not necessarily competing—have been proposed to explain the association between school suspension or expulsion and subsequent problem behavior. One likely candidate is the idle hands hypothesis: when not in school, individuals have more hours of the day in unsupervised contexts when delinquent behavior could lead to an arrest. Theoretically, this hypothesis draws heavily from Routine Activity Theory, an environmental theory of crime. Routine Activity Theory posits that three criteria must be met for a crime to be committed: (1) a motivated offender (2) a suitable target, and (3) absence of a capable guardian (Cohen and Felson 1979; Felson 1998). Applying this theory to school discipline, Routine Activity Theory would suggest that suspension or expulsion from school would increase the likelihood of criminal behavior because of the absence of a capable guardian (i.e., monitoring by school). If it is correct that absence from school increases the likelihood of arrest because of increased time available to engage in delinquent behavior, it stands to reason that being out of school by choice (i.e., truancy) should also increase the probability of arrest. Thus, a comparison of removal from school for disciplinary reasons (suspension or expulsion) versus absence from school for personal choice (truancy) is needed.

In the present study, the most relevant component of the Routine Activity Theory is whether adolescents are situated in unsupervised contexts. Although school guardianship is likely minimal or nonexistent when students are suspended, expelled, or truant, it is possible that parental monitoring could compensate for diminished school supervision. Indeed, research has consistently shown that higher levels of parental monitoring and parental involvement are related to lower levels of adolescent misconduct and delinquency (Lahey et al. 2008; Stouthamer-Loeber et al. 2002). Given that school administrators are likely to communicate with parents when students are forcibly removed from school, it is likely that some parents may monitor their children more diligently on days when their

child is suspended or expelled from school. As a result, children who have parents who engage in high levels of monitoring will have less unsupervised time on school removal days and they may therefore have a lower risk of being arrested. On the other hand, when a student is absent from school without parental knowledge—on days when a youth is truant—it is less likely that parental monitoring will affect the likelihood that a youth is arrested. Indeed, individual differences in the effectiveness of parental monitoring may explain variation in truancy itself, since highly vigilant parents are likely to prevent truancy.

Theoretical extensions of Routine Activity Theory have also focused on how peers may facilitate delinquency during unstructured time (Osgood et al. 2005; Siennick and Osgood 2012). Above and beyond earlier problem behaviors (Wiesner et al. 2012), associating with delinquent peers is linked with greater antisocial behavior (Laird et al. 2005) and adolescents, compared to other developmental periods, are particularly vulnerable to the negative effects of delinquent peers (Monahan et al. 2009). Though research has found that unstructured socialization with peers, regardless of the deviance of one's peers, places youth at risk for engaging in greater antisocial behavior (Osgood et al. 1996), interactions between peers and unstructured time due to suspension, expulsion, or truancy have not been tested. Based on previous work with peers and Routine Activity Theory, it is likely that peer delinquency will explain, at least in part, the relationship between being away from school and an increased risk of illegal behavior, regardless of whether youth are forcibly removed from school (suspended or expelled) or whether they are absent by choice (truant).

Beyond the theoretical predictions of Routine Activity Theory, other literature suggests that individual differences and contextual factors may affect the association between school disciplinary action and negative behavioral outcomes. In the educational literature, it has been suggested theoretically that the application of discipline at school may be especially harsh to students who are the least at risk—those who exhibit greater commitment to school or have fewer behavior problems. That is, disciplinary action against these less risky, positively attached students may actually serve to disengage them from school at later time points, and subsequently place them at risk for poor adaptation (Morrison et al. 2001). Indeed, given the widespread use of suspensions and expulsion since the era of zero tolerance policies, a wider breadth of students are being caught in the net of school disciplinary action. As more "good" students are caught within this net, perceptions of being betrayed by school staff may lead to greater behavioral problems, which potentially could result in arrest.

With this in mind, it would be important to consider how commitment to school may moderate the association between absence from school and arrest. Evidence suggests that youth who are less committed or attached to school are more likely to be truant (Henry 2007) and also more likely to be suspended or expelled (Arcia 2006). Yet, school suspension can lead to negative behavioral or emotional outcomes for teens (Osher et al. 2010). If it is the case that the negative effects of school discipline on behavioral outcomes may be strongest among those who are the least likely to be expelled, testing how school commitment moderates the effect of school suspension or expulsion on arrest is important. Notably, as truancy is a willing self-removal from school, it is less likely that it will lead to negative behavioral outcomes based on one's level of commitment to school. That is, it is the forced removal from school in the form of suspension or expulsion that should place less risky youth at risk for poor behavioral outcomes, *not* the willful choice of not attending school.

One of the challenges of studying how being removed from school affects the probability of being arrested by the police is that these events (e.g., school suspensions and expulsions) are not randomly assigned. Indeed, many characteristics of an adolescent, such as behavior problems or temperament, influence both the likelihood that he or she will violate school rules, which could result in a suspension or expulsion, and the likelihood that he or she will engage in illegal behavior, which could lead to an arrest. One statistical methodology that overcomes this challenge is to examine the associations between school suspensions, expulsions, and truancy days and the probability of being arrested within person. That is, in months when an adolescent is or is not in school (through suspension, expulsion or truancy), does the probability of his or her arrest change? Fixed effects models do exactly this by focusing exclusively on within-person sources of variance. Because we are able to look within each person and compare months when individuals are and are not removed from school, fixed effect models eliminate the problems associated with between-person differences in likelihood of receiving school suspension and expulsion (e.g., personality differences, race and ethnicity, sex). This is important because research has shown that Hispanic and Black high school students are disproportionately more likely to be suspended or expelled than White or Pacific Islander students (Aud et al. 2011; Skiba et al. 2002; Wallace et al. 2008). Similarly, boys are also more likely to receive school disciplinary sanctions compared to females (Taylor and Foster 1986; Wallace et al. 2008). In fact, at least one group of researchers found that male students were four times more likely to be suspended or expelled than females (Skiba et al. 2002), which could be due to sex differences in school misconduct base rates. In addition, school discipline may be differentially applied to individuals with histories of early problem behavior. Because fixed effect

models estimate regression coefficients within individuals, stable characteristics, such as race and ethnicity and sex, are held constant. Another benefit of fixed effects methods is that we can control for unmeasured (or difficult to measure) between-person differences that may contribute to school removal and probability of arrest.

As alluded to earlier, an important feature of the fixed effects framework is that it is necessary to have repeated observations with fluctuations in both the independent variables and dependent variables, for example, months when individuals are sometimes suspended, expelled, truant, or arrested and other times when they experience none of these events. Ideally, the observational period would be short, so that arrests and school discipline can be linked more closely than semester or annual assessments. To date, research has typically examined whether a student who has been suspended or expelled is likely to be arrested at a later date. For example, many have studied how school suspension or expulsion is linked to greater risk of antisocial behavior a year (Hemphill et al. 2006) or years later (McCrystal et al. 2007). No research to our knowledge has been able to examine these processes at the month level. In the present study, we link month level information about whether or not an adolescent had been suspended or expelled, truant, and arrested. We do so in a sample of known delinquent adolescents. Studying this population is advantageous because individuals in this sample have adequate month-to-month variability in the rates of school discipline and the likelihood of being arrested, which ensures that we have enough statistical power to investigate months with and without school discipline and with and without arrest. We are also able to separate the effects of truancy from that of suspension or expulsion to see whether the magnitude of the effect varies when a student is forcibly removed from school (suspension or expulsion) versus when they are missing school due to their own prerogative (truancy).

Current Study

In hopes of informing the discussion on the effects of zero tolerance policies, we investigate the month level associations between school discipline, truancy, and arrest. Based on the extant research on the link between school absence and contact with the juvenile justice system, we expect that youth who are out of school (via suspension, expulsion, or truancy) will be more likely to be arrested in that same month. Specifically, we examine if the likelihood of a student getting arrested is increased during months when he or she is (a) suspended or expelled or (b) truant. We test if this association varies based on stable individual characteristics (race, sex, age at time of school discipline or truancy, and history of behavior problems) and time-varying contextual factors. Consistent with Routine Activity Theory, we hypothesize that the association between voluntary and involuntary absence from school will be strongest in months when youth affiliate with relatively more delinquent peers or experience relatively lower levels of parental monitoring. Moreover, consistent with theories in the educational literature, we expect that any observed association between school suspension or expulsion and arrest will be strongest among youth who are more committed to school or who do not have a history of behavioral problems.

Method

Participants

Data for the present analyses were drawn from a sample of 1,354 adolescents (1,170 males and 184 females) participating in the Pathways to Desistance study, a prospective study of serious juvenile offenders in two major metropolitan areas (see Schubert et al. 2004 for complete details of study methodology). The enrolled adolescents were between 14 and 17 years of age at the time of committing a serious felony offense for which they were adjudicated. Because we were primarily interested in the years that subjects were enrolled in high school (and thus able to be suspended, expelled, or truant), the present study only uses data from the first 2 years of assessments during months when an individual was enrolled in school. The first 2 years of the study have the highest proportion of participants were enrolled in school. These data were collected between 2000 and 2006.

At the baseline interview, the mean age in the sample was 16 years ($SD = 1.14$; age range 14–18). Participants were from predominantly lower socioeconomic status, with fewer than 6.3 % of the participants' parents holding a 4-year college degree and 33 % of participants' parents having less than a high-school education. The sample is primarily Black (41.5 %), followed by Hispanic-American (33.5 %), non-Hispanic White (20.2 %), and other ethnicities (4.8 %). From the 6-month interview to the 24-month follow up, 1,076 individuals (79.5 %) completed all 4 interviews; 165 individuals (12.2 %) completed 3 interviews; 55 individuals (4.1 %) completed two interviews; 25 individuals (1.8 %) completed one interview. Eighteen individuals completed no follow-up interviews and were thus dropped from our analyses.

Procedures

The juvenile court in each site provided the names of eligible adolescents based on age and adjudicated

offenses. Interviewers attempted to contact each eligible juvenile offender and his or her parent or guardian. Contacted individuals were informed of the nature of the study and invited to participate; 80 % agreed to enroll in the study. Once parental consent and youth assent were obtained, youth were interviewed immediately and followed by interviews at 6-month intervals. Interviews were conducted in a facility (if the participant was confined), in the home, or in an agreed-upon location in the community.

Baseline interviewers were completed in approximately 4 h and each follow-up interview was completed in a 2-h session. Interviewers and participants sat side-by-side facing a computer, and questions were read aloud to avoid comprehension or reading difficulties. At each follow-up interview, participants responded to a number of self-reported behavioral, psychological, and attitudinal assessments and also completed a "life calendar" to gather information about each month since the previous interview. Interviewers began by asking the youth to identify major life events, such as a change in residence, trips, or birth of a child that had occurred since the prior interview. Participants were then asked if they had been suspended or expelled, truant, or arrested since the last interview (e.g., "Were you arrested at all?"). If the respondent's answer was positive, the interviewer went through the recall period month by month to determine in what month(s) the activity occurred and to ask about specific details. If a youth had a problem remembering the exact month of an occurrence, the interviewer would use major life events or information from other activity domains to help narrow the date (e.g., "Did this happen around your birthday? Or was it closer to when you moved?"). Previous research suggests that retrospective data gathered using life calendar methods is accurate (Freedman et al. 1988) and that the data structure of the life calendar fits the structure of respondents' autobiographical memories well (Belli 1998; Caspi and Amell 1994). As such, the life calendar data collection method can provide a more continuous and complete representation of life events than is possible with other interview or questionnaire measures.

Participants were informed that we had obtained a Certificate of Confidentiality, which legally prohibited us from disclosing any information obtained during the study to anyone outside the project staff. Youth were informed that the only exceptions to this promise of confidentiality were (a) if child abuse was suspected (b) if the participant expressed plans to hurt her- or himself or someone else (c) had a specific plan to commit a crime in the future, or (d) disclosed that someone was in jail for a crime that the participant had committed. Youth were compensated monetarily for all interviews.

Measures

The key variables of analysis in the present study are drawn from the life-calendar data: monthly arrest, monthly suspension or expulsion from school, and monthly truancy from school. In addition, we assess peer delinquency, parental monitoring, and school commitment at the recall-period level (6 month period since the last interview) as well as baseline-assessed demographics (e.g., early problem behavior) as moderators of the association between (a) suspension or expulsion and arrest, and (b) truancy and arrest.

Arrest

At each interview, adolescents were asked if they had been arrested or not since the previous interview. If the participant answered yes, the participant then reported on the month(s) when the arrest(s) occurred in the recall period. Individuals could report multiple arrests in a given recall period, but each arrest needed to be a separate incident (i.e., multiple charges for one arrest count as one arrest).

We focus on self-reported arrest rather than official petitions because many more arrest are made than formal petitions to the court. As such, using an official count of petitions would reflect a more severe threshold of offending than a self-report measure. Moreover, the present study is primarily interested in how school disciplinary action impacts the likelihood of contact with the police. As such, the self-report measure is preferable.

Suspension or Expulsion and Truancy

Adolescents reported if they had been enrolled in secondary school from which they were able to be suspended, expelled, or truant (i.e., *not* an institution school or college or junior college setting) at any point in the recall period. If an individual endorsed that he (or she) had been enrolled in school, the months when school was in session were labeled on the life calendar. Of the months that school was in session, youth reported on the number of days that he (or she) had been suspended or expelled from school in a given month. Based on this variable, we calculated a binary variable that indicates whether or not a youth reported suspension or expulsion in a given month. Because a single item asked youth about being suspended or expelled from school, it was impossible to disentangle these two disciplinary responses. However, from a conceptual standpoint, both represent forced removal from school due to disciplinary problems.

Youth also reported on whether or not he or she had been truant from school in a given month using the life calendar technique. A binary variable was calculated to

indicate whether or not an adolescent had been truant from school in each month.

Peer Delinquency

At each follow up interview, participants self-reported (Thornberry et al. 1994) the degree to which their peer group has engaged in antisocial activity (e.g., "How many of your friends have sold drugs?"). Peer delinquency is calculated as the mean rating of the prevalence of friends who engage in 12 unique behaviors. The measure was found to have excellent reliability (alpha = .92 at the 6 month interview) and a one-factor confirmatory factor analysis indicated good fit (CFI: .94; RMSEA: .09). As peer delinquency was assessed at each time point interview, and not monthly, we use the same value of peer delinquency for all months in the relevant recall period. The drawback of this effect is that we are unable to detect month-level fluctuations in peer delinquency, but can still detect larger shifts between exposures to peer delinquency over time. Moreover, because we are interested in the time-varying effects of how peer delinquency might affect the associations between suspension or expulsion and truancy and arrest, we centered the measure of peer delinquency within individual. Thus, the peer delinquency time varying covariate variable is interpreted as an individual experiencing more or less exposure to delinquent peers relative to his or her average level of delinquent peer exposure across the 2 year period.

Parental Monitoring

At each time point, participants completed the Parental Monitoring Inventory (Steinberg et al. 1992). Preliminary questions establish the presence of a single individual (X) who is primarily responsible for the youth. If the youth lives with the primary caretaker, four additional items are asked to assess parental monitoring of the youth's behavior (e.g., "How often do you have a set time to be home on weekend nights?"). These are answered on a 4-point scale which ranged from "never" to "always". Confirmatory factor analysis indicated that the measure fit the data well (CFI = .92; RMSEA = .06). Like our assessment of peer delinquency, parental monitoring was assessed at each time point interview, and not monthly. Consequently, we use the same value of parental monitoring for all months in the relevant recall period. Like peer delinquency, parental monitoring was centered on each individual's mean level of parental monitoring; for example, a value >0 represents a recall-period when an individual's level of parental monitoring is higher than average.

School Commitment

School commitment was assessed by 7 items based on the work of Cernkovich and Giordano (1992) (e.g., "Schoolwork is very important to me."). Participants responded to statements on a five point scale, ranging from "Strongly Disagree" to "Strongly Agree". Responses across statements are averaged, with higher scores indicating greater academic commitment. Across the first 2 years of the study, the measure demonstrated adequate reliability: α's = .85 at the 6 month assessment. School commitment was one of two subscales in the broader measure, and confirmatory factor analysis supported this distinction and the school commitment measure (CFI = .93; RMSEA = .07). As with peer delinquency and parental monitoring, school orientation was measured at the level of the recall period and was mapped onto the months covered within that recall period. School orientation was centered on each individual's mean.

Demographics

A number of demographic variables were assessed: *age* (at the baseline interview), *sex* (male or female), *race or ethnicity* (4 categories: Black, Non-Hispanic White, Hispanic, and Other). In addition, we assessed *early problem behavior* as a count of how many early-onset problem behaviors a youth endorsed. These five items are asked as part of the part of the Psychopathy Checklist—Youth Version (Forth et al. 2003) and assess cheating, being drunk or stoned, disturbing class, fighting, or stealing prior to age 11.

Plan of Analyses

Fixed effects regression models were used to test the longitudinal associations between suspension or expulsion and arrest as well as truancy and arrest. Typically, longitudinal statistical models typically account for two sources of variance: between-person variance and within-person variance. Between-person variance refers to variance in outcomes over time between different people because of either observed or unobserved covariates. In contrast, within-person variance is variance in outcomes within the same person over time because of either observed or unobserved covariates. Fixed effects models focus on only within-person variance. By only examining within-person effects, the fixed effect model accounts for all stable characteristics of the individual in the study, observed or unobserved, thereby eliminating individual variability and potentially large sources of bias. This is important as it is very difficult to assess all of the between-person covariates (i.e., individual differences) that could potentially influence whether

a person is suspended, expelled, truant, or arrested from school.

Fixed effects models are not without drawbacks. First, when applied to non-experimental data, fixed effects methods often lead to an increase in sampling variability relative to other analytic methods. Second, fixed effects methods cannot estimate coefficients for variables that have no within-subject variation. In other words, no main effects of stable characteristics (i.e., sex or race) can be estimated. However, interaction effects between stable characteristics and time-varying predictors or covariates can be assessed.

In the present analyses, we use longitudinal fixed effects logistic regression to simultaneously estimate the association between the likelihood of arrest in a given month and (a) whether or not a youth was suspended or expelled and (b) whether or not a youth was truant from school. These models indicate the extent to which an individual's probability of being arrested or not change—on a month-to-month basis—as a function of whether or not he or she was suspended or expelled from school or truant from school in the same month. Subsequently, we test whether these associations are moderated by individual characteristics (sex, race and ethnicity, age, and early problem behavior). The moderation (i.e., interaction) models test if the association between suspension or expulsion and truancy and arrest are stronger or weaker based on individual characteristics, such as race, age, sex, and early-onset problem behavior. Finally, we test if the association between suspension or expulsion and truancy and arrest are moderated by three time-varying covariates: peer delinquency, parental monitoring, and commitment to school. These models indicate the extent to which the associations between suspension or expulsion and truancy and arrest are stronger or weaker when individuals have relatively higher or lower levels of peer delinquency, parental monitoring, or commitment to school.

In the present analyses, data are missing primarily because of structural issues. Because we are interested in examining how suspension or expulsion and truancy are linked to arrest, we must restrict our sample to the developmental period when an individual is enrolled in school and to the seasonal periods when school is in session. Consequently, depending on the age of the individual, he or she may have a different number of months to contribute data, with younger individuals in the sample providing more month-level data points than older individuals in the sample. Remember that data analysis was limited to the first 2 years of data, meaning the entire age span is 14–19. Given that the Pathways sample is an overlapping cohort study, most of the months when individuals are actively enrolled in secondary school fall in the earlier months of the study, when retention was highest.

Results

Over the course of the study, there were a total of 6,636 months (data points) where students were both enrolled in school and school was in session (remember that these were criteria for inclusion in the analyses; see previous section on missing data). Table 1 presents descriptive information about the percentage and number of months in which individuals were suspended or expelled from school, reported being truant from school, and were arrested. Based on these patterns, there is adequate individual variability in whether or not youth experienced these events across the valid month-level data points in the sample.

Do the Odds of Arrest Increase in Months When Adolescents are Suspended or Expelled From School or are Truant From School?

In the first set of models, we simultaneously tested how being suspended or expelled from school (or not) and being truant from school (or not) was associated with being arrested in a given month (see Table 2, Model 1). We found that in months when an adolescent was suspended or expelled from school, the adolescent was 2.10 times more likely to get arrested that month compared to months when the adolescent was not suspended or expelled from school. In months when a youth was truant from school, he or she was 2.42 times more likely to be arrested compared to months when the adolescent was not truant from school.

Is the Association Between School Suspension or Expulsion, Truancy, and Arrest Moderated by Individual Characteristics?

Next we tested if individual characteristics moderated the association between being suspended or expelled or being

Table 1 Descriptive information of school suspension, truancy, and arrest across time

	% of participants (n = 1,354) who reported behavior at least once across the entire study	% of months (n = 6,636) who had at least one participant endorse behavior across the entire study
Suspended or expelled from school	24 % (n = 328)	6 % (n = 426)
Truant	26 % (n = 353)	11 % (n = 727)
Arrested	47 % (n = 647)	3 % (n = 196)

Table 2 Associations between being suspended or expelled from school, truancy, and peer delinquency, parental monitoring, school orientation, and odds of being arrested in a month

	Model 1		Model 2 peer delinquency		Model 3 parental monitoring		Model 4 school commitment	
	B (SE)	Odds ratio 95 % CI	B (SE)	Odds ratio 95 % CI	B (SE)	Odds ratio 95 % CI	B (SE)	Odds ratio 95 % CI
Suspended or expelled or not	0.74 (0.26)**	2.10 (1.27, 3.46)	1.25 (0.27)**	3.51 (2.04, 6.03)	0.89 (0.41)*	2.44 (1.10, 5.40)	1.15 (0.32)**	3.16 (1.66, 6.02)
Truant or not	0.88 (0.26)**	2.42 (1.45, 4.04)	0.78 (0.29)**	2.20 (1.25, 3.89)	0.62 (0.50)	1.85 (0.69,4.93)	0.43 (.43)	1.55 (0.66, 3.63)
Peer delinquency	–		1.11 (0.23)**	3.02 (1.93, 4.72)	–		–	
Peer delinquency × suspended or expelled or not	–		−1.81 (0.46)**	0.16 (0.06, 0.40)	–		–	
Peer delinquency × truant or not	–		0.20 (0.38)	1.22 (0.59, 2.56)	–		–	
Parental monitoring	–		–		−0.45 (0.41)	0.64 (0.28, 1.44)	–	
Parental monitoring × suspended or expelled or not	–		–		0.07 (0.68)	1.08 (0.28, 4.13)	–	
Parental monitoring × truant or not	–		–		0.44 (0.97)	1.56 (0.23, 10.40)	–	
School orientation	–		–		–		−1.02 (0.39)**	0.36 (0.17, 0.79)
School orientation × suspended or expelled or not	–		–		–		0.19 (0.63)	1.21 (0.35, 4.17)
School orientation × truant or not	–		–		–		0.35 (0.82)	1.43 (0.28, 7.16)

Dashes indicate that parameter was not estimated

* $p < .05$. ** $p < .01$

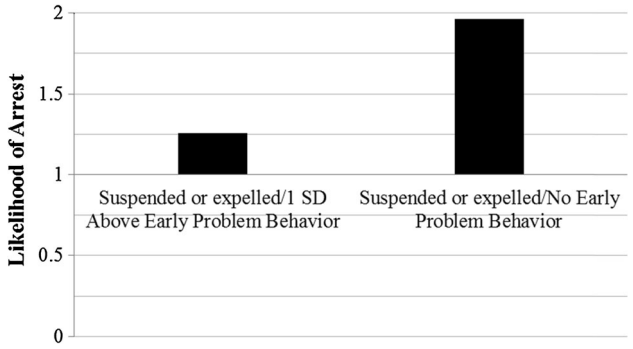

Fig. 1 Interaction between being suspended or expelled from school, early problem behavior, and arrest

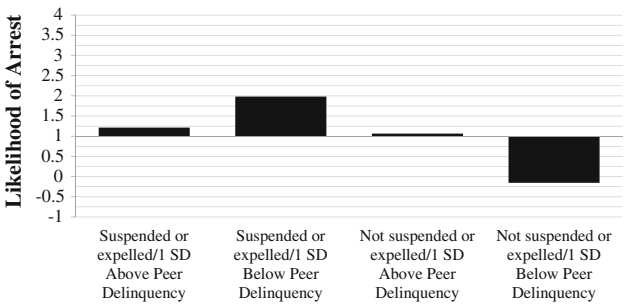

Fig. 2 Interaction between being suspended or expelled from school, peer delinquency, and arrest

truant from school in a month and the likelihood of arrest. We found no evidence that sex, race, and age moderated the association between the time-varying covariate of being suspended or expelled from school on arrest: sex (B = 1.46, se = 1.12, $p = 0.191$), race (B = −0.11, se = 0.33, $p = 0.75$), and age (B = −0.89, se = 0.29, $p = .76$) nor the association between being truant from school and arrest (B = .82, se = 1.27, $p = 0.51$), race (B = −0.10, se = 0.35, $p = 0.78$), and age (B = −0.46, se = 0.28, $p = .10$). The last moderator we tested was early problem behaviors. While early onset problem behaviors did not have an effect on the association between truancy and arrest (B = 0.03, se = 0.22, $p = 0.90$), early onset behavior problems did moderate the association between being suspended or expelled and arrest [B = −0.71, se = 0.23, $p < 0.01$; OR 0.49, 95 % CI (0.31, 0.77)]. Specifically, the strength of the relationship between being suspended or expelled and being arrested in the same month depended on the extent of youths' early problem behavior: among individuals who had been forcibly removed from school, adolescents *without* early problem behaviors were more likely to be arrested than adolescents with early problem behaviors (see Fig. 1).

Is the Association Between School Suspension or Expulsion, Truancy, and Arrest Moderated by Peer Delinquency, Parental Monitoring, and Commitment to School?

First, we estimated how fluctuations in the degree to which youth affiliated with delinquent peers moderated the associations between (a) school suspension and expulsion with arrest and (b) truancy with arrest (Table 2, Model 2). The main effect of peer delinquency indicated that when individuals had more delinquent peers, they were more likely to be arrested than in the months when their peer group consisted of fewer delinquent. However, the significant interaction indicated that in months when individuals had less delinquent peers *and* they were suspended or expelled from school, they were more likely to be arrested than in months when they were not suspended or expelled (Fig. 2). When peer delinquency was relatively high, it did not moderate the association between suspension or expulsion and arrest. There was no interaction between associating with delinquent peers and truancy on the likelihood of arrest in a given month.

In contrast to the model examining peer delinquency as a moderator, we found no evidence that parental monitoring moderated the association between school suspension or expulsion and arrest nor truancy and arrest (Table 2, Model 3). Indeed, while the main effect of being expelled or suspended from school remained significant after accounting for variation in parental monitoring, introducing the parental monitoring variable reduced the association between truancy and arrest to non-significant.

In the final model, we tested if school commitment moderated the association between school suspension or expulsion, truancy, and arrest. While we found no evidence of moderation, there was a significant main effect of school commitment on arrest. Specifically, when adolescents were more committed to school, they were less likely to be arrested in that month. As in the model examining parental monitoring, when the effect of school orientation was introduced, the association between truancy and arrest was reduced to non-significance.

Discussion

Zero tolerance policies in schools have led to an increased number of individuals being suspended or expelled, placing large numbers of teenagers in unsupervised activities and at risk for being channeled down the school-to-prison pipeline. Though time spent not in school has been previously linked to greater antisocial behavior, results of the present study suggest that school suspension or expulsion and truancy incur differential risk for arrest, depending on characteristics of the youth and whether he or she

associates with delinquent peers. Specifically, if a youth is suspended or expelled from school, his or her likelihood of being arrested that month is higher than the odds of being arrested in a month when he or she is not forcibly removed from school. Consistent with educational theory, this effect is exacerbated among the least "at risk" youth: youth without early onset problem behavior and in months when youth associate with relatively fewer delinquent peers. Taken together, it seems that disciplinary removal from school indeed increases an individual's risk for contact with the justice system. Similarly, in months when an individual chooses to be truant from school, the odds of being arrested are significantly higher than his odds of being arrested in months when he does not skip school. However, in contrast to the effects of school suspension or expulsion, the effect of truancy on arrest appears to be explained by individual differences in parental monitoring and commitment to school.

Furthermore, though considerable evidence suggests that males and ethnic minority youth may be disproportionately more likely to receive school punishment (Aud et al. 2011; Skiba et al. 2002), the non-significant race and ethnicity and sex interactions suggest that regardless of race or ethnicity or sex, school suspension or expulsion increases the likelihood of arrest. Thus, while school disciplinary action may be differentially administered to youth based on race or ethnicity and sex, once it is administered, the consequences of increased likelihood of arrest appear to be universal.

A compelling explanation for the key finding that out of school time—regardless of whether it is due to forced removal or youths' personal decision to skip school—is related to likelihood of arrest comes from the Routine Activity Theory. This theory suggests that unsupervised and unstructured activities increase the likelihood that adolescents will engage in problem behavior, which, in turn, increases their likelihood of police contact (Osgood et al. 1996). Parental guardianship during removal from school should be able to compensate for school guardianship. However, we do not find evidence that this is the case. One possible reason for this may be measurement error. Our assessment of parental monitoring is based on adolescent report at the interview and is not a life-calendar measure. As such, parental monitoring refers to the level of parental monitoring over the course of the recall period (6 months). It is likely that parental monitoring is more variable across months and that, in particular, it may vary on days when a child is suspended or expelled from school. Our parental monitoring measure is not likely to pick up this dynamic process. Indeed, variables such as whether one's teen is generally a "good kid" (i.e., without early problem behaviors, with few delinquent friends), may make parents more trusting and less changing of their monitoring on days when their child is suspended or expelled from school—hence the heightened association between school discipline and arrest for less risky youth. It is also possible that some parents' work obligations may prohibit them from actively monitoring their child on days when he or she is suspended or expelled. Future research on parental monitoring responses to suspension and expulsion are needed to address these possibilities.

While Routine Activity Theory would suggest that the association between school suspension or expulsion and arrest should be strongest when youth affiliate with delinquent peers, we find the opposite: during times when an adolescent affiliates with fewer delinquent peers, he or she is at greatest risk for arrest when suspended or expelled from school. This pattern of findings is more consistent with educational theory that posits that the deleterious effects of removal from school may be strongest among "less risky" youth, who tend to be more committed to school, have fewer behavioral problems, and affiliate with less delinquent peers. Indeed, the pattern of findings observed in the present study suggests that this is the case. While absence from school due to disciplinary action is a risk factor for arrest in general, this effect is strongest among less risky youth (those with fewer behavioral problems or at times when youth are affiliating with fewer delinquent peers). Because of this, it seems reasonable that a more individualized approach to school discipline, rather than a universal zero tolerance approach, may be more appropriate. Certainly, school discipline is necessary at times, but results of our study suggest that it should be carefully prescribed.

The present study had unique features that allowed us to improve on the limitations in the existing literature. One of the biggest strengths was the month-level data design, which allowed us to be more precise than previous research when evaluating the timeliness of suspension, expulsion, truancy and arrest. Furthermore, fixed effects regression models allowed us to evaluate within-person effects, without the noise of between-person differences, which ultimately means that our findings cannot be explained by individual factors or traits that may make one individual, compared to another individual, more likely to be suspended, for example, and also more likely to be arrested. Moreover, we simultaneously account for suspension or expulsion from school and truancy from school in the same model, allowing a test of being forcibly removed from school above and beyond the effects of voluntary absence from school and vice versa. This gives us greater confidence in the pattern of findings observed.

The specificity of our data notwithstanding, our study is limited in that we do not know if the students were indeed suspended, expelled or truant *during* the commission of the crime for which they were arrested. Indeed, as with all

cross-sectional analyses, we also do not know whether the suspension preceded the arrest or arrest preceded the suspension or expulsion. In results from lagged statistical analyses not present here, we found that there was no association between suspension or expulsion and arrest in the following month, but the models were generally unstable. This suggests that the theoretical effects of school removal on immediate arrest (and not general measures of delinquency) may be more acute. Indeed, this is consistent with the propositions of Routine Activities Theory where unstructured time should present an immediate and concurrent risk. Some student behaviors could have directly led to both suspension or expulsions and arrest. Furthermore, there is a chance that schools may implement "in-school suspensions," in addition to (or in lieu of) the more traditional out-of-school suspension. Being suspended within the confines of the school building would reduce the likelihood of being arrested in the community on that day, but we do not know how these sorts of suspensions may affect the likelihood of a youth being arrested on school grounds. This is an especially interesting consideration given the proliferation of police in public schools that have occurred as a result of zero tolerance policies. Nevertheless, it is most reasonable that the inclusion of in-school suspension, where an individual should not have increased likelihood of contact with the police, with out-of-school suspensions, where an individual could generate contact with the police, would only dampen our association between suspension or expulsion and contact with the police, thus creating a more conservative estimate of the reported association between suspension and arrest. Using a high-risk sample of juvenile offenders allowed us to evaluate a population most in need of assessment, as their likelihood of disciplinary action in school and subsequent contact with the justice system is greater than that of the general population. The drawback is that we do not know whether our findings would extend to non-delinquent samples. All data for this study is based on self-report. Although we have no reason to suspect that self-report data inherently biased the data in the pattern found here, future research would benefit from the use of official school data. Finally, we do not have descriptive information about the acts that resulted in suspension or expulsion for the students. Future research that can parse apart how different disciplinary responses to specific types of student offenses are linked with offending is needed.

Conclusions

Widespread implementation of zero tolerance policies has led to increased rates of school suspension and expulsion in school (Aud et al. 2011). This, in turn, has placed more youth at risk of contact with the juvenile justice system (Wald and Losen 2003). Given that contact with the justice system during adolescence is related to persistent offending, academic failure, including failing grades and high school dropout, reduced adult earnings, and adult unemployment (Bushway and Reuter 2002; Hirschfield 2004; Hjalmarsson 2008; Gatti et al. 2009; Sweeten 2006), it is concerning that many youth are being removed from school without attention to individual circumstances. Developmentally, evidence suggests that attending school during adolescence is a potent protective factor against antisocial behavior (Monahan et al. 2013), and, as such, default policies that remove students from school without attending to details of the circumstances or characteristics of the individual are concerning. As involuntary removal from school is related to the likelihood of arrest, it seems logical that schools and school districts would benefit from the availability of more options to address students who violate school rules. Moreover, when school suspension or expulsion is necessarily administered, it would be fruitful for research to explore what factors ameliorate the risk of arrest, with the ultimate goal of creating school-based policies that enhance school engagement and diminish the likelihood of involvement in the juvenile justice system. More individually tailored approaches to school discipline, rather than the one size fits all approach of zero tolerance policies, would preserve the safety of schools while ensuring that we are not unnecessarily sending youth down the school-to-prison pipeline.

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Author contributions KM conceived of the study, performed the statistical analyses, and coordinated and drafted the manuscript. SV assisted in the conceptual framework and statistical analyses and drafting of the manuscript. JB participated in the conceptual framework of the study, reviewed statistical analyses, and assisted in the drafting of the manuscript. EC was a Principal Investigator on the project and participated in the study design and data collection, provided conceptual insight on the study, and assisted in drafting of the manuscript. All authors have read and approved the final manuscript.

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