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Criminal Behavior and School Discipline in Juvenile Justice-Involved Youth with Autism

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Abstract

The objective was to delineate the prevalence of criminal behavior and school discipline in juvenile justice-involved youth (JJY) with autism. A sample of 143 JJY with autism was matched to a comparison group of JJY without a special education classification ($N = 286$). Results showed that JJY with autism committed significantly fewer property crimes. There were no significant differences between JJY with autism and JJY without special educational needs (SEN) with regard to individual school discipline types. Finally, regardless of special education classification, JJY who had a history of fighting in school were more likely to recidivate. Our results suggest that JJY with autism are not more likely to commit crimes compared to JJY without SEN.

Keywords

School; Crime; Discipline; Autism; Recidivism

In recent years, media coverage of criminal behavior has sometimes insinuated that the perpetrator was diagnosed with autism¹. Such media coverage is problematic in that claims linking autism to criminal behavior lack credible evidence and may result in unwarranted negative reactions from the public including stigmatizations towards individuals with the

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¹For the purposes of this paper the term autism will include autism spectrum disorder (ASD), Asperger syndrome (AS), Autistic Disorder (AD), Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS), and the Individuals with Disabilities Education Act (IDEA 2004) classification of Autism (AU).

diagnosis (Brewer et al. 2017). Additionally, these high-profile cases that are presented in the media are extreme cases with very low frequencies of occurrence in the general population, and there is little evidence of a formal autism diagnosis of the perpetrator (Brewer et al. 2017; Maras et al. 2015). In contrast to these media portrayals, extensive reviews of the literature examining autism and criminal behavior have not found a direct link between autism and violence, nor between autism and violent criminal activity (Björkly 2009; Lerner et al. 2012). Therefore, claims linking autism to criminal behavior should be interpreted with much caution.

As media attention on misconstrued associations between crime and autism has increased in the last decade, researchers have turned their attention to understanding criminal behavior among individuals with autism. Currently, however, existing research regarding the association between autism and criminal behavior lacks methodological rigor. Recent editorials (e.g., King and Murphy 2014; Maras et al. 2015) have identified limitations of the majority of the relevant publications such as small samples, lack of comparison groups, and inadequate diagnostic approaches for identifying autism in participants. Further, most of the existing studies focus on adult populations, leaving youth populations mostly unaddressed. These limitations preclude reliable conclusions about the relationship between autism and criminal behaviors, especially among adolescents. This is a critical area of research, as the ability to tailor services for juvenile justice-involved youth (JJY) with special needs (disabilities) in general, and autism in particular, requires more information drawn from systematic study about the prevalence and types of offenses as well as co-occurring factors that may be associated with criminal behavior among JJY with autism (King and Murphy 2014).

Youth with Autism in the Juvenile Justice System (JJS)

When considering the prevalence of youth with autism who come into contact with the JJS, studies have yielded inconsistent rates. A study conducted in Japan identified autism prevalence rates ranging from 1.3 to 6.7% across three family courts, but 18.2% in a court dealing with crimes such as sex-related offenses or arson (Kumagami and Matsuura 2009). Another study analyzing surveillance epidemiological data from South Carolina demonstrated that 5% of youth with autism in the study area had been charged with a crime (Cheely et al. 2012). Similarly, a recent study analyzing secondary data from the National Longitudinal Transition Study-2 showed that by the age of 21–22, 4.7% of youth with autism had been arrested (Rava et al. 2017). Taken together, these studies show that the prevalence rate of JJY with autism in the JJS may be between 1.3 and 18.2%, the rate of arrest is about 4.7%, and those with autism who have ever been charged with a crime is about 5%. These statistics are alarming since the prevalence rate of autism spectrum disorder (ASD) in the general population is 1.7% (Centers for Disease Control and Prevention 2018).

Some researchers have attempted to delineate the types of offenses most often committed by individuals with autism. However, these studies also have generated inconsistent findings. For instance, one study showed that youth with autism had higher rates of crimes against persons relative to a comparison group of youth without the diagnosis (Cheely et al. 2012). Another study demonstrated that youth with autism were more likely to commit sex-related

crimes compared to the general population referred to courts (Kumagami and Matsuura 2009). It has also been estimated that youth with autism commit property crimes at lower rates compared to youth without autism (Cheely et al. 2012). In contrast, adults with autism were shown to be more likely to commit property crimes such as arson compared to adults without autism (Mouridsen et al. 2008). Another study showed that adults with autism reported taking illicit drugs at lower rates compared to adults without autism (Woodbury-Smith et al. 2006). To our knowledge, only two studies (i.e., Cheely et al. 2012; Kumagami and Matsuura 2009) have investigated types of offenses committed by JJY with autism in comparison to JJY without this diagnosis. Due to the dearth of research focusing on youth with autism within the JJS, it is important to better understand offense types common among this special population.

Some studies suggest that when individuals with autism do commit criminal acts it might be informative to attempt to understand the offending behavior in the context of the disorder (Allely et al. 2017; Barry-Walsh and Mullen 2004; Bjørkly 2009; Schwartz-Watts 2005). Individuals with autism often struggle with social interactions, demonstrate atypical responses to sensory stimuli, and exhibit restrictive interests and repetitive behaviors (American Psychiatric Association 2013). Some researchers suggest that these characteristics—which are core symptoms of autism spectrum disorder—may either not be explicitly recognized by others or misunderstood, resulting in exchanges that are sometimes (and often unknowingly) illegal (Barry-Walsh and Mullen 2004; Bjørkly 2009; Michna and Trestman 2016; Schwartz-Watts 2005). Support for such a claim is apparent in one study that showed that the majority of individuals with a mild form of autism committed crimes due to environmental factors triggering their sensory/tactile hypersensitivity, or there was a misinterpretation of social cues from their victims (Bjørkly 2009). With this in mind, it is plausible that individuals with autism would not be involved with the criminal or JJS without other factors in the environment (e.g. interpersonal triggers) contributing to the offending behaviors.

Potential Links between School Discipline Among Youth with Autism and Juvenile Justice Involvement

In addition to inconsistent findings about the prevalence of autism in the JJS, little is known about factors that might contribute to juvenile justice involvement of youth with autism. To address this gap, we focused on how the presence or absence of school discipline incidents may be related to JJS involvement, as youth with autism are more likely than their non-disabled peers to be charged for school-based incidents such as disturbing the school, carrying a weapon, assault and battery, or threatening a school employee (Cheely et al. 2012). Though research has begun to address the relationship between school discipline incidents and arrests of students with autism (Cheely et al. 2012), to our knowledge, other school-based incidents such as suspensions and expulsions have not been explored. Suspensions and expulsions are important to examine since students in the general population who are suspended or expelled for discretionary violations are almost three times more likely to come into contact with the JJS within one year from the expulsion or suspension (Fabelo et al. 2011). Moreover, relationships between school-based discipline

incidents and JJS involvement are especially important to study among students with disabilities (SWD; i.e. students who have physical, behavioral, developmental, emotional, and/or cognitive impairments affecting educational performance) since SWD receive more suspensions and expulsions when compared to their non-disabled peers (Miller and Meyers 2015; U.S. Department of Education, 2014). Specifically, SWD have been reported to be two times more likely to receive one or more expulsions, two times more likely to receive one or more in-school suspensions (ISS), two times more likely to receive an out-of-school suspension (OSS), and are forty-five times more likely to receive more than one OSS compared to their non-disabled peers (Miller and Meyers 2015; U.S. Department of Education, 2014).

When analyzing reasons for expulsion, one study found that SWD with emotional disturbance (ED), specific learning disability, or autism violated similar types of school policies as their nondisabled peers (Miller and Meyers 2015). These school policies included: drug violations, aggravated battery, intimidation, threat of violence or bullying, and weapon violations. Differences among the groups were only apparent with regard to gang activity and battery that resulted in physical injury. SWD were more frequently involved in gang activity whereas their nondisabled peers were more frequently involved in battery that resulted in physical injury (Miller and Meyers 2015).

However, empirical evidence regarding potential links between school discipline and criminal behavior among youth with autism specifically is sparse, particularly because most available research and reports from education agencies do not typically disaggregate data for youth who have autism from the larger group of SWD. Fortunately, one recent study attempted to look at suspension rates among specific disabilities categories (Miller and Meyers 2015). Interestingly, this study found that students with autism were least likely to receive ISS or OSS when compared to students with ED or a learning disability. Unfortunately, this study failed to compare rates of ISS or OSS between students with autism and students without disabilities. Therefore, it remains unknown as to whether students with autism experience higher rates of suspensions when compared to students without disabilities. However, given the research on SWD, one could hypothesize that students with autism may be subject to higher suspension rates compared to students without disabilities.

Recently, there has been increased awareness of students with autism and their heightened risk of being suspended from the school system. For example, teachers reported that students with autism were 2.5 times more likely to be suspended than their non-disabled peers (Ambler et al. 2015). Thus, through school suspensions, expulsions, and referrals to law enforcement, youth with autism may be pushed out of the education system, which may increase their chances of becoming involved in the JJS. One factor that may be salient to understanding reasons why youth with autism may not follow rules and misbehave in school are pathological demand avoidance (PDA) characteristics that may be present among a small group of individuals with autism. An individual with autism who exhibits PDA characteristics may show resistance and avoidance toward ordinary demands of everyday life due to feelings of anxiety (O’Nions et al. 2017). Therefore, individuals with autism with

comorbid PDA characteristics may have difficulty complying with teacher directions, and, in turn, may commit rule infractions likely resulting in rejection from the school system.

The Present Study

Given the gaps in the current literature regarding the prevalence and nature of criminal activity among JJY with autism, as well as our limited knowledge about the links between school discipline incidents and criminal behavior in JJY with autism, the purpose of the present study was to delineate the prevalence of criminal behavior and school discipline incidents in this population. Four specific aims were addressed. The first aim was to compare the number of particular offense types (crimes against persons, status offenses, property offenses, drug law violations, and public order offenses) committed by JJY with autism to those committed by JJY without special educational needs (SEN). We hypothesized that JJY with autism would commit significantly more crimes against persons, whereas JJY without SEN would commit significantly more property offenses (Cheely et al. 2012). To analyze whether JJY with autism are similar or distinct from JJY with other SEN, we added two more comparison groups to the analysis: (1) JJY with learning disabilities (LD); and (2) JJY with SEN (i.e., not autism or LD). Given the extensive literature base that shows a strong correlation between LD and delinquency (e.g., Grigorenko 2006), we added the comparison of JJY with LD in order to extract a specific group of youth with disabilities that has been shown to be vastly different from other youth with disabilities who come into contact with the system. Additionally, given that social deficits are not inherent among youth with LD, we anticipated that JJY with autism would commit more crimes against person compared to JJY with LD.

The second aim was to examine and compare types of school discipline incidents (i.e. violent incidents against persons, sex related incidents, threats, theft, confrontation, fighting, property, incidents involving weapons, drug offenses, and school policy violations) and outcomes of school discipline infractions (i.e. OSS, ISS, and expulsions) that were committed by JJY with autism to a comparison groups of JJY without SEN, JJY with LD, and JJY with SEN (Miller and Meyers 2015). We hypothesized that JJY with autism, JJY without SEN, JJY with LD, and JJY with SEN would be disciplined for similar types of incidents. All groups would most frequently be disciplined for the following school violations: fighting, drug offenses, threatening behavior, and incidents involving weapons (Miller and Meyers 2015). We also hypothesized that JJY with LD and JJY with SEN would have significantly more OSS and ISS compared to JJY with autism (Miller and Meyers 2015). However, JJY with autism would have significantly more ISS, OSS, and expulsions compared to JJY without SEN (Ambler et al. 2015; Miller and Meyers 2015; U.S. Department of Education 2014).

The third aim (see bold lines in Fig. 1) was to compare rates of recidivism between JJY with autism, JJY without SEN, JJY with LD, and JJY with SEN controlling for prior school discipline incidents. We hypothesized that JJY with autism would recidivate at higher rates when compared to JJY without SEN (Barrett et al. 2010; Zhang et al. 2011). The fourth aim (see dashed lines in Fig. 1) was to analyze which school discipline incidents were associated with higher odds of recidivism in JJY with autism and to compare these odds to JJY without

SEN, JJY with LD, and JJY with SEN. We hypothesized that JJY with autism would show weaker associations between school suspensions (i.e., OSS and ISS) and recidivism compared to JJY with LD and JJY with SEN (i.e., moderation effects). However, JJY with autism would show stronger associations between school suspensions and recidivism compared to JJY without SEN. This hypothesis is based on previous research, which shows that SWD are more likely to be suspended when compared to their nondisabled peers (Miller and Meyers 2015; U.S. Department of Education 2014). Therefore, it is likely that JJY with autism would have a history of more suspensions, which significantly increases their likelihood of recidivism (Baglivio 2009).

Methods

Participants

The participants for the present study were selected from a longitudinal statewide dataset of every criminal case record of all JJY ($N = 58,678$) who committed at least one offense between January 1, 2006 and December 31, 2012 in the Connecticut (CT) JJS. Follow-up data on these JJY are available through June 2014. The CT judicial branch, court support services division (CSSD) provided data for these juveniles. The Connecticut State Department of Education (CSDE) then provided the educational records for these youths, including the primary educational classification. To examine continuation of offending into adulthood, the scope of the data included: (a) all juvenile courts in CT, and (b) the adult court and probation system in CT. CSSD periodically matches data of juveniles who have been involved in their system with the records of the CT State Police. These data were used to determine adult offending.

Among the 58,678 JJY, 231 (0.4%) of JJY were identified as having a primary educational classification of autism. However, since we did not have access to secondary education classifications, it is possible that some JJY with autism were excluded from this study. As a result, we were only able to identify those JJY who carried a primary education classification of autism, which may explain the reason for the low prevalence rate of JJY with autism in this study. For the present study, we focused on JJY from one school year (between August 30, 2010 and June 27, 2011) for the purposes of answering the primary research questions. The 2010–2011 school year was chosen for a number of reasons. For one, this school year provided us with the largest sample of JJY with autism. Data on these participants before this school year were also sufficient (i.e., missing values were extremely low; see Tables 1, 2) to control for prior offense and school discipline history (school years 2006–2010). Finally, these participants had follow-up data that allowed us to examine recidivism over a time period (i.e., 3 years including 2010–2013) that has been readily used in previous research (Barrett et al. 2010).

There were 143 JJY whose educational records indicated that they carried an Autism (AU) primary educational classification, per the Individuals with Disabilities Education Act (IDEA 2004) during the 2010–2011 school year. These 143 JJY are the subsample of JJY with which the current study was completed. Within this subsample, the majority of these JJY with autism were male (86%), and their ages (at the beginning of the 2010–2011 year) ranged from 6 to 20 years ($M = 14.25$ years, $SD = 2.60$). About 76.9% of JJY with autism

among this subsample were White, 11.9% were Black, and 11.2% were Hispanic. Age of first offense ranged from 6 to 16 years ($M = 14.03$, $SD = 2.05$). About 53.1% were eligible for free or reduced-price lunch (FRL) at their school, and 53.8% had a prior offense history (school years 2006–2010).

Autism Classification

For the purposes of the present study, autism was defined using the IDEA. The IDEA is a federal law that ensures services for students (ages 3–21) with disabilities so they have access to free and appropriate public education. Autism (AU) is one of the 13 educational classifications under the IDEA (2004), and the law defines AU as a developmental disability in which an individual shows deficits in social interactions and verbal and nonverbal communication, as well as restricted and repetitive behaviors, inflexibility, and atypical reactions to sensory stimuli (IDEA 2004). Such deficits must significantly affect the youth's educational performance in order to receive an AU classification under the IDEA.

According to Connecticut State Department of Education (2011), our participants underwent a school-based evaluation by a certified professional (e.g., school psychologist) with expertise in the evaluation of children with behavioral and emotional disorders, including autism. State requirements for school-based autism evaluations include use of autism-specific instruments and assessment in three domains: social interactions, communication, and atypical behaviors (Connecticut State Department of Education 2011). The CSDE provides information about each domain to guide evaluation foci. Social interactions include an evaluation of nonverbal communication (e.g., eye gaze), joint attention, social/emotional reciprocity, peer relations, symbolic play/imagination, and adjusting to the social environment. Communication includes an evaluation of receptive language (e.g., will not respond to verbal cues), expressive language (e.g., no babbling), and pragmatic skills (e.g., difficulty with taking the perspective of others). Finally, atypical behaviors include an evaluation of restricted or repetitive interests, stereotyped or repetitive movements, and adherence to routines. These domains are consistent with the core symptom areas of autism spectrum disorder (ASD) as described by the *Diagnostic and Statistical Manual of Mental Disorders—Fifth Edition* (DSM-5, 2013), which are the criteria guiding clinical (i.e., non school-based) diagnosis of the disorder.

Comparison Group

Propensity score matching was conducted to obtain three comparison groups (i.e., JJY without SEN, JJY with LD, and JJY with SEN) while reducing possible selection bias (Randolph et al. 2014). SEN was defined as receiving any IDEA services other than autism or LD based a student's special education classification (i.e., other health impairment (OHI), ED, speech or language impairment, visual impairment, deafness, hearing impairment, deaf-blindness, orthopedic impairment, intellectual disability, traumatic brain injury, or multiple disability). This analysis matched the 2010–2011 cohort of JJY with autism to the comparison groups in this school year based on age, age of first offense, gender, race/ethnicity, FRL, and offense history. Offense history was coded 1 if the JJY had a prior offense between school years 2006–2010, and 0 otherwise. These characteristics were

chosen because they have been previously shown to be related to an individual's risk of offending (Cottle et al. 2001).

Using the *MatchIt* package in *R version 1.0.143*, we performed exact matching (for gender, race/ethnicity, FRL, and offense history) and nearest neighbor 1–1 matching (age and age of first offense). This technique was chosen because it resulted in the lowest mean difference, similar variable distributions, and no statistically significant differences between groups while also maintaining an appropriate sample size, that is, only one JJY with autism was excluded from the study due to missing data on key matching variables. Youth with LD were excluded from the comparison group of JJY with SEN. The matched group of JJY with SEN included JJY with OHI (46.2%), ED (36.4%), speech/language impairment (11.2%), other (3.5%), and intellectual disability (2.8%). All groups combined comprised 572 JJY.

Measures

Offense Types

In order to group offense types, we used the taxonomy from the office for juvenile justice and delinquency prevention (OJJDP; Puzzanchera et al. 2012), which we have used in a previous study (Hein et al. 2017). No specific hierarchy of offenses was used in the present study meaning we did not analyze seriousness of offense or only the most serious offenses. Instead, we counted all offenses committed by youths according to the OJJDP taxonomy. Based on this taxonomy, offenses were grouped into five types: (1) crimes against persons (e.g., criminal homicide, robbery, assault, violent sexual offenses, and other crimes against persons); (2) property offenses (e.g., burglary, criminal trespassing, arson, and property damage); (3) status offenses (i.e., law violations due to the individual being a minor such as escape from custody, runaway, school absence, truancy, and defiant of school rules); (4) drug law violations (e.g., prescription forging, delivery of drugs, possession with intent, and sale of controlled substances); and (5) public order offenses (e.g., possession of alcohol by a minor, carrying a dangerous weapon, carrying a firearm, and stalking). We counted the overall number of offenses for these five offense types based on two different time frames (1) for school years 2006–2010 to compare prior offenses between JJY with autism, JJY without SEN, JJY with LD, and JJY with SEN; and (2) for school year 2010–2011 to compare offenses between JJY with autism, JJY without SEN, JJY with LD, and JJY with SEN. We then recoded the overall counts into 0 for no offenses and 1 for one or more offenses.

Recidivism

Recidivism was defined as the commission of one or more offenses regardless of the offense type within three school years (2010–2013) for individuals who had one offense between 2006 and 2010. A total of 308 JJYs (i.e., 77 JJY with autism, 77 without SEN, 77 with LD, and 77 with SEN) had one offense between 2006 and 2010 and were therefore included in the analysis of recidivism rates (aim three). The reason 46.2% did not have an offense history between 2006 and 2010 is due to initial data request requirements that participants have at least one offense between 2006 and 2012. Therefore, 46.2% of the sample had their first offense after the 2010–2011 school year.

School Discipline

School discipline incidents were grouped into 10 categories including: violent (i.e. crimes against persons), sexually related behavior, personally threatening behavior, theft/theft related behaviors, physical/verbal confrontation/conduct misbecoming, fighting/battery, property damage, offenses involving weapons, drugs/alcohol/tobacco offenses, and school policy violations. It is important to note that the IDEA (2004) protects SWD who receive special education supports and services under this law against arbitrary or prolonged removal from their individualized education program-designed placement (IEP). Additionally, when behavioral problems occur within a classroom, teachers are required to follow guidelines set forth in the student's IEP rather than using standard disciplinary measures (Loefgren 2011). There are also protections for SWD when it is determined through a manifestation determination hearing that the rule-breaking behavior stemmed from the disability that makes them eligible for special education supports and services (Loefgren 2011). However, if the discipline incident involves violence that inflicts serious bodily harm on another person, carrying a weapon, or if the student uses, possesses, or distributes illegal drugs, the student can be removed from their regular placement for up to 45 school days and longer when the infraction is determined not to be relevant to their IDEA-disabling condition.

Additionally, we examined OSS, ISS, and expulsions as defined by Connecticut State Department of Education (2016). OSS was defined as the exclusion of the student from his or her regular classroom and forbidding the student to be on school grounds for no more than ten consecutive school days. ISS was defined as the exclusion of the student from regular classroom activity for no more than ten consecutive school days and assigning the student to an in-school suspension program. Finally, expulsion was defined as the exclusion of the student from his or her regular classroom setting for more than ten consecutive school days. All school discipline incidents were counted for the school years 2006–2010 in order to analyze the associations between school discipline and recidivism.

Data Analysis

For the first aim, offenses of each of the five types were counted, and five cross-tables were analyzed to compare offenses between JJY with autism, JJY without SEN, JJY with LD, and JJY with SEN. We conducted two analyses for offense types examining both the offense counts in the 2010–2011 school year and counts for JJY's offense history (2006–2010). For the second aim, types of school discipline incidents and school discipline outcomes were counted and compared for the aforementioned thirteen discrete categories (i.e. violent incidents against persons, sex related incidents, threats, theft, confrontation, fighting, property, incidents involving weapons, drug incidents, policy, OSS, ISS, and expulsions). Thirteen cross-tables were analyzed to compare the number of school discipline incidents between JJY with autism, JJY without SEN, JJY with LD, and JJY with SEN. We also conducted two analyses for school discipline incidents examining both the school incident counts in the 2010–2011 school year and counts for JJY's school discipline history (2006–2010). Chi-square tests of independence were used in order to examine aims one and two. Post hoc analysis of adjusted residuals was conducted if Chi-square tests results were statistically significant. All *p*-values were adjusted for multiple comparisons using false

discovery rate (FDR; Benjamini and Hochberg 1995). We also included estimates of effect size, Cramer's V , for the Chi-square analyses. Estimated effect sizes of .10, .30, and .50 indicate small, medium, and large magnitudes of effect, respectively (Cohen 1992).

For aims three and four, binary logistic regressions were performed to analyze the associations between an autism classification, school discipline incidents, and the likelihood that JJY would recidivate between 2010 and 2013. For this analysis, recidivism was coded as 0 if an individual did not reoffend within three years after the 2009–2010 school year. A score of 1 was assigned if an individual committed one or more offenses within three years after the 2009–2010 school year. Modeling proceeded in three stages. In step 1, special education classification (i.e., three dummy variables where autism was coded as 0, and no SEN, LD, and SEN were coded as 1, respectively) was entered into the model. In step 2, school discipline incidents were added (OSS, ISS, prior threatening behavior in school, prior confrontations at school, prior fighting behavior at school, and prior policy violations at school). Counts were conducted for prior school discipline incidents based on school years 2006–2010. Finally, in step 3, interaction terms were entered to determine if an autism classification moderated that relation between prior school suspensions (OSS and ISS) and recidivism.

Results

Differences in Offense Types

With regard to types of crimes, Table 1 contains the number and overall percentage of JJY in each of the four groups who committed at least one offense in the 2010–2011 school year and prior to the 2010–2011 school year (i.e., from 2006 to the 2009–2010 school year). There were significant differences between the four groups with regard to property offenses during the 2010–2011 school year ($\chi^2(3) = 14.88, p = .02, V = .16$). JJY with autism had the lowest rates of property offenses (0.7%), followed by those with SEN (4.9%), no SEN (9.8%), and LD (10.5%). Results also revealed significant differences between groups with regard to property offenses between 2006 and 2010 ($\chi^2(3) = 13.85, p = .02, V = .16$). JJY with autism had the lowest rates of property offenses (8.4%), followed by LD (19.6%), with SEN (22.4%), and no SEN (23.8%).

Differences in School Discipline Incidents

Table 2 contains the number and overall percentage of JJY in each of the four groups who received at least one school discipline referral in the 2010–2011 school year and prior to the 2010–2011 school year (i.e., 2006–2010). Results showed significant differences between groups with respect to school policy violations ($\chi^2(3) = 22.79, p < .001, V = .20$), OSS ($\chi^2(3) = 24.77, p < .001, V = .21$), and ISS ($\chi^2(3) = 14.07, p = .02, V = .16$) in the 2010–2011 school year. JJY with autism (11.9%) had the lowest rates of policy violations in school compared to JJY without SEN (23.1%), JJY with SEN (32.2%), and JJY with LD (33.6%). JJY with autism also had the lowest rates of OSS (9.1%), followed by JJY without SEN (17.5%), JJY with LD (27.3%), and JJY with SEN (30.8%). Finally, JJY with autism (15.4%) had the lowest rates of ISS compared to JJY without SEN (24.5%), JJY with SEN (30.1%), and JJY with LD (33.6%).

When examining school years 2006–2010, results revealed significant differences between groups with respect to confrontation ($\chi^2(3) = 12.90, p = .03, V = .15$), policy violations ($\chi^2(3) = 11.89, p = .03, V = .14$), and ISS ($\chi^2(3) = 12.54, p = .03, V = .15$). JJY without SEN (18.2%) had the lowest rates of school discipline violations involving confrontation compared to JJY with autism (20.3%), JJY with LD (25.2%), and JJY with SEN (35.0%). JJY with autism (38.5%) had the lowest rates of policy violations, followed by JJY with LD (49.7%), JJY without SEN (50.3%), and JJY with SEN (58.7%). Finally, JJY with autism (34.3%) had the lowest rates of ISS compared to JJY with LD (44.1%), JJY without SEN (51.0%), and JJY with SEN (53.1%).

Recidivism Analysis

Frequency analysis revealed that fewer JJY with autism (29.9%) recidivated between 2010 and 2013 compared to JJY without SEN (32.5%), JJY with LD (40.3%), and JJY with SEN (46.8%) although these differences were not statistically significant ($\chi^2(3) = 5.81, p = .12, V = .14$). Next, logistic regression models were conducted to link recidivism to school discipline incidents. Table 3 contains the results of the logistic regression models.

Model 1, which included special education classification only, indicated that recidivism rates only differed significantly between JJY with autism and JJY with SEN when controlling for all other special education categories (i.e., without SEN and with LD). Specifically, JJY with SEN were significantly more likely to recidivate compared to JJY with autism (odds ratio, OR = 2.06). Variables for the second model were selected based on previous literature and high frequencies (21.2–50.3%) in prior (i.e., school years 2006–2010) school discipline incidents. Other school discipline incidents were not selected for the model due to extremely low frequencies (2.4–7.0%).

The addition of these prior school discipline incidents (2006–2010) in model 2 indicated that fighting behavior in school increased the risk for recidivism. JJY who had a history of fighting behavior in school prior to 2010–2011 were 2.06 times more likely to recidivate compared to JJY who did not have a history of fighting behavior in school. These results suggest that a history of fighting behavior in school is associated with recidivism regardless of special education classification.

The logistic regression model with all variables and interaction terms included (Model 3 in Table 3) was not statistically significant indicating that the predictors as a set did not significantly predict odds of recidivism. Model 3 added the interaction term between autism classification and school suspensions (OSS and ISS). Autism classification did not moderate the relationship between school suspensions and recidivism. The variables in model 3 accounted for 10.1% (Nagelkerke $R^2 = .101$) of the variance and correctly classified 66.2% of the individuals. The addition of the six interaction terms accounted for 2.1% of the variance (i.e., there was not a statistically significant increase compared to model 2).

Discussion

The present study examined relationships between criminal behavior, school discipline, and recidivism among JJY with autism. These youths were matched to control groups of JJY

without SEN, JJY with LD, and JJY with SEN. With regard to the first aim, the finding that JJY with autism were least likely to commit property offenses compared to the other three groups is consistent with previous literature (Cheely et al. 2012; Kumagami and Matsuura 2009). One possible explanation is that JJY with autism may be less likely to commit property offenses due to impairments in executive functioning, which may impact their ability to plan, organize, and carry out crimes such as vandalism, robbery, and burglary furtively (Cheely et al. 2012; O'Hearn et al. 2008). Therefore, JJY with autism may be less likely to engage in crimes that involve pre-meditation (Cheely et al. 2012) and instead are more likely to engage in illegal behaviors that occur due to spontaneous interactions. Inconsistent with extant literature (Cheely et al. 2012), no group differences were found with regard to crimes against persons.

With regard to school discipline incidents (aim two), JJY with autism, JJY without SEN, JJY with LD, and JJY with SEN were most frequently disciplined for similar school incidents (i.e., threats, confrontation, fighting, and school policy violations). This finding provides partial support for our first hypothesis in aim two. Overall, there were low frequencies of violent incidents, sex-related incidents, and drug- and weapon-related incidents in all groups. Consistent with our second hypothesis in aim two, JJY with LD and JJY with SEN received more OSS and ISS compared to JJY with autism. However, inconsistent with our third hypothesis in aim two, JJY with autism received less OSS and ISS compared to JJY without SEN.

We found that JJY without SEN had significantly more school violations compared to JJY with autism during the 2010–2011 school year with the exception of incidents involving violence at school. It is important to note that because of the protections of the IDEA (2004) for SWD, including for those with autism, schools would have acted differently (e.g., possibly more cautiously) in response to disciplinary infractions because of federal procedural safeguards. Additionally, when teachers know a student has autism, they may be more likely to attribute youth misbehavior to symptoms of the diagnosis, over which the student has no control, and therefore be less inclined to punish them (Ling et al. 2010). Therefore, it is possible that disciplinary responses were overall lower for JJY with autism due to IDEA safeguards or to differential teacher responses.

However, it appears that IDEA safeguards and differential teacher responses may not have the same effect for JJY with other IDEA-eligible disability classifications since JJY with SEN and JJY with LD received more OSS and ISS compared to JJY without SEN during the 2010–2011 school year. This finding could be explained by a number of factors. However, one factor salient in current literature is the effects of negative implicit attitudes toward individuals with certain disabilities (Wilson and Scior 2014). Specifically, one study found students with emotional/behavioral disorders and attention deficit/hyperactivity disorder (ADHD) to experience a higher likelihood of disciplinary exclusion compared to students with LD (Achilles et al. 2007). It is possible that these findings may have applicability to our own results, as JJY with SEN (which included a high percentage of JJY with IDEA (2004) classifications of “Other Health Impairment” [OHI] such as ADHD, and Emotional Disturbance [ED]) received more ISS during 2006–2010 and more OSS during 2010–2011 than JJY with LD. One way to investigate this possibility further is for future researchers to

examine school administrators' and teachers' implicit attitudes toward students depending on their specific disability label, as this may shed light on effects of implicit negative attitudes on school exclusion.

Additionally, we found that fewer JJY with autism (29.9%) recidivated between 2010 and 2013 compared to JJY without SEN (32.5%), JJY with LD (40.3%), and JJY with SEN (46.8%) although these differences were not statistically significant (aim three). Therefore, our third hypothesis was not supported. However, we also found that after controlling for all other special education categories (i.e., without SEN and with LD), JJY with SEN were two times more likely to recidivate compared to JJY with autism. Studies examining offending behavior in SWD as an entire group have found that SWD experience less time between referrals and recidivate at higher rates compared to students without disabilities (Barrett et al. 2010; Zhang et al. 2011). Therefore, our results suggest that JJY with autism should be studied as a separate group from youth with other disabilities, and claims linking autism to criminality should be interpreted with caution, especially with regard to reoffending.

Finally, we found that JJY, regardless of special education classification, who engaged in fighting behavior in school were 2.06 times more likely to recidivate (aim four). This finding is consistent with literature on the links between externalizing behavior in youth with autism and involvement with the JJS (Rava et al. 2017). However, it should be noted that fighting behavior in our study was similarly linked to recidivism among all groups. Particularly for youth with autism, aggression may be a result of misreading another peer's intentions (Michna and Trestman 2016). We also found that special education classification did not affect the relationship between prior school suspensions (i.e., OSS and ISS) and recidivism. This finding is inconsistent with our hypothesis and could suggest that a history of suspensions does not increase the risk for reoffending among JJY with autism.

Limitations

Despite its strengths, there were several limitations to the current study. The study did not include a community sample of youth who were not involved in the JJS. Therefore, our findings can only be attributed to youth already involved with the JJS. Moreover, this study cannot be generalized to racially and ethnically diverse populations because the majority of participants in the study were White males. Despite this limitation, the high frequency of males in the sample is to be expected since males are four times more likely to be diagnosed with autism than females and more likely to come into contact with the JJS (APA 2013; Kempf-Leonard 2012). However, more research is needed to examine criminal behavior and school discipline in diverse populations and female youth with autism who have come into contact with the JJS.

Additionally, the available data was dependent upon many different entities' (e.g., police, education department) discretion. Therefore, some variables were not able to be examined (e.g. adverse childhood experiences) because these variables were not captured in the data. Furthermore, there are known limitations to using official crime data sources compared to self-report data because official crime data may underestimate the true volume of criminal behavior due to police discretion (Kirk 2006). Moreover, some crimes identified by police

may not lead to an arrest or some arrests made by police officers are subject to court diversion effects and, therefore, are not counted in official statistics (Kirk 2006). Court diversion effects may significantly affect persons with autism since one study found that youth with AU were more likely to be diverted and less likely to be prosecuted compared to youth without autism (Cheely et al. 2012).

We were also unable to address comorbid disorders and disabilities, which implies that important information about students' additional school-based difficulties are unknown. Moreover, it is important to note that this study also excludes some individuals with autism who may have a secondary classification of AU. Many individuals with autism have comorbid disabilities that affect their behavior such as ADHD, oppositional defiant disorder, and intellectual disability (Leyfer et al. 2006; Matson and Shoemaker 2011; Simonoff et al. 2008), and students with autism may be served under more than one IDEA (2004) category. Since only primary educational classifications were available, consideration of the effect of non-autism symptoms upon school-based disciplinary infractions is not possible. Relatedly, only students with school-based educational classifications were included in this study, such that students with clinical diagnoses (i.e., DSM-5 based) made outside of the school setting but who lacked eligibility under the IDEA (2004) AU category would not have been included. Not all persons with a clinical diagnosis of ASD are eligible for school-based supports and services, as this requires both a disabling condition and a related educational need (IDEA 2004), and so it is possible that some JJY had a clinical diagnosis but no educational classification and were, therefore, excluded from the study sample. Finally, it is important to mention this limitation in light of the matched comparison groups. Once again, since we only had access to primary classifications, it is possible for students who carried a secondary classification of AU to fall into the study's matched comparison groups of students with other disabilities.

It is also important to note that definitions and evaluation procedures for an AU classification differ from state to state and as a result, identification rates of autism vary (Pennington et al. 2014). Consequently, Connecticut's definition and evaluation of autism may differ from other states, and the findings of the present study may not be generalizable to all states in the USA. It would also be important for future researchers to see if school transitions such as moves to private schools or moves out of state affect incidents of school discipline and offenses. Additionally, researchers should control for differences in school district jurisdictions as there are likely significant variations in how school discipline incidents are handled.

Another limitation exists with regard to participants' age. Since some participants were younger (e.g., 6 years old in 2010), these participants had less data prior to the 2010–2011 school year and participants who were older likely had more data on prior offense history and school discipline. Moreover, our participants' ages varied from 6 to 21 years, which is problematic in the sense that school misbehavior and juvenile delinquency present differently across developmental periods. One way to address age variability is to group participants into different age groups examining childhood, early adolescence, and later adolescence.

We also recommend that future research tease apart which AU characteristics (e.g., hypersensitivity, problems with social cues) are more likely to result in offending behavior or the possible combination of such characteristics. Follow up research should also examine the ability of youth with autism to understand the consequences of their actions after they have committed an offense as this may affect recidivism rates (Cheely et al. 2012; Michna and Trestman 2016; Paterson 2007; Woodbury-Smith et al. 2005). Ideally, examination of recidivism and autism characteristics should be aimed towards the goal of establishing prevention and intervention techniques for individuals with autism who come into contact with the JJS. Finally, we recommend the comparison of school discipline for youth with autism in elementary, middle, and high school age given that disciplinary actions likely differ across grades.

Conclusion

Overall, this study shows that youth with autism do come into contact with the JJS. However, JJY with autism, JJY without SEN, JJY with LD, and JJY with SEN do not statistically differ from one another with regard to crimes against persons, status offenses, drug law violations, or public order offenses. Importantly, this study was able to address some limitations and gaps in previous research. The sample selected for the study was larger than previous research that used case studies to examine criminal behavior among individuals with autism (King and Murphy 2014; Maras et al. 2015). Additionally, clear definitions and evaluation processes were used to classify participants with autism (Connecticut State Department of Education 2011). We also used matched comparison groups of JJY without SEN, JJY with LD, and JJY with SEN which allows for associations and conclusions to be more contextualized than previous research without comparison groups (King and Murphy 2014; Maras et al. 2015). Moreover, the available inter-agency dataset allowed us to study how the juvenile justice and education systems may interact with one another to affect youth development. To our knowledge, this study presents a first look at recidivism rates in JJY with autism. Finally, the longitudinal data allowed us to look at the prevalence of criminal behavior patterns in JJY with autism across an extended period of time as opposed to a more limited time frame (Kumagami and Matsuura 2009).

Another important finding of the current study is that fighting behavior among youth may serve as a warning sign that youths may be at risk for involvement with the JJS. By promoting effective problem-solving skills and management of social interactions with others, schools also may be reducing students' risk of involvement with the JJS. With regard to recidivism, JJY with autism may be different from JJY with other SEN; yet, they recidivate at similar rates compared to JJY without SEN and JJY with LD. Therefore, JJY with autism should be treated as a separate group from other SWD and future research should examine these differences as well as the etiology of criminal behavior among JJY with autism. In sum, our findings are important to bring to the forefront as these results suggest a more cautious approach in interpreting the media portrayals of crimes committed by youth with autism.

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Fig. 1.

Hypotheses for aim three (i.e., solid arrows) depicting the relationships between special education classification (SpEd; i.e., JJY with autism compared to JJY without SEN, JJY with SEN, and JJY with LD), school discipline incidents (i.e. threat, confrontation, fighting, property, drug, policy), OSS, ISS, and recidivism. Hypothesis for aim four (i.e., dashed arrows) depicting the moderating role of special education classification (i.e., JJY with autism compared to JJY without SEN, JJY with SEN, and JJY with LD) in the relation between OSS, ISS, and recidivism. JJY with autism are the reference group to computing three dummy variables for which autism was coded as 0, and no SEN, SEN, and LD was coded as 1, respectively

Table 1

Number and overall percentage of JJY with autism, JJY without SEN, JJY with LD, and JJY with SEN (n = 572) who committed at least one offense prior to (2006–2010) and in the main study year (2010–11 school year)

Offense	JJY with autism		JJY without SEN		JJY with SEN		JJY with LD		FDR-adj. <i>p</i>	<i>V</i>	
	Number	%	Number	%	Number	%	Number	% χ^2			
Main study year (2010–2011)											
Crimes against persons	VS	2.8	VS	2.8	12	8.4	VS	3.5	7.49	0.13	.11
Status offenses	10	7.0	VS	3.5	12	8.4	13	9.1	4.09	0.31	.09
Property violations	VS	0.7	14	9.8	7	4.9	15	10.5	14.88	0.02	.16
Drug law violations	VS	0.7	6	4.2	VS	1.4	VS	2.8	4.83	0.28	.09
Public order offenses	10		15	10.5	23	16.1	13	9.1	6.81	0.16	.11
Prior (2006–2010)											
Crimes against persons	33	23.1	22	15.4	34	23.8	23	16.1	5.42	0.22	.10
Status offenses	27	18.9	16	11.2	32	22.4	24	16.8	6.58	0.16	.11
Property offenses	12	8.4	34	23.8	32	22.4	28	19.6	13.85	0.02	.16
Drug law violations	2	1.4	10	7.0	10	7.0	6	4.2	6.61	0.16	.11
Public order offenses	42	29.4	48	33.6	47	32.9	41	28.7	1.21	0.77	.75

Prior incidents include 2006–2010 school years. VS = value suppressed for variables with five or less individuals. FDR-adj. *p* = *p*-value adjusted for false discovery rate (Benjamini and Hochberg 1995).
 Bolded Chi square indicates statistical significance $p < .05$

SEN special educational needs

Table 2

Number and overall percentage of JJY with autism, JJY without SEN, JJY with LD, and JJY with SEN (n = 572) with at least one school discipline incident prior to (2006–2010) and in main study year (2010–11)

Discipline	JJY with autism		JJY without SEN		JJY with SEN		χ^2	FDR-adj. <i>p</i>	<i>V</i>
	Number	%	Number	%	Number	%			
Main study year (2010–2011)									
Violent	VS	1.4	VS	0.7	VS	0.7	2.79	0.46	.06
Sexual	VS	0.0	VS	0.7	6	4.2	9.92	0.06	.12
Threatening Behavior	7	4.9	8	5.6	17	11.9	7.79	0.12	.12
Theft	VS	0.7	VS	0.0	VS	1.4	3.33	0.41	.06
Confrontation	VS	2.8	12	8.4	14	9.8	6.02	0.18	.10
Fighting	7	4.9	12	8.4	21	14.7	8.27	0.11	.12
Property	VS	0.7	VS	1.4	VS	0.7	4.35	0.30	.09
Weapons	VS	0.7	VS	1.4	VS	2.1	4.60	0.29	.09
Drug incidents	VS	1.4	VS	2.8	VS	2.1	10.36	0.06	.14
Policy	17	11.9	33	23.1	46	32.2	22.79	0.00	.20
OSS	13	9.1	25	17.5	44	30.8	24.77	0.00	.21
ISS	22	15.4	35	24.5	43	30.1	14.07	0.02	.16
EXP	VS	0.7	VS	2.1	VS	0.0	4.39	0.30	.08
Prior (2006–2010)									
Violent	VS	2.1	VS	2.1	8	5.6	11.61	0.04	.13
Sexual	VS	2.8	7	4.9	7	4.9	1.04	0.79	.04
Threatening Behavior	25	17.5	23	16.1	43	30.1	10.18	0.06	.13
Theft	10	7.0	7	4.9	11	7.7	1.51	0.72	.05
Confrontation	29	20.3	26	18.2	50	35.0	12.90	0.03	.15
Fighting	38	26.6	29	20.3	47	32.9	6.14	0.18	.10
Property	VS	2.1	10	7.0	6	4.2	4.16	0.31	.09
Weapons	9	6.3	10	7.0	12	8.4	3.08	0.43	.07
Drug incidents	VS	2.1	12	8.4	12	8.4	7.13	0.14	.11
Policy	55	38.5	72	50.3	84	58.7	11.89	0.03	.14
OSS	67	46.9	61	42.7	83	58.0	8.17	0.11	.12

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Discipline	JJY with autism		JJY without SEN		JJY with SEN		χ^2	FDR-adj, <i>p</i>	<i>V</i>
	Number	%	Number	%	Number	%			
ISS	49	34.3	73	51.0	76	53.1	12.54	0.03	.15
EXP	VS	0.7	VS	3.5	VS	2.8	3.26	0.41	.07

Prior incidents include 2006–2010 school years. FDR-adj, *p* = *p* value adjusted for false discovery rate (Benjamini and Hochberg 1995). Bolded Chi square indicates statistical significance. FDR-adj, *p* < .05
OSS out-of-school suspension, ISS in-school suspension, EXP expulsion.

Table 3

Logistic regression models predicting recidivism (n = 308)

Variable	Model 1		Model 2		Model 3	
	B	OR	B	OR	B	OR
No special education	0.12	1.13	0.12	1.13	0.36	1.45
Special education	0.72 *	2.06	0.58	1.79	0.54	1.72
Learning disability	0.46	1.58	0.40	1.48	0.11	1.12
Out-of-school-suspension			0.04	1.04	-0.34	0.71
In-school-suspension			-0.26	0.77	0.20	1.22
Threatening Behavior			0.03	1.03	0.06	1.06
Confrontation			0.09	1.10	0.10	1.10
Fighting			0.72 *	2.06	0.70 *	2.01
Policy			0.44	1.55	0.33	1.39
oss*no special education					0.73	2.06
ISS*no special education					-1.14	0.32
OSS*special education					0.89	2.42
ISS*Special education					-0.94	0.39
OSS*learning disability					0.20	1.23
ISS*learning disability					0.22	1.24
Fit statistics						
Chi-square	5.81		18.52		23.74	
Nagelkerke R^2	.025		.080		.101	

The special education variables was coded 0 = JJY without SEN, JJY with SEN, JJY with LD and 1 = JJY with autism. JJY with autism was the reference group. Prior school discipline variables (2006–2010) were coded 0 = no school discipline incidents and 1 = one or more school discipline incidents in each respective category (i.e., OSS, ISS, threatening, confrontation, fighting, property, drugs, and policy violations).

OR odds ratio

* $p < .05$