

Trauma Exposure and Mental Health Needs Among Adolescents Involved With the Juvenile Justice System

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Abstract

Justice-involved adolescents typically report high levels of lifetime trauma exposure, although research on juvenile justice system-wide screenings is limited. Further, there is little evidence from research on the psychological and substance abuse treatment related needs of youth relative to the trauma levels or types of trauma experienced by justice-involved adolescents. We documented lifetime exposure to traumatic events and its relation to psychological and substance use concerns in a sample of adolescents admitted to custody in the New Jersey Juvenile Justice Commission. This study examined lifetime exposure to traumatic events experienced by justice-involved adolescents ($N = 627$) using negative binomial regression modeling and zero-inflated negative binomial regression modeling to identify which adolescents have the greatest trauma exposure, and determine how cumulative types of trauma relate to youths' mental health and substance use needs. Adolescents reported experiencing an average of 4 of 17 traumatic exposures on the Life Events Checklist. The most common traumas experienced directly and indirectly were physical assault and assault with a weapon. Considering particular traumas, there were differences in exposures based on race and ethnicity, sex, child welfare involvement, and gang affiliation. Higher levels of some types of traumatic exposure were consistently related to higher levels of mental health needs. Results indicate that adolescents enter the juvenile justice system with high levels of polytraumatization. These adverse events are associated with elevated mental health and substance use needs that should be considered in case planning.

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Adolescents involved in the juvenile justice system have high rates of traumatic exposure that exceed rates typically found in national samples (e.g., Baglivio et al., 2014). The scope of such exposure is concerning as repeat victimization is likely for youth when they have experienced any type of trauma, but especially when youth have experienced polyvictimization (Finkelhor et al., 2007). Although associations between trauma and problematic outcomes have been identified among juvenile justice populations, system-level responses vary (Branson et al., 2017). Understanding individual system responses can inform our understanding of trauma-informed care success. Universal screening is an essential trauma-informed element which includes identification of trauma exposure and co-occurring mental health problems (Branson et al., 2017). This study examined juveniles assessed for trauma through a universal screening process in the New Jersey Juvenile Justice Commission (NJ JJC). The goal of this study was to identify the prevalence and types of trauma exposure among youth entering the system and determine the relation of traumatic exposure to their mental health and substance related needs at entry.

Trauma Prevalence Among Justice-Involved Youth

Research to date indicates a clear relation between trauma and juvenile justice involvement (Ford et al., 2007; Kerig & Becker, 2010; Widom & Maxfield, 1996). Histories of exposure to childhood adversity (e.g., adverse childhood experiences [ACEs]), are common among justice-involved populations (Baglivio et al., 2014; Baglivio & Epps, 2016). One study found that up to 90% of justice-involved youth reported exposure to at least one form of traumatic event, including child maltreatment (Dierkhising et al., 2013). Charak et al. (2018) found that nearly 93% of youth in a juvenile justice sample reported at least four or more discrete incidents of trauma. Further, justice-involved youth are roughly three to eight times more likely to have traumatic experiences compared to youth in the general population (Abram et al., 2004). In particular, formal cases of child abuse and neglect increase the likelihood of adolescent conduct problems and callousness (Docherty et al., 2018), arrests both as a juvenile and adult, and violent crime (Ryan et al., 2007). These impacts of childhood adversity are concerning because ACEs have been found to relate to functional impairment in social and psychiatric domains among justice-involved adolescents (Duron et al., 2021). Each additional trauma a youth experiences increases the risk of serious, violent, and chronic offenses (Fox et al., 2015).

Though cumulative trauma has demonstrated a dosage effect to outcomes such as mental health needs (Kessler et al., 2010), it is also important to recognize that different kinds of trauma exposures might be associated with disparate sets of symptoms (Boxer & Terranova, 2008; Ford, 2005) reflected in overall mental health needs. Interpersonal traumas have been associated with greater psychological distress and lower levels of functioning than non-interpersonal traumas (Ford et al., 2006). Further, psychological consequences are not only indicated for victims of trauma, but also those who inflict harm on others (Kerig et al., 2016). Therefore, causing harm to others is considered as a separate category of trauma in this study.

Trauma Prevalence by Demographic Characteristics

Race and ethnicity.

Black and Latinx youth are widely overrepresented in the juvenile justice system (Rosenthal, 2019). Black youth especially experience disproportionate admittance to every level of the juvenile justice system (Piquero, 2008) and are unequally subject to the “school to prison pipeline” (Barnes & Motz, 2018; Hirshfield, 2018). Contact with the justice system within itself can be a traumatic experience for Black youth as police contact, the courts, detainment, and after care can all perpetuate trauma (Crosby, 2016). Further, while the U.S. Department of Justice has called for juvenile justice systems to move towards more trauma-informed and responsive care at both the client and front-line staff level (Branson et al., 2017), many of these trauma informed treatments do not address cultural differences for youth of color which may impact intervention effectiveness (Igelman et al., 2008). Previous research has found that adolescents of different races and ethnicities report different levels of trauma exposure and mental health symptoms (López et al., 2017).

Biological sex.

Female adolescents are more likely to have a higher incidence of trauma than male adolescents among justice-involved populations. Female adolescents have reported both higher incidents of any trauma victimization (Cuevas et al., 2013) and polyvictimization (Ford et al., 2012). Females have reported higher levels of physical abuse (Sedlack et al., 2010), sexual abuse (Abrams et al., 2004), and emotional abuse (Chesney-Lind & Pasko, 2004) than males. Female adolescents are also more likely to experience a mental health problem related to their trauma experiences than males (Kerig et al., 2012). Though female adolescents share some of the same risk factors for delinquency as males, these risk factors often manifest themselves differently (Lee & Villagrana, 2015). For example, females involved in the juvenile justice system are more likely to have chronic mental and physical health disorders, substance use, and academic disruptions (Chesney-Lind et al., 2008).

Gang involvement.

Trauma assessment is also critical with respect to gang-involved youth who are frequently involved in the justice system (Pyrooz et al., 2016). Gang-involved youth exhibit a wide variety of personal and contextual risk factors at higher levels of severity than other antisocial youth who are not gang-involved (Boxer et al., 2015), including violent victimization (Kubik et al., 2016). Gang-involved youth represent a significant challenge to justice systems given that they might be more resistant to effective treatments (Boxer, 2011, 2019) and the robust association between gang involvement and repeat offending (Pyrooz et al., 2016). In a narrative review of gang culture, Macfarlane (2019) highlights many of the ways that gang life is connected to mental health problems, including psychiatric morbidity and the use of recreational drugs. Most recently, Wolff et al. (2020) found that retrospective reports by juvenile offenders on their histories of ACEs were linked to their becoming involved with gangs by the age of 18 years.

Relationship between trauma and mental health and substance related needs.

Trauma exposure can lead to increased mental health service use for justice-involved adolescents (Choi et al., 2018). Nearly three quarters of adolescents detained in juvenile justice facilities have one or more psychiatric diagnoses, including substance use disorders (Teplin et al., 2002). Polyvictimization has been associated with mental health symptoms and behavioral problems (Nydegger et al., 2019). Those with multiple instances of trauma have more mental health issues including depression, anxiety, post-traumatic stress disorder, eating disorders, insomnia, substance abuse, and conduct disorder compared to the general population (Fox et al., 2015). Thus, it is important to identify youth who have the greatest trauma exposure within the justice system in order to provide mental health services that address both the symptoms of the illness and the underlying traumatic experiences.

Research questions.

The association of early trauma to delinquency and recidivism has implications for how juvenile justice systems engage with youth (Baglivio et al., 2015). The regularity by which justice-involved youth report experiences of childhood trauma suggests a critical need for documenting lifetime exposure to traumatic events at the statewide level. Differences by race, gender, child protective services (CPS) involvement (via maltreatment), gang affiliation, and juvenile status (committed/waived/probationer) are particularly salient when considering mental health and substance use treatment needs; a one-size fits all approach to mental health treatment is unlikely to be successful among justice-involved youth (Herrera et al., 2019). In this study, we consider the following research questions: (a) What is the prevalence of trauma among a justice-involved population in the custody of the NJ JJC? (b) How do prevalence rates of trauma vary with respect to key demographic

identities? and (c) What is the relation of prevalence, degree of severity, and specific types of trauma to mental health and substance related needs?

Method

Participants

Participants included 627 youth (95% male) admitted to custody in a state juvenile justice system, the NJ JJC, between July 2015 and April 2019 who completed the Life Events Checklist (LEC; Gray et al., 2004). The sample was racially and ethnically diverse: Black ($n = 442$; 70.49%), Latinx ($n = 124$; 19.78%), White ($n = 53$; 8.45%), and other ($n = 8$; 1.28%). Participants ranged in age from 12 to 17 years with a mean age at admission of 16.33 years ($SD = 0.86$). Three quarters of the youth were committed to a secure facility or waived to adult court ($n = 463$; 73.84%). Nearly one quarter of the youth had any history of maltreatment, as indicated by formal CPS involvement and 23.53% ($n = 289$) were identified as gang affiliated. Table 1 presents demographic characteristics of the sample.

Table 1. Demographics of the Sample.

Variable	Total Sample	
	<i>n</i>	%
Sex		
Female	32	5.10
Male	595	94.90
Race/ethnicity		
Black	442	70.49
Latinx	124	19.78
White	53	8.45
Other	8	1.28
History of CPS involvement	140	23.53
Gang affiliated	289	46.09
Juvenile status		
Committed/waived	463	73.84
Probationer	164	26.16
Age at admission		
12	1	0.16
13	1	0.16
14	20	3.19
15	84	13.40
16	181	28.87
17	340	54.23
Mean age = 16.33 ($SD = 0.86$)		

Measures

Exposure to traumatic events.

Trauma exposures were measured with the LEC. The LEC was first developed by the National Center for Post-Traumatic Stress Disorder (PTSD) for assessing events that could be potentially traumatic (Gray et al., 2004). Although psychometric properties have not been established with justice-involved youth specifically, the LEC has been used effectively in research with adolescents (Falcone et al., 2015). The LEC assesses multiple types of exposure to 17 events ranging from natural disaster to inflicting harm on others using a five-point scale (1 = happened to me, 2 = witnessed it, 3 = learned about it, 4 = not sure, and 5 = does not apply). As a screening measure, the LEC has no official scoring procedure beyond identifying whether or not an event was experienced (Weathers et al., 2013). For the purpose of this study, only events rated as “happened” or “witnessed” were considered as positive indicators of trauma exposure and were recoded as dichotomous variables indicating the presence or absence of such an exposure. A total direct exposure score was created to represent the sum of all traumatic events that happened to each youth (direct exposure) ranging from 0 to 17. Similarly, a total indirect exposure score was created to represent the sum of all traumatic events witnessed by youth (indirect exposure) ranging from 0 to 17. A total trauma exposure score was calculated to account for all trauma exposures whether direct or indirect by collapsing across these two categories so that direct or indirect exposure for each item was counted once regardless of the nature of exposure. This score thus represented a count ranging from 0 to 17 that indicated the full extent of all types of trauma experienced.

Additionally, four categories of trauma were created so that differences among categories of trauma could be examined. These four categories included non-interpersonal items (e.g., transportation accident, disaster; items 1-5,12), interpersonal items (e.g., physical assault, sexual assault; items 6-11,13), loss related items (e.g., sudden violent and accidental deaths; items 14 and 15), and a single item related to inflicting harm on others (item 16). Both direct and indirect experiences were considered for each item so that the final counts in each category of trauma reflect a “yes” for either type of experience.

Psychological and substance use needs.

Psychological and substance use needs were measured via the NJ JJC’s established checklists¹. As part of a standardized intake process, a comprehensive assessment was completed by a mental health professional for every new adolescent in the system. This assessment pertains to several areas of functioning with the associated checklists for each domain based on research findings and

field guides about experiences that relate to service needs. The checklists are used by practitioners to examine the adolescent's history, assess service needs, and establish a case action plan. These checklists have been used by practitioners in the field for several years as one of the data elements necessary for making clinical decisions and coordinating services for treatment planning.

The index scores, a composite, indicate a level of need (low, moderate, or high) based on previous experiences where higher scores relate to higher need. The psychological need checklist of this assessment includes mental health treatment history, mental health status, developmental disability, and sexual and arson offense histories. Responses to each item indicate the presence or absence of a particular experience. In the psychological section, there are 17 items with scores ranging from 0 to 17, including items pertaining to the youth's history of prescribed psychotropic medication, psychiatric hospitalizations, and psychiatric diagnosis. An example of one item is "Known DSM-IV diagnosis— non-substance related (yes/no)." In the substance abuse section, there are 16 items, with scores ranging from 0 to 16, including items pertaining to the youth's daily drug/alcohol usage, whether or not drug/alcohol usage began at 12 years of age or younger, and whether or not drug/alcohol use contributed to problems with school/work. The substance use subsection includes the extent of drug or alcohol use and treatment history, interference with functioning, and substance screenings. An example of an item in the substance needs checklist is "First drug/alcohol use was at age 12 or younger (yes/no)."

Demographics

The covariates in this study included demographic variables obtained from youth records including age, sex, race/ethnicity, gang affiliation, history of child welfare involvement, and juvenile status (probationer or committed/waived). Questions related to age, sex, race/ethnicity, and family living arrangements were all self-reported. Adolescents ranged in age from 12 to 17 years. With each additional year of age representing more possibility for experiencing trauma, age was considered an exposure variable that indicated the period of time when trauma exposure could have happened. Gang affiliation and juvenile status were determined by the NJ JJC's official gang identification process and court processed adjudication standing.

Missing Data

All variables were checked for missingness. Only one variable, history of CPS involvement, had any missing data (0.5%). A binary logistic regression

model for this variable (missing/not missing) considering juvenile sex, race, and age suggests that missing data was associated with being male ($p < .001$) and White ($p < .01$).

Procedures

Through a collaboration with the NJ JJC, administrative data related to youth who completed the LEC screenings and associated key characteristics about the youth were collected. The JJC officially began using the LEC in 2015 to screen all youth who entered the system for trauma histories. Over the sampling period, approximately 80.5% of the 1307 new admissions that entered the system were screened for trauma using the LEC (P. Mattson, personal communication, 2019). The dataset for this study was restricted to youth who were between 12 and 17 years with complete assessments, particularly the psychological and substance related checklists, for a total sample of 627 youth. This research was approved by the research and human subjects committees at Rutgers, The State University of New Jersey and the NJ JJC.

Analysis

The analytic approaches used in this study included negative binomial regression (NBRM) modeling and zero-inflated negative binomial regression (ZINB) modeling to account for the dependent variables being count variables—total trauma types, psychological needs, and substance needs (Cameron & Trivedi, 2013; Long & Freese, 2014). Because there was significant evidence of overdispersion, including unequal means and variances, the NBRM was preferred over the standard Poisson regression model (total trauma, $G^2 = 108.22$, $p < 0.001$; psychological need, $G^2 = 6.50$, $p < 0.01$; substance use need, $G^2 = 143.34$, $p < 0.01$; Long & Freese, 2014). Further, because count data may sometimes have excess zeros, model fit statistics were used to compare ZINB to NBRM. Lower Bayesian Information Criterion (BIC) values were found for NBRM for all models except those related to substance use. Therefore, NBRM was used to fit models related to total trauma types and psychological needs while ZINB was used to fit models related to substance needs. Twelve percent ($n = 120$) of youth reported 0 indicators from the substance needs checklist. A zero count could mean that youth have no experiences of the indicators assessed (true zero), but it could also mean that zero represents some other process like a failed detection (false zero). The first models examined the relation between demographic and other covariates to total trauma, direct exposures, and indirect exposures to identify subgroup differences. The second models examined the relation

between total trauma exposures to psychological and substance related needs. The third and final models examined the relation between particular types of total trauma and psychological and substance related needs. Age at admission was included in the models as an exposure variable. This allowed for the number of years of exposure to traumatic events to be considered in estimating a priori risk. Incident rate ratios (IRRs), an indicator of relative risks, were calculated to compare individuals across several pertinent categories, including counts of trauma exposures, sex, race/ethnicity, juvenile status, history of child welfare involvement, and gang affiliation. Analyses were completed in Stata 16.0 (StataCorp, 2019).

Results

Prevalence of Trauma among Justice-Involved Youth

The majority of adolescents reported experiencing at least one trauma exposure ($n = 573$; 91.39%), with a mean of 4.39 ($SD = 2.83$) total trauma exposures, including direct and indirect events. More than half of the sample (60.45%) reported experiencing four or more types of trauma exposures. The most common direct and indirect trauma exposures included physical assault and assault with a weapon. Figure 1 depicts the range of exposures across all 17 types of trauma for both direct and indirect experiences. On average, adolescents reported 2.50 ($SD = 1.91$) mental health related needs and 5.65 ($SD = 3.38$) substance health related needs.

Prevalence of Trauma According to Demographic Characteristics

Table 2 shows the results from the first group of models, 1-3, that examined subgroup differences across total, direct, and indirect trauma exposures. Higher levels of overall trauma were associated with youth who were male ($p < .05$) and gang affiliated ($p < .01$). Additionally, Latinx and White adolescents reported 15% ($p < .05$) and 43% ($p < .001$) higher levels of trauma exposure, respectively, than did Black adolescents. These same variables were significant in the total direct trauma model, with the inclusion of two additional findings. Adolescents in the other category for race and ethnicity reported higher levels of direct trauma exposure than Black adolescents ($p < .05$). Adolescents who were committed to a juvenile facility or waived to an adult court were 30% ($p < .001$) more likely to report higher levels of direct trauma compared to adolescents who were adjudicated as probationers. No subgroup differences were found for total indirect traumas.

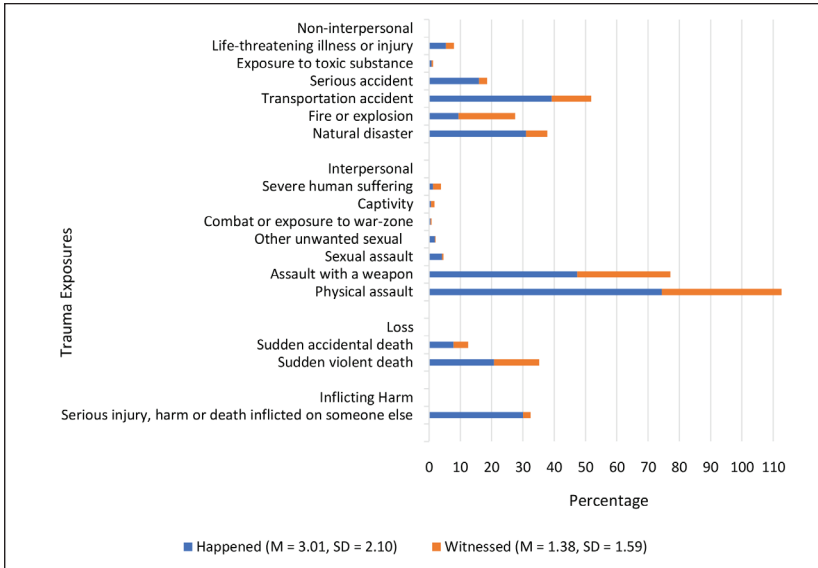


Figure 1. Trauma Exposures by Direct and Indirect Experiences Grouped as Categories.

Table 2. NBRM of Demographic Variables Regressed on Total, Direct, and Indirect Traumas.

Variable	Incidence Ratio Rate (95% CI)		
	Model 1 Total All Exposures	Model 2 Total Direct Exposure	Model 3 Total Indirect Exposure
Sex			
Female (ref)			
Male	1.40 (1.06–1.86)*	1.72 (1.24–2.38)**	0.96 (0.60–1.53)
Race/ethnicity			
Black (ref)			
Latinx	1.15 (1.01–1.31)*	1.20 (1.05–1.38)**	1.05 (0.83–1.33)
White	1.43 (1.18–1.73)***	1.49 (1.22–1.82)***	1.28 (0.92–1.80)

(continued)

Table 2. continued

Variable	Incidence Ratio Rate (95% CI)		
	Model 1	Model 2	Model 3
	Total All Exposures	Total Direct Exposure	Total Indirect Exposure
Other	0.72 (0.40–1.29)	0.42 (0.19–0.95)*	1.29 (0.55–3.05)
History of CPS involvement	0.89 (0.78–1.01)	0.93 (0.81–1.07)	0.80 (0.63–1.10)
Gang affiliated	1.16 (1.04–1.30)**	1.17 (1.04–1.32)**	1.14 (0.93–1.39)
Juvenile status			
Probationer (ref)			
Committed/waived	1.10 (0.97–1.26)***	1.30 (1.12–1.50)***	0.81 (0.65–1.02)

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

Relationship between Trauma and Mental Health Needs

Total trauma exposures related to needs.

Table 3 shows the results from the second group of models, 4-5, that examined how trauma and covariates related to the psychological and substance related needs of youth. Trauma exposure was considered as total trauma exposures (0-17). Levels of need were determined by identification of the 17- and 16-item indicators for psychological and substance related checklists on the comprehensive assessment completed by the NJ JJC. Greater need refers to higher counts of applicable indicators. In the models with total trauma exposures, higher levels of trauma exposure were associated with higher levels of psychological and substance related needs. In model 4, greater psychological needs were also associated with adolescents who were female, Latinx, White, had a history of CPS involvement, and were committed/waived. In particular, adolescents with a history of CPS involvement were 46% ($p < .001$) more likely to report higher levels of psychological need than adolescents with no history of CPS involvement. In model 5, greater substance related needs were also associated with adolescents who had higher levels of trauma, were male, Latinx, White, had no history of CPS involvement, gang affiliated, and committed/waived. Gang-affiliated adolescents were 1.17 more likely to report greater substance related needs ($p < .001$) than non-gang-affiliated adolescents. In the logistic portion of the model, youth with higher levels of trauma were 1.01 times less likely to be in the

group of youth for whom no substance needs were identified ($p < .05$). Youth who were gang affiliated ($p < .05$) and committed/waived ($p < .01$) were also less likely to be in the group of youth with no identified substance needs.

Categories of trauma related to psychological need.

Four categories of trauma were considered in association to psychological needs, including non-interpersonal, interpersonal, loss, and inflicting harm.

Table 3. NBRM of Trauma and Covariates Regressed on Psychological Needs and ZINB of Trauma and Covariates Regressed on Substance Needs.

	Model 4	Model 5	
	Psychological Needs	Substance Needs	
	NBRM	Count Model	Zero Inflation Model
	Incidence Ratio Rate (95% CI)	b (SE) Exp(b)	b (SE) Exp(b)
Total Trauma Exposures	1.03 (1.01–1.05)**	0.12 (0.01)† 1.01	–0.13(0.05)* 1.01
Sex			
Female (ref)			
Male	0.65 (0.52–0.81)***	0.19 (0.10)† 1.21	0.30 (0.61) 1.21
Race/ethnicity			
Black (ref)			
Latinx	1.23 (1.08–1.41)**	0.09 (0.04)* 1.09	–0.28 (0.36) 1.09
White	1.30 (1.08–1.56)	0.22 (0.07)** 1.04	–0.07 (0.48) 1.24
Other	1.42 (0.85–2.36)	0.21 (0.16) 1.24	–18.08 (6136.2) 1.24
History of CPS involvement	1.46 (1.29–1.65)***	–0.09 (0.05)* 0.92	0.41 (0.30) 0.92
Gang affiliated	0.99 (0.88–1.12)	0.15 (0.04)*** 1.17	–0.65 (0.31)* 1.17
Juvenile status			
Probationer (ref)			
Committed/waived	1.34 (1.16–1.55)***	0.14 (0.05)** 1.15	–1.41 (0.28)*** 1.15

Note. † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 4, models 6-9, shows the three types of traumatic exposures with a significant association to psychological needs—interpersonal traumas, loss related traumas, and inflicting harm on others. Similar to the total trauma models, the same covariates were included. Across all three models, experiencing the designated type of trauma was related to higher levels of psychological need. Males were consistently 33-34% ($p < .001$) less likely to report higher levels of psychological need than females. Latinx adolescents were 24-26% ($p < .01$) more likely to report higher levels of psychological need than Black adolescents. White adolescents were 33-37% ($p < .01$) more likely to report higher psychological needs than Black adolescents. Adolescents with a history of CPS involvement were 43-45% ($p < .001$) more likely to report higher levels of psychological need than those adolescents with no CPS involvement. Committed or waived adolescents were 36-38% ($p < .001$) more likely to report higher levels of psychological need than probationers.

Categories of trauma related to substance need.

The same four categories of trauma were considered in association with substance related needs. Table 5, models 10-13, shows the two types of traumatic exposure with a significant association to substance related needs, interpersonal and loss related experiences. Youth who experienced higher levels of interpersonal trauma were 1.03 times more likely to have higher levels of substance use need. Youth who experienced loss related traumas were 1.04 times as likely to have a higher level of substance need ($p = .05$). Across all types of trauma, males, Latinx and White adolescents, and committed/waved youth were more likely to have higher substance needs. Adolescents who had a history of CPS involvement were 0.91-0.92 times less likely to have substance related needs than youth with no histories of CPS involvement. Gang-affiliated adolescents were 1.16-1.17 times more likely to report greater substance related needs than other youth ($p < .001$). In the logistic portion of the model, youth with higher levels of trauma exposure related to interpersonal trauma or loss-based trauma were less likely to be in the group of youth for whom there were no identified substance needs ($p < .05$). Gang affiliated youth and those in a committed/waived status were also less likely to be in the group of youth with no identified substance needs.

Discussion

This study examined traumatic exposures among all justice-involved adolescents involved in state-wide screenings for trauma within the NJ JJC in order to determine: (a) the prevalence of trauma among youth, (b) the prevalence of trauma related to demographic characteristics, and (c) the relationship

Table 4. NBRM of Trauma Types Regressed on Psychological Needs.

		Incidence Ratio Rate (95% CI) Psychological Needs			
		Model 6	Model 7	Model 8	Model 9
		Non-Interpersonal	Interpersonal	Loss	Inflicting Harm
Trauma type		1.04 (1.00–1.08)	1.05 (1.01–1.09)*	1.09 (1.00–1.18)*	1.16 (1.04–1.30)*
Sex					
	Female (ref)				
	Male	0.65 (0.53–0.82)***	0.66 (0.53–0.83)***	0.67 (0.53–0.83)***	0.66 (0.53–0.82)***
Race/ethnicity					
	Black (ref)				
	Latinx	1.26 (1.09–1.43)**	1.24 (1.08–1.41)**	1.26 (1.11–1.44)**	1.25 (1.09–1.42)**
	White	1.23 (1.10–1.43)**	1.33 (1.11–1.60)**	1.37 (1.14–1.64)*	1.36 (1.13–1.64)*
	Other	1.05 (0.55–1.98)	1.03 (0.55–1.94)	1.05 (0.56–1.99)	1.05 (0.56–1.98)
	History of CPS involvement	1.42 (1.26–1.61)***	1.43 (1.26–1.62)***	1.43 (1.27–1.63)***	1.45 (1.27–1.64)***
	Gang affiliated	1.01 (0.90–1.14)	1.00 (0.89–1.13)	0.98 (0.87–1.11)	0.98 (0.87–1.11)
Juvenile status					
	Probationer (ref)				
	Committed/waived	1.39 (1.20–1.61)***	1.36 (1.17–1.58)**	1.38 (1.19–1.60)***	1.38 (1.19–1.59)***

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 5. ZINB of Trauma Types Regressed on Substance Related Needs.

Substance Use Needs		Model 10	Model 11	Model 12	Model 13
Count portion	Non-Interpersonal b (SE) Exp(b)	Interpersonal b (SE) Exp(b)	Loss b (SE) Exp(b)	Inflicting Harm b (SE) Exp(b)	
Trauma type	.004 (0.01) 1.00	0.03 (0.01)* 1.03	0.05 (0.03)† 1.05	0.04 (0.04) 1.04	
Sex, Female (ref)					
Male	0.21 (0.10)* 1.23	0.20 (0.10)† 1.22	0.20 (0.10)† 1.22	0.20 (0.10)† 1.22	
Race/ethnicity, Black (ref)					
Latinx	0.09 (0.04)* 1.10	0.09 (0.04)* 1.09	0.09 (0.04)* 1.10	0.09 (0.04)* 1.10	
White	0.24 (0.07)*** 1.27	0.22 (0.07)** 1.24	0.24 (0.06)*** 1.27	0.24 (0.06)*** 1.27	
Other	0.23 (0.17) 1.26	0.23 (0.16) 1.26	0.24 (0.17) 1.27	0.23 (0.17) 1.26	
History of CPS involvement	-0.09 (0.05)* 0.91	-0.09 (0.05)† 0.92	-0.09 (0.05)† 0.92	-0.09 (0.05)† 0.92	
Gang affiliated	0.16 (0.04)*** 1.17	0.16 (0.04)*** 1.17	0.15 (0.04)*** 1.16	0.15 (0.04)*** 1.17	
Status, Probationer (ref)					
Committed/waived	0.14 (0.05)** 1.15	0.13 (0.05)** 1.14	0.14 (0.05)** 1.15	0.14 (0.05)** 1.15	
Logit portion					
Trauma type	-0.17 (0.11) 0.84	-0.24 (0.10)* 0.79	-0.59 (0.26)* 0.55	-0.31 (0.30) 0.73	
Sex, Female (ref)					
Male	0.27 (0.62) 1.31	0.18 (0.60) 1.20	0.17 (0.59) 1.19	0.17 (0.60) 1.18	

(continued)

Table 5. continued

Count portion	Substance Use Needs			
	Model 10	Model 11	Model 12	Model 13
	Non-Interpersonal b (SE) Exp(b)	Interpersonal b (SE) Exp(b)	Loss b (SE) Exp(b)	Inflicting Harm b (SE) Exp(b)
Trauma type	.004 (0.01) 1.00	0.03 (0.01)* 1.03	0.05 (0.03)† 1.05	0.04 (0.04) 1.04
Race/ethnicity, Black (ref)				
Latinx	-0.31 (0.36) 0.73	-0.22 (0.36) 0.81	-0.36 (0.36) 0.70	-0.31 (0.36) 0.73
White	-18.5 (0.48) 0.90	-0.15 (0.48) 0.86	-0.27 (0.48) 0.76	-0.27 (0.47) 0.76
Other	-18.5 (10880) 0.00	-17.9 (8434) 0.00	-16.89 (5198) 0.00	-18.54 (11969) 0.00
History of CPS involvement	-0.47 (0.30) 1.60	0.45 (0.30) 1.57	0.41 (0.30) 1.50	0.44 (0.30) 1.55
Gang affiliated	-0.69 (0.30)* 0.50	-0.64 (0.31)* 0.53	-0.57 (0.31) † 0.56	-0.62 (0.31)* 0.54
Status, Probationer (ref)				
Committed/waived	-1.43 (0.27)***0.24	-1.33 (0.28)***0.26	-1.40 (0.27)***0.25	-1.41 (0.27)***0.25

Note. †p < .10; *p < .05; **p < .01; ***p < .001.

between trauma and mental health needs. Overwhelmingly, the youth in this study reported experiencing at least one traumatic event, either directly or indirectly, with an average of four different types of lifetime trauma exposures. This finding is similar to previous research that has found high rates of multiple trauma exposures among justice-involved youth (Charak et al., 2018; Dierkhising et al., 2013). Our findings illustrate the consistency of these levels of polytraumatization among adolescents who are screened for trauma at entry to the juvenile justice system, thus demonstrating the relevance and importance of completing trauma screenings within juvenile justice settings.

The most prevalent form of trauma experienced both directly and indirectly by adolescents was physical assault. The National Survey of Children's Exposure to Violence indicates that approximately 51.4% of youth, 0 to 17 years old, describe having lifetime exposure to physical assault (Finkelhor et al., 2015). With 41.91% of the adolescents in our study being gang affiliated, it is important to consider that gang members often experience serious injury from physical fighting (Gover et al., 2009), and similar to our sample, have higher levels of overall trauma and violent victimization than non-gang affiliated youth (Boxer et al., 2015). For juvenile justice agencies, this finding highlights the importance of assessing for prior physical violence, recognizing additional exposure to such violence may be a risk for some youth. Considering how experiences of physical violence may relate to service needs can promote efforts toward safety and protection, and supportive responses to any trauma related experiences of anxiety, dysregulation, callousness, or other symptoms.

Latinx and White adolescents reported significantly higher levels of multiple trauma exposures compared to Black youth. Results from previous research have inconsistently found that trauma exposures are higher among different racial and ethnic groups (refer to Ford et al., 2013; Costello et al., 2002; Turner et al., 2010). Although Black youth in this sample did not report the highest levels of trauma exposure, it is largely accepted that Black adolescents are overrepresented in juvenile justice systems due to over-policing and other structural inequalities (Hirschfield, 2018). As juvenile justice systems continue the work of promoting greater equity in policies and practices, they might consider how Latinx and White adolescents entering the system are possibly youth with greater personal or functional challenges and may be associated with other factors that distinguish their entrance to juvenile justice systems. Beyond considerations for legal decision-making, access to resources or cultural barriers is another characteristic that should be explored. Given ongoing mixed results, this is an area where additional research is needed.

In relation to our research question about trauma exposures and mental health needs, we did find distinctions among the youth. In particular, adolescents with a history of child welfare involvement showed the greatest likelihood of having higher levels of psychological need. Prior research has established that youth who experience child maltreatment are at greater risk for delinquency (Crowley et al., 2003) and that justice-involved youth have a high likelihood of experiencing maltreatment or other adversities (Baglivio et al., 2014). Whether youth are formally dually involved in two child-serving systems or not, juvenile justice agencies must consider the risk of previous or new child maltreatment exposure and the unique mental health needs of youth who have chronically experienced violence or neglect. Unexpectedly, youth with a history of CPS involvement showed a slightly lower likelihood of substance related needs than youth without a history of CPS involvement. There are several considerations that should be made when interpreting this result. First, underreporting of child maltreatment to CPS systems is likely as is underreporting to the juvenile justice system. Second, this variable captures any involvement with child welfare and does not distinguish those who penetrated the system further or are actively involved at entry to juvenile justice. Finally, substance related needs are quite high across the entire sample and it is possible that involvement with a child welfare system prompts access to services that help to reduce alcohol or drug related consumption. Additional research is needed to better understand justice-involved adolescents' mental health diagnoses, symptoms, and treatment pathways.

Relatedly, another group of youth demonstrating distinct needs is the youth who are gang affiliated. Whereas gang affiliated youth did not report greater psychological needs than non-gang affiliated youth, they did report the highest levels of substance need among justice-involved adolescents. This finding aligns with previous research that finds that justice-involved youth who are gang members have high rates of drug use (Macfarlane, 2019), and supports research showing that gang involved youth are a discrete subgroup in the broader population of offenders (Boxer et al., 2015).

Male adolescents in the sample reported higher levels of polytraumatization than females, yet they were less likely to report higher psychological needs compared to female youth. This is consistent with previous research that indicates that females who endure trauma are more likely to develop mental health problems than male adolescents (Chesney-Lind et al., 2008; Espinosa et al., 2013). Latinx youth compared to Black youth reported greater psychological needs when cumulative traumas were considered. Hoskins et al. (2019) has similarly found that Latinx youth are more likely to demonstrate mental health needs. Youth who were in committed circumstances also had higher psychological and substance related needs than youth who were

probationers. Previous research has found that justice-involved adolescents in out-of-home placements have higher rates of mental health need than those in the community (Espinosa et al., 2013). This finding may reflect youth's length of history with a juvenile justice system; youth with complex needs often have complex behaviors and this may relate to youth with such higher needs penetrating the system deeper. Altogether these results demonstrate that mental health needs following trauma exposures may be experienced differently across youth and any assessment of youth's needs should consider all aspects of a youth's identity, experiences, and adjudication status. With such mixed results in terms of youth characteristics, additional research is needed to better understand differences in mental health needs.

Overall, there is consistency across the models examining trauma and mental health needs indicating that individuals who experienced higher levels of polytraumatization experienced higher levels of psychological and substance related needs. Understanding adolescents' levels of mental health needs is important for discerning what treatment is needed. In general, approximately two-thirds or more of justice-involved youth meet criteria for one or more mental health disorders (Teplin et al., 2002). Previous research has found that cumulative trauma types have a fairly linear relationship to increasing symptoms (Turner et al., 2010). Further, because higher mental health screening scores associated with trauma have been found to influence how far youth penetrate juvenile justice systems (Espinosa et al., 2013), agencies can implement standardized processes for conducting trauma screenings and considering such exposure in treatment planning from diversion efforts to residential placements.

Across models that examined particular categories of trauma, higher levels of interpersonal and loss related traumas were the two types of trauma associated with higher levels of psychological and substance related needs. Additionally, inflicting harm related to greater psychological needs while non-interpersonal traumas such as transportation accidents or personal illness did not. Hoeve et al. (2015) has similarly found that aggression was related to greater mental health needs. It is important to consider that different types of trauma exposures are experienced differently. For youth with multiple exposures, those traumas of an interpersonal encounter may relate to greater psychological and substance needs than those of a non-interpersonal effect. Previous research has found that combinations of particular types of risks are associated with poorer outcomes than other combinations (see Lanier et al., 2018) suggesting that understanding the personal significance of experiencing different types of trauma and related mental health needs will be important for planning a course of treatment that addresses each youth's needs.

There are a few limitations that should be considered when interpreting these findings. Although this study examines the prevalence of traumatic exposures on the lives of adolescents involved in the juvenile justice system, the developmental timing, severity, and duration of these exposures are not considered. The LEC provides youth with an opportunity to describe any other traumas not included in the 16-item measure, yet it is possible that some youth may have been exposed to traumas not assessed and that some youth did not fully disclose trauma exposures. Additionally, this study does not consider the full range of gender identifications or cultural distinctions within pan-ethnic labels nor does it consider sexual identity which might contribute to youths' experiences of trauma and/or mental health needs. Future research should consider how these distinctions relate to the prevalence of trauma exposure and associated mental health needs.

Conclusion

Youth involved in the juvenile justice system demonstrate a high incidence of trauma exposure, and more research is clearly needed to replicate and broaden this fundamental observation. Our study augments this literature by providing a comprehensive assessment of multiple forms of trauma in a large sample of justice-involved youth. This universal, state-wide screening shows that there are categories of youth who enter the system with higher levels of trauma and greater mental health needs than others. Providing mental health services alone that do not also address the role that extralegal factors such as person-level characteristics (race, gender, gang affiliation) or trauma nature (e.g., interpersonal, loss, causing harm) plays in regard to justice involvement is not enough to ensure that individuals will not continue to cycle in and out of the justice system (Domino et al., 2019). Addressing these factors together using an intersectional and ecologically driven approach is a vital component of enhancing treatment outcomes and reducing recidivism among justice-involved youth (Abrams & Snyder, 2010; Welch-Brewer et al., 2011). Universal screening of trauma in justice-involved youth populations will also contribute substantively to theory-building with respect to understanding how different forms of violence and trauma exposure relate to mental health in this relatively under-studied population (Boxer & Sloan-Power, 2013).

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