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Peer, Substance Use, and Race-Related Factors Associated With Recidivism Among First-Time Justice-Involved Youth

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Abstract

Objectives: Peer deviancy and substance-related consequences are dynamic criminogenic needs associated with increased risk of recidivism for justice-involved youth. Most prior research in this area, however, is based on samples of primarily male youth charged with delinquent offenses. Because identification of dynamic criminogenic needs is essential to delinquency risk reduction efforts, the purpose of this study was to examine the role of peer deviancy and substance-related consequences in a sample of youth at first contact with the juvenile justice system, with relatively equal representation of males and females and youth charged with delinquent and status offenses.

Hypotheses: We hypothesized that higher levels of peer deviancy and more severe alcohol- and cannabis-related consequences would predict recidivism. We also hypothesized that Black and brown youth would be more likely to recidivate than non-Latinx White participants.

Method: First-time justice-involved youth ($N = 401$) aged 12–18 and their caregivers reported independent variables at baseline (demographic, legal, psychiatric, and peer factors). Official records of recidivism (i.e., number of new charges 2 years later) was the dependent variable for nested multivariate negative binomial regression models.

Results: Peer deviancy reported by caregivers, but not by youth, predicted recidivism 2 years later. Consequences related to alcohol, but not cannabis, increased recidivism risk. Finally, participants who were younger, male, charged with a delinquent offense, and Black, multiracial, and/or Latinx were more likely to recidivate than non-Latinx White participants after controlling for covariates.

Conclusions: Results highlight the influence of institutionalized racism on later court involvement for youth of color at first court contact, regardless of individual risk. Deviant peers and consequences of alcohol are salient intervention targets for this population.

Keywords

peer deviancy; substance-related consequences; juvenile justice; disproportionate minority contact; institutionalized racism

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Despite decreasing crime rates (Federal Bureau of Investigation, 2020), arrests, and commitments to correctional facilities over the past few decades (Rovner, 2016), 842,300 youth were involved with the juvenile justice system in the United States in 2018. Of those, approximately 744,500 youth were charged with a delinquent offense and 97,800 were charged with a status offense that was petitioned by a juvenile court in 2017 (Hockenberry & Puzzanchera, 2020). Regardless of the offense type, justice-involved youth are at substantial risk for future court involvement (Cottle et al., 2001). Although predicting delinquent acts is challenging, given the interaction of myriad individual and contextual risk factors, a wealth of empirical evidence has pointed to eight risk factors for delinquency, commonly referred to as criminogenic needs (Andrews et al., 2006). In this study, we examined the association between two dynamic criminogenic needs (i.e., substance-related consequences and peer deviancy) and the number of new juvenile charges over a 2-year period in a sample of first-time justice-involved youth.

The present study also builds upon extant literature by examining the role of demographic characteristics (e.g., gender, race) and dynamic criminogenic needs (i.e., substance-related consequences, peer deviancy) in predicting recidivism among youth at first contact with the juvenile court. Given clear evidence that Black and brown youth are disproportionately represented in the juvenile justice system, we examined racial and ethnic differences in recidivism to understand disproportionately greater contact with the juvenile justice system for racial/ethnic minoritized youth at the point of first court contact. There is also robust evidence that females are underrepresented in research on effective treatment to reduce recidivism risk (see Lipsey, 2009), and evidence suggests gender-neutral rehabilitative programming does not benefit girls as much as boys (see Chernoff, 2021; Vitopoulos et al., 2012); we therefore examine gender differences in recidivism. We also examine the association between consequences of the two most common types of substances used among this population (i.e., alcohol and cannabis) and measure both youth- and caregiver-reported peer deviancy. Finally, our sample represents understudied subpopulations in this area of research—specifically, females and youth charged with status offenses. These findings have the potential to inform both research and clinical practice, especially for historically understudied subpopulations within the juvenile justice system.

Recidivism Risk and Criminogenic Needs

Among justice-involved youth, meta-analytic findings suggest almost half recidivate over an average 3.75-year follow-up period (Cottle et al., 2001). This estimate is identical to the rate of rearrest for youth charged with a violent offense at first court contact in Los Angeles, California (Ryan et al., 2014). Identification of criminogenic needs that contribute to overall risk are typically assessed via risk assessment instruments (Vincent et al., 2012). Contemporary best practices in risk assessment are based on the risk-need-responsivity (RNR) model (Andrews & Bonta, 2006, 2010). According to the RNR model, most youth

are at low risk for continued court involvement, and few are at high risk (Hoge, 2016). Although historical static risk factors (e.g., a history of delinquent behavior) cannot be addressed through treatment, they should be considered when determining overall risk. Those who are at moderate or high risk should receive services designed to reduce future recidivism risk, and those services should be matched to identified dynamic criminogenic needs (see Vieira et al., 2009). Other factors that should inform treatment planning are called specific responsivity factors (e.g., mental health symptoms; Hoge, 2016). Constellations of criminogenic needs and responsivity factors may interact to increase recidivism risk. Notably, evidence suggests justice-involved youth who are diagnosed with both substance use (i.e., a dynamic criminogenic need) and mental health (i.e., a specific responsivity factor) disorders are at increased risk of being detained 12 months later (Tolou-Shams et al., 2014).

Peer Deviancy

There is ample research evidence peer deviancy is a dynamic criminogenic need that can increase the risk of future court involvement. The relationship between peer deviancy and delinquent behavior is thought to be mediated by social processes (Watts & McNulty, 2015), regardless of youths' onset of delinquent behavior or their gender identity (Pepler et al., 2010). Social learning theory and differential association theory propose mechanisms to explain the impact deviant peers have on delinquency, including experiencing a social reward, being socialized to perceive laws as illegitimate, and direct modeling of delinquent behavior (Akers, 1973; Watt et al., 2004). Increased exposure to deviant peers is also one mechanism by which juvenile justice system involvement can be iatrogenic (Dishion et al., 1999; Gatti et al., 2009); such findings have led to recommendations to refer youth to interventions that do not unintentionally increase their recidivism risk via increased exposure to deviant peers (Dodge et al., 2006).

Substance-Related Consequences

Substance-related consequences are also considered a dynamic criminogenic need that should be targeted in treatment to reduce recidivism risk for justice-involved youth (Andrews & Bonta, 2006). One meta-analysis showed that substance-related consequences (i.e., severe substance use and/or evidence of related impairment) predicted recidivism for justice-involved youth, although substance use alone did not (Cottle et al., 2001). This finding has been confirmed by more recent studies with samples of youth enrolled in diversion programs in the United States (Wylie & Rufino, 2018) and detained youth in South Australia (Putni š, 2003). Furthermore, substance-related consequences are associated with recidivism for justice-involved youth, whereas internalizing disorders are not (McCormick et al., 2017; McReynolds et al., 2010). In a meta-analysis, Dowden and Brown (2002) found that consequences of alcohol and drugs independently predicted recidivism for both justice-involved youth ($k = 7$) and adults ($k = 109$). The authors also examined whether gender moderated this relationship and found that drug-related consequences predicted recidivism for both males and females, whereas alcohol-related consequences predicted recidivism only for males. Reflecting the fact that most research in this area has been conducted with males, 83.3% of participants in the Cottle et al. (2001) and 96.6% of participants in the Dowden and Brown (2002) meta-analyses were identified as male.

Taken together, these findings suggest the need to measure severity and/or impairment related to substance use when estimating recidivism risk. These findings should also be confirmed in a sample with representation from justice-involved male and female youth who have been charged with both status and delinquent offenses at their point of first contact with the justice system in the United States.

Substance-Related Consequences Among Peer Groups

Substance use often occurs within social contexts and is influenced by peers during adolescence, including for both community non-justice-involved and justice-involved youth. Longitudinal data from the National Youth Survey of non-justice-involved youth found that initiation of substance use most often occurred within a peer group and continued use was sustained through the peer group (Reed & Rountree, 1997). The authors suggested peers influence substance-related consequences during adolescence, as the peer group provides exposure to substances and the rationalization to continue using substances. Garnier and Stein (2002) found that lower socioeconomic status and lower teacher-rated competence in social relationships (e.g., maladaptive peer interactions, less consideration of others) at age six were prospectively associated with peer substance use and delinquency at age 18, which were strongly associated with substance use and delinquency. Among a sample of male youth mandated to residential facilities, Friedman and Terras (1999) found that social behavior and peer factors accounted for significantly more variance than family factors in predicting substance-related consequences.

Substance use in adolescence may also be related to engaging in delinquent acts with peers. For example, Tsakpinoglou and Poulin (2017) examined how best friendships among sixth graders related to substance use and co-deviancy (i.e., engaging in deviant acts together) by identifying how peer pressure and unsupervised co-deviancy predicted substance use 1 year later. They found that unsupervised co-deviancy was the strongest predictor of increased cannabis use, whereas the only predictor of alcohol use was the best friend's alcohol-use status (Tsakpinoglou & Poulin, 2017). For a sample of non-justice-involved youth aged 11–13 years, Trucco et al. (2011) found that both self-reported and peer delinquency were associated with perceived peer approval of alcohol use and alcohol use by peers 1 year later, which also predicted the initiation of alcohol use.

There is some evidence of gender differences in the role of peer influence on substance use, with some gender-by-substance type interactions. One study found that females had decreased odds of using cannabis after the leader of their peer network used those substances, whereas male youth had increased odds of using hard drugs after a leader of their peer network used them (Kwan et al., 2015). However, more research is needed examining the relationship among peers, substance-related consequences, and recidivism, particularly with groups who have been underrepresented in juvenile justice research (e.g., females).

Validity of Youth and Caregiver Reports of Substance Use and Peer Deviance

Although a significant literature base has supported the relationship between criminogenic needs and recidivism, less is known about whether this relationship varies depending on the source of data (i.e., youth report, caregiver report, or both) when collecting information for research and clinical purposes. For example, some evidence suggests that peer deviancy is more predictive of recidivism when reported by caregivers than when reported by justice-involved youth (Stoolmiller & Blechman, 2005). In a sample of college students, there was an 83.4% overlap between the perception of delinquent acts committed by a friend and the friend's own self-report; however, participants underestimated the actual level of delinquent acts for 20 of 26 items (Boman et al., 2012). To our knowledge, no published research on recidivism has compared the predictive validity of peer deviancy reported by justice-involved youth and by their caregivers. In this study, both youth and their caregivers reported the youth's peer deviancy, providing an opportunity to examine the relationship between peer deviancy reported from both sources and recidivism; this study makes a unique contribution to the extant literature in this area.

Systemic Bias Toward Specific Demographic Groups

Certain youth are at higher risk of involvement with the juvenile justice system because of developmental differences and structural gender, racial, and ethnic biases (Hockenberry & Puzzanchera, 2020). Youth aged 10–15 years account for more than half of delinquency petitions, whereas 16- and 17-year-olds have substantially higher rates of petitioned status offenses compared to those aged 15 and younger. Compared to females, male youth account for most court petitions for both delinquency (73%) and status offenses (57%). Given the over-representation of males in the juvenile justice system, most theories regarding the etiology of delinquent behaviors and services to address them have been based on predominantly male samples (Cruise et al., 2017). Emerging evidence suggests that justice-involved females and males have some gender-specific treatment needs, both criminogenic and noncriminogenic (see Hannah-Moffat, 2005). For example, Vitopoulos et al. (2012) found that despite similar rates of criminogenic needs on a risk assessment instrument, only male justice-involved youth evidenced reduced recidivism risk when matched to services designed to address their individual dynamic criminogenic needs. Such evidence calls for a reexamination of criminogenic needs' relevance across gender identities of justice-involved youth.

There is also substantial evidence that racial/ethnic minoritized youth are overrepresented in the juvenile justice system in the United States; this phenomenon has been commonly referred to as *disproportionate minority contact* (DMC). DMC has persisted even after federal legislation was passed to reduce such disparities (Leiber et al., 2011; Piquero, 2008) and despite decreasing rates of both delinquent and status offenses from 2005 to 2018 (Hockenberry & Puzzanchera, 2020). Specifically, Black youth are significantly more likely to have a delinquency case petitioned compared to all other racial/ethnic groups. Over the same time frame, the proportion of Black and Latinx youth with a petitioned status

offense has increased while the proportion of White youth has decreased (Hockenberry & Puzzanchera, 2020). This pattern mirrors increased disparities in arrest rates from 2003 to 2013, which suggests Black youth are at higher risk of being arrested and adjudicated delinquent compared to White youth (Rovner, 2014).

Furthermore, there is evidence DMC is not attributable to greater risk of violence or serious delinquent behavior. For example, Desai et al. (2012) found DMC in juvenile detention despite evidence that racial/ethnic minoritized youth were at lower violence risk; such disproportionality remained after accounting for mental health symptoms, seriousness of charges, violence risk, age, and gender. In light of lower crime rates and initiatives to reduce the number of youth who are confined, more research is needed to examine racial/ethnic disproportionality among youth at the point of first contact with the juvenile justice system. Although most research on DMC has focused on youth charged with delinquent offenses, DMC is also observed among youth charged with status offenses (Coalition for Juvenile Justice, 2014). In order to better understand how DMC manifests for first-time justice-involved youth when controlling for legal factors and dynamic criminogenic needs, we examined racial/ethnic identity as a predictor of recidivism.

Present Study

There are several gaps in the extant body of research. Most research examining predictors of recidivism has come from samples of youth with a history of justice involvement, despite evidence that youth at first court contact exhibit similar recidivism risk (Ryan et al., 2014). Furthermore, most research has focused on youth charged with delinquent rather than status offenses, despite evidence that adjudication of status offenses predicts recidivism for youth with a history of court involvement (Myner et al., 1998) and that they are more likely to be prosecuted than delinquent offenses at first court contact (Barrett et al., 2006). Although peer deviancy and substance-related consequences have been found to predict recidivism for justice-involved youth, such relationships have yet to be explored with youth at first court contact. Additionally, most studies have relied on either youth- or caregiver-reported peer deviancy as predictors of recidivism. Finally, given the continued overrepresentation of Black and brown youth in the juvenile justice system, it is important to account for systemic bias against racial/ethnic minoritized youth when exploring both peer deviancy and substance-related consequences as predictors of recidivism. Note that there is no evidence increased recidivism risk is due to a higher likelihood of perpetrating violence or delinquent acts; increased recidivism risk instead reflects institutionalized racism in the juvenile justice system.

The goal of the present study was to expand understanding of youth recidivism to include whether youth and caregiver perceptions of peer deviancy were associated with recidivism and whether Black and brown youth were more likely to recidivate in a sample inclusive of groups traditionally neglected in research (i.e., status offenders and females). The first aim was to examine whether peer deviancy and substance-related consequences were associated with the number of new juvenile court charges (i.e., recidivism) during a 2-year follow-up period for a sample of first-time justice-involved youth. The second aim was to examine whether youth and/or caregiver reports of the youths' peer networks predicted recidivism;

these findings can inform best practices in forensic assessment and case planning for justice-involved youth. The third aim was to examine whether Black, multiracial, and/or Latinx youth were more likely to recidivate, after controlling for covariates and independent variables associated with recidivism.

We hypothesized that higher levels of peer deviancy and more severe substance-related consequences would predict recidivism after accounting for static risk factors in a sample of youth at first contact with the justice system. Specifically, we hypothesized that higher levels of peer deviancy and more severe substance-related consequences would predict recidivism. We also hypothesized that youth who identified as Black, multiracial, and/or Latinx would be more likely to recidivate compared to White non-Latinx youth, after controlling for the influence of dynamic criminogenic needs (i.e., peer deviancy and substance-related consequences).

Method

Participants

The sample consisted of 401 youth who had come into contact with family court in one jurisdiction for the first time, resided in the community, and had an involved caregiver who agreed to participate in the research project. Study exclusion criteria included cognitive impairment that would impede ability to complete assessments, caregiver's unwillingness to participate, and/or if the caregiver and youth had not lived in the same household for at least the past 6 months. Court staff estimates and records indicated approximately 50% of the 4,800 juveniles seen at the court setting during the enrollment period were potentially eligible.

On average, youth participants were 14.53 years old ($SD = 1.54$, range = 12–18), and slightly more than half identified as male (57%). Most identified as Latinx (42.3%), followed by White non-Latinx (31.7%), Black non-Latinx (10.8%), other non-Latinx (8.1%), and multiracial non-Latinx (7.1%). About half (51.5%) had been charged with a delinquent (vs. status) offense. Most caregivers identified as female (87.3%) and the biological parent (92.8%). The average caregiver participant was 41.0 years old ($SD = 7.2$ years). Most caregivers identified as White non-Latinx (43.2%), followed by Latinx (33.9%), other non-Latinx (10.6), Black non-Latinx (8.3%), and multiracial non-Latinx (4.0%). More than 60% of caregivers reported a total annual household income of less than $30,000, to support an average of four people. About two-thirds (65%) reported receiving public assistance (e.g., food stamps, SNAP, WIC, SSI).

Measures

All independent variables were measured at baseline, including demographic, historical legal, psychiatric, and peer factors. The present study used self-report data from the baseline assessment and official court records of recidivism, defined as the number of adjudicated charges across the 24-month follow-up period.

Demographic Factors

Youth and caregivers reported standard demographic characteristics (e.g., age, gender, race, and ethnicity). Caregivers reported whether the youth had ever been removed from the home and placed elsewhere (e.g., foster care, group home).

Historical Legal Factors

Type of charge (status vs. delinquent offense) was derived from official records. Youth self-reported whether they had committed 23 types of delinquent acts (Thornberry & Krohn, 2000) during the 4 months before their enrollment in the study. The number of acts was summed to create the self-report delinquency measure. Despite evidence of good internal reliability ($\alpha = .79$), two items were excluded from the estimation of Cronbach's α because zero or one participant reported those acts and they did not contribute any variance (i.e., forcing someone to have sex and committing robbery). Because this variable was positively skewed and leptokurtic, it was log-transformed (see Table 1). The transformed variable had acceptable skewness and kurtosis and was used for subsequent analyses.

Psychiatric Factors and Substance-Related Consequences

Caregivers reported whether their youth had ever been hospitalized for psychiatric reasons, which was dichotomized to represent the presence (1) or absence (0) of a prior psychiatric hospitalization. Caregivers also completed the Behavioral Assessment System for Children, 2nd Edition (Reynolds & Kamphaus, 2004), to report the extent of their child's externalizing problems compared to a combined gender sample using a t score (range = 36–108, $M = 59.89$, $SD = 14.59$). Externalizing problems were considered clinically significant when the t score was at or above 70, resulting in a dichotomous variable representing the presence (1) or absence (0) of clinically significant symptoms.

Alcohol-related consequences were assessed using the 24-item Brief Young Adult Alcohol Consequences Questionnaire (Kahler et al., 2006). Youth responded yes (1) or no (0) to statements describing consequences of alcohol use (e.g., "I have taken foolish risks when I have been drinking"; $\alpha = .86$). Cannabis-related consequences were assessed using the 21-item Brief Marijuana Consequences Questionnaire (Simons et al., 2012). Youth responded yes (1) or no (0) to statements describing consequences of cannabis use (e.g., "I have driven a car when I was high"; $\alpha = .83$). Total sum scores were created so that higher scores reflected more alcohol- and cannabis-related consequences, respectively. Both measures of substance-related consequences were kurtotic and were log-transformed before data analysis.

Peer Factors

Gang Involvement.—Youth self-reported whether they had ever belonged to a gang (yes/no).

Peer Delinquency.—Youth self-reported their exposure to delinquent peers and perceptions regarding how their peers would respond to their own delinquent behavior (Thornberry et al., 1994). Eight items assessed peer delinquency (e.g., "In the past 4 months, how many of your friends stole something worth more than $100?"; $\alpha = .94$),

with responses ranging from 1 (*none of them*) to 4 (*most of them*); higher scores reflect that a greater number of their peers participated in delinquent behavior. Because of significant skewness and leptokurtosis, this variable was log-transformed, which resulted in skewness and kurtosis within acceptable limits; the log-transformed variable was used for inferential statistical analysis (see Table 1). Six items assessed beliefs about peer responses to delinquent behaviors (e.g., "What would your friends say if you used a weapon or force to get money or things from people?"; α = .91), with responses ranging from 1 (*say it was wrong*) to 3 (*say it was ok*); higher scores reflect greater perceived acceptance by peers.

Caregivers completed an 11-item assessment of three dimensions of youth's peer associations (Dishion & Kavanagh, 2003). Deviant behavior of their child's peers (seven items; e.g., "What percentage of your child's friends misbehaved or broke the rules?"; α = .75) was rated on a scale from 1 (*very few, less than 25%*) to 5 (*almost all, more than 75%*); scores were averaged, with higher scores indicating more perceived peer deviant behavior. Peer prosocial behavior (two items; e.g., "How often did your child associate with others who took school seriously and completed their homework?"; α = .83) was rated on a scale from 1 (*never*) to 5 (*always*); items were averaged so that higher scores reflect more perceived prosocial behavior among peers. Parental monitoring of peer relationships (two items; e.g., "How well did you know your child's peers at school?"; α = .76) was rated on a scale from 1 (*very well*) to 4 (*not at all*); scores were averaged so that higher scores reflect higher levels of parental monitoring.

Resistance to Peer Influence.—Youth self-reported their ability to resist peer influence (Steinberg & Monahan, 2007). Each item presents two statements on a single scale and asks youth to rate themselves (seven items; e.g., "Some people would do something that they knew was wrong just to stay on their friends' good side. BUT Other people would not do something they knew was wrong just to stay on their friends' good side"; α = .78). Responses ranged from 1 (*really true of me, item on left*) to 4 (*really true of me, item on right*).

Recidivism

Official court records were examined to document recidivism data, operationalized as the number of new charges after initial contact with the court during a 24-month follow-up period (range = 0–16, $M = 1.07$, $SD = 2.33$). The recidivism variable distribution was highly leptokurtic and right skewed (see Table 1). The types of charges included property (e.g., larceny/theft), nonviolent (e.g., drug/alcohol violation), violent (e.g., simple assault), and status (e.g., curfew and loitering) offenses.

Procedure

The Institutional Review Board of the University of California, San Francisco, approved all study procedures (#15-17258). Potential participants received a study flyer with their court appointment letter and were approached by research assistants at their first appointment to determine interest and eligibility. Interested youth and families were screened in a private setting at the court; for those eligible, assent and consent were obtained offsite at the home, in a private community space, or in a research lab. Youth and caregiver assessments (<2 hr)

were conducted using tablet-based, audio-assisted computerized assessment in English and in Spanish (caregivers only). Audio-assisted computerized assessment improves self-report reliability (Romer et al., 1997), is easy to administer, and is time and cost-effective. Follow-up assessments were conducted every 4 months postbaseline for 24 months. The current report uses data from the baseline assessment and official records across the 24-month follow-up period.

Results

Plan of Analysis

Preliminary analyses consisted of descriptive statistics, Pearson product moment correlations, and regression analyses to examine bivariate relationships between demographic covariates, historical legal risk factors, psychiatric and substance related consequences factors, peer factors, and recidivism. Given overdispersion in the recidivism variable (i.e., the conditional variance was greater than the conditional mean), negative binomial regression was used for all analyses involving this outcome. We used SPSS (Version 27) for data preparation, data cleaning, calculation of descriptive statistics, and bivariate regression analyses. We used R statistical software (Version 4.1.0; R Core Team, 2021) for calculating correlations, log-transforming skewed independent variables, multiple imputation, and multivariate regression analyses.

Primary analyses consisted of stepwise multivariate negative binomial regression analyses predicting recidivism including demographic controls (i.e., youth gender, age, race/ethnicity, and history of out-of-home placement). Within the sample, there were complete data for each of the independent variables and the dependent variable that were included in the final step of the nested regression analysis ($n = 358$, 89.3%). In order to include the entire sample ($N = 401$) in the nested multivariate regression analyses, we employed multiple imputation for missing data using the mice R package (Version 3.13.0; van Buuren & Groothuis-Oudshoorn, 2011); model coefficients were pooled from 10 imputed data sets for the multivariate models. We used the MASS package's (Version 7.3-54; Venables & Ripley, 2002) glm.nb function for nested negative binomial regression analyses. The data sets generated and analyzed during the present study are not publicly available but are available from the corresponding author on reasonable request.

Descriptive Statistics

Age was significantly correlated with greater resistance to peer influence, greater perceived peer acceptance of delinquent acts, more self-reported consequences of alcohol and cannabis, and caregiver report of deviant peers (see Table 2). Youth-reported past-4-month peer deviancy was positively associated with past-4-month self-reported delinquency and alcohol-related consequences. Youth-reported peer deviancy was also associated with caregiver-reported clinically significant externalizing symptoms, as well as more deviant peers and less prosocial peers. Caregivers' reports of youth having more deviant peers were positively associated with youths' reports of past-4-month delinquency, all youth-reported peer measures, and psychiatric and substance-related-consequences variables.

Bivariate Negative Binomial Regression Analyses

Demographics and independent variables predicted recidivism at 2-year follow-up, which was operationalized as the number of new charges (see Table 3).

Demographic Factors

Female participants were less likely to recidivate, β = −0.48, *SE* = 0.22, *p* = .03. Compared to non-Latinx White participants, Latinx participants were more likely to recidivate, β = 0.55, *SE* = 0.25, *p* = .03.

Historical Legal Risk Factors

Youth who had been charged with a delinquent offense were more likely to recidivate compared to those with status offenses, β = 0.81, *SE* = 0.21, *p* < .001. Youth who self-reported engaging in more past-4-month delinquency were also more likely to recidivate, β = 0.92, *SE* = 0.31, *p* = .004.

Psychiatric Factors and Substance-Related-Consequences Factors

Caregiver report of clinically significant externalizing symptoms was associated with greater recidivism risk, β = 0.73, *SE* = 0.24, *p* = .002. Similarly, youth report of cannabis-related consequences was associated with greater recidivism risk, β = 0.73, *SE* = 0.34, *p* = .03, but youth report of alcohol-related consequences was not, β = 0.58, *SE* = 0.36, *p* = .11.

Peer Factors

Youth whose caregivers rated their peers as more deviant were more likely to recidivate, β = 0.72, *SE* = 0.16, *p* < .001. Caregivers' report of prosocial peers also predicted recidivism, such that youth with more prosocial peers were less likely to recidivate, β = −0.51, *SE* = 0.11, *p* < .001. In contrast, parental monitoring was not associated with recidivism. Youths' report of peer deviancy (i.e., lifetime gang involvement, past-4-month peer deviance, and perceived peer acceptance of delinquent acts), their resistance to peer influence, and their own deviant beliefs did not predict recidivism.

Multivariate Negative Binomial Regression Analyses

A series of multivariate negative binomial regression analyses was conducted to predict the number of new charges during the 2 years following first court contact (see Table 4). Multivariate Wald tests were used to determine whether adding independent variables (IVs) at each step significantly improved model fit. Demographic IVs were entered at Step 1, historical legal risk factor IVs were added at Step 2, psychiatric factors and substance-related consequences IVs were added at Step 3, and caregiver-reported peer factors were added at Step 4. Multicollinearity was examined by reviewing the variance inflation factor values (VIFs) for Model 4. All VIFs for IVs indicated that multicollinearity was not a problem for the full set of IVs (range = 1.06–1.68), as they were far less than 10 (see Mertler & Vannatta, 2010).

Demographic Factors

In Model 1, we examined the association between demographic factors and recidivism. Females were less likely to recidivate than males, $\beta = -0.57$, $SE = 0.22$, $p = .009$, incident rate ratio (IRR) = 0.56. Older youth were also less likely to recidivate, $\beta = -0.15$, $SE = 0.07$, $p = .030$, $IRR = 0.86$. Compared to participants who identified as White non-Latinx, Black non-Latinx youth were more than twice as likely to recidivate, $\beta = 0.86$, $SE = 0.36$, $p = .018$, IRR = 2.35. History of out-of-home placement was not associated with recidivism.

Historical Legal Factors

In Model 2, historical legal factors (i.e., offense type and self-reported past-4-month delinquency) were added to the demographic factors included in Model 1. Results of the multivariate Wald test indicated the addition of historical legal factors in Model 2 significantly improved model fit, $\chi^2(2, 366.54) = 12.92$, p .001. After controlling for the impact of historical legal risk factors on recidivism, demographic factors (i.e., gender, age, and race/ethnicity) continued to predict recidivism in the expected direction. Youth who were charged with a delinquent offense were twice as likely to recidivate than those charged with a status offense, $\beta = 0.69$, $SE = 0.22$, $p = .005$, IRR = 1.99. Similarly, youth who reported higher levels of delinquency in the past 4 months were more likely to recidivate, $\beta = 1.02$, $SE = 0.31$, $p < .001$, IRR = 2.77.

Psychiatric Factors and Substance-Related Consequences

In Model 3, psychiatric factors (i.e., history of inpatient psychiatric hospitalization and caregiver-reported clinically significant externalizing symptoms) and substance- (i.e., alcohol- and cannabis-) related consequences were examined in addition to the demographic and historical legal risk factors included in Model 2. Results of a multivariate Wald test indicated that the addition of psychiatric factors in Model 3 improved the model fit compared to Model 2, $\chi^2(4, 380.57)$, $p = .003$. After controlling for the impact of psychiatric factors and substance-related consequences, gender, age, and racial/ethnic identity continued to predict recidivism in the same direction; however, the addition of psychiatric factors and substance-related consequences resulted in two changes from the prior model. Specifically, participants who identified as multiracial non-Latinx, $\beta = 1.08$, $SE = 0.40$, $p = .007$, IRR = 2.93, and Latinx, $\beta = 0.61$, $SE = 0.25$, $p = .014$, IRR = 1.84, were more likely to recidivate compared to White non-Latinx participants. In this model, having been charged with a delinquent offense continued to predict recidivism, but past-4-month self-reported delinquency was no longer a statistically significant predictor.

Among psychiatric and substance-related-consequences factors, only clinically significant externalizing problems reported by caregivers, $\beta = 0.49$, $SE = 0.23$, $p = .037$, IRR = 1.63, and alcohol-related consequences, $\beta = 1.04$, $SE = 0.44$, $p = .017$, IRR = 2.84, predicted recidivism. In contrast, neither a history of inpatient psychiatric hospitalization nor cannabis-related consequences were associated with recidivism.

Peer Factors

In Model 4, caregiver-reported peer factors were examined in addition to the aforementioned demographics, historical legal risk factors, psychiatric factors, and substance related

consequences included in Model 3. Results of a multivariate Wald test indicated that the addition of peer factors in Model 4 resulted in a significantly better fit compared to Model 3, $\chi^2(2, 375.79) = 6.09$, $p = .003$. After controlling for the impact of peer, historical legal, and psychiatric factors, the same demographic factors and being charged with a delinquent offense continued to predict recidivism in the same direction observed in Model 3; however, caregiver-reported clinically significant externalizing symptoms were no longer a statistically significant predictor of recidivism. Among psychiatric and substance-related-consequences factors, only alcohol-related consequences were associated with greater risk of recidivism, $\beta = 0.80$, $SE = 0.43$, $p = .062$, IRR = 2.22, after controlling for all other IVs in Model 4; this relationship did not reach statistical significance but is notable because alcohol-related consequences had the second largest effect on recidivism after race/ethnicity, similar to that of a delinquent charge (IRR = 2.17). Among caregiver-reported peer factors, greater levels of peer deviancy for their youth predicted more new charges, $\beta = 0.49$, $SE = 0.19$, $p = .009$, IRR = 1.63, but their youth's prosocial peers did not.

Discussion

Risk and needs assessment for justice-involved youth aids the identification of recidivism risk and targets for intervention to reduce such risk (Vincent et al., 2012). Identification of both static risk factors and dynamic criminogenic needs is essential to the identification of risk, but only the latter inform case planning decisions (Andrews & Bonta, 2006, 2010). The first aim of this longitudinal study was to examine whether two dynamic criminogenic needs (i.e., peer deviancy and substance-related consequences) predicted recidivism for a sample of first-time justice-involved youth. As hypothesized, peer deviancy and alcohol-related consequences were found to be salient predictors of future court involvement for this sample with relatively equal representation of participants who identified as male and female as well as those charged with status and delinquent offenses; these relationships were statistically significant after accounting for the impact of demographic, psychiatric, and historical static risk factors. Bivariate analyses showed that cannabis-related consequences, but not alcohol-related consequences, predicted recidivism. Results of multivariate analyses, however, suggested the opposite: Cannabis-related consequences no longer predicted recidivism, whereas alcohol-related consequences did. The second aim was to examine whether youth self- and/or caregiver-reported deviancy in the youth's peer group predicted recidivism. Results of bivariate analyses showed that whereas youth-reported peer measures did not predict recidivism, caregivers' reports of their youth's deviant and prosocial peers predicted recidivism in the expected direction. After controlling for demographic, legal, psychiatric, and historical static risk factors, only caregivers' reports of their youth's deviant peers predicted more new charges during the 2-year follow-up period. The third aim was to examine whether Black and brown youth were more likely to recidivate compared to White non-Latinx youth, after controlling for covariates and independent variables associated with recidivism. Consistent with our hypothesis, Black and multiracial non-Latinx and Latinx youth were more likely to recidivate than White non-Latinx youth.

A number of demographic characteristics also predicted recidivism at the multivariate level. Younger participants were more likely to recidivate than older participants and males were more likely to recidivate than females, consistent with meta-analytic findings (Cottle et al.,

2001). Also consistent with the extant literature (Desai et al., 2012; Leiber et al., 2011; Piquero, 2008), Latinx, Black non-Latinx, and multiracial participants were significantly more likely to recidivate compared to White non-Latinx participants, after controlling for other demographics, historical legal risk factors, and two dynamic criminogenic needs (i.e., alcohol-related consequences and peer deviancy). This finding is likely reflective of racial bias documented in studies of school disciplinary practices (Okonofua & Eberhardt, 2015) and referrals to juvenile court (Hughes et al., 2020); police perceptions of criminality (Eberhardt et al., 2004); juvenile court staff diversion decisions (Love & Morris, 2019); prosecutorial discretion (Smith & Levinson, 2012); juvenile court judges' disposition decisions (Peck & Jennings, 2016), including sentences of life without parole (Sterling, 2013); and racist media descriptions of adult Black defendants increasing the likelihood of execution (Goff et al., 2008). Thus, there is ample evidence that racial bias permeates most, if not all, aspects of the justice system and accounts for a large portion of the variance in continued involvement in the juvenile justice system as well as at initial court contact for youth, per our study, regardless of their individual-level risk.

Although identifying the exact mechanism that increased the likelihood of ongoing court involvement for Black, multiracial, and/or Latinx youth participants in this sample is beyond the scope of this study, a review of the literature provides some guidance. For example, youth of color are more likely to have police contact because of increased surveillance in their neighborhoods prescribed by so-called proactive policing and the War on Crime in the 1980s (Stevens & Morash, 2015). Further, results of longitudinal research with Black and brown ninth-grade boys in New York City suggested that the frequency of police stops was associated with increased self-report delinquency 12 months later; this relationship was partially mediated by psychological distress (Del Toro et al., 2019). The authors also found that the direct relationship between police stops and delinquent behaviors 6 months later interacted with age, with younger participants impacted to a greater extent. In other words, police stops appear to be iatrogenic, at least for boys of color in an urban area.

Given that the current sample consisted of youth at their first-ever court contact, mechanisms that contribute to DMC for justice-involved youth at this stage of first-time involvement in the juvenile justice system should be considered. For example, juvenile probation officers typically make recommendations to the court at the preadjudication phase as well as postadjudication decisions to file probation violations. Using a vignette design, Aalsma et al. (2017) found that probation officers were more likely to recommend intensive and restrictive conditions for Black youth when their family had been involved with the probation process in the past; the opposite was true for White youth with past family involvement in the probation process, who were likely to be mandated to fewer, less intensive restrictions. Among youth in two jurisdictions who had a probation violation in their case file, Bechtold et al. (2015) found no evidence that the youth's race/ethnicity influenced the likelihood of probation violations; however, they were not able to control for dynamic criminogenic needs that may have influenced the likelihood of probation violations. Thus, future research should examine the mechanisms that contribute to DMC for justice-involved youth at the point of first court contact.

Practice Implications

Results of this study can inform risk assessment and case planning decisions with first-time justice-involved youth. The relatively equal representation in terms of gender identity and charge severity improves the generalizability of these findings to both female- and male-identified youth and those charged with both status and delinquent offenses.

Best practices in risk assessment are to evaluate both historical static risk factors and dynamic criminogenic needs because they are associated with recidivism risk (Clarke et al., 2017; McGrath & Thompson, 2012; Vincent et al., 2011, 2012). In the present study, the results of multivariate analyses showed that both historical legal risk factors and dynamic criminogenic needs predicted recidivism during the 2-year follow-up period. Because this sample consisted of first-time justice-involved youth, past involvement with the justice system was not a static risk factor for this sample. Among legal factors, only being charged with a delinquent offense predicted recidivism. In contrast, past-4-month self-reported delinquency, caregiver-reported externalizing behavior (i.e., aggression, hyperactivity, and conduct problems), a history of out-of-home placement, and psychiatric hospitalizations did not. Thus, these findings indicate that being charged with a delinquent offense was the only salient legal risk factor for recidivism.

Both dynamic criminogenic needs predicted recidivism, although these findings are nuanced when compared with the extant literature. Only alcohol-related consequences predicted recidivism—not consequences related to cannabis, which is inconsistent with meta-analytic results showing that drug-related consequences increased recidivism risk for justice-involved youth regardless of gender, whereas alcohol-related consequences predicted recidivism only for males (Dowden & Brown, 2002); this inconsistency may be due to the relatively equal representation of males and females in our sample, which provided our study with greater statistical power than others to examine the interaction between gender and the consequences of different types of substances (i.e., alcohol & cannabis) in predicting recidivism. Furthermore, Dowden and Brown (2002) included youth and adult samples in their study, which suggests that their results may be less generalizable to justice-involved youth, in particular. Our results are also consistent with prior findings showing that peer influence may have different impacts on the use of alcohol and cannabis, perhaps due to engagement in delinquent acts together (Tsakpinoglou & Poulin, 2017) or to gene—social group interactions (Watts & McNulty, 2015).

Although our data were not collected in the context of a risk assessment procedure, the results highlight the importance of collecting data from both youth and their caregivers to identify recidivism risk and targets for intervention when youth first encounter the court, especially when identifying whether peer deviancy is a salient dynamic criminogenic need. This recommendation is bolstered by prior research suggesting that adolescents' perceptions of peer deviancy may not be reliable. For example, college students underestimated the actual level of delinquent acts committed by their friends (Boman et al., 2012). In a study of justice-involved youth, caregivers' reports of peer deviancy predicted recidivism, whereas youth's reports did not (Stoolmiller & Blechman, 2005). Because we used different measures of peer deviancy for caregivers and youth, we were unable to make that same

comparison in this study; however, underreporting of peer deviancy by youth is one possible reason why only caregivers' reports of their justice-involved youths' deviant peers predicted recidivism. Collecting information from both youth and caregivers is also likely to yield more information about specific responsivity factors, such as mental health needs, that should be targeted for intervention (Burke et al., 2015). Though not directly tied to recidivism risk, some evidence suggests that receipt of services for specific responsivity factors can reduce recidivism risk (Vieira et al., 2009), potentially via increasing the number of dynamic criminogenic needs that are targeted for intervention (McCormick et al., 2017).

Notably, a greater number of prosocial peers was associated with less recidivism risk at the bivariate level but was no longer significant after controlling for covariates, including the impact of deviant peers. Meta-analytic findings suggest that prosocial peers are protective against recidivism and deviant peers increase recidivism risk for both male and female justice-involved youth (Scott & Brown, 2018). However, the current findings suggest that the protective effect of prosocial peers may be washed out after controlling for demographics, historical legal risk, and deviant peers. In this sample of justice-involved youth, recidivism risk 2 years after first contact with the court was more closely associated with caregiver-reported deviant peers than caregiver reported-prosocial peers.

Limitations, Strengths, and Future Directions

Some limitations to the current findings should be considered. These findings are based on a sample of justice-involved youth in first-time contact with the juvenile justice system in the northeast region of the United States and may not be generalizable to other jurisdictions or populations of justice-involved youth. Because recidivism was based on new charges within the state 2 years later, charges youth received from other jurisdictions would not have been included in these analyses. However, the prospective study design allowed for tracking of participants every 4 months during the 2-year follow-up period, which indicated that most participants remained in the same jurisdiction over that period; being charged during the follow-up period was therefore most likely to occur in the jurisdiction where recidivism data were collected. Another limitation is that recidivism was operationalized as the number of formal charges, which means other potential collateral measures of recidivism (e.g., arrest) were not examined. Given that formal charges are a more conservative estimate of recidivism, because they theoretically require more proof of delinquency than arrests, replication of these findings with number of arrests as the dependent variable is warranted to understand whether substance use and peer deviancy predict more police contact as well. Despite such limitations, this study had multiple strengths, including comparison of youth- and caregiver-report of deviant peers (most studies have relied on only one source) and representation of youth charged with status offenses and females (historically excluded groups in this area of research). Future research should attempt to replicate these findings in other jurisdictions.

Conclusion

These findings contribute to the extant literature by examining predictors of recidivism for youth at first contact with the juvenile justice system. After accounting for empirically

informed covariates, peer deviancy and alcohol-related consequences functioned as dynamic criminogenic needs for first-time justice-involved youth. Cannabis-related consequences were not associated with recidivism risk in multivariate analyses. Our findings highlight the importance of collecting data from multiple sources, including both youth and their caregiver, during the risk assessment and case planning process.

The current findings also contribute to a large body of literature on DMC by showing that racial/ethnic minoritized youth are at increased risk of continued involvement in the justice system from the point of first-ever contact. Specifically, first-time justice-involved youth who identified as Latinx, Black non-Latinx, or multiracial non-Latinx were at increased recidivism risk after accounting for a range of demographic, legal, and behavioral health factors, suggesting that increased recidivism risk was not due solely to increased criminogenic risk at the individual or peer level. Researchers should continue to examine mechanisms that drive DMC for justice-involved youth at first court contact and expand assessment and intervention to incorporate impact of structural racism on youth risk for recidivism. Likewise, juvenile court personnel (e.g., judges, probation officers) and service providers who serve justice-involved youth should consider how their practices and decision-making processes contribute to DMC in their own jurisdictions.

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Public Significance Statement

This study highlights the need to identify substance use and peer deviancy among youth at their first contact with the court system. For clinicians, these findings may inform risk assessment and case planning for justice-involved youth historically underrepresented in research (i.e., females, youth charged with a status offense, youth at first court contact). Finally, institutional racism influences continued court contact above and beyond individual behavioral determinants, making it imperative to develop and test multilevel recidivism prevention interventions that explicitly address structural racism within the legal system.

Table 1

Descriptive Statistics

Variable	n (%)/M (SD)	Range	Original		Log-transformed	
			Skewness (SE)	Kurtosis (SE)	Skewness (SE)	Kurtosis (SE)
Demographic Factors						
Gender[a]						
Male	226 (56.6%)					
Female	171 (42.9%)					
Age	14.53 (1.54)	12–18	0.03 (0.12)	−0.97 (−1.92)		
Race/ethnicity[b]						
Black non-Latinx	43 (10.8%)					
Other non-Latinx	31 (7.8%)					
Multiracial non-Latinx	29 (7.3%)					
Latinx	168 (42.2%)					
White non-Latinx	127 (31.9%)					
Out-of-home history[c]	41 (10.3%)					
Legal factors						
Offense type[d]						
Status	195 (48.6%)					
Delinquent	206 (51.4%)					
Past-4-month delinquency	2.11 (2.72)	0–15	1.84 (0.12)	4.36 (0.25)	0.38 (0.12)	−1.14 (0.25)
Psychiatric factors and substance-use severity						
Inpatient history[e]	51 (12.8%)					
Externalizing problems	97 (24.4%)					
Alcohol consequences	0.84 (2.31)	0–13	3.28 (0.12)	10.93 (0.24)	2.24 (0.12)	3.73 (0.24)
Cannabis consequences	1.14 (2.48)	0–21	3.33 (0.12)	15.39 (0.24)	1.51 (0.12)	1.10 (0.24)
Caregiver-reported peer factors						
Deviant peers	1.79 (0.63)	1.00–3.86	1.08 (0.13)	0.76 (0.25)		

Variable	n (%)/M (SD)	Range	Original		Log-transformed	
			Skewness (SE)	Kurtosis (SE)	Skewness (SE)	Kurtosis (SE)
Prosocial peers	3.29 (0.97)	1.00–5.00	−0.16 (0.12)	−0.25 (0.25)		
Parental monitoring	2.12 (0.82)	1.00–4.00	0.40 (0.13)	−0.52 (0.26)		
Youth-reported peer factors						
Resistance to peer influence	2.74 (0.52)	1.60–4.00	0.49 (0.13)	−0.38 (0.26)		
Gang involvement	26 (6.6%)	—				
Past-4-month peer deviancy	2.28 (4.68)	0–24	3.08 (0.13)	10.03 (0.25)	1.22 (0.13)	0.47 (0.26)
Peer reactions	8.15 (2.97)	6–18	1.53 (0.13)	1.71 (0.26)		
Deviant beliefs	27.54 (6.51)	7–32	−1.74 (0.13)	2.25 (0.25)		
Recidivism						
Recidivism	1.07 (2.33)	0–16	3.43 (0.12)	13.82 (0.24)		

[a] 0 = female, 1 = male.

[b] 0 = White non-Latinx, 1 = Black non-Latinx, 2 = other non-Latinx, 3 = multiracial non-Latinx, 4 = Latinx.

[c] 0 = never removed from home, 1 = history of removal from home.

[d] 0 = status offense, 1 = delinquent offense.

[e] 0 = no history of inpatient hospitalization, 1 = history of inpatient hospitalization.

Table 2

Correlations for Continuous Independent Variables

Parameter 1	Parameter 2	r	95% CI LL	95% CI UL	t	df	p
Alcohol consequences	Age	.23	.13	.32	4.57	390	<.001
Alcohol consequences	Cannabis consequences	.54	.46	.60	12.65	393	<.001
Alcohol consequences	Number of charges	.12	.02	.21	2.35	391	.66
Alcohol consequences	Past-4-month delinquency	.36	.27	.45	7.61	379	<.001
Alcohol consequences	Peer belief	−.15	−.25	−.05	−2.97	371	.13
Alcohol consequences	Peer delinquency	.15	.05	.25	2.85	357	.18
Alcohol consequences	CG peer delinquency	.17	.07	.27	3.32	367	.04
Alcohol consequences	CG parental monitoring	.05	−.06	.15	0.85	355	.99
Alcohol consequences	CG prosocial peers	−.10	−.20	.00	−1.99	381	.99
Alcohol consequences	RPI	−.02	−.13	.08	−0.44	351	.99
Age	Cannabis consequences	.23	.14	.32	4.72	397	<.001
Age	Number of new charges	−.07	−.17	.03	−1.46	397	.99
Age	Past-4-month delinquency	.07	−.03	.17	1.41	385	.99
Age	Peer belief	−.17	−.27	−.07	−3.33	376	.04
Age	Peer delinquency	.09	−.01	.20	1.81	362	.99
Age	CG peer delinquency	.11	.01	.21	2.11	373	.99
Age	CG parental monitoring	−.02	−.12	.09	−0.31	360	.99
Age	CG prosocial peers	−.02	−.12	.08	−0.46	387	.99
Age	RPI	.14	.04	.24	2.72	355	.25
Cannabis consequences	Number of new charges	.10	.01	.20	2.08	399	.99
Cannabis consequences	Past-4-month delinquency	.32	.22	.40	6.56	386	<.001
Cannabis consequences	Peer belief	−.17	−.27	−.07	−3.40	376	.04
Cannabis consequences	Peer delinquency	.09	−.01	.19	1.79	362	.99
Cannabis consequences	CG peer delinquency	.16	.06	.25	3.09	374	.09
Cannabis consequences	CG parental monitoring	.08	−.02	.18	1.54	361	.99
Cannabis consequences	CG prosocial peers	−.11	−.21	−.02	−2.28	388	.77
Cannabis consequences	RPI	−.10	−.20	.00	−1.88	355	.99

Parameter 1	Parameter 2	r	95% CI		t	df	p
			LL	UL			
Number of charges	Past-4-month delinquency	.21	.12	.31	4.32	386	<.01
Number of charges	Peer belief	−.10	−.20	.00	−1.90	376	.99
Number of charges	Peer delinquency	.08	−.02	.19	1.62	362	.99
Number of charges	CG peer delinquency	.26	.16	.35	5.11	374	<.001
Number of charges	CG parental monitoring	.05	−.05	.15	0.96	361	.99
Number of charges	CG prosocial peers	−.22	−.31	−.13	−4.49	388	<.001
Number of charges	RPI	−.03	−.13	.08	−0.52	355	.99
Past-4-month delinquency	Peer belief	−.20	−.29	−.10	−3.89	372	.01
Past-4-month delinquency	Peer delinquency	.38	.28	.46	7.67	359	<.001
Past-4-month delinquency	CG peer delinquency	.25	.15	.34	4.93	364	<.001
Past-4-month delinquency	CG parental monitoring	.05	−.05	.15	0.96	352	.99
Past-4-month delinquency	CG prosocial peers	−.17	−.26	−.07	−3.32	378	.04
Past-4-month delinquency	RPI	−.05	−.15	.06	−0.93	349	.99
Peer belief	Peer delinquency	−.11	−.21	−.01	−2.10	359	.99
Peer belief	CG peer delinquency	−.06	−.16	.04	−1.14	353	.99
Peer belief	CG parental monitoring	.04	−.07	.14	0.73	343	.99
Peer belief	CG prosocial peers	.05	−.05	.15	0.99	367	.99
Peer belief	RPI	.14	.04	.24	2.69	347	.27
Peer delinquency	CG peer delinquency	.11	.00	.21	2.01	342	.99
Peer delinquency	CG parental monitoring	−.03	−.14	.08	−0.57	330	.99
Peer delinquency	CG prosocial peers	−.12	−.22	−.02	−2.27	353	.77
Peer delinquency	RPI	−.11	−.21	.00	−1.99	337	.99
CG peer delinquency	CG parental monitoring	.24	.14	.34	4.56	341	<.001
CG peer delinquency	CG prosocial peers	−.53	−.60	−.46	−12.23	373	<.001
CG peer delinquency	RPI	−.07	−.17	.04	−1.25	334	.99
CG parental monitoring	CG prosocial peers	−.28	−.37	−.18	−5.40	354	<.001
CG parental monitoring	RPI	.06	−.05	.16	1.02	323	.99
CG prosocial peers	RPI	.13	.02	.23	2.43	346	.54

Note. Alcohol- and cannabis-related consequences, past-4-month delinquency, peer belief (i.e., beliefs regarding peer reactions to delinquency), peer delinquency, and resistance to peer influence were self-reported by youth participants. CG = caregiver-reported; CI = confidence interval; *LL* = lower limit; *UL* = upper limit; RPI = resistance to peer influence.

Table 3

Bivariate Negative Binomial Regression Models

Independent variables	β (SE)	95% CI		Wald χ²	p
		LL	UL		
Demographic Factors					
Gender[a]	−0.48 (0.22)	−0.11	−0.06	4.76	.03
Age	−0.11 (0.07)	−0.25	0.03	2.47	.12
Race/ethnicity[b]					
Black non-Latinx	0.67 (0.37)	−0.02	1.42	3.28	.07
Other non-Latinx	−0.34 (0.45)	−1.21	0.58	0.57	.45
Multiracial non-Latinx	0.62 (0.43)	−0.18	1.53	2.08	.15
Latinx	0.55 (0.25)	−0.06	1.05	4.84	.03
Out-of-home history[c]	0.57 (0.34)	−0.06	1.28	2.81	.10
Historical Legal Risk Factors					
Offense type[d]	0.81 (0.21)	0.40	1.23	14.88	<.001
Past-4-month delinquency[log]	0.92 (0.31)	0.34	1.51	8.81	.004
Psychiatric Factors and Substance-Use Severity					
Inpatient history[e]	0.45 (0.31)	−0.13	1.09	2.11	.14
Externalizing problems[f]	0.73 (0.24)	0.27	1.21	9.25	.002
Alcohol consequences[log]	0.58 (0.36)	−0.07	1.31	2.60	.11
Cannabis consequences[log]	0.73 (0.34)	0.08	1.42	4.61	.03
Caregiver-Reported Peer Factors					
Deviant peers	0.72 (0.16)	0.41	1.06	20.25	<.001
Prosocial peers	−0.51 (0.11)	−0.73	−0.30	21.50	<.001
Parental monitoring	0.11 (0.13)	−0.13	0.38	0.72	.37
Youth-Reported Peer Factors					
Resistance to peer influence	−0.11 (0.21)	−0.52	0.30	0.27	.60

Independent variables	β (SE)	95% CI		Wald χ²	p
		LL	UL		
Gang involvement[g]	0.43 (0.42)	−0.34	1.33	1.05	.31
Past-4-month peer deviancy[log]	0.03 (0.02)	−0.01	0.08	2.25	.18
Peer reactions	0.04 (0.04)	−0.03	0.12	1.00	.25

[a] 0 = female, 1 = male.

[b] 0 = White non-Latinx, 1 = Black non-Latinx, 2 = other non-Latinx, 3 = multiracial non-Latinx, 4 = Latinx.

[c] 0 = never removed from home, 1 = history of removal from home.

[d] 0 = status offense, 1 = delinquent offense.

[e] 0 = no history of inpatient hospitalization, 1 = history of inpatient hospitalization.

[f] 0 = no clinically significant externalizing problems, 1 = clinically significant externalizing problems.

[g] 0 = no history of gang involvement, 1 = history of gang involvement.

[log] Variable was log-transformed to meet regression model assumptions.

Table 4

Multivariate Nested Negative Binomial Regression Models

Model step	Variable	Estimate	95% CI		SE	Wald	p	IRR	95% CI	
			LL	UL					LL	UL
Step 1	(Intercept)	2.03	0.02	4.05	1.03	1.98	.048	7.64	1.02	57.44
	Gender[a]	−0.57	−1.00	−0.15	0.22	−2.63	.009	0.56	0.37	0.87
	Age	−0.15	−0.29	−0.02	0.07	−2.18	.030	0.86	0.75	0.99
	Black non-Latinx[b]	0.86	0.15	1.56	0.36	2.38	.018	2.35	1.16	4.77
	Other non-Latinx[b]	−0.39	−1.30	0.51	0.46	−0.85	.393	0.68	0.27	1.67
	Multiracial non-Latinx[b]	0.60	−0.24	1.44	0.43	1.41	.160	1.82	0.79	4.21
	Latinx[b]	0.48	−0.01	0.97	0.25	1.94	.053	1.62	0.99	2.64
	Out-of-home history[c]	0.42	−0.25	1.08	0.34	1.23	.218	1.51	0.78	2.93
Step 2	(Intercept)	1.61	−0.37	3.59	1.01	1.60	.110	5.00	0.69	36.13
	Gender[a]	−0.49	−0.90	−0.07	0.21	−2.30	.022	0.61	0.41	0.93
	Age	−0.19	−0.32	−0.05	0.07	−2.69	.007	0.83	0.73	0.95
	Black non-Latinx[b]	0.97	0.28	1.65	0.35	2.76	.006	2.63	1.32	5.23
	Other non-Latinx[b]	−0.13	−1.00	0.73	0.44	−0.30	.761	0.87	0.37	2.08
	Multiracial non-Latinx[b]	0.80	0.00	1.61	0.41	1.96	.051	2.23	1.00	4.98
	Latinx[b]	0.46	−0.02	0.95	0.25	1.88	.061	1.59	0.98	2.58
	Out-of-home history[c]	0.52	−0.11	1.15	0.32	1.63	.104	1.69	0.90	3.16
	Offense type[d]	0.69	0.26	1.12	0.22	3.19	.002	1.99	1.30	3.05
	Past-4-month delinquency[log]	1.02	0.41	1.63	0.31	3.27	.001	2.77	1.50	5.11
Step 3	(Intercept)	2.12	0.07	4.17	1.04	2.04	.042	8.36	1.08	64.91
	Gender[a]	−0.56	−0.98	−0.14	0.21	−2.64	.009	0.57	0.37	0.87
	Age	−0.24	−0.38	−0.10	0.07	−3.36	.001	0.79	0.68	0.91

Model step	Variable	Estimate	95% CI LL	95% CI UL	SE	Wald	p	IRR	95% CI LL	95% CI UL
	Black non-Latinx [b]	1.03	0.35	1.71	0.35	2.97	.003	2.80	1.42	5.53
	Other non-Latinx [b]	0.06	−0.82	0.93	0.44	0.13	.896	1.06	0.44	2.54
	Multiracial non-Latinx [b]	1.08	0.29	1.86	0.40	2.70	.007	2.93	1.34	6.42
	Latinx [b]	0.61	0.13	1.10	0.25	2.47	.014	1.84	1.13	2.99
	Out-of-home history [c]	0.34	−0.29	0.98	0.32	1.06	.288	1.41	0.75	2.66
	Offense type [d]	0.82	0.40	1.25	0.22	3.83	<.001	2.28	1.49	3.48
	Past-4-month delinquency [log]	0.35	−0.34	1.04	0.35	0.99	.321	1.42	0.71	2.82
	Inpatient history [e]	0.11	−0.50	0.72	0.31	0.36	.717	1.12	0.61	2.05
	Externalizing problems [f]	0.49	0.03	0.95	0.23	2.09	.037	1.63	1.03	2.57
	Alcohol consequences [log]	1.04	0.19	1.90	0.44	2.40	.017	2.84	1.21	6.68
	Cannabis consequences [log]	0.40	−0.40	1.21	0.41	0.99	.325	1.50	0.67	3.36
Step 4	(Intercept)	1.56	−0.74	3.85	1.17	1.34	.182	4.75	0.48	47.12
	Gender [a]	−0.60	−1.01	−0.19	0.21	−2.86	.004	0.55	0.36	0.83
	Age	−0.23	−0.36	−0.09	0.07	−3.20	.002	0.80	0.70	0.92
	Black non-Latinx [b]	0.95	0.28	1.62	0.34	2.80	.005	2.58	1.33	5.03
	Other non-Latinx [b]	0.14	−0.71	0.99	0.43	0.31	.754	1.15	0.49	2.68
	Multiracial non-Latinx [b]	1.11	0.35	1.87	0.39	2.89	.004	3.04	1.43	6.48
	Latinx [b]	0.58	0.10	1.06	0.24	2.38	.018	1.79	1.11	2.89
	Out-of-home history [c]	0.27	−0.35	0.89	0.32	0.85	.398	1.31	0.70	2.43
	Offense type [d]	0.77	0.36	1.19	0.21	3.69	<.001	2.17	1.44	3.27
	Past-4-month delinquency [log]	0.14	−0.53	0.80	0.34	0.40	.687	1.15	0.59	2.24
	Inpatient history [e]	0.10	−0.49	0.69	0.30	0.33	.744	1.10	0.61	1.98
	Externalizing problems [f]	0.25	−0.23	0.72	0.24	1.01	.315	1.28	0.79	2.06

Model step	Variable	Estimate	95% CI		SE	Wald	p	IRR	95% CI	
			LL	UL					LL	UL
	Alcohol consequences [log]	0.80	−0.04	1.63	0.43	1.87	.062	2.22	0.96	5.11
	Cannabis consequences [log]	0.31	−0.47	1.10	0.40	0.79	.432	1.37	0.62	3.00
	Deviant peers	0.49	0.13	0.86	0.19	2.64	.009	1.63	1.13	2.36
	Prosocial peers	−0.11	−0.34	0.13	0.12	−0.89	.375	0.90	0.71	1.14

Note. CI = confidence interval; IRR = incident rate ratio; LL = lower limit; UL = upper limit.

[a] 0 = female, 1 = male.

[b] 0 = White non-Latinx, 1 = Black non-Latinx, 2 = other non-Latinx, 3 = multiracial non-Latinx, 4 = Latinx.

[c] 0 = never removed from home, 1 = history of removal from home.

[d] 0 = status offense, 1 = delinquent charge.

[e] 0 = no history of inpatient hospitalization, 1 = history of inpatient hospitalization.

[f] 0 = no clinically significant externalizing problems, 1 = clinically significant externalizing problems.

[log] Variable was log-transformed to meet regression model assumptions.