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### Title

Psychiatric and Substance-Related Problems Predict Recidivism for First-Time Justice-Involved Youth.

### Permalink

<https://escholarship.org/uc/item/525306qq>

### Journal

Journal of the American Academy of Psychiatry and the Law, 51(1)

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### Publication Date

2023-03-01

### DOI

10.29158/JAAPL.220028-21

Peer reviewed



# HHS Public Access

Author manuscript

*J Am Acad Psychiatry Law*. Author manuscript; available in PMC 2024 March 01.

Published in final edited form as:

*J Am Acad Psychiatry Law*. 2023 March ; 51(1): 35–46. doi:10.29158/JAAPL.220028-21.

## 2021–2–12 Psychiatric and Substance-Related Problems Predict Recidivism For First-Time Justice-Involved Youth

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### Abstract

Justice-involved youth with clinically significant co-occurring psychiatric and substance-related problems are at increased risk for recidivism. Less is known about how psychiatric symptoms (i.e., internalizing and externalizing) and substance-related problems (i.e., alcohol and cannabis) interact to predict recidivism, especially at first court contact. Among 361 first-time justice-involved youth aged 12 to 18, we used nested, multivariate, negative binomial regression models to examine the association between psychiatric symptoms and substance-related problems, accounting for demographic and legal covariates, with 24-month recidivism (i.e., number of new charges). Clinically significant externalizing symptoms and alcohol-related problems predicted recidivism. Moderation analyses revealed that alcohol-related problems drove recidivism for youth without clinically significant psychiatric symptoms and externalizing symptoms predicted recidivism, regardless of alcohol-related problems. After accounting for other predictors, Latinx, Black non-Latinx, and multiracial non-Latinx youth were more likely to recidivate at follow-up than White non-Latinx youth. Systematic screening, referral, and linkage to treatment for psychiatric and substance-related problems are needed to reduce recidivism risk among first-time justice-involved youth. Differences in recidivism rates by race/ethnicity not attributable to behavioral health needs suggest it is imperative to concurrently deploy large-scale structural interventions designed to combat systemic racial bias and disproportionate minority contact within the juvenile justice system.

### Keywords

juvenile justice; mental health; racial disparities; recidivism; substance use

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Arrest rates for youth under the age of 18 have declined over 50% in the last decade, with approximately 700,000 youth arrested in 2019 compared to over 1.6 million in 2010<sup>1</sup>. Most youth arrests are due to property crimes and simple assault<sup>1</sup>, and Black and Latinx youth are arrested at disproportionately higher rates for the same crimes compared to their White peers<sup>2</sup>. Primary prevention efforts in the community (e.g., school-based interventions) have focused on developing, testing, and implementing large-scale, broad delinquency prevention interventions<sup>3</sup> (e.g., Pittsburgh Youth Study) to prevent youth from coming into contact with the justice system; however, empirically supported secondary prevention interventions to offset recidivism for first-time justice-involved youth are lacking. Ongoing juvenile justice reform efforts focus on diverting youth from detention and keeping youth in the community and with their families with the appropriate, best practice supports. To meet the goals of such reform, there is a growing need to identify and target mechanisms of change to reduce the risk of youth recidivism<sup>4</sup>, particularly for first-time justice-involved youth who are initially diverted from detention.

Substance use and related problems have been repeatedly identified as salient predictors of recidivism among both youth and adults<sup>5,6,7,8</sup>. Justice-involved youth report higher rates of lifetime and recent substance use<sup>8</sup> and misuse<sup>9</sup> compared to their non-justice-involved peers. Of note, among first-time justice-involved youth ( $M = 14.5$  years) nearly 50% reported lifetime cannabis use; 80% of youth reporting lifetime use reported frequent cannabis use in the past four months<sup>10</sup>. Many youth endorsed lifetime alcohol use (30%), with most reporting recent use<sup>10</sup> (past 4 months). Comparisons of substance use by youth race and ethnicity have been conducted across a variety of justice-settings. Among detained youth, White adolescents were more likely to have used substances compared to their Black peers<sup>11,12</sup>. Similarly, White youth were more likely to use substances compared to non-White youth referred to alternative to detention programs<sup>13</sup>. Substance use predicts recidivism among justice-involved youth after accounting for other factors, such as prior delinquency, gender, ethnicity, and age<sup>5,8</sup> and is, therefore, critical to consider in understanding and preventing recidivism.

Justice-involved youth also have high rates of psychiatric need, with rates of psychiatric diagnoses ranging from approximately 30% to 80%<sup>12,14,15,16,17,18</sup>. Justice-involved youth are commonly diagnosed with depressive<sup>8,14,19</sup>, post-traumatic stress<sup>14,20</sup>, externalizing<sup>12,14,21,22</sup> (e.g., attention deficit hyperactivity disorder, disruptive behavior disorder), and mood<sup>8,14</sup> disorders. Racial and ethnic differences in rates of psychiatric diagnoses have been documented among justice-involved youth, with some variability according to setting. Among youth in detention, White youth had significantly higher rates of any psychiatric disorder diagnosis than Black youth, including any disruptive behavior disorder and conduct disorder<sup>12</sup>. Among youth residing in residential facilities, Black youth were more likely than White and Latinx youth to be diagnosed with conduct disorder while White males were more likely to be diagnosed with ADHD, adjustment, anxiety, eating, and mood disorders than Black males<sup>23</sup>. Similarly, a single U.S. state sample of all justice-involved youth (including detained and community supervised youth) found Black youth were more likely to be diagnosed with disorders related to aggression or impulse control compared to White youth<sup>24</sup>. Psychiatric symptoms have been documented as a driver of recidivism, specifically among youth on parole following release from detention<sup>25</sup>.

Psychiatric symptoms and substance-related problems cannot be considered in isolation, as rates of co-occurring disorders range from 21<sup>26</sup> to 61 percent<sup>17</sup> among justice-involved youth. As with psychiatric and substance use disorders more generally, rates of co-occurring disorders are particularly high for White youth<sup>26</sup>. Evidence suggests substance use moderates the association between youths' psychiatric symptoms and recidivism<sup>27</sup>. Further, among community-supervised justice-involved youth referred for a mental health evaluation, those with co-occurring psychiatric and substance use disorders were approximately six times more likely than their non-dually diagnosed peers to be detained over a 12-month follow-up period<sup>8</sup>. Despite the well-documented psychiatric and substance-related needs of justice-involved youth<sup>10</sup>, less is known about the interplay of these needs and how they influence the legal trajectories of youth following first ever juvenile court contact. Disentangling the association of psychiatric symptoms and substance-use related problems with recidivism for youth at their first contact with the justice system, while critically considering the impact of race, ethnicity, sex, and age (i.e., static factors associated with recidivism) will be key to identifying the level (e.g., individual, structural) and type (e.g., substance use, co-occurring) of intervention that could keep youth at the diversion stage from future justice involvement.

## Current Study

The current study examined predictors of recidivism (i.e., number of new legal charges) among youth enrolled in Project EPICC (Epidemiological Project Involving Children in the Court), a two-year longitudinal study of first-time justice-involved youth<sup>10</sup>. Consistent with the approach taken by Tolou-Shams et al.<sup>8</sup>, we examine psychiatric symptoms and substance-related problems (specifically alcohol and cannabis related problems, henceforth referred to as substance-related problems) as predictors of recidivism while considering the impact of relevant demographic and legal history factors on recidivism. We hypothesized that substance-related problems, psychiatric symptoms, and their co-occurrence would predict youth recidivism (i.e., number of new legal charges) over the two-year follow-up period, and that ethnoracial minoritized youth would be disproportionately represented among youth who recidivate.

## Methods

### Participants and Procedure

Participants were 361 first-time justice-involved youth and an involved caregiver. To be eligible for participation, youth had to: be between 12 and 18 years old; have been in contact with the court for the first time within the past 30 days; have an open status (e.g., truancy) and/or delinquent petition (e.g., assault); be living in the community; and have an involved caregiver willing to participate. Study exclusion criteria included cognitive impairment that would impede ability to complete assessments, caregiver's unwillingness to participate, or if the caregiver and youth had not lived in the same household for at least the prior six months.

Participants were recruited through a large family court in the northeastern region of the United States. Potential participants received a study flyer with their court appointment date notification 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 and for those eligible, caregiver consent and youth assent were obtained off-site at the participant's home, private community space, or research lab. 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. Youth and caregiver assessments (less than two hours in duration) were conducted using tablet-based, audio-assisted computerized assessment<sup>26</sup> in English and Spanish (caregiver only). Follow-up assessments were conducted every four months post-baseline for 24 months. Additional study methods are reported in Tolou-Shams et al.<sup>10</sup>. The current report uses data from the baseline assessment and official court records of recidivism across the 24-month follow-up period. The Principal Investigator's university and collaborating sites' Institutional Review Boards (and Office for Human Research Protections) approved all study procedures.

## Measures

**Demographic Characteristics**—Youth and caregiver age, sex, race, and ethnicity were assessed at baseline. Caregivers also reported whether the youth had ever been placed outside of the home (e.g., foster care, group home) or hospitalized on an inpatient psychiatric unit.

**Youth Psychiatric Symptoms**—Youth internalizing and externalizing symptoms were assessed using the Behavior Assessment System for Children, Second Edition<sup>29</sup> (BASC-2). Prior research suggests whereas adolescents tend to capture and report their internal states accurately<sup>30</sup>, their reports on externalizing behaviors (e.g., oppositional behavior) tend to be less reliable<sup>31,32</sup>; therefore, we used adolescent self-report of internalizing symptoms and caregiver report for externalizing symptoms. The Internalizing composite scale is a broad index of inwardly directed distress and combines seven subscales: Atypicality (9 items; e.g., I see weird things), Locus of Control (9 items; e.g., "What I want never seems to matter"), Social Stress (10 items; e.g., "I feel out of place around people"), Anxiety (13 items; e.g., "I worry but I don't know why"), Depression (12 items; e.g., "I feel depressed"), Sense of Inadequacy (10 items; e.g., "I fail at things"), and Somatization (7 items; e.g., "I often have headaches") subscales. Responses were captured using true/false responses and 4-point Likert scales (1=*never* to 4=*almost always*). The Externalizing composite scale consists of the Hyperactivity (8 items; e.g., "Acts without thinking"), Aggression (10 items; e.g., "Threatens to hurt others"), and Conduct Problems (14 items; e.g., "Gets into trouble:) subscales, and is characterized by disruptive behavior problems such as aggression, hyperactivity and delinquency. Caregivers responded to items on 4-point Likert scales (1=*never* to 4=*almost always*). The sum of points for each composite scale provided a raw score then converted to a *t*-score (standardized scores with a mean of 50 and standard deviation of 10) based on a general adolescent sample; scores were dichotomized to reflect clinically significant symptoms, reflected by *t*-scores greater than or equal to 70.

**Youth Substance-Related Problems**—Substance-related problems were assessed using the 24-item Brief Young Adult Alcohol Consequences Questionnaire<sup>33</sup> ( $\alpha = .86$ ) and the 21-item Brief Marijuana Consequences Scale<sup>34</sup> ( $\alpha = .83$ ). For each measure, youth responded yes (1) or no (0) to statements describing typical consequences of substance use (e.g.,

“I have taken foolish risks when I have been drinking” for alcohol consequences; “The quality of my work or schoolwork has suffered because of my marijuana use” for cannabis consequences). Overall scores on both scales were sums of all items endorsed. Higher scores suggested more severe alcohol- or cannabis-related problems.

**Recidivism**—Recidivism was operationalized as the total number of new charges, per official court records, across the 24-month follow-up period (range = 0–16 across the 24 months; range = 0–10 across each 4-month period).

## Plan of Analysis

Preliminary analyses consisted of descriptive statistics and examining bivariate associations between youth demographic (age, gender, race/ethnicity, history of out-of-home placement), legal (status versus delinquent offense at first court contact), psychiatric (history of inpatient hospitalization, clinically significant internalizing symptoms, clinically significant externalizing symptoms), and substance (alcohol- and cannabis-related problems) factors with recidivism. The alcohol- and cannabis-related problems variables were highly kurtotic and were therefore log-transformed prior to analysis to normalize the distributions. Due to 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. Primary analyses consisted of a stepwise comparison of nested models (model 1: demographic; model 2: legal; model 3: psychiatric; model 4: substance-related problems) predicting recidivism. Secondary analyses were conducted to understand the implications of comorbidity by examining interactions between youth psychiatric symptoms and substance-related problems to predict recidivism.

## Results

### Sample Characteristics

**Demographics**—Youth were on average 14.6 years old ( $SD=1.5$ , range=12–18) and 56.0 percent male. The majority were ethnoracial minoritized youth (33.0% White non-Latinx, 11.4% Black non-Latinx, 7.8% other non-Latinx, 6.9% multi-racial non-Latinx, 41.0% Latinx), and 51.0 percent had initial system contact for a delinquent offense. Additional descriptive statistics are presented in Table 1. Caregivers were predominantly female (86.7%) and biological parents (92.8%), on average 41.0 years old ( $SD = 7.3$  years), and the majority identified as a member of ethnoracial minoritized group (43.9% White non-Latinx, 8.9% Black non-Latinx, 9.7% other non-Latinx, 4.4% multi-racial non-Latinx, 33.1% Latinx). Approximately two-thirds of caregivers (63.6%) reported an annual household income below \$30,000, with an average of 3.8 people dependent upon this income; 64.8% reported receiving public assistance (e.g., food stamps, Supplemental Nutrition Assistance Program [SNAP], Women, Infants, and Children [WIC], Supplemental Security Income [SSI]).

**Psychiatric symptoms and substance use**—Youth in the current sample exhibited a range of behavioral health needs. Regarding psychiatric symptoms, 18.3% of youth were in the clinical range for externalizing problems and 14.1% for internalizing problems;

10.2% had a lifetime history of out-of-home placement and 12.7% of inpatient psychiatric hospitalization. Overall, youth reported low levels of problems related to use of alcohol ( $M=0.89$ ,  $SD=2.39$ , range=0–13; 81.4% reported no consequences) and cannabis ( $M=1.24$ ,  $SD=2.58$ , range=0–21; 67.3% reported no consequences).

**Recidivism**—The rate of recidivism was 35.7 percent ( $n = 129$ ), with participants recidivating, on average, once during the 24-month follow-up period ( $SD = 2.27$ ); most ( $n = 232$ , 64.3%) had zero new charges (see Figure 1).

**Attrition**—Although 401 youth-caregiver dyads were enrolled for longitudinal follow-up in the parent study<sup>10</sup>, the current sample was restricted to the 361 (90.0%) with complete data on key predictors of recidivism. Youth included versus excluded (due to missing data) from analyses did not differ on key demographic and historical factors (i.e., age, gender, race/ethnicity, lifetime history of out-of-home placement or psychiatric hospitalization), psychiatric symptoms, or alcohol-related problems; youth included in the analytic sample reported significantly more cannabis-related problems,  $t(30.49)=-2.391$ ,  $p=.023$ , than youth who were excluded.

### Bivariate Analyses

Bivariate negative binomial regressions were used to examine the associations between youth demographic, legal, psychiatric, and substance use factors with recidivism. Demographic factors associated with recidivism included identifying as Latinx compared to White non-Latinx ( $B=0.54$ ,  $p=.039$ ) and reporting lifetime history of out-of-home placement ( $B=0.68$ ,  $p=.053$ ). Identifying as male ( $B=-0.40$ ,  $p=.076$ ) and Black non-Latinx ( $B=0.70$ ,  $p=.059$ ) was marginally associated with recidivism. Age ( $B=-0.09$ ,  $p=.232$ ) was unrelated to recidivism. First-time contact due to a first-time delinquent (versus status offense) ( $B=0.83$ ,  $p<.001$ ) was associated with recidivism. Regarding psychiatric factors, clinically significant levels of externalizing symptoms ( $B=0.73$ ,  $p=.004$ ) were associated with greater likelihood of recidivism whereas clinically significant internalizing symptoms ( $B=-.99$ ,  $p=.005$ ) predicted lower likelihood of recidivism. History of inpatient psychiatric hospitalization ( $B=0.53$ ,  $p=.098$ ) was marginally associated with increased risk for recidivism. Regarding substance use, greater cannabis use-related problems ( $B=0.67$ ,  $p=.047$ ) predicted recidivism and alcohol-related problems ( $B=0.64$ ,  $p=.074$ ) marginally predicted recidivism.

### Primary Analyses

Results of multivariate negative binomial regression analyses are presented in Table 2. The final step of the model (model 4) included all demographic, legal, psychiatric, and substance use factors ( $p < .10$  at bivariate level). A number of significant demographic predictors emerged. Males recidivated more than females ( $B=-0.48$ ,  $p=.035$ ); Black non-Latinx ( $B=0.96$ ,  $p=.009$ ), Latinx ( $B=0.63$ ,  $p=.004$ ), and multiracial non-Latinx ( $B=1.12$ ,  $p=.008$ ) youth recidivated more than White non-Latinx youth; and age was inversely related to recidivism ( $B=-0.22$ ,  $p=.004$ ). Youth in first-time contact due to a delinquent offense recidivated more than those with a status offense ( $B=0.81$ ,  $p=.001$ ). As in the bivariate analyses, internalizing problems were negatively related to recidivism ( $B=-0.75$ ,  $p=.033$ ) and externalizing problems were positively related ( $B=0.54$ ,  $p=.037$ ). More problems

associated with alcohol ( $B=1.17, p=.002$ ), but not cannabis, were positively related to recidivism.

### Secondary Analyses

Four additional multivariate negative binomial regression models were conducted to examine the interaction between psychiatric (internalizing and externalizing) and substance use (alcohol- and cannabis-related problems) factors (Table 3). Demographic, legal, psychiatric, and substance use factors were parallel to those included in the final multivariate model. Interactions emerged between alcohol-related problems and both internalizing ( $B=-1.50, p=.065$ ) and externalizing ( $B=-1.29, p=.030$ ) problems (see Figure 2). More alcohol-related problems increased risk of accruing more charges for youth in the non-clinical range on internalizing problems. Youth with clinically significant externalizing problems were at high-risk of recidivism regardless of alcohol-related problems, but more alcohol-related problems increased risk of recidivism for youth in the non-clinical range for externalizing problems. There were no significant interactions between youth internalizing or externalizing symptoms and cannabis-related problems.

### Discussion

In this sample of first-time justice-involved youth, approximately one-third recidivated, many of whom accrued multiple new charges over the 24-month period, suggesting recidivism risk screening and intervention for this diversion population is warranted. Consistent with prior research and study hypotheses, clinically significant internalizing symptoms predicted lower likelihood of recidivism and externalizing symptoms predicted greater likelihood of recidivism, after accounting for a range of demographic and other known factors associated with recidivism. Past meta-analysis findings revealed a similar pattern for externalizing disorders, though internalizing disorders were associated with lower risk of recidivism only for females<sup>35</sup>. Our findings suggest that for first-time justice-involved youth, externalizing symptoms and alcohol-related problems are critical treatment targets for reducing recidivism. Conversely, internalizing symptoms were associated with lower recidivism risk suggesting these symptoms may be protective against future justice involvement, perhaps because these youth are more socially isolated, withdrawn, and anxious and, therefore, not engaging in behaviors that could potentially lead to justice contact. Furthermore, the association between alcohol-related problems and recidivism was particularly strong for youth with non-clinical levels of externalizing symptoms; this suggests a need to integrate substance use and psychiatric symptom screening and assessment results to fully understand first-time justice-involved youth's risk for recidivism. Ultimately, these findings support the implementation of empirically supported screening practices to inform service referrals to appropriately matched and tailored interventions within the juvenile justice system to reduce the likelihood of continued juvenile justice involvement. Furthermore, substance use problems and co-occurring mental health and substance use problems have been associated with increased risk for rearrest and re-incarceration, respectively, among justice-involved adults,<sup>36,37</sup> suggesting the relationship between substance use and future criminal justice involvement persists into adulthood.

Substance use and related problems also drive recidivism and must be incorporated into clinical screening and referral to intervention practices. Alcohol-related problems increased the likelihood of recidivism for youth who did not report clinically significant psychiatric symptoms; however, youth with clinically significant externalizing symptoms were more likely to recidivate, regardless of alcohol-related problems. Consistent with prior research in the same jurisdiction,<sup>8</sup> among other community-based justice-involved youth samples<sup>38</sup> and detained youth,<sup>39</sup> cannabis-related problems were more prevalent in our sample than alcohol-related problems. In multivariate analyses, however, only alcohol-related problems predicted recidivism, suggesting it should not be overlooked as a relevant target for recidivism reduction.

Finally, race, ethnicity, gender, and age were also associated with recidivism in this sample, after accounting for the influence of offense type, psychiatric symptoms, and substance-related problems on recidivism. Consistent with extant literature, females were less likely to recidivate than males<sup>40,41,42</sup> and participants who were younger at first-time justice contact were more likely to recidivate over the subsequent 24 months.<sup>43,44</sup> Non-Latinx Black, non-Latinx multiracial, and Latinx youth had higher rates of recidivism than non-Latinx White youth. Such findings are consistent with a wealth of evidence that youth of color are disproportionately placed into contact with the justice system at all intercepts, from arrest through sentencing.<sup>45,46</sup> These findings highlight the impact of institutionalized racism on trajectories of justice involvement, beginning at the point of first contact when diversion from initial detention occurs. Findings also correspond with the notion that the juvenile justice system has become a *de facto* behavioral health system of care for ethnoracial minoritized youth because of limited access to community-based substance use prevention and treatment services for communities of color.<sup>47</sup>

Our study represents a call to action for future research to incorporate and critically consider the complex interplay of systemic factors, such as racism, that can contribute to risk of recidivism along with individual modifiable factors. To effectively reduce likelihood of recidivism for first-time justice involved youth, individual-level interventions to screen, assess, and treat co-occurring psychiatric and substance use needs, implemented concurrently with the development of effective structural-level interventions (e.g., reducing police surveillance in Black neighborhoods, academic-public partnerships, increasing access to community-based substance use and mental health services) to reduce disproportionate minority contact, are warranted. For example, White justice-involved youth are generally more likely to be diagnosed with co-occurring disorders<sup>26</sup> yet have lower rates of recidivism; therefore, it is unclear whether treating externalizing and alcohol-related problems would reduce disproportionate minority contact, particularly in the absence of additional structural-level interventions.

### Practice Implications

The current results have a number of implications for screening, assessment, and risk management and case planning decisions for justice-involved youth. Consistent with best practices<sup>48</sup>, the current findings highlight the importance of screening for psychiatric symptoms and substance-related problems at initial court contact to identify youth in need of

behavioral health treatment. Referrals based on screening alone, however, are ineffectual in engaging youth into services<sup>49</sup>; yet, there is growing evidence when justice-involved youth are referred to services that are matched with identified needs, recidivism risk is reduced.<sup>4,50</sup> Furthermore, access to needed interventions<sup>51</sup> and implementation of novel and culturally responsive interventions to engage youth and families into services<sup>52</sup> will be critical to ensuring receipt of needed treatment. There is a need to study the effectiveness of practice models that implement and embed, for example, brief substance use and mental health interventions<sup>53</sup> (e.g., Family Check-Up) at time of first court contact as well as practice models that incorporate family navigator services that bridge the justice system and families to community-based behavioral health providers receiving referrals.<sup>54</sup>

### **Strengths, Limitations, Future Directions**

The current study has a number of strengths, including the prospective design, collecting data from multiple sources (i.e., youth-report, caregiver-report, and official records), and a sample including understudied groups (i.e., females, status offenders). There are some limitations to the current study that can be addressed with future research. First, youth in the current sample were recruited from a single-family court, so findings should be replicated in other jurisdictions. Second, predictors of recidivism were based on self-report data collected in the context of a research study conducted in the court setting, which may have led to underreporting of psychiatric symptoms or substance-related problems out of concern of court-related consequences; however, reported rates in both domains are high and consistent with prior research and are therefore likely to reflect accurate response patterns. Future recidivism risk studies of first-time justice involved youth might consider incorporating a risk-needs-responsivity framework<sup>55</sup> that examines multiple other criminogenic needs and responsivity factors not included in the current analyses to more holistically understand recidivism risk and need for intervention. Third, we were underpowered to examine differences in predictive associations within specific racial or ethnic subgroups due to sample size. Future research should explore whether alcohol use and externalizing symptoms, as well as their co-occurrence predict recidivism at the same rate for Black and Latinx youth as white youth. Relatedly, future research should examine whether effective treatment of externalizing symptoms and alcohol use reduces inequities in future legal system contact. Finally, the current analyses did not examine structural-level mechanisms that place ethnoracial minoritized youth at increased risk for future court involvement, after controlling for the influence of psychiatric symptoms and substance-related problems. We acknowledge that our findings are limited to examining the relationship between the social construct of ethnoracial categories and recidivism without measures of individual, institutional, or structural racism. Future research should explore ways in which factors such as police bias, institutionalized racism, stigma, and perceived discrimination affect ethnoracial minoritized youths' risk for recidivism and develop system-wide interventions to actively combat those mechanisms.

### **Conclusion**

Externalizing symptoms and alcohol-related problems were the most salient factors associated with recidivism risk for a sample of justice-involved youth at first court contact.

Systematic screening and assessment of these factors and connection to treatment is an essential component of early intervention initiatives designed to reduce the risk of continued justice involvement.

## Acknowledgments

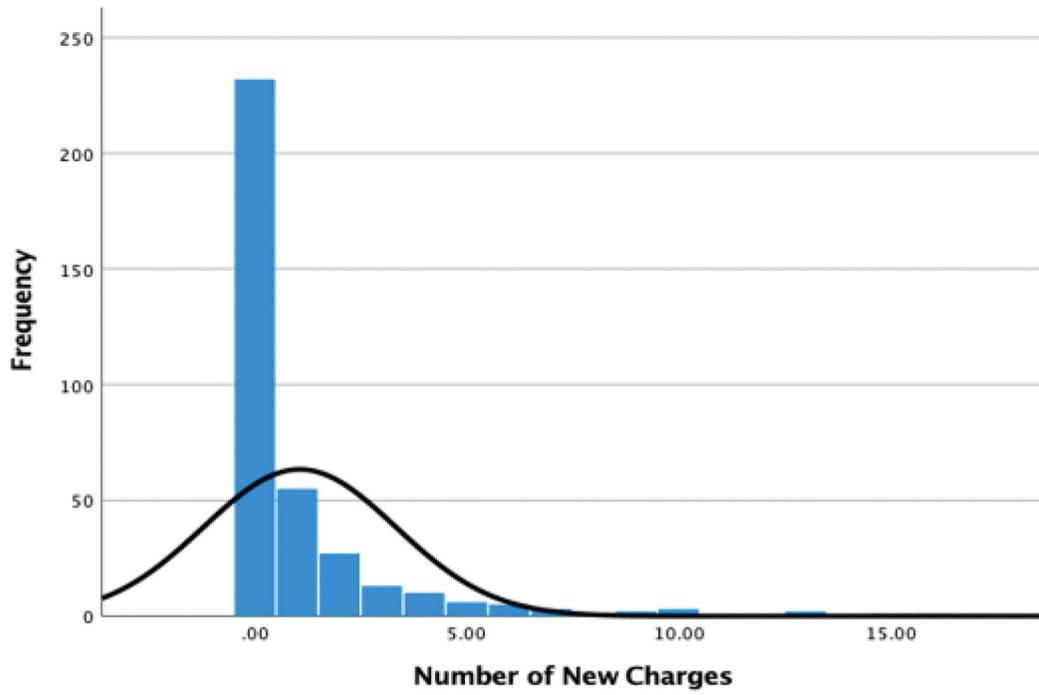
This project was funded by grants from the National Institute on Drug Abuse (NIDA; R01DA034538, K24DA046569; Tolou-Shams; K23DA050798; Folk) and National Institute of Mental Health (NIMH; K23MH111606; Kemp)

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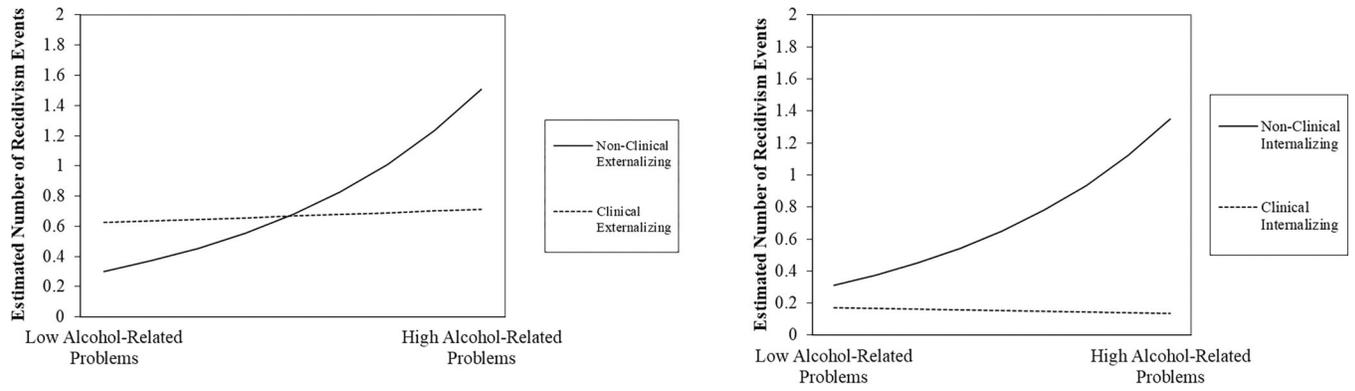
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**Figure 1.**  
Distribution of number of new charges during two-year follow-up period



**Figure 2.**  
Interaction between psychiatric symptoms and alcohol related problems

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**Table 1.**

Descriptive statistics of the total sample and stratified by recidivism status.

Variable	Total Sample (N=361) M(SD) / %	Youth who Recidivated (n=129) M(SD) / (%)	Youth who did not Recidivate (n=232) M(SD) / (%)
<u>Demographic Factors</u>			
Sex (Male)	56.0%	60.5%	53.4%
Age	14.57 (1.54)	14.49 (1.55)	14.62 (1.54)
<u>Race/Ethnicity</u>			
White non-Latinx	33.0%	28.7%	35.3%
Black non-Latinx	11.4%	10.9%	11.6%
Other non-Latinx	7.8%	6.2%	8.6%
Multi-racial non-Latinx	6.9%	8.5%	6.0%
Latinx	41.0%	45.7%	38.4%
Out-of-home placement	10.2%	12.4%	9.1%
<u>Legal Factors</u>			
Offense Type (Delinquent)	51.0%	63.6%	44.0%
<u>Psychiatric Factors</u>			
Inpatient Hospitalization	12.7%	14.0%	12.1%
Internalizing Problems (Clinical)	14.1%	13.2%	21.2%
Externalizing Problems (Clinical)	18.3%	26.4%	19.8%
<u>Substance Use Factors</u>			
Alcohol-Related Problems	0.89 (2.39)	1.16 (2.79)	0.75 (2.13)
Cannabis-Related Problems	1.24 (2.58)	1.64 (3.23)	1.02 (2.12)

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**Table 2.**

Results of stepwise regression models predicting recidivism.

	Model 1			Model 2			Model 3			Model 4		
	B (SE)	95% CI	X <sup>2</sup>	B (SE)	95% CI	X <sup>2</sup>	B (SE)	95% CI	X <sup>2</sup>	B (SE)	95% CI	X <sup>2</sup>
<u>Demographic Factors</u>												
Sex (Male)	-0.46 (0.24)	-0.92, 0.01	3.71 <sup>†</sup>	-0.39 (0.23)	-0.84, 0.06	2.89 <sup>†</sup>	-0.29 (0.23)	-0.74, 0.16	1.61	-0.48 (0.23)	-0.93, -0.03	4.44 <sup>*</sup>
Age	-0.12 (0.08)	-0.27, 0.02	2.67	-0.17 (0.74)	-0.31, -0.02	5.22 <sup>*</sup>	-0.13 (0.07)	-0.28, 0.01	3.16 <sup>†</sup>	-0.22 (0.07)	-0.36, -0.07	8.47 <sup>**</sup>
<u>Race/Ethnicity<sup>a</sup></u>												
Black non-Latinx	0.82 (0.38)	0.08, 1.56	4.70 <sup>*</sup>	0.68 (0.37)	-0.05, 1.40	3.35 <sup>†</sup>	0.72 (0.36)	0.01, 1.43	3.93 <sup>*</sup>	0.96 (0.37)	0.24, 1.68	6.82 <sup>**</sup>
Other non-Latinx	-0.46 (0.48)	-1.40, 0.49	0.90	-0.53 (0.48)	-1.47, 0.40	1.25	-0.46 (0.47)	-1.38, 0.46	0.97	-0.08 (0.47)	-1.01, 0.84	0.03
Multi-racial non-Latinx	0.54 (0.45)	-0.33, 1.42	1.49	0.76 (0.44)	-0.09, 1.62	3.06 <sup>†</sup>	0.78 (0.43)	-0.07, 1.62	3.27 <sup>†</sup>	1.12 (0.43)	0.29, 1.96	6.94 <sup>**</sup>
Latinx	0.50 (0.26)	-0.00, 1.01	3.83 <sup>*</sup>	0.30 (0.26)	-0.21, 0.81	1.34	0.33 (0.26)	-0.17, 0.83	1.68	0.63 (0.26)	0.12, 1.13	5.96 <sup>*</sup>
Out-of-home placement	0.53 (0.35)	-0.15, 1.20	2.32	0.35 (0.34)	-0.32, 1.02	1.05	0.29 (0.34)	-0.37, 0.95	0.74	0.37 (0.32)	-0.27, 1.00	1.26
<u>Legal Factors</u>												
Offense Type (Delinquent)	-	-	-	0.84 (0.23)	0.38, 1.30	12.87 <sup>***</sup>	0.67 (0.24)	0.20, 1.13	7.91 <sup>**</sup>	0.81 (0.23)	0.35, 1.27	11.99 <sup>**</sup>
<u>Psychiatric Factors</u>												
Inpatient Hospitalization	-	-	-	-	-	-	0.10 (0.33)	-0.55, 0.74	0.09	0.17 (0.32)	-0.46, 0.79	0.27
Internalizing Problems	-	-	-	-	-	-	-0.78 (0.35)	-1.47, -0.09	4.91 <sup>*</sup>	-0.75 (0.35)	-1.44, -0.06	4.54 <sup>*</sup>
Externalizing Problems	-	-	-	-	-	-	0.54 (0.26)	0.03, 1.06	4.25 <sup>*</sup>	0.54 (0.26)	0.03, 1.05	4.37 <sup>*</sup>
<u>Substance Use Factors</u>												
Alcohol-Related Problems	-	-	-	-	-	-	-	-	-	1.17 (0.39)	0.42, 1.93	9.29 <sup>**</sup>
Cannabis-Related Problems	-	-	-	-	-	-	-	-	-	0.43 (0.36)	-0.28, 1.14	1.43
<u>Model Fit</u>												
Deviance	275.25			277.34			280.96			280.01		
Pearson X <sup>2</sup>	382.30			454.52			477.70			323.71		
df	352			351			348			346		

Note.

<sup>†</sup>  
 $p < .10$

\*  
 $p < .05$

\*\*  
 $p < .01$

\*\*\*  
 $p < .001$

<sup>a</sup>Reference group=White, non-Latinx

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**Table 3.**

Results of interaction models examining the effects of co-occurring mental health and substance use factors on recidivism.

	Model 1			Model 2			Model 3			Model 4		
	B (SE)	95% CI	X <sup>2</sup>	B (SE)	95% CI	X <sup>2</sup>	B (SE)	95% CI	X <sup>2</sup>	B (SE)	95% CI	X <sup>2</sup>
<u>Demographic Factors</u>												
Sex (Male)	-0.45 (0.18)	-0.79, -0.10	6.24 *	-0.43 (0.18)	-0.78, -0.08	5.79 *	-0.44 (0.18)	-0.79, -0.09	6.08 *	-0.44 (0.18)	-0.78, -0.09	6.04 *
Age	-0.21 (0.06)	-0.32, -0.09	12.52 ***	-0.22 (0.06)	-0.34, -0.11	14.11 ***	-0.21 (0.06)	-0.33, -0.10	12.88 ***	-0.21 (0.06)	-0.33, -0.10	13.04 ***
Race/ Ethnicity <sup>a</sup>												
Black, non-Latinx	0.95 (0.28)	0.40, 1.50	11.32 ***	0.93 (0.28)	0.38, 1.48	10.81 **	0.93 (0.28)	0.38, 1.48	11.05 ***	0.93 (0.28)	0.38, 1.48	10.81 **
Other, non-Latinx	-0.09 (0.39)	-0.86, 0.69	0.47	-0.10 (0.39)	-0.87, 0.68	0.06	-0.12 (0.39)	-0.89, 0.65	0.09	-0.12 (0.39)	-0.90, 0.65	0.10
Multi-racial, non-Latinx	1.09 (0.33)	0.44, 1.74	10.84 **	1.05 (0.33)	0.40, 1.70	10.11 **	1.05 (0.33)	0.40, 1.70	10.10 **	1.05 (0.33)	0.40, 1.69	10.09 **
Latinx	0.67 (0.20)	0.27, 1.07	10.68 **	0.66 (0.20)	0.26, 1.06	10.59 **	0.64 (0.20)	0.24, 1.04	9.90 **	0.63 (0.20)	0.24, 1.03	9.80 **
Out-of-home placement	0.39 (0.25)	-0.09, 0.87	2.49	0.39 (0.25)	-0.09, 0.87	2.51	0.39 (0.25)	-0.09, 0.87	2.53	0.39 (0.25)	-0.09, 0.87	2.53
<u>Legal Factors</u>												
Offense Type (Delinquent)	0.77 (0.18)	0.41, 1.13	17.93 ***	0.79 (0.18)	0.43, 1.15	18.61 ***	0.76 (0.18)	0.40, 1.11	17.43 ***	0.75 (0.18)	0.40, 1.11	17.14 ***
<u>Psychiatric Factors</u>												
Inpatient Hospitalization	0.23 (0.24)	-0.24, 0.71	0.92	0.20 (0.24)	-0.28, 0.68	0.65	0.22 (0.24)	-0.26, 0.70	0.82	0.22 (0.24)	-0.26, 0.70	0.78
Internalizing Problems	-0.78 (0.29)	-1.35, 0.21	7.25 **	-0.88 (0.29)	-1.45, -0.31	9.07 **	-0.85 (0.30)	-1.43, -0.27	8.17 **	-0.88 (0.29)	-1.45, -0.31	9.05 **
Externalizing Problems	0.54 (0.20)	0.16, 0.93	7.74 **	0.56 (0.19)	0.18, 0.94	8.34 **	0.55 (0.19)	0.17, 0.93	8.02 **	0.56 (0.20)	0.17, 0.95	8.07 **
<u>Substance Use Factors</u>												
Alcohol-Related Problems	1.27 (0.32)	0.65, 1.90	16.02 ***	1.40 (0.33)	0.75, 2.06	17.58 ***	1.12 (0.31)	0.52, 1.72	13.48 ***	1.10 (0.31)	0.50, 1.70	12.98 ***
Cannabis-Related Problems	0.46 (0.29)	-0.10, 1.02	2.58	0.40 (0.29)	-0.17, 0.96	1.91	0.44 (0.29)	-0.14, 1.02	2.25	0.45 (0.32)	-0.17, 1.08	2.03
<u>Interaction Terms</u>												
Internalizing × Alcohol	-1.50 (0.81)	-3.09, 0.09	3.40 †	-	-	-	-	-	-	-	-	-

	Model 1			Model 2			Model 3			Model 4		
	B (SE)	95% CI	X <sup>2</sup>	B (SE)	95% CI	X <sup>2</sup>	B (SE)	95% CI	X <sup>2</sup>	B (SE)	95% CI	X <sup>2</sup>
Externalizing × Alcohol	-	-	-	-1.29 (0.59)	-2.45, -0.12	4.70 <sup>*</sup>	-	-	-	-	-	-
Internalizing × Cannabis	-	-	-	-	-	-	-0.23 (0.76)	-1.73, 1.26	0.09	-	-	-
Externalizing × Cannabis	-	-	-	-	-	-	-	-	-	-0.14 (0.58)	-1.29, 1.00	0.06
<b>Model Fit</b>												
Deviance	400.63			399.78			404.30			404.33		
Pearson X <sup>2</sup>	494.88			494.85			520.67			520.76		
df	346			346			346			346		

Note.

<sup>†</sup> p<.10

\* p<.05

\*\* p<.01

\*\*\* p<.001

<sup>a</sup>Reference group=White, non-Latinx

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