

Detained Adolescents: Mental Health Needs, Treatment Use, and Recidivism

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Although approximately 60 to 70 percent of detained adolescents meet criteria for a mental disorder, few receive treatment upon community re-entry. Given that mental health treatment can reduce recidivism, we examined detained adolescents' mental health needs and their postdetention mental health treatment and recidivism. Altogether, 1,574 adolescents (≤ 18 years) completed a mental health screening at a detention center. Scores on the screening, mental health treatment utilization (60 days after detention), and recidivism (6 months after detention) were measured. About 82.2 percent of adolescents had elevated scores on the mental health screening, but only 16.4 percent obtained treatment and 37.2 percent reoffended. Logistic regression models revealed adolescents with insurance and higher angry-irritable scores were significantly more likely to obtain treatment, whereas males, black and older adolescents, and those endorsing a trauma history were less likely. Black adolescents, insured adolescents, and those with higher alcohol and drug use scores were significantly more likely to reoffend. Mental health treatment increased the likelihood of recidivism. The prevalence of mental health needs among detained adolescents was high, but treatment utilization was low, with notable treatment disparities across race, gender, and age. The use of mental health treatment predicted recidivism, suggesting that treatment acts as a proxy measure of mental health problems. Future research should assess the impact of timely and continuous mental health services on recidivism among detained adolescents.

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Of the approximately 1.65 million adolescents (≤ 18 years) who are arrested in the United States each year,¹ about 20 percent (330,000), are placed in short-term detention centers or long-term prison facilities.² These detained adolescents (DAs) represent an especially vulnerable population, with prominent mental health problems and treatment needs.^{3–7} In fact, epidemiological studies of the DA population indicate that 40 to 55 percent of DAs meet the criteria for a disruptive behavior disorder (e.g., conduct disorder or oppositional defiant disorder),^{5,8} 60 to 70 percent meet the criteria for a nonbehavioral mental disorder (e.g., anxiety disorder or major depressive disorder),^{5,9–11} and 45 to 50 percent meet the

criteria for a substance-related disorder (e.g., alcohol use disorder or cannabis-related disorder),^{5,12,13} whereas only 10 to 20 percent of adolescents in the general population have a mental disorder.^{6,14}

The high rates of mental and substance-related disorders among DAs are problematic, given that mental health problems are associated with criminal activity.^{15–17} Longitudinal studies^{13,17–20} have linked mental health problems, particularly behavioral and conduct problems; substance abuse; attention deficit-hyperactivity disorder; and coexistence of these disorders, to an elevated risk of recidivism. Recidivism is already common among DAs; 30 to 50 percent of these youths reoffend within 6 months of release from detention.^{16,21,22} Thus, detained youths with mental health problems may struggle to achieve successful rehabilitation and community reintegration because they face elevated risks of recidivism^{19,23–25} and of getting stuck in the “revolving door” of the juvenile justice system, in which they are repeatedly arrested, detained, released, re-arrested, and re-detained.^{26,27} Unfortunately, frequent contact with the juvenile justice system, marked by multiple stays in detention, has been identified as one of the

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highest risk factors for incarceration as an adult.²⁸ Thus, DAs with mental health concerns who are stuck in the revolving door are quite likely to experience long-term incarceration in the adult prison system.

One way to stop repeated recidivism is to have DAs participate in intensive, community-based mental health treatment upon release from detention.^{22,29,30} Some community-based mental health interventions have been shown to produce positive outcomes for DAs, with regard to their mental health concerns and criminal activity.^{31–34} Specifically, in a review of more than 600 interventions aimed at addressing delinquency, drug use, and violence among juvenile offenders, Henggeler and Schoenwald³⁰ identified three effective interventions: multisystemic therapy (MST), functional family therapy (FFT), and multidimensional treatment foster care. Meta-analyses show that these interventions yield small to moderate ($d = 0.08–0.24$) effect sizes for recidivism (i.e., reduce recidivism by 16–46%).³⁵ Moderate effect sizes ($d = 0.28–0.52$) for improved symptomatology (i.e., fewer symptoms, behavior problems, and hospitalizations),³⁶ have been successfully replicated at multiple sites^{30,36} and sustain good outcomes related to criminal behavior and drug use for at least one year after detention.^{30,32,34} Although such interventions can help DAs, the estimated prevalence of detained adolescents who obtain mental health services upon community re-entry is low,^{24,37,38} ranging from 8 percent³⁹ to 40 percent.²¹ More important, evidence-based interventions for juvenile offenders (i.e., MST, FFT) are not widely available, and only about 5 percent of DAs participate in these comprehensive interventions each year.³⁰

Although research is limited, several demographic factors have been suggested to explain the disparity between mental health needs and actual treatment utilization by DAs.^{5,40–42} First, gender is strongly related to mental health service utilization,^{40,43} with higher rates of treatment referrals, treatment seeking, and postdetention service use among female than male DAs.^{39,44} Race is also strongly associated with service utilization.^{7,11,42,45,46} DAs from racial minority groups are significantly less likely than white DAs to receive treatment referrals, placements in mental health treatment facilities upon release from detention, and actual treatment services in detention or in the community.^{14,45–48} In fact, one study esti-

mated that white DAs are four times more likely than Black DAs to receive a mental health treatment placement rather than incarceration,⁴⁷ whereas black DAs with mental illness are six times more likely to be detained than similarly aged white DAs with mental illness.⁴⁹ When both gender and race are considered, white female DAs are most likely to obtain mental health treatment in the community, and black male DAs are least likely to obtain treatment.^{40,42} Besides race and gender, age is related to service use among DAs.^{37,41,50} The likelihood of postdetention service utilization decreases as age increases; younger DAs are more likely to obtain mental health treatment referrals⁴⁷ and treatment placements and to use a variety of treatment types than older DAs of similar gender and racial/ethnic background.^{37,50}

Despite the high prevalence of mental disorders among DAs^{5,8,10,42} and evidence that such problems increase the risk of recidivism and interfere with community reintegration,^{15,20,24} a disproportionately low number of DAs receive mental health treatment after being released from detention.^{21,37,39} The large discrepancy between the number of DAs experiencing significant mental health problems and the number actually receiving mental health treatment services points to significant treatment barriers and service gaps that should be identified and addressed. Accordingly, we examined these concerns via a longitudinal study. The primary purposes of the study were (1) to identify the mental health needs of detained adolescents; (2) to determine rates of postdetention mental health treatment utilization and significant predictors of treatment utilization; (3) to determine rates of postdetention recidivism and significant predictors of recidivism; and (4) to determine whether undergoing mental health treatment is associated with lowered recidivism.

Method

Sample

All consecutive adolescent intakes between April 2006 and March 2008 within a large juvenile detention facility in a Midwestern city were included in the study. Adolescents were excluded if they had a cognitive disability that precluded them from completing the primary study measure and/or were placed in the adult prison system during the study timeframe. Altogether, the sample consisted of 1,574 DAs

(80.9% male) between 11 and 18 years (mean (M) = 15.5) of age upon admission to the detention center. Of those studied, 62.9 percent were black, 30.0 percent were white non-Hispanic, 4.4 percent were Hispanic, and 2.7 percent were other races. Altogether, 1,511 DAs (96.0%) had prior contact with the juvenile justice system before first detention. The average age of first contact with the juvenile justice system was 13.8 years ($SD = 1.99$, range = 6–18), and the average number of contacts before detention was 3.79 ($SD = 3.02$, range = 0–44). Male DAs had significantly more contacts with the juvenile justice system ($M = 4.70$, $SD = 3.85$; range = 0–44) than female DAs ($M = 3.93$, $SD = 3.22$, range = 0–21); race/ethnicity and age were not related to prior contact or number of prior contacts with the juvenile justice system upon detention entry. The sample averaged 1.76 charges ($SD = 1.10$, range = 1–9), with the most severe charges including felonies (14.7%), misdemeanors (21.0%), probation violations (21.3%), warrant arrests (34.2%), status offenses (3.0%), or unknown charges (5.6%). The number of charges did not differ across gender, race/ethnicity, or age. During the study timeframe, 515 (24.7%) DAs had detentions ($M = 1.33$ stays; $SD = .63$, range = 1–6), with an average length of stay of 15.6 days ($SD = 16.42$, range = 0–141).

Because of the small number of Hispanic and other-race DAs ($n = 111$, 7.1%), these adolescents were excluded from the data analysis to allow for examination of white versus black adolescents. DAs with data missing at follow-up ($n = 8$, .5%) were also excluded from the sample, resulting in a final sample of 1,455 DAs (80.7% male, 67.6% black) across 1,942 detention admissions.

The sample represents one subset of a larger sample of DAs ($n = 7,137$, 74.1% male; 56.9% black, 34.6% white) that was included in a study that examined the implementation of a mental health screening and referral program at the juvenile detention facility.³⁷ To determine the impact of implementing a mental health screening, a preimplementation cohort was compared to a postimplementation cohort, with results showing no significant differences between cohorts in postdetention mental health treatment utilization.³⁷ The current study focuses on the cohort of adolescents detained during the postimplementation period and expands upon prior work by directly examining the relation-

ships between mental health screening data and two key outcomes: mental health treatment utilization and recidivism.

Procedure

The study was conducted during the 24-month postimplementation period (April 1, 2006, to March 31, 2008) of a mental health screening and referral program at the juvenile detention facility. Data were collected from two primary electronic sources. First, juvenile court records for all detained adolescents (ages 11–18) were extracted from the juvenile justice system's electronic database. Second, electronic outpatient records from Indiana Medicaid and one of the primary hospital systems (i.e., hospital and all affiliated clinics) within Indianapolis were extracted from the Regenstrief Medical Record System of the Indiana Network for Patient Care. The electronic juvenile court and mental health care records were linked using the software program RecMatch, which matched records based on individual participant identifiers (e.g., last name, first name, date of birth, last 4 digits of Social Security number) and a probabilistic matching algorithm.⁵¹ Linked records were deidentified for data analysis. The Institutional Review Board at Indiana University approved the study, and the Marion County Superior Court, Juvenile Division provided permission to access data without obtaining assent from participants or consent from participants' parents and guardians.

Measures

Demographics

Data regarding age at detention entry, gender, and self-reported race and ethnicity were extracted from juvenile court records.

Mental Health Needs

Mental health needs were defined as scores on the Massachusetts Youth Screening Instrument-Second Version (MAYSI-2). All participants completed an electronic version of the MAYSI-2 upon intake at the detention facility, and these results were extracted from juvenile court records. The MAYSI-2 is a 52-item self-report questionnaire designed to identify juvenile-justice-involved youths at risk for cognitive, emotional, and behavioral disorders and in need of mental health services.³ Adolescents answer "yes" or "no" to whether items have been true for them "within the past few months." The measure is di-

vided into seven scales: alcohol and drug use (8 items), angry-irritable (9 items), depressed-anxious (9 items), suicidal ideation (5 items), somatic complaints (6 items), traumatic experiences (5 items), and thought disturbance (5 items). Scale scores are summed based on the number of “yes” responses. With the exception of traumatic experiences, total scores are interpreted as falling in normal, caution, or warning ranges.^{3,6} Scores in the caution or warning range are considered clinically significant and indicative of mental health needs. The traumatic experience scale does not have cutoffs for the caution and warning ranges; endorsement of at least one traumatic event (e.g., sexual abuse, life in danger, or witness to violence) served as the caution cutoff for this study. At the detention center used in the study, adolescents were considered to have screened positively on the MAYSI-2 if they scored within the caution or warning range for suicidal ideation or within the caution or warning range on two or more scales.

The MAYSI-2 has been normed and validated for juvenile-justice-involved youths^{6,52,53} and has shown good internal consistency ($\alpha = .61-.86$ for scales),³ discriminant validity,⁵² convergent validity with the Millon Adolescent Clinical Inventory and Child Behavior Checklist–Youth Self-Report,^{6,54} and predictive validity for mental disorders⁵⁵ and recidivism.^{18,53}

Mental Health Treatment Utilization

Mental health treatment utilization was defined as receiving any postdetention mental health treatment service within 60 days of release from detention. Utilization data were limited to whether an adolescent received any service (yes/no), rather than the number of services used. Treatment services included individual, group, or family services obtained as outpatient or home-based treatment. Data were collected from Indiana Medicaid claims and the medical records of a large hospital system (i.e., main hospital and its affiliated clinics) in Indianapolis. This hospital system is the largest provider of mental health care for individuals without insurance in the county, making it the predominant provider of indigent care.

Insurance

Insurance was defined as the type of insurance listed on the medical health records documenting mental health treatment utilization within 60 days of release from detention. Insurance status included Medicaid, private insurance (e.g., Anthem Blue

Shield, Aetna), self-pay/no insurance, or unknown insurance status.

Recidivism

Recidivism was defined as any new arrest charge within 6 months of release from detention.²⁸ New arrest charges included felonies, misdemeanors, status offenses, warrant arrests, or probation violations. Data were abstracted from juvenile court records according to whether an adolescent had a new arrest (yes/no) rather than the number of arrests.

Data Analysis

Descriptive statistics were calculated at baseline and follow-up time points. For MAYSI-2 results, mean scale scores and the prevalence of adolescents scoring within the caution and warning ranges for each scale were calculated. Two-tailed independent *t*-tests were conducted to determine whether mean scale scores differed significantly by gender or race (i.e., white versus black). A series of 2×2 chi-square analyses were conducted to determine whether the proportion of DAs scoring within the caution range on MAYSI-2 scales and the proportion scoring within the warning range on the scales differed significantly by gender or race.

Two binary logistic regression analyses were conducted to identify predictors for mental health treatment within 60 days and for recidivism within 6 months after release from the first detention in the study period. For these models, predictors included age, male (yes/no), black (yes/no), insurance (yes/no), and the scores on the seven individual MAYSI-2 scales. Expanding on these models, one additional binary logistic regression analysis was conducted for the dichotomous outcome of recidivism within 6 months. The same predictors were entered into the model, with the addition of treatment utilization within 60 days. For all models, predictors were entered by using backward elimination, in which all predictors were initially considered in a full model; the predictor with the highest nonsignificant probability ($p > .10$) was eliminated in a continual process until all remaining predictor variables were significant ($p \leq .05$).⁵⁶ To test whether multicollinearity affected the regression analyses, bivariate correlations between predictor variables and an inverse inflation factor were examined.^{57,58} Strong correlations ($r \geq .65$) and a significant inverse inflation factor ($p \leq .10$) were considered indicators of multicollinear-

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Table 1 Scale Scores on the MAYSI-2

	Total (<i>N</i> = 1,942) ^a	Female (<i>n</i> = 357)	Male (<i>n</i> = 1,585)	<i>t</i> -test	White (<i>n</i> = 605)	Black (<i>n</i> = 1,337)	<i>t</i> -test
Alcohol/drug use (8 items)	2.10 (2.33)	2.35 (2.43)	2.04 (2.30)	2.16*	2.96 (2.61)	1.71 (2.07)	10.43***
Angry–irritable (9 items)	4.29 (2.83)	5.01 (2.68)	4.13 (2.84)	5.52***	4.44 (2.86)	4.23 (2.83)	1.52
Depressed–anxious (9 items)	2.74 (2.33)	3.68 (2.45)	2.53 (2.25)	8.16***	2.89 (2.44)	2.68 (2.28)	1.82
Somatic complaints (6 items)	2.97 (1.88)	3.57 (1.75)	2.83 (1.88)	6.79***	3.36 (1.88)	2.79 (1.85)	6.29***
Suicidal ideation (5 items)	0.81 (1.42)	1.41 (1.72)	0.68 (1.30)	7.64***	1.02 (1.60)	0.72 (1.32)	4.04***
Thought disturbances (5 items)	0.81 (1.42)	0.90 (1.11)	0.79 (1.04)	1.82	0.76 (1.03)	0.83 (1.06)	–1.28
Traumatic experiences (5 items)	2.21 (1.58)	2.44 (1.65)	2.13 (1.56)	2.16*	2.32 (1.59)	2.16 (1.57)	2.19*

Data are expressed as the mean (SD). Two-tailed *t*-test: **p* ≤ .05; ***p* ≤ .01; ****p* ≤ .001.

^a Total number of MAYSI-2 administrations, based on 1,455 unique participants.

ity.⁵⁹ Analyses were conducted in SPSS Version 22.0.

Results

Mental Health Needs

Table 1 shows the means and standard deviations of the seven MAYSI-2 scales, grouped by gender and racial status. On average, the sample scored highest on the angry–irritable and somatic complaints scale, endorsing about half the items within each scale. Female DAs earned significantly higher mean scores than male DAs on all scales except thought disturbances. White DAs earned significantly higher mean scores than black DAs on alcohol/drug use, somatic complaints, suicidal ideation, and traumatic experiences. As shown in Table 2, approximately 82.2 percent of the sample scored within the caution range on at least one scale, 43.5 percent scored within the warning range on at least one scale, 82.3 percent endorsed at least one traumatic experience, and 66.2 percent had a positive screening. The chi-square analyses revealed that a significantly higher percentage of female DAs than male DAs scored within the caution and warning ranges for all scales, except thought disturbances and traumatic experiences. A significantly higher percentage of white DAs than black DAs scored in the caution range for alcohol/drug use, somatic complaints, suicidal ideation, and traumatic experiences. A higher percentage of white than black DAs earned warning scores for all scales except thought disturbances.

Mental Health Insurance and Treatment Utilization

About half (49.7%) the sample had insurance coverage for mental health treatment. Specifically, 37.8 percent of DAs had Medicaid and 11.9 percent had private insurance, whereas 39.5 percent were self-

pay, and 10.8 percent had no insurance information listed in their medical records. The prevalence of insurance was significantly higher among male (49.6%) DAs than among female (44.7%) DAs ($\chi^2 = 3.01$; *p* = .047), but not among white DAs (46.3%) versus black DAs (29.7; $\chi^2 = 2.05$; *p* = .08).

A total of 16.4 percent of DAs sought mental health treatment within 60 days after detention, including 20.8 percent of DAs with Medicaid, 10.4 percent with private insurance, 16.7 percent with no insurance or self-pay, and 3.2 percent with unknown insurance status. In terms of gender and race, 24.9 percent of female DAs, 14.5 percent of male DAs, 19.1 percent of white DAs, and 15.3 percent of black DAs obtained treatment. For those DAs who obtained treatment, 46.4 percent had Medicaid, 6.0 percent had private insurance, 45.2 percent were self-pay, and 2.4 percent had unknown insurance status.

Results showed no signs of significant multicollinearity among predictor variables, so all predictors were individually entered into the binary logistic regression models for mental health treatment utilization within 60 days of the subject's leaving detention. As shown in Table 3, male, black, older, and insured adolescents, as well as DAs who endorsed traumatic experiences were significantly less likely to seek treatment. In contrast, those with higher scores on the angry–irritable scale were more likely to obtain treatment. The remaining MAYSI-2 scales failed to predict significant treatment utilization.

Recidivism

After release from detention, 37.1 percent of the adolescents had at least one episode of recidivism within 6 months; specifically, 37.0 percent of female DAs, 37.2 percent of male DAs, 34.5 percent of

Table 2 Detained Adolescents Scoring Within the Caution and Warning Ranges on the MAYSI-2 Scales

	Total (n = 1,942) ^a	Female (n = 357)	Male (n = 1,585)	χ^2	White (n = 605)	Black (n = 1,337)	χ^2
Alcohol/drug use							
Caution	534 (27.5)	115 (32.2)	419 (26.4)	4.88*	255 (42.1)	279 (20.9)	94.62**
Warning	244 (12.7)	57 (15.9)	187 (11.8)	18.00**	138 (22.8)	106 (7.9)	89.25***
Angry-irritable							
Caution	947 (48.8)	217 (60.8)	730 (46.1)	25.30***	314 (51.9)	633 (47.3)	3.46
Warning	309 (15.9)	73 (20.4)	236 (14.9)	6.73**	111 (18.3)	198 (14.8)	3.90*
Depressed-anxious							
Caution	919 (47.3)	234 (65.5)	685 (43.2)	58.27***	290 (47.9)	629 (47.0)	0.13
Warning	272 (14.0)	85 (23.8)	187 (11.8)	32.90***	102 (16.9)	170 (12.7)	5.94*
Somatic complaints							
Caution	1,118 (57.6)	256 (71.7)	862 (54.4)	35.80***	408 (67.4)	710 (53.1)	35.04***
Warning	213 (11.0)	53 (14.8)	160 (10.1)	6.74**	92 (15.2)	121 (9.1)	16.16***
Suicidal ideation							
Caution	405 (20.9)	134 (37.5)	271 (17.1)	73.73***	159 (26.3)	246 (18.4)	15.68***
Warning	275 (14.2)	98 (27.5)	177 (11.2)	63.56***	113 (18.7)	162 (12.1)	14.75***
Thought disturbances							
Caution	971 (50.0)	193 (54.1)	778 (49.1)	2.81	282 (46.6)	689 (51.5)	3.77
Warning	364 (18.7)	74 (20.7)	290 (18.3)	1.13	107 (17.7)	257 (19.2)	0.65
Any scale above							
Caution	1,596 (82.2)	317 (88.8)	1,279 (65.9)	13.06***	523 (86.4)	1,073 (80.3)	10.91**
Warning	844 (43.5)	209 (58.5)	635 (40.1)	40.50***	321 (53.1)	523 (39.1)	32.94***
Traumatic experiences ^b							
Caution	1,599 (82.3)	304 (85.2)	1,295 (81.7)	2.51	512 (84.6)	1,087 (81.3)	3.17*
Positive screening ^c	1,286 (66.2)	284 (79.6)	1,002 (63.2)	34.75***	437 (72.2)	829 (63.5)	14.20***

Data are expressed as the number (percentage of the subgroup). Chi-square test: * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

^a Total number of MAYSI-2 administrations, based on 1,455 unique participants.

^b Scale does not have a warning range.

^c Defined as the warning or caution range for suicidal ideation or at least two scales within the caution or warning range.

white DAs, and 38.4 percent of black DAs reoffended. The most severe charges at 6 months included felonies (33.0%), misdemeanors (31.8%), status offenses (16.1%), warrant arrests (16.8%), and proba-

tion violations (2.1%). Results showed no signs of significant multicollinearity among predictor variables, so all predictors were entered into the regression models for recidivism within 6 months. Black adolescents (odds ratio (OR) = 1.23, confidence interval (CI) = 1.0–1.52), insured adolescents (OR = 1.64, CI = 1.37–1.97), and adolescents with higher alcohol/drug use (OR = 1.10, CI = 1.05–1.15) were significantly more likely to reoffend within 6 months. Higher scores on the traumatic experiences scale (OR = 0.88, CI = 0.81–0.94) and somatic complaints scale (OR = .94, CI = .88–1.0) were associated with a decreased likelihood of recidivism.

As displayed in Table 4, when treatment utilization was included as a predictor, the final logistic regression analysis showed a significant relationship between mental health treatment services and recidivism. Adolescents who sought treatment within 60 days were significantly more likely to have reoffended by 6 months of release from detention. Altogether, the same set of predictors as the previous model (without treatment utilization) was significant. Specifically, being black, having insurance, receiving mental health treatment, and having higher alcohol/drug use scores were associated with an in-

Table 3 Binary Logistic Regression Predicting Treatment Utilization^a

	Treatment Utilization Within 60 Days		
	Odds Ratio	95% Confidence Interval	<i>p</i>
Male (vs. female)	0.55	0.42–0.72	$\leq .001$
Black (vs. white)	0.74	0.58–0.96	.02
Age	0.80	0.73–0.87	$\leq .001$
Insurance	1.49	1.17–1.89	.001
Angry-irritable	1.10	1.05–1.16	$\leq .001$
Traumatic experiences	0.92*	0.84–1.00	.04
Eliminated predictors ^b			
Alcohol/drug use	1.03	0.97–1.09	.37
Thought disturbances	0.95	0.84–1.08	.44
Depressed-anxious	1.01	0.94–1.09	.80
Somatic complaints	0.99	0.92–1.07	.85
Suicidal ideation	1.01	0.91–1.11	.90

Male is the referent category for gender. Black is the referent category for race.

^a Calculated for each individual at first detention during the study period ($N = 1,455$ participants).

^b Values for eliminated predictors based on last step before they were eliminated from the model.

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Table 4 Binary Logistic Regression Predicting Recidivism, Final Model With All Predictors^a

	Recidivism Within 6 Months		
	Odds Ratio	95% Confidence Interval	<i>p</i>
Treatment (60 days)	3.04	2.37–3.90	≤.001
Black (vs. white)	1.29	1.04–1.60	.02
Insurance	1.58	1.31–1.91	≤.001
Alcohol/drug use	1.10	1.05–1.16	≤.001
Traumatic experiences	0.88	0.82–0.95	≤.001
Somatic complaints	0.94	0.88–1.00	.04
Eliminated predictors ^b			
Age	1.0	0.93–1.07	.97
Male (vs. female)	1.0	0.78–1.29	.99
Angry–irritable	1.01	0.96–1.05	.83
Thought disturbances	0.97	0.86–1.08	.53
Depressed–anxious	1.00	0.93–1.07	.89
Suicidal ideation	0.98	0.90–1.07	.66

Male is the referent category for gender. Black is the reference category for race.

^a Calculated for each individual at first detention during the study period (*N* = 1,455 participants).

^b Values for eliminated predictors based on last step before they were eliminated from the model.

creased likelihood of recidivism, but higher traumatic experiences and somatic complaints were associated with a decreased likelihood of recidivism.

Discussion

Despite evidence that most DAs experience serious mental health problems,^{3,6,40,42} this study marks one of the few longitudinal attempts to examine the relationship between mental health needs of DAs and postdetention mental health treatment utilization and recidivism.²⁷ By accessing the juvenile court records and health records of a large sample of DAs, we were able to achieve the primary purposes of the study and identify several key findings.

Mental Health Needs

Consistent with previous research in detained youths completing the MAYSI-2,^{3,6,11,54} we found high rates of mental health needs. More than 80 percent of the total sample endorsed mental health problems or substance use that warranted clinical attention and follow-up. Clearly, DAs are a very vulnerable group at high risk for mental health problems.^{6,10,37} Of note, the female DAs in this study reported significantly higher mental health needs than the male DAs. Such results are consistent with previous findings of greater severity and frequency of mental illness symptoms,^{6,11,60} higher rates of psy-

chiatric disorders,^{4,8,39} and lower overall functioning among detained female adolescents than among male adolescents.^{43,61} Such gender discrepancies may arise because female DAs are more likely than male DAs to identify and endorse mental health problems.¹¹ In addition, the differential treatment of male and female adolescents within the legal system may also contribute to the gender differences found in this study.⁶ Specifically, female adolescents are less likely to be arrested than are male adolescents;⁶¹ 3 in 100 female adolescents were arrested in 2010, compared with 8 in 100 male adolescents.¹ Judges are also less likely to incarcerate female offenders and more likely to assign them to probation or other diversion programs.^{6,61} This fact may be due to female DAs evidencing increased mental health problems when compared to male DAs.^{6,60}

White DAs in this study reported significantly higher mental health concerns than did black DAs on four of the seven MAYSI-2 scales. In addition, the prevalence of white DAs who scored within the warning range on most scales was notably higher than black DAs. These results replicate those in some prior studies, which indicated that white DAs report significantly higher mental health needs^{11,40} and are more likely than black or Hispanic DAs to meet criteria for one or more mental disorders.^{48,62} However, not all studies of incarcerated youths support these conclusions; some studies show that racial/ethnic minorities have higher mental health needs^{45,63} and others have failed to find significant racial differences in mental health concerns.⁷ Although current results may reflect true racial differences in mental health status between white and black DAs, it is also likely that racial differences are due to systematic biases in the legal system, in which minority youths are disproportionately involved in the juvenile justice system,^{7,12,14} as well as biases in the self-report of mental health needs. Just as male adolescents are less likely to endorse mental health concerns than are female adolescents,^{3,11} black adolescents may be less aware of or willing to endorse mental health problems,^{11,25,64} perhaps because of a fear of being stigmatized or labeled as having a mental health problem. Thus, the minority DAs in the current study may have experienced similar mental health concerns to white DAs, they were less likely to endorse these concerns.

Mental Health Treatment Utilization

Despite current findings that most DAs had elevated mental health needs, only about 16 percent of the sample used mental health services after leaving detention. This prevalence rate is quite low, suggesting that DAs represent a poorly served population with unmet treatment needs.^{14,25,37,40,42} Unfortunately, this service utilization rate is fairly consistent with that found in prior work. It is slightly higher than some study estimates that showed that 8.1,³⁹ 13.6,³⁷ and 14.1 percent²⁴ of DAs obtain postdetention services, but lower than other study estimates that showed that 20.5 percent²¹ to 45.5 percent⁴¹ of DAs engage in postdetention services. Given that more than 80 percent of the sample scored in the caution range for at least one MAYSI-2 scale, current findings highlight a large discrepancy between mental health concerns and actual treatment use for this population. Moreover, the results showed that higher self-reported mental health needs did not consistently predict the use of mental health treatment, except for the angry-irritable score. Theoretically, greater mental health needs should have been associated with higher likelihood of treatment use, but results failed to support this relationship.

In trying to understand the study's findings, it should be noted that many mental health providers are available in the city of this study and about half the DAs who obtained services did not have insurance coverage, so lack of available services and lack of providers who accept noninsured youths do not appear to explain the results. At the same time, insurance status emerged as a particularly strong predictor of treatment use, in that DAs covered by Medicaid or private insurance were significantly more likely to obtain mental health treatment than were DAs with no insurance. Such findings make sense, given the low socioeconomic status within the DA population^{8,42} and evidence that the financial costs of treatment or lack of insurance often serve as treatment barriers that prevent adolescents from obtaining needed treatment.^{42,65}

In addition to insurance status, findings indicate that receiving services may be strongly tied to demographic variables. As found in prior epidemiological studies,^{37,40,42,45} male, minority, and older youths were significantly less likely to obtain services, regardless of mental health needs. Such results highlight treatment disparities related to gender, race, and age that may be due to several factors, including that male, minority, and older DAs engage in less treat-

ment seeking,^{25,42} lack financial resources and transportation to obtain treatment,^{42,46} are less likely to be referred and connected to services by providers,^{7,40} or are more likely to be re-arrested and detained in correctional facilities instead of mental health facilities.^{27,47} In considering insurance status and demographic variables together, this study shows a strong bias against male DAs; they were significantly more likely than female DAs to have insurance but were still less likely to obtain treatment. Overall, findings suggest a two-tiered approach within the juvenile justice system, in which female, white, and younger offenders are more often placed on a rehabilitation-focused track, whereas male, black, and older offenders are more often placed on a punitive incarceration track.⁴⁷

Across the seven MAYSI-2 scales, the angry-irritable scale had the highest mean score. Such results seem reasonable, because anger and irritability are characteristics of behavior disorders, such as conduct disorder, oppositional defiant disorder, and attention deficit/hyperactivity disorder,⁶⁶ which are commonly found among juvenile offenders.^{5,8,10} The proportion of DAs falling in the caution and warning ranges for the angry-irritable scale was not notably larger than that of other scales, yet the scale emerged as one of only two significant mental health predictors of service utilization, with higher scores linked to higher likelihood of receiving treatment. This scale has been associated with impulsivity and sensation seeking,⁵² as well as rules violations, aggression toward peers and staff, and need for intensive supervision.⁶⁷ Thus, DAs with high scores on the angry-irritable scale tend to exhibit increased behavioral problems and infractions, which may result in heightened attention of providers/staff, probation officers, and court officials who refer or order these youths to obtain treatment, thereby resulting in a relationship between higher angry-irritable scores and higher likelihood of treatment.

Recidivism

More than one-third of the sample had at least one recidivism event within six months of leaving detention, meaning that twice as many adolescents reoffended than received mental health treatment. Higher scores on the alcohol and drug use scale were associated with an increased likelihood of recidivism. Several factors may contribute to this relationship: adolescents with substance-related problems are more

likely to engage in antisocial behavior while under the influence, to be arrested for possession of drugs or drug paraphernalia, and to be involved in drug-related activity (e.g., theft and gang involvement),^{15,28,68–70} resulting in more opportunities and risks for recidivism. In addition to alcohol and drug use, race was related to recidivism. As found in prior research,^{12,15,16} black DAs were significantly more likely than white DAs to reoffend upon community re-entry. Although it is difficult to determine the exact reason for such findings, discrimination among law enforcement officers who disproportionately target black youths may partially account for the higher likelihood of arrest of black adolescents in the community.^{48,49,71} In fact, the bias against black adolescents is quite apparent when considering alcohol and drug use and race together. White DAs reported higher alcohol and drug use than black DAs and higher alcohol and drug use was associated with an increased risk of recidivism, but black DAs still faced a higher risk of recidivism than white DAs.

Traumatic Experiences

Consistent with other studies of juvenile-justice-involved youths,^{54,72–74} traumatic experiences were common among the study sample, with more than 80 percent of DAs reporting at least one traumatic event. DAs who reported a higher number of traumatic experiences were less likely to obtain mental health treatment within 60 days and to reoffend within 6 months. Several reasons may explain such findings. First, compared with youths with no trauma history, adolescents who experience trauma exhibit higher rates of both externalizing and internalizing problems after the occurrence of the traumatic event.⁷² Thus, adolescents with severe trauma histories may present with numerous problems, including delinquency and aggression, emotional dysregulation, abnormal eating, and lack of coping resources.^{72,74} Given such concerns, it is possible that these adolescents are more likely to be placed in long-term residential treatment facilities after release from detention, thereby eliminating any opportunities for outpatient treatment (as measured in this study) and recidivism in the community. Alternatively, youths with traumatic experiences often develop psychological disorders such as posttraumatic stress, major depression, and anxiety.^{73,74} Common symptoms and coping strategies associated with these disorders include behavioral inhibition, social withdrawal, and

avoidance of others, places, and situations,⁶⁶ which may decrease the likelihood that these adolescents actively seek treatment or spend time with delinquent peers who engage in delinquent acts in the community, resulting in a reduced likelihood of treatment utilization and recidivism.

Effectiveness of Mental Health Treatment Utilization

The final regression model for this study indicated that mental health treatment services were associated with an increased likelihood of recidivism. Given studies demonstrating that mental health services can successfully improve psychiatric symptoms, decrease delinquent behavior, and teach coping skills to prevent recidivism,^{29,30,75} the results are somewhat discouraging and counter to the purpose of mental health treatment. Several possibilities may explain the relationship between treatment utilization and higher likelihood of recidivism. First, treatment utilization may serve as a proxy measure of mental health needs, particularly alcohol and drug use. As mentioned previously, detained youths with serious substance-related problems are more likely to have a recidivism event (e.g., drug-related arrests and drug-related probation violations)^{13,20,28,70} and may also be more likely to be court-ordered to receive treatment. Hence, adolescents' alcohol and drug use may moderate the relationship between mental health treatment and recidivism, but an examination of moderation was outside the scope of this study. Alternatively, DAs may have experienced treatment barriers,^{22,40–42} such as lack of transportation, poor family and social support, negative beliefs about treatment, no interest in treatment, or the social stigma of seeking care, which prompted early termination of treatment. Unfortunately, because of limitations in data collection, we were unable to examine specifically the impact of discontinued treatment on recidivism or to compare recidivism outcomes for DAs who attended a single treatment session versus multiple sessions. Additional research is needed to test the relationship between treatment quantity and duration and recidivism.

Several other factors may also partially explain the positive relationship between treatment utilization and recidivism. Specifically, we measured treatment utilization within 60 days, which may not have been enough time for DAs to experience significant treatment benefits, such as improved behavior and reduced risk of re-

cidivism. In addition, findings may be related to low-quality, non-evidence-based treatment. Reviews of different treatments for juvenile-justice-involved youths indicate that non-evidence-based treatment (e.g., poorly implemented, low fidelity) fail to prevent recidivism and can result in negative outcomes.^{13,29,33} The DAs in this present study were unlikely to have participated in such high-quality, evidence-based treatments as MST or FFT; instead, they probably received low-quality treatment and episodes of recidivism were not reduced. Unfortunately, such conclusions are difficult to make because we examined only the use of mental health treatment and not key treatment elements (e.g., treatment strategies, family involvement, multiple services, duration of services, and treatment implementation/model fidelity) that promote the effectiveness of mental health treatment.^{30,35,75} Future research should examine how these elements influence the effectiveness of mental health services on reducing recidivism.

Limitations

Several limitations of the study should be acknowledged. First, all data were abstracted from electronic records, so the rates of treatment utilization and recidivism may be inaccurate because of missing or inaccurately reported data. Further, treatment utilization rates are limited to Medicaid claims and medical records from a single hospital and its affiliated clinics. The number of adolescents who received services outside of Medicaid and this hospital system, participated in informal, nondocumented treatment (e.g., religious counseling and support groups), or moved out of state is not known, so the treatment utilization rates may underestimate the true rates. However, the hospital in which medical records were gathered is the primary care provider for indigent care and the largest provider of mental health services to individuals without insurance in the city. Provided that most noninsured adolescents in the sample would have used services at this hospital and that treatment data for all adolescents with Medicaid were collected, treatment estimates are likely to be generally accurate. Another potential limitation is that the study assessed only whether adolescents sought mental health services. Future research is needed with more detailed treatment information, particularly receipt of referrals, frequency of treatment sessions and withdrawals, treatment type, and treatment quality. These details are crucial to drawing firm conclusions about postdetention treatment

services, treatment gaps and disparities, and the impact of treatment on recidivism. However, despite the study's limitations in the measurement of mental health treatment, the findings are important in showing that mere contact or connection with mental health services is not enough to reduce recidivism. Further, the study highlights the gap between youths who demonstrate the need for treatment and those who actually connect with services and emphasizes the need for effective mental health screening in the juvenile justice system.

As a final limitation, the sample consisted of adolescents detained in a single detention facility in Indiana, and thus there is the potential for generalizability concerns. This limitation is minimal, given that the sample was large and the demographic distribution matches the overall detained adolescent population.^{1,76} Thus, results should have good generalizability and applicability to juvenile-justice-involved youths in other states.

Implications and Recommendations

Based on the literature and current study findings, the authors offer the following recommendations.

Programs are needed within the juvenile justice system that identify DAs with mental health concerns and treatment needs, so that these adolescents can be connected to appropriate, evidence-based treatment services upon community re-entry. Specifically, we recommend that juvenile justice facilities employ validated, reliable mental health screenings for all adolescents during intake.^{4,11,13} Ideally, the results of an adolescent's mental health screening should help determine whether a comprehensive psychological evaluation is needed, and serve as a guide for assessing mental health treatment needs and appropriate mental health services.^{12,43}

Consistent with the literature, the current study found prominent mental health and substance use concerns among DAs, but low rates of service utilization in the community. Research examining the use of mental health treatment upon community re-entry is limited,^{24,39,41} and therefore future research should focus on identifying and understanding postdetention treatment utilization, particularly prevalence rates, types of services used, quantity and duration of services, facilitators and barriers to treatment, and the discrepancy between low rates of service use and high rates of mental health problems. We recommend that future research also examine why demographic factors (e.g., race, gen-

der, and age) appear to be more strongly tied to mental health treatment than to actual mental health concerns and treatment needs.

Reviews of mental health treatments for juvenile offenders indicate that certain interventions (e.g., MST, FFT) are effective in reducing recidivism,^{32,34,36} whereas other treatments yield mixed support.^{29,33,35} In the current study, we found that basic treatment use was associated with increased likelihood of recidivism, which calls into question the types of services that DAs are receiving. Researchers are advised to advance the development, implementation, and dissemination of evidenced-based treatments that not only address the mental health concerns regarding DAs, but also promote reductions in rates of recidivism.

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