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Psychiatric Disorders and Violence: A Longitudinal Study of Delinquent Females and Males After Detention

Dr. Katherine S. Elkington, PhD,

HIV Center for Clinical and Behavioral Studies, New York State Psychiatric Institute, and
Columbia University, New York

Dr. Linda A. Teplin, PhD,

Northwestern University, Feinberg School of Medicine, Chicago

Dr. Karen M. Abram, PhD,

Northwestern University, Feinberg School of Medicine, Chicago

Dr. Jessica A. Jakubowski, PhD,

Northwestern University, Feinberg School of Medicine, Chicago

Dr. Mina K. Dulcan, MD, and

Northwestern University, Feinberg School of Medicine, Chicago. Also with the Ann and Robert H.
Lurie Children's Hospital of Chicago

Dr. Leah J. Welty, PhD

Northwestern University, Feinberg School of Medicine, Chicago

Abstract

Objective—To examine the relationship between psychiatric disorders and violence in delinquent youth after detention.

Method—The Northwestern Juvenile Project is a longitudinal study of youth from the Cook County Juvenile Temporary Detention Center (Chicago, Illinois). Violence and psychiatric disorders were assessed via self-report in 1,659 youth (56% African American, 28% Hispanic, 36% female, ages 13–25) interviewed up to 4 times between three and five years after detention. Using generalized estimating equations and logistic regression, we examined (1) the prevalence of violence three and five years after detention; (2) the contemporaneous relationships between psychiatric disorders and violence as youth age; and (3) if the presence of a psychiatric disorder predicts subsequent violence.

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Correspondence to Linda A. Teplin, PhD, Department of Psychiatry and Behavioral Sciences, Northwestern University, Feinberg School of Medicine, 710 N. Lakeshore Drive, Suite 900, Chicago, IL 60611; healthdisparities@northwestern.edu.

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Results—Rates of any violence decreased between 3 and 5 years after detention, from 35% to 21% (males), and from 20% to 17% (females). Contemporaneous relationship between disorder and violence: Compared to the group with no disorder, males and females with any disorder had greater odds of any violence (adjusted odds ratio [AOR], 3.0 [95%CI, 1.9–4.7] and AOR, 4.4 [95%CI, 3.0–6.3], respectively). All specific disorders were associated contemporaneously with violence, except for major depressive disorder/dysthymia among males. Disorder and subsequent violence: Males with other drug use disorder and females with marijuana use disorder 3 years after detention had greater odds of any violence 2 years later (AOR, 3.4 [95%CI, 1.4–8.2] and AOR, 2.0 [95%CI, 1.1–3.8], respectively).

Conclusion—Aside from substance use disorders, the psychiatric disorders studied may not be useful markers of subsequent violence. Violence assessment and reduction must be key components of ongoing psychiatric services for high-risk youth.

Keywords

psychiatric disorder; violence; youth; delinquents; longitudinal

Introduction

Many studies have examined the association between psychiatric disorders and violence in adults.^{1–4} Among adults with serious mental illness, those with psychotic symptoms or a co-occurring substance use disorder (SUD) are more likely to be violent than the general population.^{1,2,5} Far less is known about youth, in part because studies have focused less on psychiatric disorders than on substance use or mental health problems and their relationship to violence.^{6–11}

Studying psychiatric disorders allows a more systematic approach, providing a consistent, consensually understood, and clinically meaningful description of the frequency, severity, and recency of symptoms, and their relationship to violence. However, we found only six studies of youth—two cross-sectional^{12,13} and four longitudinal^{14–17}—that examined psychiatric disorders and violence. These investigations found that some psychiatric disorders (attention-deficit/hyperactivity disorder [ADHD], conduct disorder [CD], SUD, and schizophrenia spectrum disorder) are associated with violence.^{12–17} Depression and anxiety disorders predict violence only when comorbid with CD or SUD.¹⁵ Despite their contributions, these studies have limitations.

First, half of the studies examined only one or two disorders, providing limited information.^{14,16,17} Moreover, these studies could not examine how co-occurring psychiatric disorders known to be associated with violence — SUD and disruptive behavior disorders (DBD) — may confound the association.^{12,13,15}

Second, behavioral disorders and violence were assessed using similar questions.^{12–17} *DSM* criteria for DBD include physically violent and aggressive behavior,¹⁸ such as “initiating physical fights” or “using a weapon to cause serious physical harm to others.” Failure to adjust for this tautology may generate spurious associations.

Finally, few studies of psychiatric disorders and violence examined the highest-risk populations.^{13,14} None studied youth in the juvenile justice system. The largest and best-designed investigations examined only youth in the general population.^{12,15–17} This omission is critical: delinquent youth have much higher rates of psychiatric disorders and comorbid disorders than youth in the general population.^{19–21} Moreover, risk factors for violence—impulsivity, child abuse, poor parental supervision, delinquent peers, and neighborhood disintegration—are more prevalent among delinquent youth.^{22–27}

This paper addresses these limitations. We use data from the Northwestern Juvenile Project, a prospective longitudinal study of a large stratified, random sample of delinquent youth. We examine the association between psychiatric disorders and violence in three ways: (1) the prevalence of violence three and five years after detention; (2) the contemporaneous relationship between violence and psychiatric disorders as youth age; and (3) whether the presence of psychiatric disorder predicts subsequent violence. Analyses correct for the overlapping symptoms of DBD and violence and also control for DBD and SUD, disorders often associated with violence.

Method

The most relevant information on our methods is summarized below. Additional information is available in Supplement 1 (available online) and is published elsewhere.^{20,21}

Sampling and Interview Procedures

Baseline Interviews—We recruited a stratified random sample of 1,829 youth at intake to the Cook County Juvenile Temporary Detention Center (CCJTDC) in Chicago, IL, between November 20, 1995, and June 14, 1998. Consistent with juvenile detainees nationwide,²⁸ nearly 90% of detainees at CCJTDC were male; most were racial/ethnic minorities. To ensure adequate representation of key subgroups, we stratified our sample by gender, race/ethnicity (African American, non-Hispanic white, Hispanic, and “other” race/ethnicity), age (10–13 years or 14 years), and legal status (processed as a juvenile or as an adult). Face-to-face structured interviews were conducted at the detention center in a private area, most within 2 days of intake.

Follow-Up Interviews—We conducted follow-up interviews at 3 and 4.5 years after baseline for the entire sample, and two additional interviews at 3.5 and 4 years after baseline for a random subsample of 997 participants. For each follow-up, we interviewed participants whether they lived in the community or in correctional facilities.

Procedures to Obtain Assent and Consent

Participants signed either an assent form (if they were <18 years) or a consent form (if they were 18 years). The Northwestern University Institutional Review Board and the Centers for Disease Control and Prevention Institutional Review Board approved all study procedures and waived parental consent, consistent with federal regulations regarding research with minimal risk.^{29–31}

Measures

We used data from only the follow-up interviews because many of the violence variables were measured only at follow-up.

Perpetration of Violence—We assessed violence via self-report because official arrest or court records underreport violent behavior.³² Questions were drawn from the Denver Youth Survey.³³ Participants were asked if, during the 3 months prior to the interview, they had committed (yes/no): (1) assault; (2) assault with a weapon; (3) robbery; (4) forced sex; or (5) used a gun. An “any violence” variable (yes/no) reflects whether participants reported any of these violent behaviors.

Psychiatric Diagnosis—We administered the Diagnostic Interview Schedule for Children Version IV (child and young adult versions), based on the *DSM-IV*, to assess manic episode, hypomania, major depressive disorder (MDD), dysthymia, generalized anxiety disorder (GAD), posttraumatic stress disorder (PTSD), panic disorder, schizophrenia, conduct disorder (CD), and oppositional defiant disorder (ODD) in the past year.³⁴ To assess past-year SUD and antisocial personality disorder (APD), we administered the Diagnostic Interview Schedule, Version IV (DIS-IV³⁵). Additional information on our diagnostic measurement and prevalence of disorders has been published elsewhere.^{20,21}

We examined the following diagnostic groups: (1) manic episode or hypomania; (2) MDD or dysthymia; (3) any anxiety disorder (GAD, PTSD, and panic disorder); (4) any DBD (CD, ODD, or APD); (5) alcohol use disorder; (6) marijuana use disorder; and (7) other drug use disorder. There were too few cases of schizophrenia (<14 participants at any follow-up interview) to reliably estimate associations with violence.

We omitted symptoms of violent behavior from CD and APD criteria to avoid spurious associations between these disorders and violence. Prevalence of DBD after adjustment was approximately 1% less than original rates. Supplement 1, available online, describes how diagnoses were adjusted.

Statistical Analysis and Sample Characteristics

All analyses were conducted using Stata software and its survey routines.³⁶ To generate prevalence rates and inferential statistics that reflect CCJTDC’s population, each participant was assigned a sampling weight augmented with a nonresponse adjustment to account for missing data. Taylor series linearization was used to estimate standard errors (SEs). Our analyses consist of three parts:

1. **Prevalence of Violence** (Tables 1, 2, 3, and 6). As in our prior paper,²¹ we present prevalence rates for the entire sample at 2 time points: Time 1 and Time 2. Time 1 is approximately 3 years after baseline (mean [SD], 3.2 [0.3] years; range, 2.7–4.5 years); 1,659 (90.7%) of participants had a Time 1 interview. Time 2 is approximately 5 years after baseline (mean [SD], 4.9 [0.4] years; range, 4.3–6.0 years); 1,561 (85.3%) of participants had a Time 2 interview. Table S1 (available online) describes sample demographics at Time 1 and Time 2.

2. ***Contemporaneous Relationship Between Violence and Psychiatric Disorders as Youth Age*** (Tables 4 and 5). We used generalized estimating equations (GEEs), a standard approach for prospective longitudinal studies. We report odds ratios (ORs) examining: (1) changes in the prevalence of violence over time; and (2) associations between psychiatric disorder and violence over time. These analyses use all available interviews (average 2.9 interviews/person; range, 1–4 interviews).

Models estimating changes in violent behavior over time included covariates for gender, race/ethnicity (African American, Hispanic, or non-Hispanic white), aging (time since baseline), age at baseline (10–18 years), and legal status at detention (processed in juvenile or adult court). Because incarceration may restrict opportunities for violent behavior, we included covariates for incarceration during the 90 days prior to the interview to match the recall period for violent behavior.

To examine the contemporaneous association between violence and psychiatric disorder, we estimated a series of three GEE models. The first model (the “single disorder” model) estimated the association between the violent behavior and a single psychiatric disorder over time. The second model added a covariate for DBD. The third model added alcohol use disorder, marijuana use disorder, and other drug use disorder to the “single disorder” model. We fit the second and third models because many delinquent youth have more than one disorder¹⁹ and because prior studies found that DBD and SUD^{12,13,15,16} in youth are associated with violence. This allowed us to examine if DBD and SUD confound the association between specific psychiatric disorders and violence. We estimated separate models for males and females.

3. ***Psychiatric Disorder and the Prediction of Subsequent Violence*** (Tables 7 and 8). We used logistic regression to examine if psychiatric disorder at Time 1 is associated with violence at Time 2. To control for prior violence, we included violent behavior at Time 1 as a covariate. We estimated separate models for males and females.

Missing Data—Thirty-one participants had died by Time 1, and 50 participants, by Time 2 (Table S1, available online). Retention was high (85.3% at Time 2); there were no demographic differences in attrition from baseline to Time 1 or Time 2. Although we augmented sampling weights to account for missing data, we also examined the sensitivity of our findings to attrition. To ensure that any decrease in the prevalence of violent behavior was not due to dropout, we repeated our analysis on the 1,491 participants who had interviews at both Time 1 and Time 2. Prevalence rates were nearly identical to those presented in the Results section (tables available from the authors upon request).

Results

The Prevalence of Violence at Time 1 and Time 2 After Detention

Table 1 shows the prevalence of violence at Time 1 and Time 2 for males and females. At Time 1, more than one-third of males (34.6%) and nearly one-fifth of females (19.8%) were violent. At Time 2, more than 1 in 5 males (21.4%) and 1 in 6 females (16.7%) were violent.

Irrespective of gender, assault without a weapon was the most common violent behavior. Robbery and forced sex were the least common. Compared with females, males had significantly higher prevalence of any violence and 3 subcategories: assault without a weapon, robbery, and gun use. Prevalence of any violence, assault without a weapon, and gun use decreased significantly over time. There were few racial/ethnic differences in violence among males or females (Tables S2 and S3, available online).

The Contemporaneous Relationship Between Psychiatric Disorder and Violence

Tables 2 and 3 present prevalence of violence and psychiatric disorder at Time 1 and Time 2 for males and females. Tables 4 and 5 show ORs for the contemporaneous relationship between psychiatric disorder and violence among males and females, respectively.

Males—Males with no disorder at Time 1 had the lowest rates of violence at Time 1 – less than 25%. More than half of males with an alcohol use disorder or other drug use disorder were violent. At Time 2, prevalence of violence was lowest among males with no disorder (11.7%) and highest among males with mania or hypomania (60.8%).

Compared with males who did not have a disorder, males with any disorder had greater odds of any violence and 3 subcategories – assault with a weapon, assault without a weapon, and gun use (Table 4). Even after controlling for DBD and SUD, nearly every psychiatric disorder was associated with any violence and one or more of its subcategories. Of note, DBD and alcohol use disorder were associated with every violent behavior; marijuana use disorder was associated with every behavior except assault with a weapon. Some of the largest ORs were for any anxiety disorder, which was associated with every behavior except assault without a weapon.

Females—Females with no disorder at Time 1 had the lowest rates of violence at Time 1 (10.3%; Table 3). Approximately one-third of females with DBD, alcohol use disorder, marijuana use disorder, or other drug use disorder were violent. At Time 2, 6.6% of females with no disorder were violent, compared with 30.7% of females with any disorder.

Compared with females with no disorder, females with any disorder had more than four times the odds of any violence and its subcategory, assault without a weapon, and more than three times the odds of assault with a weapon (Table 5). After controlling for DBD or SUD, MDD or dysthymia, DBD, alcohol use disorder, and marijuana use disorder were also associated with any violence and one or more of its subcategories.

Psychiatric Disorder and the Prediction of Subsequent Violence

Table 6 shows the prevalence of violence at Time 2 for males and females with and without psychiatric disorders at Time 1. Tables 7 and 8 show ORs for psychiatric disorder at Time 1 predicting subsequent violence at Time 2 for males and females, respectively.

Males—About 20% of males without disorder at Time 1 were violent at Time 2. Among males with any disorder at Time 1, 23.9% were violent at Time 2. Males with other drug use disorder at Time 1 had the highest prevalence of violence at Time 2 (42.7%); males with anxiety disorders had the lowest prevalence (17.3%).

Only the presence of other drug use disorder and anxiety disorder predicted subsequent violence at Time 2 (Table 7). Males with other drug use disorder at Time 1 had approximately three times the odds of any violence and its subcategory, assault without a weapon, at Time 2. Males with an anxiety disorder at Time 1 were less likely to commit assault with a weapon or use a gun at Time 2 compared with males without anxiety disorder at Time 1.

Females—Among females without disorder at Time 1, 1 in 10 was violent at Time 2 (Table 6); among females with any disorder at Time 1, more than 1 in 5 were violent at Time 2. Females with marijuana use disorder at Time 1 had the highest prevalence of subsequent violence at Time 2 (34.0%); they had more than twice the odds of any violence and its subcategory, assault without a weapon, at Time 2 (Table 8). Alcohol use disorder was associated with subsequent assault without a weapon.

Discussion

Although violence decreased significantly as youth aged—mirroring general population trends^{8,37,38}—five years after detention, when participants were 15 to 23 years old, approximately 21% of males and 17% of females reported recent violent behavior. Consistent with prior studies,^{7,10,37–39} males had higher rates than females.

Overall, alcohol, marijuana, and other drug use disorders were contemporaneously associated with violence. However, the degree to which SUDs predicted subsequent violence depended on gender, specific substance used, and violent behavior. These findings corroborate and extend prior studies of substance use and violence in delinquent and general population youth.^{10,40–42} The mechanisms underlying the association between SUDs and violence likely vary by substance. Alcohol intoxication increases aggression and violence in youth and young adults.^{11,12} The association between violence and illicit drugs is influenced, in part, by involvement in the illegal drug trade and associations with gang members and other violent individuals.^{12,43}

No other disorder predicted subsequent violence; however, most disorders were contemporaneously associated with violence as youth aged. DBD and violence were associated even after adjusting for overlap in their definitions. This finding extends those of prior studies of general population youth^{12,15} and suggests that other symptoms of DBD – such as nonphysical aggressiveness and antisocial or oppositional attitudes – are associated with violence.⁴⁴

The contemporaneous association between anxiety disorders and violence may be explained by PTSD, the most common anxiety disorder among our participants. Symptoms of PTSD—being easily startled, feeling on-edge, having anger outbursts—have been linked to violence in studies of high-risk youth⁴⁵ and adults.^{46,47} The association between mania/hypomania and any violence in males confirms prior studies of adults,^{4,48} which found that acute manic symptoms (e.g., aggression, irritability, explosiveness, impulsivity) elevate the immediate risk for violent behavior. Finally, the association between MDD or dysthymia and violence for females may reflect that underlying risk factors for violence and MDD or dysthymia,

such as exposure to community violence, are more common among delinquent females than among the general population.^{49,50}

In sum, even after accounting for disorders that are commonly associated with violence—SUD and DBD—most disorders were contemporaneously associated with violence as youth aged. However, only SUD predicted subsequent violence. Taken together, our findings suggest that: (1) aside from SUDs, the psychiatric disorders studied may not be useful markers to predict subsequent violence; and (2) violence assessment and reduction must be key components of ongoing psychiatric services for high-risk youth.

Our study has limitations. Data were drawn from one site. Findings may be generalizable only to detained youth in urban centers with similar demographic compositions and cannot be generalized to community populations. We cannot determine if psychiatric disorders and violence are causally related. Participants may have had more than one disorder; however, we did not have enough power to determine if specific combinations of disorders or uncommon disorders (e.g., schizophrenia) increased the likelihood of being violent. We also could not examine how incarceration affects mental disorder, violence, or the relationship between them. Our data are subject to the reliability and validity of the youth's self-report; many parents of detained youth were unavailable.²⁰ Underreporting of psychiatric symptoms is common among adolescents,⁵¹ and delinquent youth may underreport violent behaviors. Our findings do not take into account treatment services that might have been provided. Finally, although the demographic characteristics of delinquent youth have not changed substantially over time,^{52,53} findings might differ in a contemporary sample.

Despite these limitations, our findings have implications for research, mental health policy, and clinical services:

Examine the development of violence in delinquent females

Although males comprise a larger proportion of the delinquent population, and juvenile arrests for violence have decreased in the past 10 years, the decrease has been slower for females (28% vs. 45%).⁵⁴ Yet most research on violence has focused on males or has not examined gender differences.⁵⁵ Our findings on mood disorders and violence suggest that pathways to violence may be different for males and females.⁵⁰ Future studies will provide the empirical basis to develop gender-specific programs to reduce violence.

Explore the role of comorbid disorders and violence

Copeland et al.¹⁵ found that comorbid disorders increase the odds of violence among youth in the general population. Yet no study of delinquent youth has examined comorbid disorders and violence. This omission is critical: more than half of delinquent youth have a comorbid SUD,¹⁹ which substantially increases violence in adults with psychiatric disorders.^{2,5}

Augment standard psychiatric treatment with interventions to reduce violence

Psychiatric disorders and violence co-occur over time in delinquent youth. Community mental health clinics are uniquely positioned to address violent behaviors in delinquent

youth with psychiatric disorders. However, few mental health or substance abuse treatment programs also target violence. Successful programs, such as multisystemic therapy or functional family therapy, are costly (\$1,842-\$5,800 per person annually)^{56,57} but are far less expensive than the average annual cost of incarceration (\$88,000 per youth).⁵⁸

Provide early identification and treatment of SUD in delinquent youth

Treating SUD—in our study, the sole predictor of subsequent violence—may prevent future violence^{59–61} and reduce the likelihood that delinquent youth persist in a violent and criminal lifestyle.⁶²

Delinquent youth are detained for an average of 2 weeks before they return to their communities.³² Due to the Affordable Care Act,⁶³ more youth will be eligible to receive care in the community as they age. Yet delinquent youth have many characteristics that complicate treatment—histories of trauma and abuse, comorbid disorders, high-risk peer groups, and disrupted family systems^{24–26,50,64}—making them difficult to engage and manage in standard care.⁶⁵ Thus, the critical question is: How can we provide community mental health systems with the resources needed to treat delinquent youth when they return home?

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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References

1. Choe JY, Teplin LA, Abram KA. Perpetration of violence, violent victimization, and severe mental illness: Balancing public health concerns. *Psychiatr Serv.* 2008; 59(2):153–164. [PubMed: 18245157]
2. Corrigan P, Watson A. Findings from the National Comorbidity Survey on the frequency of violent behavior in individuals with psychiatric disorders. *Psychiatry Res.* 2005; 136(2–3):153–162. [PubMed: 16125786]

3. Hiday VA. The social context of mental illness and violence. *Journal of Health and Social Behavior*. 1995; 36:122–137. [PubMed: 9113138]
4. Swanson JW, Holzer CE, Ganju VK, Jono RT. Violence and psychiatric disorder in the community: Evidence from the Epidemiologic Catchment Area surveys. *Hosp Community Psychiatry*. 1990; 41:761–770. [PubMed: 2142118]
5. Fazel S, Gulati G, Linsell L, Geddes JR, Grann M. Schizophrenia and Violence: Systematic Review and Meta-Analysis. *PLoS Med*. 2009; 6(8):e100–120.
6. Dembo R, Williams L, Wothke W, Schmeidler J. The Relationships Among Family Problems, Friends' Troubled Behavior and High Risk Youths' Alcohol/Other Drug Use and Delinquent Behavior: A Longitudinal Study. *International Journal of Addictions*. 1994; 29:1419–1442.
7. Ellickson PL, Saner H, McGuigan KA. Profiles of violent youth: Substance use and other concurrent problems. *Am J Public Health*. 1997; 97(6):985–991. [PubMed: 9224181]
8. Elliot, DS.; Huizinga, D.; Menard, S. Multiple Problem Youth: Delinquency, Substance Use, and Mental Health Problems. New York: Springer-Verlag New York Inc; 1989.
9. Martino SC, Ellickson PL, Klein DJ, McCaffrey D, Edelen MO. Multiple trajectories of physical aggression among adolescent boys and girls. *Aggressive behavior*. 2008; 34:61–75. [PubMed: 17701991]
10. Resnick MD, Ireland M, Borowsky I. Youth Violence Perpetration: What Protects? What Predicts? Findings from the National Longitudinal Study of Adolescent Health. *J Adolesc Health*. 2004; 35:424.e421–424.e410. [PubMed: 15488438]
11. Rossow I, Pape H, Wichstrom L. Young, wet and wild? Associations between alcohol intoxication and violent behaviour in adolescence. *Addiction*. 2002; 94(7):1017–1031. [PubMed: 10707440]
12. Arseneault L, Moffitt TE, Caspi A, Taylor PJ, Silva PA. Mental disorders and violence in a total birth cohort. *Arch Gen Psychiatry*. 2000; 57:979–986. [PubMed: 11015816]
13. Apter A, Gothelf D, Orbach I, et al. Correlation of suicidal and violent behavior in different diagnostic categories in hospitalized adolescent patients. *J Am Acad Child Adolesc Psychiatry*. 1995; 34:912–918. [PubMed: 7649962]
14. Tarter RE, Kirisci L, Vanyukov M, et al. Predicting adolescent violence: Impact of family history, substance use, psychiatric history, and social adjustment. *Am J Psychiatry*. 2002; 159:1541–1547. [PubMed: 12202275]
15. Copeland WE, Miller-Johnson S, Keeler G, Angold A, Costello EJ. Childhood Psychiatric Disorders and Young Adult Crime: A Prospective, Population-Based Study. *The American Journal of Psychiatry*. 2007; 163(11):1668–1675. [PubMed: 17974931]
16. Fang X, Massetti GM, Ouyang L, Grosse SD, Mercy JA. Attention-Deficit/Hyperactivity Disorder, Conduct Disorder, and Young Adult Intimate Partner Violence. *Arch Gen Psychiatry*. 2010; 67:1179–1186. [PubMed: 21041619]
17. Loeber R, Pardini D, Homish DL, et al. The Prediction of Violence and Homicide in Young Men. *J Consult Clin Psychol*. 2005; 73:1074–1088. [PubMed: 16392981]
18. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders: DSM-IV. Washington, DC: American Psychiatric Association; 1994.
19. Abram KM, Teplin LA, McClelland GM, Dulcan MK. Comorbid Psychiatric Disorders in Youth in Juvenile Detention. *Arch Gen Psychiatry*. 2003; 60:1097–1108. [PubMed: 14609885]
20. Teplin LA, Abram KM, McClelland GM, Dulcan M, Mericle AA. Psychiatric Disorders in Youth in Juvenile Detention. *Arch Gen Psychiatry*. 2002; 59:1133–1143. [PubMed: 12470130]
21. Teplin LA, Welty LJ, Abram KM, Dulcan MK, Washburn JJ. Prevalence and persistence of psychiatric disorders in youth after detention: A prospective longitudinal study. *Arch Gen Psychiatry*. 2012; 69(10):1031–1043. [PubMed: 23026953]
22. Buka SL, Stichick TL, Birdthistle I, Earls FJ. Youth Exposure to Violence: Prevalence, Risks, and Consequences. *Am J Orthopsychiatry*. 2001; 71(3):298–310. [PubMed: 11495332]
23. Dembo R, Williams L, Wothke W, Schmeidler J, Brown CH. The role of family factors, physical abuse, and sexual victimization experiences in high-risk youths' alcohol and other drug use and delinquency: a longitudinal model. *Violence and Victims*. 1992; 7:245–266. [PubMed: 1294239]

24. Hawkins, JD.; Herrenkohl, T.; Farrington, DP., et al. Juvenile Justice Bulletin. Washington, DC: Office of Juvenile and Delinquency Prevention; 2000. Predictors of youth violence. Vol No. NCJ 179065
25. Maguin, E.; Hawkins, JD.; Catalano, RF.; Hill, K.; Abbott, R.; Herrenkohl, T. Risk factors measured at three ages for violence at age 17–18. Boston: American Society of Criminology; 1995.
26. Moffitt TE. Adolescence-limited and life-course persistent antisocial behavior: A developmental taxonomy. *Psychol Rev.* 1993; 100:674–701. [PubMed: 8255953]
27. Thornberry, TP.; Huizinga, D.; Loeber, R. The prevention of serious delinquency and violence: Implications from the Program of research of the Causes and Correlates of Delinquency. In: Howell, JC.; Krisberg, B.; Hawkins, JD.; Wilson, JJ., editors. Sourcebook on serious, violent and chronic juvenile offenders. Vol. 213–237. Thousand Oaks, CA: Sage Publications; 1995.
28. Snyder, HN.; Sickmund, M. Juvenile Offenders and Victims: 2006 National Report. Washington, DC: US Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention; 2006.
29. Office of Human Research Protections. Guidance on the Involvement of Prisoners in Research. Bethesda, MD: Office of Human Research Protections; 2003.
30. Shaffer D. Use of passive consent in child/adolescent mental health research -- effect of letter from Dr. Charles R. McCarthy, Director of the Office for Protection from Research Risks, NIH [editorial]. *Res Notes Child Adolesc Psychiatry.* 1992;10.
31. Federal Register. Federal Policy for the Protection of Human Subjects: Notices and Rules. Jun 18; 1991 Part 256(117):28002–32. (56 FR 28002). 1991.
32. Snyder, HN.; Sickmund, M. Juvenile Offenders and Victims: 1999 National Report. Washington, DC: Office of Juvenile Justice Delinquency Prevention; 1999.
33. Institute of Behavioral Science. Denver Youth Survey Youth Interview Schedule. Boulder, CO: University of Colorado Boulder; 1991.
34. Shaffer D, Fisher P, Lucas CP, Dulcan MK, Schwab-Stone ME. NIMH Diagnostic Interview Schedule for Children Version IV (NIMH DISC-IV): description, differences from previous versions, and reliability of some common diagnoses. *J Am Acad Child Adolesc Psychiatry.* 2000; 39(1):28–38. [PubMed: 10638065]
35. Robins, LN.; Cottler, LB.; Bucholz, KK.; Compton, W. Diagnostic Interview Schedule for DSM-IV (DIS-IV). St. Louis: Washington University; 1995.
36. Stata Statistical Software: Release 12 [computer program]. College Station, TX: StataCorp LP; 2011.
37. Office of the Surgeon General (US). [Accessed August 15, 2013] Youth Violence: A Report of the Surgeon General. www.surgeongeneral.gov/library/youthviolence/toc.htmlExternal. Published 2001
38. Mahalik JR, Levine Coley R, McPherran Lombardi C, Doyle Lynch A, Markowitz AJ, Jaffee SR. Changes in health risk behaviors for males and females from early adolescence through early adulthood. *Health Psychology.* 2013; 32(6):685–694. [PubMed: 23477574]
39. Sussman S, Skara S, Weiner MD, Dent CW. Prediction of violence perpetration among high risk youth. *Am J Health Behav.* 2004; 28:134–144. [PubMed: 15058514]
40. Marcus RF, Jamison EG. Substance use in adolescence and early adulthood: which best predicts violence in early adulthood? *Journal of Child and Adolescent Substance Abuse.* 2013; 22(1):38–57.
41. Ostrowsky MK. Does marijuana use lead to aggression and violent behavior? *J Drug Educ.* 2011; 41(4):369–389. [PubMed: 22455101]
42. White HR, Loeber R, Stouthamer-Loeber M, Farrington DP. Developmental associations between substance use and violence. *Dev Psychopathol.* 1999; 11:785–803. [PubMed: 10624726]
43. Goldstein PJ. The drugs/violence nexus: a tripartite conceptual framework. *Journal of Drug Issues.* 1985; 15:493–506.
44. Nagin D, Tremblay RE. Trajectories of Boys' Physical Aggression, Opposition, and Hyperactivity on the Path to Physically Violent and Nonviolent Juvenile Delinquency. *Child Dev.* 1999; 70(5): 1181–1196. [PubMed: 10546339]

45. Fehon DC, Grilo CM, Lipschitz DS. A Comparison of Adolescent Inpatients With and Without a History of Violence Perpetration Impulsivity, PTSD, and Violence Risk. *J Nerv Ment Dis.* 2005; 193:405–411. [PubMed: 15920381]
46. Barrett EL, Mills KL, Teesson M. Hurt people who hurt people: Violence amongst individuals with comorbid substance use disorder and post traumatic stress disorder. *Addict Behav.* 2011; 36:721–728. [PubMed: 21411235]
47. Taft CT, Monson CM, Schumm JA, Watkins LE, Panuuzio J, Resick PA. Posttraumatic Stress Disorder Symptoms, Relationship Adjustment, and Relationship Aggression in a Sample of Female Flood Victims. *J Fam Violence.* 2009; 24:389–396. [PubMed: 21057584]
48. Feldmann TB. Bipolar disorder and violence. *Psychiatr Q.* 2001; 72(2):119–129. [PubMed: 11433878]
49. Molnar BE, Browne A, Cerda M, Buka SL. Violent behavior by girls reporting violent victimization: a prospective study. *Arch Pediatr Adolesc Med.* 2005; 159:731–739. [PubMed: 16061780]
50. Zahn, MA.; Agnew, R.; Fishbein, D., et al. *Juvenile Justice Bulletin.* Washington, DC: Office of Juvenile Justice and Delinquency Prevention; 2010. Causes and Correlates of Girls' Delinquency: Understanding and Responding to Girls' Delinquency.
51. Schwab-Stone M, Shaffer D, Dulcan M, et al. Criterion validity of the NIMH Diagnostic Interview Schedule for Children Version 2.3 (DISC-2.3). *J Am Acad Child Adolesc Psychiatry.* 1996; 35:878–888. [PubMed: 8768347]
52. [Accessed September 29, 2014] Easy Access to Juvenile Court Statistics: 1985–2011. Office of Juvenile Justice and Delinquency Prevention website. <http://www.ojjdp.gov/ojstatbb/ezajcs/>
53. [Accessed September 29, 2014] Easy Access to the Census of Juveniles in Residential Placement: 1997–2011. Office of Juvenile Justice and Delinquency Prevention website. <http://www.ojjdp.gov/ojstatbb/ezacjrp/>. Updated October 30, 2013
54. Office of Juvenile Justice and Delinquency Prevention Statistical Briefing Book. [Accessed August 30, 2013] US Department of Justice Office of Justice Programs website. http://www.ojjdp.gov/ojstatbb/crime/JAR_Display.asp?ID=qa05235. Updated February 25, 2014
55. Odgers CL, Moretti MM, Reppucci ND. Examining the science and practice of violence risk assessment with female adolescents. *Law Hum Behav.* 2005; 29:7–21. [PubMed: 15865330]
56. Barnoski, R. [Accessed February 1, 2014] Providing Evidence-Based Programs With Fidelity in Washington State Juvenile Courts: Cost Analysis. Document No. 09-12-1201. Washington State Institute for Public Policy website. <http://www.wsipp.wa.gov/ReportFile/1058>. Published December 2009
57. [Accessed August 27, 2013] Social Programs That Work: Multisystemic Therapy for Juvenile Offenders. Coalition for Evidence-Based Policy website. <http://evidencebasedprograms.org/1366-2/multisystemic-therapy-for-juvenile-offenders>. Published 2012
58. [Accessed August 27, 2013] The Costs of Confinement: Why Good Juvenile Justice Policies Make Good Fiscal Sense. Justice Policy Institute website. http://www.justicepolicy.org/images/upload/09_05_REP_CostsOfConfinement_JJ_PS.pdf. Published May 2009
59. Cuellar AE, Markowitz S, Libby AM. Mental health and substance abuse treatment and juvenile crime. *Journal of Mental Health Policy.* 2004; 7(2):59–68.
60. Foster EF, Qaseem A, Connor T. Can Better Mental Health Services Reduce the Risk of Juvenile Justice System Involvement? *Am J Public Health.* 2004; 94(5):859–865. [PubMed: 15117712]
61. Hoeve M, McReynolds LS, Wasserman GA. Service Referral for Juvenile Justice Youths: Associations with Psychiatric Disorder and Recidivism. *Adm Policy Ment Health.* 2014; 41(3): 379–389. [PubMed: 23397231]
62. Terry YM, Van der Waal CJ, McBride DC, Van Buren H. Provision of Drug Treatment Services in the Juvenile Justice System: A System Reform. *The Journal of Behavior Health Services and Research.* 2000; 27(2):194–214.
63. [Accessed June 24, 2013] Aging Out of Medicaid: What is the Risk of Becoming Uninsured?. The Henry J Kaiser Family Foundation website. <http://www.kff.org/medicaid/upload/8057.pdf>. Published March 19, 2010

64. Lipsey, MW.; Derzon, JH. Predictors of violent and serious delinquency in adolescence and early adulthood: a synthesis of longitudinal research. In: Loeber, R.; Farrington, DP., editors. Serious and violent juvenile offenders: risk factors and successful interventions. Thousand Oaks, CA: Sage Publications; 1998. p. 86-105.
65. Rowe CL, Liddle HA, Greenbaum PE, Henderson CE. Impact of psychiatric comorbidity on treatment of adolescent drug abusers. *J Subst Abuse Treat.* 2004; 26:129–140. [PubMed: 15050090]

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Table 1

Prevalence of Violence at Time 1 and Time 2 for Males and Females^a

Violent Behavior	Males				Females				Tests of Sex Differences, Contrasting Males to Females ^c		Changes in Prevalence Over Time, per Year ^d	
	Time 1 ^b (n = 1,044)		Time 2 ^b (n = 992)		Time 1 ^b (n = 604)		Time 2 ^b (n = 565)		AOR	(95% CI)	AOR	(95% CI)
	%	(SE)	%	(SE)	%	(SE)	%	(SE)				
Any Violence^e	34.6	(2.6)	21.4	(2.2)	19.8	(1.7)	16.7	(2.4)	2.3 *	(1.8, 3.0)	0.77 *	(0.7, 0.9)
Forced sex ^f	0.04	(0.0)	0.0	-	0.2	(0.2)	0.2	(0.2)				
Assault without a weapon	25.1	(2.3)	18.1	(2.0)	16.1	(1.5)	11.6	(1.4)	2.0 *	(1.5, 2.6)	0.83 *	(0.7, 1.0)
Robbery	3.9	(1.1)	1.8	(0.7)	1.1	(0.4)	0.6	(0.3)	4.1 *	(1.7, 9.9)	0.74	(0.5, 1.1)
Assault with a weapon	5.9	(1.2)	5.0	(1.2)	6.2	(1.0)	7.8	(2.4)	1.3	(0.8, 2.0)	0.84	(0.7, 1.0)
Gun use	14.8	(2.0)	6.8	(1.3)	4.3	(0.8)	5.1	(2.3)	4.7 *	(3.1, 7.2)	0.67 *	(0.6, 0.8)

Note: AOR = adjusted odds ratio; SE = standard error.

^a Descriptive and inferential statistics are weighted to adjust for sampling design and reflect the demographic characteristics of the Cook County Juvenile Temporary Detention Center. Violence was assessed for the past three months.^b Out of the 1,054 males and 605 females interviewed at Time 1, 10 males and 1 female were not administered the violence questions. Out of the 993 males and 568 females interviewed at Time 2, 1 male and 3 females were not administered the violence questions.^c Odds ratios (ORs) contrast males to females and describe differences in prevalence as youth age. We used all available interviews to estimate gender differences in violent behavior. ORs are adjusted for race/ethnicity, incarceration (indicator for having spent none of the last 90 days incarcerated, yes/no; number of days in corrections), judicial status (processed in adult or juvenile court), age at baseline, and aging (time since baseline).^d ORs are given per one year. For example, an OR of 0.80 means that the odds of violence were decreasing by 20% per year. We used all available interviews to estimate changes in prevalence over time. ORs are adjusted for gender, race/ethnicity, incarceration (indicator for having spent none of the last 90 days incarcerated, yes/no; number of days in corrections), judicial status (processed in adult or juvenile court), and age at baseline.^e "Any violence" includes the violent behaviors listed.^f There were too few instances of forced sex to examine gender differences or changes in prevalence over time. Forced sex was reported by one male and one female at Time 1, and by one female at Time 2.

* p < 0.05

Table 2

Prevalence of Violence Among Males With and Without Psychiatric Disorder^a

Psychiatric Disorder, Time 1 ^c	Disorder Present (n)	Violence, Time 1 (n = 1,044) ^b					
		Any Violence ^d		Assault Without a Weapon		Robbery	
		%	(SE)	%	(SE)	%	(SE)
Any disorder	(n = 537)	43.9	(3.8)	31.5	(3.5)	7.8	(2.2)
Mania or hypomania	(n = 58)	48.3	(11.0)	40.7	(10.7)	12.9	(7.7)
Major depression or dysthymia	(n = 89)	42.8	(8.9)	32.9	(8.2)	9.4	(5.6)
Any anxiety ^e	(n = 91)	45.3	(8.9)	27.9	(7.8)	6.0	(4.4)
Any behavioral ^f	(n = 275)	49.9	(5.4)	37.0	(5.1)	10.3	(3.6)
Alcohol use disorder	(n = 195)	57.4	(6.2)	39.6	(5.9)	11.2	(4.1)
Marijuana use disorder	(n = 289)	49.1	(5.1)	32.8	(4.6)	10.5	(3.3)
Other drug use disorder	(n = 70)	54.3	(9.5)	49.7	(9.6)	7.7	(3.5)
No disorder	(n = 418)	24.7	(3.8)	16.9	(3.3)	0.1	(0.1)
						2.5	(1.4)
						8.9	(2.5)

Psychiatric Disorder, Time 2 ^c	Disorder Present (n)	Violence, Time 2 (n = 992) ^b					
		Any Violence ^d		Assault Without a Weapon		Robbery	
		%	(SE)	%	(SE)	%	(SE)
Any disorder	(n = 463)	30.9	(3.6)	27.8	(3.5)	2.9	(1.3)
Mania or hypomania	(n = 31)	60.8	(14.2)	44.9	(15.4)	17.5	(13.1)
Major depression or dysthymia	(n = 48)	23.0	(9.0)	17.3	(7.7)	6.1	(5.4)
Any anxiety ^e	(n = 52)	42.9	(10.8)	30.9	(9.9)	5.8	(5.6)
Any behavioral ^f	(n = 236)	38.9	(5.4)	34.2	(5.2)	4.6	(2.5)
Alcohol use disorder	(n = 200)	37.4	(5.7)	31.1	(5.3)	6.2	(3.0)
Marijuana use disorder	(n = 230)	37.4	(5.5)	34.2	(5.4)	0.7	(0.4)
Other drug use disorder	(n = 66)	36.4	(10.4)	30.8	(10.3)	1.2	(1.2)
No disorder	(n = 446)	11.7	(2.6)	9.6	(2.4)	0.2	(0.1)
						2.4	(1.3)
						3.2	(1.3)

Note: SE = standard error.

^a Descriptive statistics are weighted to adjust for sampling design and reflect the demographic characteristics of the Cook County Juvenile Temporary Detention Center. Violence was assessed for the past three months.

^g Out of the 1,054 males interviewed at Time 1, 1,044 were administered the violence questions and also administered either the Diagnostic Interview Schedule for Children (DISC) or the Diagnostic Interview Schedule (DIS). Of those 1,044, 89 have missing values for any disorder and no disorder because they have missing values for one or more of the subcategories. Out of the 993 males interviewed at Time 2, 992 were administered the violence questions and also administered either the DISC or the DIS. Of those 992, 83 have missing values for any disorder and no disorder because they have missing values for one or more of the subcategories.

^c Categories of psychiatric disorder are not mutually exclusive.

^d "Any violence" includes the violent behaviors listed as well as forced sex, which was reported by one male at Time 1.

^e "Any anxiety disorder" consists of generalized anxiety disorder, panic disorder, or posttraumatic stress disorder.

^f For participants younger than 18, any disruptive behavior disorder is defined as having conduct disorder (CD) or oppositional defiant disorder. For participants 18 and older, it is defined as having antisocial personality disorder. CD and antisocial personality disorder were adjusted to exclude violent symptoms.

Prevalence of Violence Among Females With and Without Psychiatric Disorder^a

Violence, Time 1 (n = 604) ^b											
Psychiatric Disorder, Time 1 ^c	Disorder Present (n)	Any Violence ^d		Assault Without a Weapon		Robbery		Assault With a Weapon		Gun Use	
		%	(SE)	%	(SE)	%	(SE)	%	(SE)	%	(SE)
Any disorder	(n = 270)	28.8	(3.0)	23.3	(2.7)	1.7	(0.8)	9.1	(1.8)	5.7	(1.4)
Mania or hypomania	(n = 34)	29.5	(8.4)	28.4	(8.2)	0.0	-	9.1	(5.1)	2.2	(2.2)
Major depression or dysthymia	(n = 86)	28.5	(5.1)	22.1	(4.6)	3.6	(2.0)	8.0	(2.9)	6.7	(2.7)
Any anxiety ^e	(n = 67)	22.8	(5.4)	17.4	(4.8)	2.9	(2.1)	11.0	(4.0)	5.8	(2.8)
Any behavioral ^f	(n = 118)	32.8	(5.0)	25.0	(4.3)	2.8	(1.4)	8.8	(2.6)	7.6	(2.4)
Alcohol use disorder	(n = 69)	32.2	(5.8)	29.9	(5.6)	2.5	(1.7)	6.7	(2.9)	10.2	(3.5)
Marijuana use disorder	(n = 89)	32.2	(5.9)	26.5	(5.3)	1.7	(1.2)	12.5	(3.6)	9.9	(3.2)
Other drug use disorder	(n = 29)	34.3	(9.3)	34.4	(9.3)	11.1	(6.1)	6.8	(4.7)	14.5	(6.8)
No disorder	(n = 271)	10.3	(1.9)	7.8	(1.7)	0.8	(0.6)	3.1	(1.1)	3.1	(1.1)
Violence, Time 2 (n = 565) ^b											
Psychiatric Disorder, Time 2 ^c	Disorder Present (n)	Any Violence ^d		Assault Without a Weapon		Robbery		Assault With a Weapon		Gun Use	
		%	(SE)	%	(SE)	%	(SE)	%	(SE)	%	(SE)
Any disorder	(n = 202)	30.7	(5.0)	21.2	(3.1)	1.7	(0.9)	16.4	(5.4)	11.1	(5.5)
Mania or hypomania	(n = 14)	53.2	(13.5)	41.2	(13.2)	6.1	(5.9)	20.3	(10.6)	6.1	(5.9)
Major depression or dysthymia	(n = 62)	25.7	(5.6)	22.6	(5.4)	0.0	-	14.3	(4.5)	3.2	(2.2)
Any anxiety ^e	(n = 41)	28.7	(7.1)	22.1	(6.6)	4.6	(3.2)	14.3	(5.5)	7.2	(4.0)
Any behavioral ^f	(n = 65)	49.0	(10.1)	26.6	(6.7)	2.4	(1.7)	27.7	(12.7)	23.3	(13.1)
Alcohol use disorder	(n = 49)	42.2	(7.1)	35.0	(6.9)	5.6	(3.2)	22.2	(6.0)	10.0	(4.3)
Marijuana use disorder	(n = 77)	32.8	(5.4)	27.0	(5.1)	2.2	(1.5)	14.2	(4.0)	6.2	(2.7)
Other drug use disorder	(n = 25)	38.2	(9.7)	23.1	(8.4)	11.5	(6.3)	11.5	(6.3)	11.5	(6.3)
No disorder	(n = 311)	6.6	(1.4)	4.6	(1.2)	0.0	-	2.9	(1.0)	0.3	(0.3)

Note: SE = standard error.

^aDescriptive statistics are weighted to adjust for sampling design and reflect the demographic characteristics of the Cook County Juvenile Temporary Detention Center. Violence was assessed for the past three months.

^b Out of the 605 females interviewed at Time 1, 604 were administered the violence questions and also administered either the Diagnostic Interview Schedule for Children (DISC) or the Diagnostic Interview Schedule (DIS). Of those 604, 63 have missing values for any disorder and no disorder because they have missing values for one or more of the subcategories. Out of the 568 females interviewed at Time 2, 565 were administered the violence questions and also administered either the DISC or the DIS. Of those 565, 52 have missing values for any disorder and no disorder because they have missing values for one or more of the subcategories.

^c Categories of psychiatric disorder are not mutually exclusive.

^d "Any violence" includes the violent behaviors listed as well as robbery and forced sex. Robbery was reported by 7 females at Time 1 and 4 females at Time 2. Forced sex was reported by one female at Time 1 and one female at Time 2.

^e "Any anxiety disorder" consists of generalized anxiety disorder, panic disorder, or posttraumatic stress disorder.

^f For participants younger than 18, any disruptive behavior disorder is defined as having conduct disorder (CD) or oppositional defiant disorder. For participants 18 and older, it is defined as having antisocial personality disorder. CD and antisocial personality disorder were adjusted to exclude violent symptoms.

Table 4

The Contemporaneous Relationship Between Psychiatric Disorder and Violence as Males Age (n = 1,115)^{a,b,c,d}

	Any Violence ^e		Assault Without a Weapon		Assault With a Weapon		Gun Use	
	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)
Any Disorder	3.02	(1.94, 4.70) *	3.37	(2.10, 5.40) *	2.35	(1.21, 4.54) *	2.33	(1.36, 3.97) *
Mania or Hypomania	3.04	(1.35, 6.81) *	2.89	(1.25, 6.71) *	2.77	(1.32, 5.84) *	1.82	(0.79, 4.16)
+ Any behavioral	2.81	(1.04, 7.64) *	2.35	(0.83, 6.64)	2.19	(0.81, 5.88)	1.57	(0.70, 3.53)
+ Alcohol, marijuana, other drug	2.47	(1.06, 5.75) *	2.36	(0.97, 5.72)	2.59	(1.21, 5.54) *	1.53	(0.66, 3.53)
Major Depression or Dysthymia	1.47	(0.73, 2.98)	1.47	(0.69, 3.12)	1.57	(0.74, 3.33)	0.90	(0.39, 2.08)
+ Any behavioral	1.43	(0.59, 3.44)	1.43	(0.55, 3.72)	1.52	(0.54, 4.31)	0.85	(0.32, 2.26)
+ Alcohol, marijuana, other drug	1.27	(0.64, 2.53)	1.29	(0.62, 2.72)	1.44	(0.67, 3.08)	0.81	(0.36, 1.82)
Any Anxiety^f	2.79	(1.39, 5.61) *	1.89	(0.90, 3.94)	3.55	(1.76, 7.17) *	2.81	(1.45, 5.43) *
+ Any behavioral	2.62	(1.25, 5.52) *	1.60	(0.71, 3.64)	3.47	(1.58, 7.63) *	2.67	(1.34, 5.31) *
+ Alcohol, marijuana, other drug	2.08	(1.04, 4.17) *	1.40	(0.64, 3.08)	3.33	(1.54, 7.21) *	2.33	(1.19, 4.53) *
Any Behavioral^g	2.65	(1.70, 4.13) *	2.52	(1.59, 3.99) *	3.40	(1.70, 6.80) *	2.68	(1.57, 4.59) *
+ Alcohol, marijuana, other drug	1.84	(1.15, 2.96) *	1.80	(1.07, 3.02) *	2.70	(1.45, 5.02) *	1.99	(1.16, 3.40) *
Alcohol Use Disorder	3.27	(2.19, 4.89) *	2.88	(1.97, 4.22) *	2.23	(1.11, 4.49) *	2.95	(1.75, 4.98) *
+ Any behavioral	3.38	(2.06, 5.53) *	2.90	(1.80, 4.65) *	2.29	(1.19, 4.42) *	2.97	(1.69, 5.24) *
+ Marijuana, other drug	2.60	(1.70, 3.96) *	2.30	(1.52, 3.48) *	2.06	(0.97, 4.38)	2.48	(1.41, 4.38) *
Marijuana Use Disorder	2.27	(1.60, 3.22) *	2.14	(1.45, 3.15) *	1.55	(0.80, 3.03)	2.15	(1.39, 3.31) *
+ Any behavioral	2.54	(1.67, 3.87) *	2.41	(1.52, 3.83) *	1.57	(0.90, 2.75)	1.80	(1.07, 3.01) *
+ Alcohol, other drug	1.64	(1.12, 2.41) *	1.58	(1.02, 2.43) *	1.24	(0.60, 2.54)	1.60	(0.98, 2.60)
Other Drug Use Disorder	2.49	(1.50, 4.13) *	2.50	(1.45, 4.30) *	1.82	(1.01, 3.28) *	2.23	(1.11, 4.47) *
+ Any behavioral	2.65	(1.50, 4.67) *	2.72	(1.46, 5.04) *	2.03	(0.96, 4.28)	2.15	(0.85, 5.42)
+ Alcohol, marijuana	1.69	(1.05, 2.74) *	1.75	(1.02, 2.99) *	1.49	(0.79, 2.82)	1.55	(0.72, 3.31)

Note: "Any behavioral" refers to any disruptive behavior disorder. "Alcohol" refers to alcohol use disorder, "marijuana" refers to marijuana use disorder, and "other" refers to other drug use disorder. AOR = adjusted odds ratio.

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^d Odds ratios (ORs) and their associated 95% CIs are weighted to account for sampling design.

^e ORs compare violent behavior by disorder present to disorder absent.

^f Models include the listed disorder(s), along with race/ethnicity, age at the interview, age at baseline, legal status (processed as an adult or juvenile), and incarceration status (indicator for having spent none of the last 90 days incarcerated, yes/no; number of days in corrections).

^g Models were estimated using all available interviews (range 1–4 interviews per person; 3,269 total interviews for 1,115 males).

^h "Any violence" includes assault without a weapon, robbery, assault with a weapon, gun use, and forced sex. There were too few instances of robbery (58) and forced sex (1) to reliably estimate associations between these behaviors and psychiatric disorder.

ⁱ "Any anxiety disorder" consists of generalized anxiety disorder, panic disorder, or posttraumatic stress disorder.

^j For participants younger than 18, any disruptive behavior disorder is defined as having conduct disorder (CD) or oppositional defiant disorder. For participants 18 and older, it is defined as having antisocial personality disorder. CD and antisocial personality disorder were adjusted to exclude violent symptoms.

* $p < 0.05$

Table 5

The Contemporaneous Relationship Between Psychiatric Disorder and Violence as Females Age (n = 636) ^{a,b,c,d}

	Any Violence ^e		Assault Without a Weapon		Assault With a Weapon	
	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)
Any disorder	4.35	(3.00, 6.30) *	4.71	(3.12, 7.12) *	3.86	(2.11, 7.07) *
Mania or hypomania	2.64	(1.45, 4.81) *	2.66	(1.43, 4.95) *	2.01	(0.71, 5.66)
+ Any behavioral	2.04	(1.00, 4.19)	2.60	(1.27, 5.35) *	1.66	(0.50, 5.52)
+ Alcohol, marijuana, other drug	1.75	(0.87, 3.51)	1.81	(0.88, 3.71)	1.40	(0.48, 4.09)
Major depression or dysthymia	2.15	(1.48, 3.14) *	2.03	(1.37, 3.01) *	2.86	(1.70, 4.79) *
+ Any behavioral	1.74	(1.08, 2.79) *	1.59	(0.97, 2.60)	2.17	(1.13, 4.16) *
+ Alcohol, marijuana, other drug	1.67	(1.10, 2.52) *	1.52	(0.99, 2.33)	2.21	(1.24, 3.91) *
Any anxiety^f	1.68	(1.09, 2.61) *	1.64	(1.01, 2.67) *	2.61	(1.45, 4.68) *
+ Any behavioral	1.51	(0.91, 2.53)	1.32	(0.77, 2.27)	2.22	(1.07, 4.59) *
+ Alcohol, marijuana, other drug	1.36	(0.84, 2.21)	1.26	(0.74, 2.15)	2.16	(1.15, 4.06) *
Any behavioral^g	3.92	(2.70, 5.68) *	3.37	(2.27, 4.99) *	2.63	(1.42, 4.85) *
+ Alcohol, marijuana, other drug	3.08	(2.05, 4.63) *	2.56	(1.63, 4.03) *	2.16	(1.08, 4.31) *
Alcohol use disorder	2.91	(2.03, 4.16) *	3.14	(2.19, 4.50) *	2.83	(1.71, 4.69) *
+ Any behavioral	2.42	(1.51, 3.88) *	2.70	(1.67, 4.37) *	1.63	(0.77, 3.43)
+ Marijuana, other drug	2.37	(1.64, 3.45) *	2.59	(1.78, 3.78) *	2.31	(1.33, 4.01) *
Marijuana use disorder	2.62	(1.88, 3.64) *	2.61	(1.85, 3.69) *	2.56	(1.54, 4.24) *
+ Any behavioral	2.50	(1.65, 3.79) *	2.64	(1.69, 4.12) *	2.97	(1.58, 5.58) *
+ Alcohol, other drug	2.16	(1.53, 3.04) *	2.11	(1.47, 3.05) *	2.19	(1.28, 3.73) *
Other drug use disorder	2.71	(1.53, 4.81) *	2.37	(1.34, 4.20) *	2.54	(1.07, 6.04) *
+ Any behavioral	2.49	(1.23, 5.02) *	2.32	(1.10, 4.89) *	1.45	(0.47, 4.49)
+ Alcohol, marijuana	1.91	(1.10, 3.32) *	1.59	(0.90, 2.83)	1.81	(0.79, 4.10)

Note: "Any behavioral" refers to any disruptive behavior disorder, "Alcohol" refers to alcohol use disorder, "marijuana" refers to marijuana use disorder, and "other" refers to other drug use disorder. AOR = adjusted odds ratio.

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^d Odds ratios (ORs) and their associated 95% CIs are weighted to account for sampling design.

^e ORs compare violent behavior by disorder present to disorder absent.

^f Models include the listed disorder(s), along with race/ethnicity, age at the interview, age at baseline, legal status (processed as an adult or juvenile), and incarceration status (indicator for having spent none of the last 90 days incarcerated, yes/no; number of days in corrections).

^g Models were estimated using all available interviews (range 1–4 interviews per person; 1,963 total interviews for 636 females).

^h "Any violence" includes assault without a weapon, robbery, assault with a weapon, gun use, and forced sex. There were too few instances of robbery (14), gun use (59), and forced sex (2) among females to reliably estimate associations between these behaviors and psychiatric disorder.

ⁱ "Any anxiety disorder" consists of generalized anxiety disorder, panic disorder, or posttraumatic stress disorder.

^j For participants younger than 18, any disruptive behavior disorder is defined as having conduct disorder (CD) or oppositional defiant disorder. For participants 18 and older, it is defined as having antisocial personality disorder. CD and antisocial personality disorder were adjusted to exclude violent symptoms.

* $p < 0.05$

Table 6
Psychiatric Disorder at Time 1 and the Prevalence of Subsequent Violence at Time 2 Among Males and Females^a

		Males (n = 945) ^b					
		Violent Behavior at Time 2					
Psychiatric Disorder at Time 1 ^c	Disorder Present (n)	Any Violence ^d % (SE)	Assault Without a Weapon % (SE)	Robbery % (SE)	Assault With a Weapon % (SE)	Gun Use % (SE)	
Any disorder	(n = 491)	23.9 (3.2)	20.9 (3.0)	3.3 (1.5)	5.3 (1.7)	7.8 (2.1)	
Mania or hypomania	(n = 56)	29.3 (9.5)	29.1 (9.5)	7.3 (5.6)	8.3 (5.7)	10.2 (5.8)	
Major depression or dysthymia	(n = 85)	19.5 (6.1)	18.8 (6.1)	1.1 (0.8)	3.3 (1.3)	7.1 (4.0)	
Any anxiety ^e	(n = 87)	17.3 (6.3)	16.1 (6.0)	0.0 —	1.2 (0.9)	0.7 (0.5)	
Any behavioral ^f	(n = 253)	24.7 (4.5)	19.6 (4.0)	4.3 (2.5)	7.5 (3.0)	12.4 (3.8)	
Alcohol use disorder	(n = 175)	24.5 (5.2)	21.0 (4.8)	7.9 (4.0)	8.9 (4.1)	8.1 (3.5)	
Marijuana use disorder	(n = 266)	29.4 (4.7)	25.4 (4.4)	5.5 (2.5)	7.9 (2.9)	10.6 (3.2)	
Other drug use disorder	(n = 66)	42.7 (10.3)	38.6 (10.6)	1.9 (1.9)	6.1 (3.2)	8.7 (3.5)	
No disorder	(n = 379)	19.2 (3.4)	15.8 (3.2)	0.3 (0.2)	5.2 (2.1)	5.3 (1.8)	

		Females (n = 542) ^b					
		Violent Behavior at Time 2					
Psychiatric Disorder at Time 1 ^c	Disorder Present (n)	Any Violence ^d % (SE)	Assault Without a Weapon % (SE)	Robbery % (SE)	Assault With a Weapon % (SE)	Gun Use % (SE)	
Any disorder	(n = 236)	22.3 (4.4)	14.0 (2.3)	1.1 (0.7)	11.1 (4.5)	9.3 (4.5)	
Mania or hypomania	(n = 32)	18.2 (6.8)	18.2 (6.8)	0.0 —	2.5 (2.5)	0.0 —	
Major depression or dysthymia	(n = 73)	21.7 (4.9)	15.0 (4.2)	1.1 (1.1)	4.1 (2.3)	5.5 (2.7)	
Any anxiety ^e	(n = 63)	14.9 (4.4)	8.9 (3.5)	1.3 (1.3)	6.4 (3.1)	1.3 (1.3)	
Any behavioral ^f	(n = 106)	28.0 (8.6)	12.4 (3.3)	2.3 (1.4)	18.2 (9.2)	17.9 (9.3)	
Alcohol use disorder	(n = 60)	25.9 (5.7)	23.0 (5.5)	1.4 (1.4)	5.8 (2.8)	4.8 (2.7)	
Marijuana use disorder	(n = 81)	34.0 (10.0)	17.1 (4.5)	0.9 (0.9)	20.0 (11.2)	20.1 (11.3)	
Other drug use disorder	(n = 24)	28.1 (9.0)	16.6 (7.6)	3.9 (3.8)	7.8 (5.3)	3.9 (3.8)	
No disorder	(n = 250)	9.9 (1.9)	8.2 (1.8)	0.3 (0.3)	3.7 (1.2)	0.8 (0.5)	

Note: SE = standard error.

^a Descriptive statistics are weighted to adjust for sampling design and reflect the demographic characteristics of the Cook County Juvenile Temporary Detention Center. Violence was assessed in the 3 months prior to Time 2.

^b Out of the 946 males interviewed at Time 1 and Time 2, 945 were administered the violence questions and also administered either the Diagnostic Interview Schedule for Children (DISC) or the Diagnostic Interview Schedule (DIS). Of those 945, 75 have missing values for any disorder and no disorder because they have missing values for one or more of the subcategories. Out of the 545 females interviewed at Time 1 and Time 2, 542 were administered the violence questions and also administered either the DISC or the DIS. Of those 542, 56 have missing values for any disorder and no disorder because they have missing values for one or more of the subcategories.

^c Categories of psychiatric disorder are not mutually exclusive.

^d "Any violence" includes the violent behaviors listed as well as forced sex, which was reported by one male at Time 1, one female at Time 1, and one female at Time 2.

^e "Any anxiety disorder" consists of generalized anxiety disorder, panic disorder, or posttraumatic stress disorder.

^f For participants younger than 18, any disruptive behavior disorder is defined as having conduct disorder (CD) or oppositional defiant disorder. For participants 18 and older, it is defined as having antisocial personality disorder. CD and antisocial personality disorder were adjusted to exclude violent symptoms.

Table 7

Psychiatric Disorder at Time 1 and the Prediction of Subsequent Violence at Time 2, Among Males (n=945)^{a,b,c,d}

	Any Violence ^e		Assault Without a Weapon		Assault With a Weapon		Gun Use	
	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)
Any disorder	1.10	(0.61, 1.99)	1.18	(0.64, 2.16)	0.52	(0.16, 1.67)	1.12	(0.42, 2.99)
Mania or hypomania	1.19	(0.43, 3.30)	1.41	(0.51, 3.92)	1.36	(0.33, 5.61)	1.48	(0.39, 5.66)
Major depression or dysthymia	0.63	(0.26, 1.53)	0.76	(0.31, 1.86)	0.47	(0.14, 1.52)	0.55	(0.21, 1.43)
Any anxiety^f	0.77	(0.30, 1.99)	0.88	(0.35, 2.25)	0.09	(0.01, 0.65) *	0.09	(0.02, 0.35) *
Any behavioral^g	1.09	(0.59, 2.00)	0.99	(0.53, 1.85)	0.83	(0.30, 2.29)	2.50	(0.98, 6.36)
Alcohol use disorder	1.26	(0.66, 2.39)	1.21	(0.64, 2.31)	1.67	(0.54, 5.19)	1.07	(0.41, 2.80)
Marijuana use disorder	1.43	(0.79, 2.60)	1.55	(0.85, 2.81)	0.94	(0.31, 2.81)	1.53	(0.59, 3.97)
Other drug use disorder	3.37	(1.38, 8.24) *	3.38	(1.31, 8.73) *	0.86	(0.24, 3.08)	1.33	(0.45, 3.94)

Note: "Any behavioral" refers to any disruptive behavior disorder, "Alcohol" refers to alcohol use disorder, "marijuana" refers to marijuana use disorder, and "other" refers to other drug use disorder. AOR = adjusted odds ratio.

^aOdds ratios (ORs) and their associated 95% CIs are weighted to account for sampling design.

^bORs compare violent behavior by disorder present to disorder absent.

^cModels include the listed disorder along with the violent behavior at Time 1.

^dOut of the 946 males interviewed at Time 1 and Time 2, 945 were administered the violence questions and also administered either the Diagnostic Interview Schedule for Children (DISC) or the Diagnostic Interview Schedule (DIS). Of those 945, 75 have missing values for any disorder and because they have missing values for one or more of the subcategories.

^eAny violence includes assault without a weapon, robbery, assault with a weapon, gun use, and forced sex. At Time 2, there were too few instances of robbery (17) and forced sex (0) to reliably estimate ORs.

^fAny anxiety disorder consists of generalized anxiety disorder, panic disorder, or posttraumatic stress disorder.

^gFor participants younger than 18, any disruptive behavior disorder is defined as having conduct disorder (CD) or oppositional defiant disorder. For participants 18 and older, it is defined as having antisocial personality disorder. CD and antisocial personality disorder were modified to exclude violent symptoms.

* p < 0.05

Table 8

Psychiatric Disorder at Time 1 and the Prediction of Subsequent Violence at Time 2, Among Females (n=542)^{a,b,c,d}

	Any Violence ^e		Assault Without a Weapon		Assault With a Weapon	
	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)
Any disorder	1.81	(0.99, 3.30)	1.75	(0.92, 3.33)	1.82	(0.74, 4.49)
Mania or hypomania	1.19	(0.41, 3.46)	1.45	(0.50, 4.20)	0.46	(0.06, 3.79)
Major depression or dysthymia	1.82	(0.93, 3.56)	1.35	(0.64, 2.84)	0.78	(0.22, 2.79)
Any anxiety^f	1.10	(0.48, 2.51)	0.64	(0.23, 1.73)	1.30	(0.38, 4.48)
Any behavioral^g	1.44	(0.79, 2.61)	1.21	(0.62, 2.37)	1.77	(0.75, 4.18)
Alcohol use disorder	1.98	(1.00, 3.94)	2.44	(1.19, 5.00) *	1.21	(0.40, 3.68)
Marijuana use disorder	2.04	(1.10, 3.78) *	2.29	(1.19, 4.43) *	1.54	(0.58, 4.12)
Other drug use disorder	2.34	(0.86, 6.41)	1.44	(0.44, 4.77)	1.79	(0.39, 8.34)

Note: "Any behavioral" refers to any disruptive behavior disorder, "Alcohol" refers to alcohol use disorder, "marijuana" refers to marijuana use disorder, and "other" refers to other drug use disorder. AOR = adjusted odds ratio.

^a Odds ratios (ORs) and their associated 95% CIs are weighted to account for sampling design.

^b ORs compare violent behavior by disorder present to disorder absent.

^c Models include the listed disorder along with the violent behavior at Time 1.

^d Out of the 545 females interviewed at Time 1 and Time 2, 542 were administered the violence questions and also administered either the Diagnostic Interview Schedule for Children (DISC) or the Diagnostic Interview Schedule (DIS). Of those 542, 56 have missing values for any disorder because they have missing values for one or more of the subcategories.

^e "Any violence" includes assault without a weapon, robbery, assault with a weapon, gun use, and forced sex. At Time 2, there were too few instances of robbery (4) and forced sex (1) to reliably estimate ORs.

^f "Any anxiety disorder" consists of generalized anxiety disorder, panic disorder, or posttraumatic stress disorder.

^g For participants younger than 18, any disruptive behavior disorder is defined as having conduct disorder (CD) or oppositional defiant disorder. For participants 18 and older, it is defined as having antisocial personality disorder. CD and antisocial personality disorder were modified to exclude violent symptoms.