Gender Differences in Criminality: Bipolar Disorder with Co-occurring Substance Abuse

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Outpatient interviews to collect criminal history data were conducted with 55 women and 77 men who had the dual diagnosis of rapid-cycling bipolar disorder with co-morbid substance abuse disorders (DD-RCBD), to ascertain gender-related similarities and differences. Fifty-three percent of women and 79 percent of men reported that they had been charged with a crime, and nearly half of those charged had been incarcerated. Men with DD-RCBD were more likely to have committed a felony and had a trend of committing more misdemeanors. Although women with DD-RCBD were less likely to have a criminal history than their male counterparts, they were far more likely to have a criminal history than were women in the general population. Implications from this pilot study include the need for earlier identification of bipolar disorder and for the increased availability of psychiatric and substance abuse services within correctional facilities.

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Mental illness has a long-standing, complex relationship to violence and criminality. Men make up the great majority of arrestees, but recent evidence (Ref. 1, p 43) shows that mentally ill women may be as likely to be violent as mentally ill men. The Mood Disorders Questionnaire (MDQ) is an instrument that has been shown to be a valid and reliable screening tool for determining bipolar disorder.[2,3] Calabrese and colleagues[4] recently reported that the lifetime prevalence of legal complications in subjects with positive MDQ scores is 26 percent overall, with a gender differential. Approximately three times as many MDQ-positive men had been arrested, convicted, and jailed, as had MDQ-positive women. MDQ-positive subjects were significantly more likely to have been arrested, convicted, and jailed for a crime (other than drunken driving) than were MDQ-negative subjects, and MDQ-positive women evidenced greater disruption in their social and family lives. Exploration of gender differences in criminality in the context of bipolar disorder is essential, both for understanding the gender-specific risks and for treatment planning inside and outside correctional institutions.

Women with bipolar disorder, compared with men, may experience more severe symptoms of both mania and depression.[5] Women with bipolar disorder are depressed more frequently than are men[5] and may be less likely to experience manic episodes.[6] Dysphoric mania is more prevalent in women, and may be more likely with co-morbid substance abuse.[6]

A recent meta-analysis found that the prevalence of rapid cycling in bipolar patients is 16.3 percent,

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with a small majority being women.[7] Rapid-cycling patients have younger onset, poorer global functioning, and greater illness severity than non-rapid cyclers.[8] No systematic relationship between mood and menstrual cycle was found in women with rapid-cycling bipolar disorder (RCBD).[9]

Bipolar disorder also has the highest prevalence of co-morbid substance use when compared with other Axis I conditions. In the Epidemiologic Catchment Area (ECA) study, lifetime prevalence of drug abuse/dependence and alcohol abuse/dependence in bipolar disorder was 33.6 and 43.6 percent, respectively, compared with 6.2 and 13 percent in the general population.[10] Higher rates of substance use disorders were noted in men than in women with bipolar disorder.[11] However, a study of patients hospitalized for their first mixed or manic episode found that women were at least six times as likely as men to have co-occurring substance use disorders.[12,13]

Further data from the ECA project revealed that, though rates of self-reported violence among men (with no mental disorder) were twice as high as those among women (2.7% versus 1.1%), mental illness and substance abuse changed this effect.[14] Nine percent of women with mood disorders and 22 percent of women with substance use disorders reported violence in the past year, compared with 14 percent of men with mood disorders and 21 percent of men with substance use disorders. Among persons with dually diagnosed mood disorder and substance abuse, almost a third (29.2%) self-reported violent behavior in the past year.[14] In a jail sample (n = 1272), among the component of non-Hispanic white women aged 26 to 50, Teplin and colleagues[15] found that 3.8 percent experienced a manic episode during their lifetimes compared with 1.1 percent of the general population. In a study of incarcerated female felons, a slight majority had received mental health or substance abuse treatment.[16] However, we lack published data about legal involvement in persons with dual diagnosis bipolar disorder, particularly regarding gender differences.

In this study, we sought to understand the relationship between bipolar disorder with co-morbid substance abuse and legal involvement, from a gender-based perspective. In the United States, men commit offenses at a *per capita* rate six times that of women. Women comprise 17 percent of violent arrests, 29 percent of property arrests, and 18 percent of drug arrests.[17] In 1996, women served less time than men convicted of the same offense (excluding property offenses).[17] Women in prison are more likely than men to be serving time for a drug offense (33% of incarcerated women versus 21% of incarcerated men) and are less likely to be in prison for violent crime (32% versus 47%).[18] Sixty percent of mentally ill offenders, compared with 51 percent of non-mentally ill offenders in prison, were under the influence of a mind-altering substance during their offense.[19] Almost a quarter (23%) of female inmates were using cocaine at the time of arrest.[18]

The purpose of our study was to examine gender differences in the rates of criminality in patients with the dual diagnosis of rapid-cycling bipolar disorder and substance abuse/dependence (DD-RCBD). We chose persons with rapid-cycling bipolar disorder as a specific population to study because the data suggest that this course specifier is a predictor of nonresponse to treatment and that these patients experience significant unmet needs. We hypothesized that: (1) women with DD-RCBD, because of elevated risk from both mental illness and substance abuse, have higher rates of criminally offending when compared with the general population of women, though they are still less likely to commit crimes than men with DD-RCBD; (2) women with DD-RCBD who are charged with a crime are less likely to be convicted and incarcerated than are men with DD-RCBD who are charged; (3) though rates of offending are likely to be higher than those in the general population for both sexes, women with DD-RCBD remain less likely to commit violent offenses than do men with DD-RCBD; (4) women with DD-RCBD are less likely to commit nonviolent offenses than are men with DD-RCBD; (5) women are less likely than men to have had felony and misdemeanor arrests; and (6) though both women and men have dual diagnoses, in keeping with national statistics, women are less likely than men to commit substance-related crimes. Specifically regarding women with DD-RCBD, we hypothesized that, in keeping with the national data above and based on clinical experience, (7) women who are addicted to cocaine are more likely to commit legal offenses than women with DD-RCBD who are addicted to other substances.

Methods

Participants were involved in a treatment study for dual-diagnosis bipolar disorder and provided informed consent. The Institutional Review Board of

Case Western Reserve University/University Hospitals of Cleveland approved the study. Participants were adults (18 years old and older) who were recruited from an outpatient psychiatry mood disorders clinic at an academic medical center by advertisement or were referred by clinicians. To be included in this study, participants had to meet DSM-IV criteria for rapid-cycling bipolar disorder and to have a recent history of substance abuse or dependence. Diagnosis was ascertained by a psychiatrist (J.R.C.) based on comprehensive clinical interviews, and substance abuse or dependence behavior must have been active in the six months prior to study entry. For participating in the study, patients received psychiatric care at no cost, but they were not compensated for their time. A smaller comparison group was composed of patients enrolled in another treatment study and included patients with bipolar disorder diagnosed by psychiatrists but without a lifetime history of substance abuse (according to reports of patients and significant others and the results of drug screening). Patients with any lifetime history of substance abuse were not included in the comparison group because the legal history was reported over the patient's lifetime.

The Addiction Severity Index (ASI)[20] is a semi-structured interview that was completed on entry into the study, with information from both the patient and a family member or significant other for collateral documentation in all cases. The ASI was used to assess potential problem areas among substance-abusing patients. The Legal Status section of the ASI specifically inquired about the following legal charges: robbery, assault, rape, homicide/manslaughter, weapons offense, arson, shoplifting/vandalism, burglary/larceny/breaking and entering, forgery, major driving violations, prostitution, drug charges, driving under the influence (DUI), disorderly conduct, and contempt of court. Charges of attempted robbery and attempted rape were coded as robbery and rape, respectively. Lifetime convictions and incarcerations were also determined.

Both descriptive and comparative analyses were performed on information gathered from the ASI, to compare results between the sexes. With this sample size, rather than reporting rates of each crime separately, categories were constructed for the crimes recorded on the ASI, based on violence and statute. Charges were divided into those that were violent offenses against another person (not violence only against property; i.e., rape, homicide/manslaughter, assault, robbery[21]) and nonviolent offenses (drug charges, burglary, DUI, forgery, prostitution, contempt of court, arson, and disorderly conduct) with another category for unknown violence (shoplifting and weapons offenses may be either violent or nonviolent, depending on threat or use of weapons). Based on the Ohio Revised Code,[22] charges were separated into misdemeanor (prostitution, disorderly conduct, contempt of court, and forgery) and felony charges (rape, homicide, burglary, and robbery), and an overlapping indeterminate category that could be either misdemeanor or felony, depending on individual circumstances (shoplifting, drug charges, DUI, assault, weapons, and arson). Finally, charges were classified as primarily substance related (drug charges, disorderly conduct, and DUI) or not primarily substance related (rape, homicide/manslaughter, assault, robbery, burglary, forgery, prostitution, contempt of court, arson, shoplifting, and weapons offenses). The lifetime report of substance abuse/dependence was used in the analysis, because lifetime inquiry about legal involvement was used.

The data were analyzed with SPSS (Statistical Package for the Social Sciences for Windows, 11.1 standard version). Chi-square tests were used to compare differences between groups. As the study was exploratory and is one of the first to examine specifically the gender differences in DD-RCBD, the α level was set at .05.

The sample was composed of 132 patients with the dual diagnosis of rapid-cycling bipolar disorder and substance abuse, including 55 (42%) women and 77 (58%) men. The mean age of the sample was 35.5 years. The majority of the sample (83%) was white with 16 percent being African American. The participants had an average of 1.9 psychiatric hospitalizations for mood disorder episodes. In the past 12 months, they had an average of 6.0 depressive episodes and 6.0 manic/hypomanic/mixed episodes, with no significant gender effect. The comparison group included 31 community patients with bipolar disorder without any lifetime history of substance abuse, including 18 (58%) women and 13 (42%) men. The mean age of the comparison group was 36.6 years; 87 percent were white, and 13 percent were African American. The comparison group had an average of 0.5 hospitalizations for mood disorders, and, within the past 12 months, had had an average

Table 1 Charges, Convictions and Incarcerations Among 132 Patients With Dual-Diagnosis, Rapid-Cycling Bipolar Disorder and Comorbid Substance Abuse

	Women, *n* (%)	Men, *n* (%)	*p*
Ever charged with a legal offense	29 (53)	61 (79)	0.001
If charged, ever convicted of a legal offense	13 (48)	34 (56)	0.413
If charged, ever incarcerated for a legal offense	13 (45)	28 (46)	0.924

of 6.3 depressive episodes and 6.3 manic/hypomanic/mixed episodes.

Results

Of 132 community patients with DD-RCBD, 90 (68%) had ever been charged with a legal offense. Of patients charged, 55 percent were convicted and 46 percent were incarcerated. Fifty-three percent of the women, compared with 79 percent of the men, had been charged with a legal offense during their lifetimes ($p = .001$; Table 1). Compared with national data,[17] the women in this sample had an odds ratio of 3.998 for lifetime arrests (95% confidence interval (CI): 2.162–7.394; hypothesis 1). Of those subjects charged, there was no significant difference between women and men regarding the likelihood of being convicted (48% and 56%, respectively) and being incarcerated (45% and 46%, respectively). Therefore, hypothesis 2 was refuted. Overall, 24 percent of the women had been incarcerated in their lifetimes. Of the comparison subjects with bipolar disorder only, three (17%) women and one (8%) man had been charged with a crime in their lifetimes. In the bipolar comparison group, one (6%) woman and one (8%) man had been convicted, and one (6%) woman had been incarcerated.

Violent and Nonviolent Offenses

Of the 55 women in this study, 3 (5%) had been charged with violent offenses compared with 16 percent of the men, with a trend toward statistical significance ($p = .07$; Table 2; hypotheses 3 and 4). The women were significantly less likely to have been charged with a nonviolent offense (42%) than were the men (71%, $p = .001$). Offenses with unknown violence were committed by 20 percent of the women and 35 percent of the men ($p = .06$). In the bipolar comparison group, one (6%) woman had been charged with a violent crime, one with a nonviolent crime, and one with a charge of unknown violence. One (8%) man had committed a crime of unknown violence.

Table 2 Rates of Violent, Nonviolent and Indeterminate Violence Charges, and Substance-Related Charges Among 132 Patients With Dual-Diagnosis, Rapid-Cycling Bipolar Disorder and Comorbid Substance Abuse

	Women, *n* (%)	Men, *n* (%)	*p*
Violent charges	3 (5)	12 (16)	0.071
Nonviolent charges	23 (42)	55 (71)	0.001
Charges of indeterminate violence	11 (20)	27 (35)	0.059
Substance-related charges	21 (38)	53 (69)	<0.0001

Felonies and Misdemeanors

In this sample of patients with DD-RCBD, women were less likely than men to have been charged with felonies (0% and 17%, respectively; $p = .001$; Table 3; hypothesis 5). Similarly, the women were less likely than the men to have been charged with overlapping indeterminate offenses (36% and 64%, respectively; $p = .002$), and the women had a trend of fewer misdemeanors than did the men (27% and 42%, respectively; $p = .09$). In the bipolar comparison group, one (6%) woman had been charged with a felony, while two (11%) had indeterminate offenses. One (8%) man had been charged with an indeterminate offense.

Substance-Related Offenses

Overall, 56 percent of patients with DD-RCBD had been charged with drug- or alcohol-related offenses (Table 2; hypothesis 6). Though both the women and men were from the dual-diagnosis population, these women were significantly less likely than the men to have had substance-related charges (38% and 69%, respectively; $p < .0001$). The women who had abused cocaine were more likely to have been charged with a crime than those who had not (including women abusing alcohol or mari-

Table 3 Rates of Felony, Indeterminate Gravity, and Misdemeanor Charges Among 132 Patients With Dual-Diagnosis, Rapid-Cycling Bipolar Disorder and Comorbid Substance Abuse

	Women, *n* (%)	Men, *n* (%)	*p*
Felony charges	0 (0)	13(17)	0.001
Indeterminate	20(36)	49(64)	0.002
Misdemeanor charges	15(27)	32(42)	0.091

juana). Sixty-five percent of the women who had abused cocaine and 38 percent who had abused other substances had been charged with a crime ($p = .047$; hypothesis 7). However, the same pattern did not hold true for men; 78 percent of the men who did not abuse cocaine and 82 percent who did had legal histories.

Discussion

Significantly more men than women (79 percent (61/77) versus 53 percent (29/55)) in this sample of patients with bipolar disorder and co-morbid substance abuse exhibited a lifetime history of being charged with legal offenses. However, the risk of being charged with a legal offense was remarkably increased in women with dual diagnosis, when compared with women in the general population. Of patients charged with legal offenses, 48 percent of the women and 56 percent of the men were convicted, and 45 and 46 percent, respectively, were incarcerated. Five percent of the women and 16 percent of the men had violent offenses; none of the women and 17 percent of the men had felonies; and 38 percent of the women and 69 percent of the men had substance-related offenses. Of those women who abused or were dependent on cocaine ($n = 31$) versus those who abused or were dependent on other substances ($n = 24$), 65 and 38 percent, respectively, had been charged with a legal offense.

Gender Comparison in the United States

The women with the dual diagnosis of bipolar disorder and co-occurring substance abuse in our sample were four times more likely to have been arrested than were women in the general population.[17] Nationally, women account for 16 percent of inmates in the corrections system. Thus, nationally, men are six times more likely than women to be incarcerated. In our sample of DD-RCBD women, though there was still a significant difference, men were less than twice as likely as women to have been incarcerated. Incarceration rates of women with the dual diagnosis of bipolar disorder and substance abuse were much higher than the 1.1 percent estimated lifetime incarceration rates nationally for women,[17] as one-fourth of the women in this sample had been incarcerated. These discrepancies suggest the importance of dual diagnoses in women, especially because those with dual diagnoses appeared to have much more legal involvement than do patients with bipolar disorder only. The similarity in rates of conviction and incarceration between women and men with DD-RCBD who were charged showed the relative evenhandedness of the justice system.

Nationally, 1 of every 56 females older than 10 years has committed a violent offense compared with 1 of every 9 males older than 10 years.[17] In our sample, the men with DD-RCBD were only two to three times as likely to be charged with violent crimes as the women, though the difference did not reach statistical significance, possibly due to sample size. In another study, although male patients were more likely to commit an act of violence in the 20 weeks after hospital discharge, by the one-year mark, the men were not significantly more likely than women to be violent (24.6% of women and 29.7% of men) (Ref. 1, p 41). Nationally, women account for 18 percent of drug arrests and 16 percent of DUI arrests.[17] In contradistinction, in our sample, the women were well-represented, with 38 percent having substance-related charges. The men were less than twice as likely as the women to have substance-related arrests. Co-occurrence of a substance problem with major mental illness was a "key factor in violence."[23] Together, these studies draw attention to the fact that mental health clinicians tend to underestimate the risk of violence among mentally ill women.[1]

Our results appear to suggest that bipolar disorder with co-occurring substance abuse has a high likelihood of increasing a woman's tendency toward criminal behavior. Underlying reasons may include disinhibition or impulsivity. The findings also suggest that the addition of substance abuse to bipolar disorder has a greater influence on criminal behavior in women than in men. In fact, the prevalence of illegal behavior in women with dually diagnosed bipolar disorder appears more similar to men with the same diagnosis than to women in the general population. This suggests an equalizing effect of substance use disorders, most specifically among bipolar women who are abusing cocaine. Our study results, in combination with the results of Teplin and colleagues,[15] highlight the overrepresentation of bipolar women in the corrections system. Our community-based sample suggests that a large number of women with DD-RCBD have arrest histories, underscoring the importance of early identification of bipolar disorder, both primary and secondary prevention, and appropriate treatment.

Comparison with Other Nations

Studies in other nations have investigated the effects of mental illness on arrest rates of men and women. However, international percentages of arrest rates accounted for by women (Ref. 24, p 105) vary from 2 to 21 percent. Although their sample was not separated according to individual Axis I diagnosis, investigators in a Danish study found that mentally ill women were at increased risk of criminality, and proportionately more mentally ill women than nonmentally ill women were convicted of all types of offenses except those that were drug related. Mentally ill women were found to be at increased risk of violence, and had "even greater risk of violence than of criminality generally."[25] A Swedish study found that women with major mental illness were 5 times more likely than women without disorders to have been convicted of a criminal offense, whereas women with substance abuse/dependence were 32 times more likely to have been convicted. Men with major mental disorders were only 2.6 times more likely to have been convicted of a criminal offense, and men with substance abuse/dependence were 20 times more likely than were men with no disorder to have been convicted. Of female offenders with a major mental illness, 43 percent had co-morbid substance abuse disorders. For both men and women with mental illness, the risk of committing violent crimes was higher than the risk of committing crimes in general.[26] In contrast, a Swiss study indicated that, compared with control subjects, "women with mental disorders were 4.1 times more likely to have been convicted of a criminal offense, but they were no more likely than controls to have committed violent crimes" (Ref. 27, p 673). Furthermore, "alcohol- and drug-abusing women [were] 14.5 times more likely than control subjects to be criminally registered" (Ref. 27, p 674).

Reviewing studies, Tehrani and Mednick calculated that "perhaps. . .29 percent of all the violent crime perpetrated in the community by males is committed by mentally ill men, and 50 percent of all the violent crime perpetrated by females is committed by mentally ill women" (Ref. 28, p 61). Brennan and colleagues noted "the overall effect. . .of the relationship between crime and major mental disorder is similar for males and females. . . . On examination of violent crime, however, females are found to have a higher effect. . .than males" (Ref. 29, p 8). The effect of mental illness on violence appears to be more substantial in women than in men.[30] Though it lacks sample size to draw specific conclusions about violent criminality, our study draws attention to the specific diagnosis of dual-diagnosis bipolar disorder in an American cohort.

Comparison of Legal Complications in Bipolar Disorder with Co-morbid Substance Abuse with Other Serious Mental Illnesses

Substance abuse disorder co-morbidity in bipolar disorder appeared to increase criminal history rates from 26 percent[4] to 68 percent overall in the current sample, similar to rates noted by Pollack and colleagues[31] in a smaller study, and is worthy of further study. While reporting less criminality than our sample, a study of state hospital inpatients found that, of 29 patients with bipolar disorder, 66 percent had no criminal history, 24 percent had arrests for crimes against persons, 7 percent for crimes against property, and 3 percent for nonviolent crime. Patients who abused substances committed more serious crimes than patients who did not.[32]

Recently, Lafayette and colleagues[33] reported on the legal history of 96 outpatients with schizophrenia at an urban community mental health clinic. Of the women, 24 percent (6/25) had arrests for violent crimes, 12 percent (3/25) had arrests for nonviolent crimes, and 64 percent (16/25) had no arrest history. Of the men, the respective percentages were 39 percent (28/71), 28 percent (20/71), and 32 percent (23/71). In the persons with schizophrenia, a significant gender effect was noted in the arrest groups. While prevalence of a substance abuse disorder was higher among those with arrests, the differences were not significant. In comparison, our results indicated higher rates of criminal charges overall for women with DD-RCBD and less violent crime.

Methodological Issues

True rates of legal system involvement are underestimated in community samples because persons who are currently incarcerated are not included. In the current study, rates of violent felonies were underestimated because of the frequently longer prison terms. However, the high rates of criminality and legal system involvement among outpatients with DD-RCBD remain noteworthy. The strengths of our study include its relatively large sample size and the fact that a community sample, rather than a jail sample, was used. In addition, our data are specific for individuals carrying the diagnosis of DD-RCBD

rather than a nonspecific diagnosis of mentally disordered offender. Furthermore, in the current study, diagnoses were made by psychiatrists rather than by patient's report or chart review. This study also represents the first structured assessment in this patient population to use the ASI.

Unfortunately, because of the retrospective nature of the study and time lapse since arrest, we were unable to correlate violence and arrests with participants' mood states at the time of offenses, though it can be hypothesized that more criminality and arrests would occur in the manic or mixed state. Type I errors are possible because of the exploratory nature of the study. Based on a sample of 132, power was .93 to detect medium-sized effects, and .21 to detect small effects. We had .80 power to detect effects as small as $w = .245$, where $w = .30$ is considered a medium-sized effect.[34] Legal histories were based not only on patients' self-reports, but also on corroboration by family members or significant others, though rates may still be underestimates. The ASI limits data to self-report, and we did not verify charges or lack of charges with official arrest records in our jurisdiction, due to strong possibilities that crimes were committed in other jurisdictions as well. Because of plea-bargaining, participants may have reported lesser charges than the initial offense actually represented, and self-report (even with collateral corroboration) may not be as reliable as official records. It is also possible that women may differentially report criminal histories. "Arrest rates are likely to underestimate the true incidence of violence and criminal behavior among psychiatric patients" (Ref. 32, p 790). Because of the nature of data collection and sample size, we were unable to control for other possible violence risk factors, such as other co-morbid diagnoses, education, or socioeconomic status. Data could lack generalizability because the study was small and the sample was from a limited geographic area. Evidence indicates that those with mood- or alcohol-related disorders may commit violent crimes for the first time in mid-adulthood.[35] Therefore, because of the relatively young age of our sample, we may have underestimated lifetime rates for criminality in dual diagnosis rapid-cycling bipolar disorder. Draine and colleagues noted that "studies of persons with serious mental illness who are living in the community have consistently found lifetime arrest rates in the range of 42 to 50 percent" (Ref. 36, p 566). We found both female and male arrest rates in DD-RCBD were higher than those published in these prior reports.

Future gender-oriented research should compare risks of offending in women with RCBD with those in women who have never experienced rapid cycling. Investigating mood state at the time of the offense would be valuable as well, but would require a prospective study design. In an older British sample, researchers noted that, in women who committed violent crime, an excess of offenses occurred on the 28th and 1st days of the menstrual cycle, with a lack of offenses during the ovulatory period.[37] This too would be interesting to investigate among women with mental illness who become violent.

Conclusion

The discrepancy noted between criminality in the general female population and women with rapid-cycling bipolar disorder with co-occurring substance abuse indicates the importance of these dual diagnoses in women. Effects of dual diagnosis bipolar disorder on criminality in women appears greater than the effects in men. Though these women still have lesser involvement in the legal system than do men, rates are much higher than their non-mentally ill counterparts. Monahan and colleagues noted:

> That violence committed by women tends to be less "visible" than violence committed by men—occurring disproportionately more against family members, at home, and without response from the police—may indicate that clinicians should be particularly careful to inquire about violence among patients who are women [Ref. 1, pp 43–4].

Our findings suggest a need for early identification of bipolar disorder and co-morbidity of substance abuse. They also suggest the need for more services in prison for people with dual-diagnosis bipolar disorder, as women in our sample were four times more likely than the general population of women to have been arrested in their lifetimes.

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