
BRIEF RESEARCH REPORT

Accuracy of Self-Reported Arrests Among a Forensic SPMI Population

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Self-reports are prone to response error even in the most structured and standardized environment, but the highly stigmatizing nature of illegal behavior and the possible cognitive problems inherent to the SPMI population increase the likelihood of such error. Using administrative data as the gold standard, the validity of self-reported arrests was examined among 85 mentally ill substance-abusing individuals with justice involvement. The overall accuracy of self-reported arrests during a three-month recall period was 84.7%. Validity was higher among individuals who at the time of the follow-up interview were either in a jail diversion program or incarcerated. Individuals with a mood disorder appeared to be somewhat less accurate in their self-reports than subjects with schizophrenia, despite the implication of cognitive distortion accompanying this latter diagnostic category. Further research on issues such as the accuracy of self-reports over longer recall periods, or the accuracy of self-reported frequency of arrest, is necessary, given the reliance on self-report methodology in outcome studies.

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INTRODUCTION

Involvement in the criminal justice system has been considered a major performance indicator for decades and is even more so now with the recent work at the national level by (1) the 16-State Project funded by the Center for Mental Health Services (CMHS), Substance Abuse and Mental Health Services Administration, in collaboration of the Survey and Analysis Branch, Division of State and Community Systems Development (Gonzalez *et al.*, 2001), (2) the CMHS Five-State Feasibility Study (NASMHPD Research Institute, 1998), and (3) the 1998 National Association of State Mental Health Program Directors' Framework of Mental Health Performance Indicators (NASMHPD President's Task Force, 1998). Evaluations of programs that aim to keep individuals with serious mental illness out of the criminal justice system track recidivism through self-report or by accessing administrative data. A couple of large-scale studies, such as the MacArthur Community Violence Study (Steadman *et al.*, 1998) and the SAMHSA-funded national multi-site evaluation of jail diversion programs (Lattimore, Broner, Sherman, Frisman, & Shafer; 2003; Steadman *et al.*, 1999), have used both data collection procedures, but the costs of doing so are usually prohibitive. Of the two data collection procedures, self-report is the more common as it allows researchers to collect data at reduced cost and with little delay. However, despite these economic and logistical advantages, "serious doubts have been cast on the truthfulness of data collected by self-report on sensitive topics related to stigmatized behaviors" (Hser, 1997). All self-reports are subject to response error, but the validity of self-reports is especially questionable when respondents are asked about sensitive or threatening topics, like illegal behavior. Complicating the issue even further, respondents in mental health research are typically patient populations defined by illnesses characterized by distortions in reality and problems with insight. This means that self-reports regarding rates of arrest among individuals with mental illness are subject to more than the usual errors caused by faulty recall and the tendency for respondents to present themselves in a socially desirable way.

Validity refers to the "degree to which a measurement measures what it purports to measure" (Last, 1995). There are several types of validity but the type of validity relevant here is "criterion" or "empirical" validity. Criterion validity compares a measure to some external indicator or standard and can be (1) concurrent, where the measure and the criterion are contemporaneous, or (2) predictive, where the measure predicts to a criterion that occurs in the future (Maxfield, Luntz-Weiler, & Spatz-Widom, 2000). (For a more thorough review of validity, refer to Nunnally, 1967). The challenge in any assessment of criterion validity is the identification of a valid external criterion, also referred to as the gold standard. Most validation studies in the area of criminal justice involvement assess concurrent validity by comparing self-reported arrests with official arrest records.

Correlations between self-report of criminal behavior and official reports of crime in the general offender population vary between 0.66 (Wyner, 1977) and 0.80 (Hindelang, 1981). Despite the reliance on self-reported methodology, research on the validity of self-reported arrests among persons with serious mental illness is extremely rare. Our literature search identified only three studies. As described in more detail below, all three assessed criterion-related validity and used official records of police contact as the external indicator.

Convit, O'Donnell, and Volavka (1990) compared self-reported arrests with official arrest records for 41 psychiatric inpatients. Sixty-six percent of the subjects gave accurate reports. Twelve percent denied having been arrested even though the official data showed an arrest (i.e. false negatives). The extent of over-reporting was fairly high: 22% reported arrests when official records showed none (i.e. false positives). The authors concluded that the high rate of over-reporting may have been due, in part, to distortions in perception because many of the subjects who over-reported had a diagnosis of schizophrenia.

Nieves, Draine, and Solomon (2000) explored the effects of serious mental illness and substance abuse on the validity of self-reported criminal history data as given by clients of a psychiatric probation and parole service. The correlation between self-reported number of lifetime arrests and official report number of lifetime arrest was 0.67 ($p < 0.01$). Subjects diagnosed with schizophrenia and mania were slightly more likely to under-report their arrest histories, which is opposite to findings by Convit and colleagues. Subjects with antisocial personality disorder were significantly more likely to over-report the number of arrests. The author's interpretation of this latter finding was that persons with antisocial personality disorder may have less internal motivation to meet social desirability standards and may therefore be less likely to feel pressure to minimize illicit or deviant behaviors.

Modestin and Ammann (1995) examined the validity of infractions of the law reported in the charts by comparing the accounts to official records of their convictions, regardless of whether the infractions were followed by arrest. The sample included 909 male psychiatric inpatients suffering from schizophrenia, mood disorder, or alcoholism. There was consistency between the report of criminal behavior abstracted from the clinical chart and the official record for 69% of the sample. The ratio of false negative to false positive patients differed among the three diagnostic groups, with a strong tendency for alcoholics not to report their criminality (i.e. false negatives) and, consistent with findings by Convit and colleagues, a greater likelihood for individuals with schizophrenia to report criminality not officially recorded (i.e. false positives).

The purpose of our research was to extend the literature on the validity of self-reported arrests among individuals with mental illness. We had two research questions: (1) using official arrest data as the gold standard, how valid are self-reports of arrest among individuals with severe and persistent mental illness (SPMI)? and (2) do accuracy, over-reporting, and under-reporting vary by respondent-specific characteristics, including gender, diagnosis, program involvement, interview location, and charge type?

METHODS

Overview

The data for this study were abstracted from the Hawai'i Jail Diversion Evaluation Project, which was part of the Substance Abuse and Mental Health Services Administration (SAMHSA) funded multi-site longitudinal study to evaluate diversion programs nationwide (Lattimore et al., 2003; Steadman et al., 1999). All of the

study sites applied common cross-site inclusion criteria, which included 18 years or older, a chart diagnosis of schizophrenia, major depression, or bipolar disorder, co-occurring substance abuse or dependence per chart diagnosis and/or screening assessment using the Michigan Alcohol Screening Test (Storgaard, Nielsen, & Gluud, 1994) and Drug Abuse Screening Test (Skinner, 1982), and law enforcement involvement.

The primary objective of the original study was to examine differences in outcomes for diverted versus non-diverted individuals with co-occurring disorders. Because diversion services were in place on only two of the four major Hawaiian Islands, a study group (those diverted) and a control group (those not diverted) were naturally available. Diverted subjects were recruited from O'ahu, and non-diverted subjects (i.e. the control group) were recruited from the Big Island and Maui. On O'ahu, subjects were recruited from the Honolulu Diversion Post-Booking/Post-Arrest Program. Subject recruitment for the control or comparison population varied by island. On Maui subjects were identified through the Maui Police Department. On the Big Island subjects were identified through the Hawai'i County Intake Service Center, which is a branch under the Division of Public Safety that provides intake and pretrial services for Hawai'i County.

The data collection procedure involved a cross-site questionnaire administered in three waves of face-to-face interviews with study participants. The first interview, referred to as the baseline, occurred within two weeks of initial arrest. The second interview (also called the first follow-up interview) occurred three months after the baseline interview. The third and final interview (also called the second follow-up interview) occurred 12 months after the baseline interview. The interviews took place between 1998 and 2001. Data were collected on several outcomes, including psychiatric status, substance use, general functioning, and involvement in the criminal justice system. All data were collected through self-report. Data regarding utilization of health care services and arrests during the study period were also abstracted from official records.

In order to examine the validity of self-reported arrests, we compared the criminal justice data collected during the first follow-up interview with data from official records. With the first follow-up interview completed approximately three months after the baseline interview, the questions focused on involvement in the criminal justice system since the first baseline interview. The interview included several items about involvement in the criminal justice system; however, the format of the administrative data limited our focus to the responses to seven questions. The stem, or introduction, was the same for all seven questions. Subjects were asked "Since the first interview, have you been arrested and booked or taken into custody for any: (1) violent crimes, (2) drug crimes, (3) other crimes against people, (4) property crimes, (5) procedural violations, (6) lesser crimes, and (7) other offenses?". The responses to these questions were used to determine whether the interviewee reported any arrest during the three-month follow-up period. Data were also abstracted regarding the location of interview (jail or the community), study status (diverted or not diverted), gender (male or female), and diagnosis (schizophrenia or mood disorder). Official arrest records were provided by the Attorney General's Office of the State of Hawai'i, and all charges were coded into one of the seven categories.

Table 1. Overview of the methodological concepts in a validity study

According to self-report	According to official data		Total
	Arrested	No arrest	
Arrested	<i>a</i>	<i>b</i>	<i>a + b</i>
No arrest	<i>c</i>	<i>d</i>	<i>c + d</i>
Total	<i>a + c</i>	<i>b + d</i>	<i>n</i>
Proportion of under-reporters		$c/(a + c) \times 100$	
Proportion of over-reporters		$b/(b + d) \times 100$	
Proportion of offenders according to interviews		$(a + b)/n \times 100$	
Proportion of offenders according to official data		$(a + c)/n \times 100$	

Study Design

This validation study uses the complete design as described by Marquis (1978). As shown in Table 1, the sample was divided into four groups based on the administrative data and the responses to questions collected through self-report. With the administrative data considered the gold standard and the three-month period between baseline and follow-up interview being the interval of interest, individuals were classified as (a) accurate arrestees, (b) inaccurate arrestees, (c) inaccurate nonarrestees, and (d) accurate nonarrestees.

Subjects

Three-month follow-up interviews were conducted with 85 subjects with SPMI and co-morbid substance abuse disorder. With a two-week window before and a three-week window after the due date of the first follow-up interview, the average number of days between baseline and follow-up interview was 98.6 (SD = 17.3). Subjects' mean age was 37.8 (SD = 9.1). A majority were male (72%) and 61% were enrolled in a jail diversion program. The distribution among diagnostic categories was schizophrenia 35%, major depressive disorder 40%, and bipolar disorder 24%. The last two categories were collapsed into mood disorders for the data analysis due to the small number of individuals in the bipolar disorder category. Most of the follow-up interviews occurred in the community (75%), with 25% conducted in jail.

Data Analysis

Two measures of agreement were calculated: overall agreement and kappa (Cohen, 1960). Overall agreement is the equivalent of accurate arrestees and accurate nonarrestees out of the total. Kappa is a measure of agreement between different measures of the same variable and compares the observed agreement with that expected by chance. Standard errors were also calculated and may be used to form confidence intervals for kappa, $\text{kappa} \pm 1.96 \text{ (SE)}$ (Fleiss, 1981). The frequency of over-reporting and under-reporting was also calculated, with over-reporting (i.e. false positives) measured as the proportion of inaccurate nonarrestees out of all true nonarrestees, and under-reporting (i.e. false negatives) measured as the proportion of inaccurate arrestees out of all true arrestees. Data were stratified by gender,

diagnosis, group status, location of intake, and charge type, and the analysis described above was repeated to examine differences in the accuracy of self-reported arrests between various groups. The chi square test was used to assess the association between self-report and official data, with Fisher's exact test being used in cases with cells less than five. A two-sided test was used with a significance level of 0.05. Significance tests were not conducted in cases of empty cells.

RESULTS

Table 2 presents the proportions of subjects that were arrested during the three-month follow-up period according to arrest records and self-reports. According to official arrest records, 28 (33%) of our overall study population of 85 individuals with SPMI and co-morbid substance abuse disorder were arrested during the three-month interval. These 28 individuals averaged 3.1 criminal charges for each arrest. In contrast, 25 subjects (29%) reported that they had been arrested since the baseline interview.

Table 2 also compares official and self-reported arrest rates by gender, diagnosis, interview location, and program status. Official data showed higher arrest rates for both males (34%) and females (29%) compared to self-reports. Thirty-one percent of males and 25% of females reported at least one arrest during the interval between baseline and three-month follow-up. Although the official data showed slightly higher arrest rates compared to the self-report data, both data sets showed that arrests rates for subjects with schizophrenia were identical to arrest rates for subjects with a mood disorder. Among the subjects who were interviewed at three-month follow-up in jail, official data showed that 52% had been arrested compared to 43% reporting an arrest. Of those subjects interviewed in the community, official data indicated that 27% were arrested compared to only 25% through self-report. Rates of arrest, based on either self-report or official data, were similar for subjects who were diverted, that is, enrolled in a jail diversion program at baseline. In contrast,

Table 2. Proportions of official and self-reported arrests during a three-month recall period

	Arrests based on official data (%) ((a + c)/n)	Arrests based on self-report (%) ((a + b)/n)
Overall	33	29
Gender		
• Male*	34	31
• Female*	29	25
Diagnosis		
• Schizophrenia*	33	30
• Mood disorder*	33	30
Location of interview		
• Jail**	52	43
• Community*	27	25
Program status		
• Diverted*	36	36
• Not diverted*	31	25

* $p < 0.05$.

**Test of significance could not be calculated due to an empty cell.

Table 3. Proportions of respondents over- and under-reporting arrests and measures of agreement during a three-month recall period

	Overall agreement ((a + d)/n) (%)	Kappa	Standard error	Over-reported (b/(b + d)) (%)	Under-reported (c/(a + d)) (%)
Overall	84.7	0.644*	0.09	8.8	28.6
Gender					
• Male*	83.6	0.629*	0.106	10.0	28.6
• Female*	87.5	0.684*	0.168	5.9	28.6
Diagnosis					
• Schizophrenia*	90	0.769*	0.126	5.0	20.0
• Mood disorder*	81.5	0.571*	0.120	11.1	33.3
Location of interview					
• Jail**	90.5	0.811*	0.125	n.a.	18.2
• Community*	82.8	0.551*	0.120	n.a.	32.3
Program status					
• Diverted*	87.9	0.738*	0.122	9.5	16.7
• Not diverted*	82.7	0.571*	0.126	8.3	37.5

* $p < 0.05$.

**Test of significance could not be calculated due to an empty cell.

arrest rates based on official data were slightly higher than self-reported arrests for those individuals with no history of jail diversion involvement. A significant association ($p < 0.05$) was demonstrated for relationship of official arrest reports and self-arrest reports for all study characteristics, except for interview location, which was not calculated due to insufficient data.

Table 3 presents the overall proportions of subjects who over-reported arrests (8.8%) and under-reported arrests (28.6%) according to official arrest records. The table also includes two measures of agreement (i.e. overall accuracy of self-report and kappa between official records and self-report) with corresponding standard errors. The overall accuracy of subjects' self-report of arrest was 84.7%. The overall kappa, evaluating the strength of the association between self-report and official arrest records, was 0.644.

The accuracy of study subjects' self-report of arrest was slightly higher for female study subjects (87.5%) than for male study subjects (83.6%). Study subjects with a diagnosis of schizophrenia demonstrated overall self-report accuracy of 90%, compared with overall accuracy of 81.5% for study subjects with a history of mood disorder. Overall accuracy was also higher for study subjects interviewed in jail at three-month follow-up (90.5%), compared with the overall accuracy of subjects who were interviewed in the community at follow-up (82.8%). Subjects with a history of jail diversion program involvement reported arrests at a slightly higher accuracy (87.9%) than did subjects with no history of jail diversion (82.7%). Overall accuracy of self-report of arrest was relatively high, with the range from 83 to 91%.

Comparisons of over-reporting when stratified by study characteristics indicated that males tended to over-report arrest (10%) at a slightly higher rate than did females (5.9%). Subjects with schizophrenia over-reported arrest at a slightly lower rate (5%) than did subjects with a mood disorder diagnosis (11.1%). Over-reporting for interview location could not be calculated. Subjects with a history of jail diversion program involvement over-reported arrest at 9.5%, which was marginally higher than over-reporting rates for subjects with no history of jail diversion (8.7%).

Table 4. Overall agreement and frequency of arrest by arrest category during a three-month recall period

Arrest category	Overall agreement ((a + d)/n) (%)	Frequency of arrest*
Violent crimes	100	4
Other crimes against people	99	3
Drug crimes	98	7
Property crimes	95	3
Lesser crimes	89	24
Procedural violations	84	41

*Number of charges based on official data.

Under-reporting of arrest was equivalent for male and female subjects (28.6%). Subjects with a mood disorder diagnosis under-reported arrest at a higher rate (33.3%) than did subjects with schizophrenia (20%). Subjects interviewed in jail at three-month follow-up under-reported arrest at a lower rate (18.2%) than did subjects who were interviewed in the community (32.3%). Study subjects with a history of jail diversion program involvement under-reported arrest at a lower rate (16.7%) than did the subjects with no history of Jail Diversion Program involvement (37.5%).

Kappa measures of agreement between official arrest records and study subjects' self-report of arrest ranged from 0.51 to 0.811, depending on the study characteristic. Kappa was similar for males and females, higher for subjects with history of schizophrenia compared to subjects with a history of mood disorder diagnosis, and higher for subjects interviewed in jail compared with subjects interviewed in the community. Kappa was also higher for subjects with a history of jail diversion program involvement compared with those without such involvement. All kappas reached statistical significance ($p < 0.05$), indicating the high degree of agreement between official arrest records and subjects' self-report of arrest.

Table 4 presents overall accuracy of subjects' self-report of arrest during the three-month study period, classified by severity of criminal offense and by the frequency of charges according to severity of the crime. Violent crimes were reported with 100% accuracy, crimes against people were reported with 99% accuracy, and drug crimes were reported at 90% accuracy. Property crimes were reported at a 95% accuracy, while lesser or minor crimes were reported at an 89% accuracy. Subjects' self-report for procedural violations, the lowest severity of criminal offense, demonstrated the lowest accuracy (84%). Accuracy was also higher for charges that occurred less frequently, such as violent charges ($N = 4$), compared with offenses with the highest frequency of occurrence, such as procedural violations ($N = 41$).

DISCUSSION

National program evaluation and treatment studies conducted by mental health, substance abuse, and criminal justice agencies rely extensively on self-report of arrest as a measure of program outcome; despite the current lack of sufficient studies demonstrating error rates for self-report of arrests. Our prospective evaluation of arrest self-reports for 85 individuals with SPMI and co-morbid substance abuse

disorder demonstrated an overall accuracy of 85% during a three-month recall period. Under-reporting of arrest (29%) was almost three times more common than over-reporting of arrest (9%), indicating subjects were much more likely to fail to report an arrest than to inaccurately report an arrest that did not occur according to official arrest records.

Focusing on under-reporting, which accounts for the majority of variance in self-report accuracy, our results did not indicate any gender differences, but we did determine a higher likelihood for subjects with a mood disorder diagnosis (33%) to under-report arrests than for subjects with schizophrenia (20%). Previous studies have reported the opposite pattern, with higher inaccuracy for self-report of arrest demonstrated by subjects with schizophrenia, and have proposed that this may be attributable to psychosis or the cognitive distortions (Convit et al., 1990). Our findings would not support the assumption that cognitive impairments associated with schizophrenia contribute to less accurate arrest self-report. Subjects who were interviewed at three-month follow-up while incarcerated not surprisingly evidenced much lower under-reporting of arrest than did subjects who were interviewed in the community. Study subjects with a history of a jail diversion program were also less likely to under-report arrests than subjects with no jail diversion program involvement. Collectively, these latter findings may suggest that SPMI persons with a history of criminal justice system involvement, from either enrollment in a jail diversion program or by arrest and incarceration, may exhibit relatively higher accuracy in their self-report of arrest, primarily due to lower under-reporting of arrests.

Our findings also indicated that accuracy of self-report of arrest increases in relation to increasing severity of the crime, and decreases in relation to the frequency. These findings are consistent with the literature on self-report methodology that indicates that more serious and less frequent criminal offenses would be reported with higher accuracy than would less severe and more frequent crimes (Loftus & Marburger, 1983).

Memory for any behavior is more likely to be accurate for shorter compared to longer periods and for questions that do not require detailed accounts (Crisanti, Laygo, & Junginger, 2003). The accuracy observed in this study may be the result of the brief three-month duration of follow-up in our study and of the general nature of the question "Have you been arrested?". A necessary next step will be to compare these findings to future studies of the validity of self-report with longer recall periods, and for requests of exact information, such as age at first arrest and number of arrests. Another consideration is the use of administrative data as the gold standard. Official records offer a relatively inexpensive, unobtrusive strategy for checking on the accuracy of self-report arrest, but also suffer from a number of serious problems (Langenbucher & Merrill, 2001). The five false positives (i.e. 9% over-reporting) may be explained by lost records in the criminal justice system, incompleteness of records due to lags in data entry, or arrests that occurred outside the State of Hawai'i.

In addition to problems with administrative data, over-reporting may also result if individuals interpret being extradited or brought to the hospital by police as being arrested (Convit et al., 1990). On the other hand, under-reporting would result if these cases were coded in the administrative data but not reported during the self-report. To avoid this last possibility, we excluded emergency examination and

hospitalization cases and extradition cases from the official data. Finally, interpretation of our findings may be limited by the relatively small sample size restricting our use of multivariate analyses.

We determined that the accuracy of self-report for individuals with SPMI and comorbid substance abuse disorders varied minimally by gender, was moderately better for individuals with a history of schizophrenia than for those with a history of mood disorder, and was slightly better for subjects with a history of criminal justice involvement. With under-reporting of arrest rates averaging 29% and overall inaccuracy rate of 15%, cautionary adjustments may be considered for interpretation of program data relying on self-report of arrests. Replication studies with larger sample sizes allowing multivariate analyses will be important to further evaluate the associations of study characteristics that we evaluated with respect to accuracy of arrest self-report, and to examine the influence of other variables (e.g. antisocial personality disorder, medication compliance, current substance abuse, etc.) that may further influence accuracy of arrest self-report among individuals with SPMI.

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