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FINAL REPORT

Developing and Validating a Brief Jail Mental Health Screen for Women

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EXECUTIVE SUMMARY

The most recent Bureau of Justice Statistics data indicate that approximately 13 million

people were admitted to US jails in 2003. The best clinical estimates suggest that about 900,000

of these detainees met criteria for mental illness in the year prior to incarceration (Gains Center,

2004). The importance of gender considerations in responding to the needs of these 900,000

individuals is illustrated by data showing that rates of current severe disorder for female

detainees are about two times those of male detainees (12% vs. 6.4%) (Teplin et al, 1996). This

difference is explained in large part by higher rates of depression among female detainees.

To respond to the vast needs of detainees with serious mental illness, the American

Psychiatric Associations (APA) Guidelines for Psychiatric Services to Jails and Prisons

(American Psychiatric Association, 2000) recommends universal screening of all detainees

immediately upon booking. The APA recommended that the universal, initial screenings should

be done by correction officers. Practically this means there must be some type of standard

screening tool that can be administered quickly during the usual booking process for which

minimal training is required. And while jails seek to identify inmates with mental illness and

must provide services to those identified, there are competing organizational and fiscal concerns

that must also be taken into account. While the screening tool must be sensitive enough to detect

those with a serious mental illness, the rate of detainees identified for referral for subsequent,

fuller mental health assessment must not be so high as to overwhelm a resource poor

organization. The screening process, and screening tool used, must balance these concerns.

The Brief Jail Mental Health Screen was developed (Steadman et al, 2005) in response to

this need. The authors concluded that "…the BJMHS is a powerful tool for screening men

booked into U.S. jails" (Steadman et al, 2005). They reached this conclusion based on an accuracy rate of 73.5% for men and 61.6% for women. However, these overall accuracy rates mask the very important issue of a substantially higher false negative rate, i.e. detainees scored by the BJMHS as not having a current mental illness who really had one, for women than for men (34.7% vs.14.6%). An analysis of the false negative cases revealed that many women who qualified for a depression diagnosis on the Structured Clinical Interview for DSM-IV (SCID), the validating clinical instrument, were not endorsing relevant items on the BJMHS and, therefore, were not being referred.

Given the importance of developing a more sensitive instrument in the context of the increasing number of women being booked into US jails and their higher rates of mental disorders, we set out to refine the BJMHS, creating the BJMHS-R, by adding targeted questions to reduce the false negative rates of the screen for women while: (1) retaining the high overall accuracy rates of the original study; (2) maintaining a low false positive rate for both men and women; and (3) maintaining the rate of referrals at a level that jails could actually be expected to handle (11.3% in the prior study).

Methodology

The BJMHS-R was revised by reanalyzing the data from the previous study, conducting an extensive review of existing mental health screens, and considering feedback from professionals in the mental health field. The resulting revised screen included three additional questions: two on depression and one on post-traumatic stress. Participants included jail detainees admitted to one of four county jails – two in Maryland and two in New York—who were screened generally within 24 hours after their initial booking. The screening data were

used to identify a sub-sample of detainees who were systematically sampled for a detailed clinical assessment conducted by a trained research interviewer in order to validate the screen.

Screening data were collected on all male and female jail detainees admitted to the four jails during the eight month data collection period. All interviews occurred within 72 hours of a detainee's admission to the jail. Participation in this study was voluntary. Informed consent forms were required and obtained for all SCID interview participants. Participants were informed that their decision to participate would not affect their stay in the jail and were administered a brief quiz to assess their competency to consent. All human subjects procedures were approved by the Institutional Review Board (IRB) of the university or organization associated with each data collection site.   The overall refusal rate was 31.4%. This refusal rate, while high, is identical to the 31% in our prior research and is most likely due to the lack of compensation and difficulty scheduling within the jail constraints.

Results

Participants included 10,562 male and female jail detainees admitted to one of four county jails from November, 2005 to June, 2006. The participants were predominately male (84.2%), slightly over half were African American (55.5%), with an average age of 31.9 years (SD=10.7). Detainees were considered to be referred for further evaluation if they endorsed at least two of the ten symptoms or either of the two medical history questions of the BJMHS-R. Of the 10,258 detainees with valid BJMHS-R screening data, 2,238 (21.8%) were classified as needing a referral for further mental health assessment. Female detainees (655, 40.6%) were more than twice as likely as men (1580, 18.4%) to be classified as a referral.

The referral rate was also affected by the gender of the correction officers doing the screens. Detainees that were screened by a female officer were twice as likely to be referred as

opposed to those screened by a male officer (31.4% vs. 15.8%). The pattern was similar for both male and female detainees.

The screening data were used to identify a sub-sample of 945 detainees who were systematically selected within sampling subgroups for a detailed clinical assessment conducted by a trained research interviewer using the Structured Clinical Interview for DSM-IV (SCID). This sample was constructed so that there would be an adequate sample from each jail scored positively on the BJMHS-R (Referrals) and designed to comprise a large enough number of females to enable separate analysis by gender resulting in an over-sampling in those two groups. Participants in the final SCID sub-sample were 464 detainees that included 175 Referrals (68 males and 107 females) and 289 Non-referrals (138 males and 151 females).

The core research question of this study was whether the BJMHS-R improved the results from the previous validation study, particularly for female detainees.

The original BJMHS was validated by comparing the results from the SCID interviews (yes or no for a valid diagnosis of SMI) with the predicted results from the BJMHS (yes or no for referral). The analysis was done separately by gender. In the prior study, 73.5% of the males and 61.6% of the females from the SCID sub-sample were classified correctly There was a false negative rate of 14.6% for males and 34.7% for females. As with the prior study, the modal diagnosis of the false negatives for both genders was major depression.

While the false negative rate for both males and females were lower in the new validation study, the overall accuracy of the BJMHS-R was hampered by a much higher false positive rate. For the BJMHS-R, the false positive rates were 67.6% for men and 61.7% for women vs. 48.6% for men and 45.1% for women for the original BJMHS. The BJMHS-R refers many people who

do not meet the criteria for a serious mental health illness. This results in a higher rate of referrals overall using the revised screen.

Finally, to assess the potential value added of the four new questions to the original BJMHS, we took the new data and analyzed the original 8 BJMHS items. The 8 item original BJMHS items outperformed the 12 item BJMHS-R items. The overall accuracy rate was 75.7% (80.5% for the men and 71.9% for the women) compared to 68.8% overall for the BJMHS-R (72.3% for the men and 65.9% for the women). Moreover, the 34.7% false negative rate for women that pushed us to do this follow-up study, which was reduced to 14.6% with the BJMHS-R, diminished to 14.1% with the 8 item BJMHS in this sample. Further decreasing any potential value of the revised screen was an increase in the proportion of those detainees referred. In the original study it was 11.3%. With the new data with the new instrument it was 21.6% referred, a very substantial increase compromising the practicality of the screening instrument. With the original BJMHS in the new data, 15.6% of those screened were referred.

Discussion

Despite making a number of what seemed to be clinically informed changes to the BJMHS the original BJMHS turned out to be more powerful. These results reinforce the value of this screen for men and suggest that the earlier reservations about its use for women were overstated. While the BJMHS is more accurate for men than for women, it can greatly facilitate the implementation of universal screening of all jail detainees for mental illness. It is quick; 2-3 minutes. It requires only modest training of correction officers who do the booking. And it remains the most accurate brief screen available.

It is quite possible that the results for this screening tool vary not only by sample but may be influenced by other factors such as the base rate of mental illness in the jail. And while it is

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clear that the results vary over time, we are inclined to believe that this variation may reflect the variation in practice, and inclined to put more stock in the validation study results where the number sampled was greater (for the women).

Our observation that women booking officers were slightly more likely to elicit responses on the BJMHS-R that resulted in referral was a difference greater than one would expect by chance. This difference was not as pronounced with the BJMHS (8 item version that did not contain the additional depression and PTSD questions) as with the 12 item BJMHS-R but still significantly different. It is important to note that the overall accuracy results from the BJMHS do not significantly differ from female booking staff to male booking staff (75.8% v. 77.9 % respectively). This is explained by the fact that while female officers tended to refer more individuals and had a lower false negative rate, they also had a higher false positive rate resulting in an overall equivalency in accuracy. But the only practical way to use this tool is to have it administered as part of the regular booking process by the officers doing the booking regardless of gender. Regardless of the effectiveness of any screen, there will always be inmates with serious mental illness who are missed which is why training correctional staff to observe inmates over time for signs of mental illness throughout their jail stay is essential.

At this time, the BJMHS, at very low expense, provides a very strong ability to accurately identify those detainees with current symptoms of mental illness. It identifies a reasonable proportion of those screened (15.6%) who should be referred for more intensive assessment by medical staff. Within the constraints of time, staff, and money in U.S. jails, this is an instrument that can be administered by regular corrections staff in 2-3 minutes, and offers the strongest empirical basis for regular use as a practical tool of any instruments currently available.

Developing and Validating a Brief Jail Mental Health Screen for Women

ABSTRACT

Objective: Jails need a reliable screening tool to identify inmates that require further mental health assessment and treatment. The research reported here validates the Brief Jail Mental Health Screen (BJMHS) as such a tool. Prior research on the BJMHS produced an unacceptable high false negative rate for women. This research sought to add four additional items to the eight item screen targeting depression and trauma to improve the performance of the screen with women. Instead the results from this research show no improvement with the additional items and an improvement in the results for women with the original screen with this new sample.

Methods: BJMHS data were collected in four jails (2 in Maryland and 2 in New York) from 10,258 detainees. A subset of 464 were then administered the Structured Clinical Interview for DMM-IV (SCID) for standardized clinical cross-validation (175 Referrals (positives on screen; 68 males and 107 females) and 289 Non-referrals (negatives on screen; 138 males and 151 females)). Results: The BJMHS takes an average of 2.5 minutes to administer. It correctly classified 80.5% of males and 71.9% of females based on SCID diagnoses. Overall, it identifies 15.6% of screened detainees for further mental health assessment. Conclusions: The BJMHS in its original eight item version is a practical, efficient tool for jail correction officer intake screening for male and female detainees.

Developing and Validating a Brief Jail Mental Health Screen for Women

FINAL REPORT

In the present report, we describe the refinement and results of our Brief Jail Mental Health Screen. The validation, which sought to improve the results of the Brief Jail Mental Health Screen developed under earlier NIJ funding was successful. But the finding that the original screen performed more than adequately, and better than the revised screen, was unexpected. Before describing our methods and findings, we provide a brief background and statement of the importance of the development of this screening tool.

Background and Significance

Serious Mental Illnesses and Acute Psychiatric Distress

On June 30, 2003, 602,781 adult men and 81,650 adult women were incarcerated in approximately 3,300 U.S. local jails (Bureau of Justice Statistics, 2004). The most recent Bureau of Justice Statistics data indicate that approximately 13 million people were admitted to US jails in 2003. As correctional staff struggle to keep up with this rapid influx, their efforts are increasingly impacted by the individuals with serious mental illnesses who are entering these jails in growing numbers. Previous research (Teplin, 1994; Teplin, Abram, & McClelland, 1996) reported that approximately 6% of male inmates and 15% of female inmates admitted to Chicago's Cook County Jail displayed current, acute symptoms of schizophrenia, major depression, and/or bipolar disorder and required treatment. Extrapolated to the entire U.S. jail population, this means approximately 900,000 persons with active symptoms of serious mental disorder are being admitted to U.S. jails annually. The importance of gender considerations in responding to the needs of these 900,000 individuals is illustrated by data showing that rates of current severe disorder for female detainees are about two times those of male detainees (12%

vs. 6.4%) (Teplin et al, 1996). This difference is explained in large part by higher rates of depression among female detainees.

Because serious mental illnesses are chronic in nature, they are subject to exacerbation and relapse. The stress of incarceration can aggravate symptoms in persons with pre-existing mental disorders, leading to acute psychiatric disturbances, including risk of harm to self or others. Several studies have shown that inmates with psychiatric impairment may exhibit more serious and more numerous adjustment problems (greater perceived stress, more disciplinary problems such as refusal to leave one's cell, fire-setting, destruction of property, etc.) during incarceration than unimpaired inmates (Toch and Adams, 1986; Toch, Adams, & Grant, 1989; McCorkle, 1995; Lindquist and Lindquist, 1997). This relationship has been found to apply more strongly among female inmates than among males (McCorkle, 1995; Lindquist and Lindquist, 1997). Untreated, these inmates may pose a significant danger to themselves, other inmates, and correctional personnel.

Jails have a substantial legal obligation to provide health and mental health care for inmates (Cohen and Dvoskin, 1992) although case law and statutes have not provided a clear definition of what constitutes "adequate" mental health care. However, the American Psychiatric Association (2000) has recommended that all jails provide at minimum: (1) mental health screening, referral, and evaluation; (2) crisis intervention and short-term treatment (most often medication); (3) access to inpatient services, and (4) discharge and pre-release planning. In a recent national survey of 1,706 American jails, Steadman and Veysey (1997) reported that 83% of all U.S. jails provided some form of initial screening for mental health treatment needs. However, screening procedures are highly variable. Screening may consist of anything from one or two questions regarding previous treatment to a detailed, structured mental status examination.

One result of this variability is apparent in Teplin's (1990) Cook County (Chicago), IL data. Fully 63% of inmates with acute symptoms on an independently administered standardized clinical instrument were missed by routine screening performed by jail staff and remained untreated. With the volume of women now being booked into U.S. jails and the overall under identification of detainees with mental illness, there is a pressing need to develop valid and reliable procedures that can screen incoming detainees for signs and symptoms of acute psychiatric disturbance and disorder.

Detecting and Responding to Mental Illness in Jails

Jails experience a rapid in-flow of individuals with a multitude of health, mental health, and substance use problems. The first task of correctional staff is to triage those who may be at significant risk for suicide, acute psychotic decompensation and/or medical/psychiatric complications from recent substance abuse from those who are experiencing varying degrees of distress more usually associated with arrest and detention (Ogloff et al., 1991). Effective mental health triage in the jail setting can be viewed as a three-stage process: 1) routine, systematic and universal mental health *screening* performed by correctional staff during the booking/classification process to identify those inmates who may need closer monitoring and mental health assessment; 2) a more in-depth *assessment* by trained mental health personnel conducted within 24 hours of a positive screen; and 3) a full-scale psychiatric *evaluation* when an inmate's degree of acute disturbances warrants this. Screening is a crucial part of this process, since it is the primary means by which jail staff can determine which inmates require more specialized mental health assessment or psychiatric evaluation, and treatment. Unless inmates are identified as *potentially* needing mental health treatment, they will not receive it.

Other studies are underway to develop screening instruments. One such study by Trestman, Ford & Hogan (unpublished) in Connecticut seeks to develop a screening instrument for use by correctional staff and focuses more specifically on prison inmates. The screen they have developed takes approximately 25 minutes to administer and focuses on similar symptoms as the Brief Jail Mental Health Screen but is broader in scope. While more avenues of inquiry may be desirable in terms of assuring that no mentally ill persons are missed in the screening process, brief is a relative term and while a half hour may be brief for a prison setting, it is not brief enough for the faster turn-around jail setting. Jails are looking for a quicker but accurate alternative.

Screening is the weak link in the delivery of mental health services in jails and prisons. Despite the advances we were able to make for males in our prior NIJ project validating the BJMHS, currently, there are no valid, practical, standardized tools available for brief, initial screening for *women*. Like the BJMHS, a standard screen for women needs to be brief, because the corrections classification staff have only a limited amount of time to spend with any one inmate. It also needs to incorporate explicit decision criteria, because the mental health training and experience of correctional staff is likely to be highly variable, and overall, relatively low. Correctional staff traditionally are confident in their ability to discern overtly psychotic symptoms, but considerably more uncertain about identifying less obvious, but equally serious signs and symptoms of anxiety and depression, the most prevalent types of mental illnesses among female detainees.

A useful jail mental health screen for women would also exhibit a low false-negative rate; that is, it would not miss many female inmates who truly did have a serious mental disorder because the potential costs of not treating an inmate with an actual serious mental illness could

be grave. On the other hand, it also needs a modest false-positive rate, since jail mental health resources within a jail are scarce, and burdening trained mental health staff with the need to assess many people who do not have a serious mental illness is an inefficient use of their time.

Development and Limitations of the BJMHS

The initial instrument proposed for meeting the key criteria for screening for mental illness for jail detainees was the Referral Decision Scale (RDS) (Teplin and Swartz, 1989). The RDS was designed to serve as a rapidly administered and easily scored screening tool for use by correctional staff in identifying inmates who were likely to be suffering from schizophrenia, bipolar disorder, or major depression. The RDS was meant to flag signs and symptoms of gross impairment associated with each of these three disorders. It consists of three sub-scales incorporating 14 items predictive of these disorders that were derived from the Diagnostic Interview Schedule (DIS) (Robins et al., 1981). The final published version of the RDS contains three sub-scales of five items each (Teplin and Swartz, 1989). Each of the three sub-scales contained a cut-off score that, if met or exceeded, should result in a referral for mental health assessment.

Teplin and Swartz (1989) provided preliminary evidence of the validity of the RDS compared with the parent instrument (DIS). They reported the average sensitivity of the three RDS sub-scales (how well the sub-scales detect illness among those inmates who are truly ill) as .88, and the mean specificity as .99 when compared with the DIS-generated definitions for each disorder of ill versus non-ill. They offered additional support for the concurrent validity of the RDS using DIS data from a separate study involving 1,149 North Carolina prison inmates. Once again the three RDS sub-scales exhibited acceptable validity in comparison with the full DIS (average sensitivity of .79 and average specificity of .99).

Several subsequent studies raised questions about the content, concurrent and predictive validity of the RDS. Hart et al. (1993) examined the validity of the RDS among a sample of 790 male pretrial detainees in Vancouver, British Columbia. The RDS was administered along with two other symptom-rating scales, the Brief Psychiatric Rating Scale (BPRS) and the Diagnostic Profile. As a validation procedure, the full DIS was then administered separately. In this study, the RDS produced higher prevalence rates than either of the other two scales.

Rogers et al. (1995) raised additional questions about the validity of the RDS as a screening instrument. The RDS was administered along with the Schedule of Affective Disorders and Schizophrenia (SADS) and the Personality Assessment Inventory (PAI) to a sample of 108 male jail detainees housed in a specialty unit for inmates with serious mental disorders in Fort Worth, Texas. Rogers and his colleagues (1995) found supportive evidence for the schizophrenia and depression subscales, but not for the bipolar mania sub-scales. The average correlation coefficient among the schizophrenia sub-scales was .29, and was .42 among the depression sub-scales. By contrast, the average correlation coefficient among the bipolar mania sub-scales was only .19.

Finally, Veysey and associates (1998) challenged the validity of the RDS as a screening instrument on other grounds. Veysey and colleagues questioned the face validity of individual items (i.e., several items did not appear appropriate for use with incarcerated individuals), and the use of lifetime occurrence of symptoms rather than current symptoms may over-estimate the current need for further mental health services in the resource-poor jail environment.

Using a revised RDS produced by Veysey et al. *(unpublished manuscript)* led to the development of the Brief Jail Mental Health Screen. Because the RDS sub-scales did not perform well in discriminating among schizophrenia, bipolar disorders, and major depression, we

first developed a single composite scale. Thus, a positive score would indicate that an individual

has recent or acute symptoms associated with any one or more of these three disorders. The total

number of items was reduced from the original 14 to a smaller set of 8 items by eliminating

items that had questionable face validity for jail detainees and did not contribute statistically to

the composite scale. Several items were rephrased to provide clearer wording. Finally, the time

frame employed by the RDS was changed from lifetime occurrence to 'within the past six

months', and any positive response to a symptom during the past six months is also followed

with a question about whether that symptom is experienced currently.

Based on this revision, we recently completed a NIJ funded validation study using the

Structured Clinical Instrument for DSM-IV (SCID) (First et al. 1996), a semi-structured

interview to assess the presence of key DSM-IV Axis I diagnosis, as the gold standard. The

results of the analyses of the brief screen of the eight items and the current symptoms are

presented in Table 1. This instrument would result in 11% of screened individuals being referred

for follow-up assessment. Overall, 73.5% of the males were correctly classified and with a false

negative rate of only slightly 14.6%. For the women, the overall accuracy was 61.6% with a

relatively high false negative rate of 34.7%.

Neither the RDS nor the BJMHS contains any systematic screening questions for risk of

suicide. Fortunately, a standardized screen already exists that is enjoying widespread use. The

one-page tool, the Suicide Prevention Screening Guidelines (SPSG) (1998), appears quite

suitable for use upon jail intake. Developed in New York State where its use is already a

standard part of the booking process, the SPSG contains four sections: Observations of the

arresting officer, Personal data, Behavior and appearance, and Criminal history. This one-page

checklist normally takes less than five minutes to complete and can be used in conjunction with the BJMHS or BJMHS-R.

Clearly, research to date has shown that the BJMHS is a useful tool for screening male inmates upon entry into jail. It is a straightforward instrument that is simple to use and requires only modest training. Correctional officers' reactions to administering the BJMHS have been neutral to positive about its use. The screen is 73.5% accurate for male detainees. With approximately 10,000,000 males booked into U.S. jails annually and with 63% of those with a mental illness currently being missed (Teplin, 1990), we believe that the BJMHS would be a substantial improvement that can be absorbed into the resource-strapped jail operations. However, where research has fallen short has been in the application of the BJMHS to women. The BJMHS misses one-third of currently symptomatic women and just over 40% of those identified for referral did not have a current serious mental health diagnosis.

We suspected that the BJMHS did not effectively measure symptoms of anxiety that are associated with the high incidence of post traumatic stress disorders experienced by female detainees (Veysey, 1998). And we posited that the addition of items that capture anxiety symptoms or traumatic experiences may improve the predictive validity of the BJMHS for female detainees. On another note, female detainees may be less likely to disclose symptoms to correctional officers, who are most often male, upon intake. As such, examination of the gender of the correctional officer administering the BJMHS to female detainees could reveal some interesting findings about a BJMHS for women and its use in U.S. jails.

We were in a unique position to make substantial advancements in the development of a brief jail mental health screen for women in that we collected BJMHS and SPSG data on 1371 females and have matching SCID data for 146 of these cases. Further analysis of these data,

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particularly of the mood and anxiety symptom data captured on the SCID, was used to direct an exploration in determining which items could be added to the existing BJMHS to make it a useful tool for screening female detainees upon entry into jail. We further analyzed our existing data on female detainees and use those results along with other recent research on women's mental health disorders prevalent in jail populations to develop a brief jail mental health screen for women (BJMHS-R), and carry out a validation study of this screen in the same four U.S. jails in which the BJMHS was validated

Overview of Present Research

Given the importance of developing a more sensitive instrument in the context of the increasing number of women being booked into US jails and their higher rates of mental disorders, we set out to refine the BJMHS by adding targeted questions for depression and PTSD to reduce the false negative rates of the screen for women while: (1) retaining the high overall accuracy rates of the original study; (2) maintaining a low false positive rate for both men and women; and (3) maintaining the rate of referrals to one that jails could actually be expected to handle (11.3% in the prior study). We set out to do this in multiple sites to insure that the findings were generalizable.

Methodology

The BJMHS-R was revised by reanalyzing the data from the previous study, conducting an extensive review of existing mental health screens, and considering feedback from professionals in the mental health field. In the previous study it was found that the modal SCID diagnosis of missed cases (for both male and female) was major depression. The existing SCID interview data were analyzed using the all sub-sets regression method to find the best predictive model for a diagnosis of major depression. Three symptoms of depression were identified that

did not have a corresponding question in the original BJMHS, or its parent screen, the Referral Decision Scale (5). These were added to the BJMHS-R with wording from other clinically validated mental health screens (the first two came from the RAND Depression Screener and one came from the Mini-International Neuropsychiatric Interview). The questions were slightly modified in order to make them consistent with the format of the BJMHS-R.

It was felt that part of the reason the original BJMHS performed relatively poorly with females was due to the fact that the BJMHS did not measure symptoms of anxiety that are associated with the high incidence of post traumatic stress disorders experienced by female detainees. Thus a fourth additional question relating PTSD was added to the screen. This revised instrument is referred to as the BJMHS-R.

Another feature of the BJMHS-R, was a question on the gender of the screening officer. We wanted to examine the possibility that female inmates would be less likely to disclose mental health symptoms to correctional officers who are predominantly male and that this was a contributor to the high false negative rate. As with the previous study, the Structured Clinical Interview for DSM-IV (SCID) was used as 'gold standard' for the clinical validation of the revised BJMHS.

Participants included jail detainees admitted to one of four county jails – two in Maryland and two in New York. We had intended to collect data at the four jails used in the original research but one of the jails, Albany County, NY, declined and we substituted another upstate New York jail in Rochester that had adequate volume of bookings (and female bookings) into the jail. Data were collected between November, 2005 and June, 2006. At three of the jails (Rennselaer County, NY, Montgomery County, MD and Prince George County, MD), all the participants were screened on admission to the jail. At the fourth jail (Monroe County,

Rochester, NY), due to concerns about the heavy volume of detainees, participants were screened after their initial court hearing, which was generally within 24 hours after their initial booking.

The screening data were used to identify a sub-sample of detainees who were systematically sampled for a detailed clinical assessment conducted by a trained research interviewer using the SCID. This sub-sample was constructed so that there would be an adequate sample of inmates from each jail who scored positive on the BJMHS-R, and was designed to comprise a large number of females to enable separate analysis by gender. Finally, the sample was large enough to allow for the comparison with the results from the previous study.

Measures

Brief Jail Mental Health Screen. The BJMHS-R consists of the original eight yes/no items on the BJMHS and the additional four yes/no questions that were added to try to improve the accuracy of the BJMHS.

The BJMHS-R is organized into two sections. The first section included the ten symptom items that ask whether someone is currently experiencing the occurrence of mental health symptoms. The original six questions asked whether one believed that someone can control your mind by putting thoughts into your head or taking thoughts from your head, feeling as though other people know your thoughts or can read your mind, having lost or gained as much as two pounds a week for several weeks without even trying, noticing that you are currently much more active than you usually are, feeling as though you have to talk or move more slowly than you usually do, or feeling as though you were useless or sinful for the past few weeks. The newly added questions asked: whether one is feeling sad, empty, or depressed nearly every day; feeling like you have lost interest in things like work, hobbies, and other things you usually

enjoyed; currently having trouble sleeping nearly every night; or have ever had any experience that was so frightening, horrible, or upsetting that you had recently had nightmares, or were easily startled.

The second section of the BJMHS-R includes two items that address whether a detainee was ever hospitalized for emotional or mental health problems, and whether he or she is currently taking psychotropic medication. This instrument is included as Figure 1.

Structured Clinical Interview for DSM-IV. The SCID is a semi-structured interview designed to assess the presence of selected DSM-IV Axis I diagnoses. This instrument, which should be administered by a trained clinical interviewer or mental health professional, uses a modular format with skip patterns that allow an interviewer to move out of a given section if the diagnostic criteria in that section are not met. If the diagnostic criteria for a given diagnosis are met, that diagnosis is scored in terms of its lifetime prevalence and in terms of its presence in the past month. We administered a subset of available modules. For the purpose of the validation study, serious mental illness (SMI) was defined as the presence of one or more of the following SCID diagnoses: major depressive disorder, depressive disorder not otherwise specified, bipolar disorder (I and II and not otherwise specified), schizophrenia disorder, schizoaffective disorder, schizophreniform disorder, brief psychotic disorder, delusional disorder, and psychotic disorder not otherwise specified. Mean administration time of the SCID was 66.7 +/- 28.7 minutes .

Training

Screening Instruments. Correctional Classification Officers in all four jails received training on administration of the BJMHS. This training, which took place in the jails, included a brief video which provided a description of the research project and instructions on completing the BJMHS during the booking process.

Clinical Research Interviewers. Sixteen Clinical Research Interviewers were formally trained on administration of the SCID by a clinically trained SCID instructor. This two-day training included a description of the research project, information on conducting interviews in a jail setting, and instructions on completing and scoring the SCID. In addition, all of the Clinical Research Interviewers conducted practice interviews on acquaintances and on psychiatric patients who volunteered to participate in this aspect of the SCID training process. In order to ensure inter-reliability, all the interviewers rated two SCID reliability tapes and were observed conducting interviews at the jail by the SCID trainer and other project staff.

Procedure

Screening data were collected on all male and female jail detainees admitted to the four jails during the eight month data collection period.

As soon as detainees were classified into the referral and non-referral groups, a Subject Tracking Program, programmed in MS Access, was used to identify and generate a list of potential detainee participants for the SCID interview. This list of potential participants was given to jail administration staff who verified each detainee's presence in the jail and who helped schedule consultation visits between the detainees and the study's trained Clinical Research Interviewers. The Clinical Research Interviewers, who were blind to the detainees' sampling group statuses, approached the detainees on their list of potential participants and completed SCID interviews with those who consented to participate in the study. All interviews occurred within 72 hours of a detainee's admission to the jail.

Participation in this study was voluntary. Informed consent forms were required and obtained for all SCID interview participants. Participants were informed that their decision to participate would not affect their stay in the jail and were administered a brief quiz to assess their

competency to consent. All human subjects procedures were approved by the Institutional

Review Board (IRB) of the university or organization associated with each data collection site.

Jail detainees at the Montgomery County jail in Maryland received $25 for their participation in

the SCID interview. At the onset of the study, detainees at the Prince George County jail did not

receive any compensation for agreeing to complete the SCID interview. Three quarters of the

way through the study, the participants there were provided with a $10 commissary credit as up

to that point there had been an extremely high refusal rate at the site. At the request of jail

administrators in the New York facilities, detainees did not receive compensation for their

participation in the SCID interviews. The overall refusal rate was 31.4%. This refusal rate,

while high, is identical to the 31% in our prior research (4) and is most likely due to the lack of

compensation and difficulty scheduling within the jail constraints.

Results

Participants included 10,562 male and female jail detainees admitted to one of four

county jails from November, 2005 to June, 2006. The participants were predominately male

(84.2%), slightly over half were African American (55.5%), with an average age of 31.9 years

(SD=10.7). All participants answered questions on the revised BJMHS during initial booking

except at the Monroe County jail where inmates were screened after their first court date, which

was generally within 24 hours of their initial booking.

Detainees were considered to be referred for further evaluation if they endorsed at least

two of the ten symptoms from Section 1 of the BJMHS-R, or either of the two medical history

questions from section 2 of the BJMHS-R. Of the 10,258 detainees with valid BJMHS-R

screening data, 2,238 (21.8%) were classified as needing a referral for further mental health

assessment. Female detainees (655, 40.6%) were more than twice as likely as men (1580, 18.4%) to be classified as a referral.

There was a clear gender difference among correction officers doing the screens. Detainees that were screened by a female officer were twice as likely to be referred as opposed to those screened by a male officer (31.4% vs. 15.8%). The pattern was similar for both male and female detainees. Of the male detainees screened by male officers 14.6% were referred using the screen vs. 26.0% of the males screened by a female officer. For female detainees the numbers were 30.9% vs. 44.1% respectively. At the Monroe County jail, nearly all the female detainees were screened by female officers. If this jail is excluded from the above analysis, the discrepancy for females is considerably less (30.5% vs. 36.4% depending on the gender of the screening officer), but the general pattern nevertheless holds.

The screening data were used to identify a sub-sample of 945 detainees who were systematically selected within sampling subgroups for a detailed clinical assessment conducted by a trained research interviewer using the SCID. This sample was constructed so that there would be an adequate sample from each jail scored positively on the BJMHS-R (Referrals) and designed to comprise a large enough number of females to enable separate analysis by gender resulting in an over-sampling in those two groups. Approximately 26% of those selected were released prior to the interview or were unavailable for a variety of reasons (illness, etc.). Participants in the final SCID sub-sample were 464 detainees that included 175 Referrals (68 males and 107 females) and 289 Non-referrals (138 males and 151 females).

The core research question of this study was whether the BJMHS-R improved the results from the previous validation study, particularly for female detainees.

The original BJMHS was validated by comparing the results from the SCID interviews (yes or no for a valid diagnosis of SMI) with the predicted results from the BJMHS (yes or no for referral). The analysis was done separately by gender. In the prior study, 73.5% of the males and 61.6% of the females from the SCID sub-sample were classified correctly There was a false negative rate of 14.6% for males and 34.7% for females.

The above analysis was replicated for the revised 12 item BJMHS-R (see Table 1). Very similar results were found with 72.3% of males and 65.9% of females from the SCID sub-sample correctly classified. The false negative rate (those with SMI not identified by the BJMHS-R screen) for males was 8.0% (down from 14.6% with the BJMHS) and 14.6% for females (down from 34.7% with the BJMHS). In total there were 33 false negatives and two-thirds of these were females (N=22). As with the prior study, the modal diagnosis of the false negatives for both genders was major depression. Sixteen out of the 33 false negative individuals (males and females) met the criteria for major depression while another 9 were diagnosed as bi-polar.

While the false negative rate for both males and females were lower in the new validation study, the overall accuracy of the BJMHS-R was hampered by a much higher false positive rate. For the BJMHS-R, the false positive rates were 67.6% for men and 61.7% for women vs. 48.6% for men and 45.1% for women for the original BJMHS. The BJMHS-R refers many people who do not meet the criteria for a serious mental health illness. This results in a higher rate of referrals overall using the revised screen.

As with the original study, there was an issue with the consistent reporting of symptoms in the BJMHS-R. All the questions asked on the BJMHS-R are repeated as part of the SCID interview. They were either part of the SCID or were added for the purpose of this validation study. In all but three of the 33 false negative cases, the detainees did not endorse experiencing

any mental health symptoms when being screened by the booking officers, but did so during the SCID interview. The other three cases reported only one mental health symptom during the screening process, and thus were not referred. Clearly, the jail booking process is always going to be associated with underreporting of symptoms that will be reported in a more private setting with trained clinical interviewers. Minimizing this underreporting through optimum items and administration is the goal.

Finally, to assess the potential value added of the four new questions to the original BJMHS, we took the new data and analyzed the original 8 BJMHS items. As is evident in Table 2, quite unexpectedly, on all relevant factors with the new data, the 8 item original BJMHS items outperformed the 12 item BJMHS-R items. The overall accuracy rate was 75.7% (80.5% for the men and 71.9% for the women) compared to 68.8% overall for the BJMHS-R (72.3% for the men and 65.9% for the women). The McNemar test showed that these differences in accuracy were significant for both males (χ= 123.90, p <0.001) and females (χ= 178.56, p <0.001). Hence the 8 item BJMHS from the validation data was indeed more accurate then the 12 item revised BJMHS-R. Moreover, the 34.7% false negative rate for women that pushed us to do this follow-up study, which was reduced to 14.6% with the BJMHS-R, diminished to 14.1% with the 8 item BJMHS in this sample.

Table 3 presents the full results of all three versions of the BJMHS examined: the original 8 item study, the new BJMHS-R 12 item, and the 8 item BJMHS on the validation data. The bottom line is that the four added questions in the 12 item BJMHS-R did not improve upon the performance of the original instrument. But there was significant improvement as measured by difference of means test of the percent correctly classified from the original BJMHS to the 8

item BJMHS on the validation data for females (z=-2.13, p=.033) and this approached significance for males (z=-1.69, p=.091) thus reinforcing the utility of the eight item version.

Further decreasing any potential value of the revised screen was an increase in the proportion of those detainees referred. In the original study it was 11.3%. With the new data with the new instrument it was 21.6% referred, a very substantial increase compromising the practicality of the screening instrument. With the original BJMHS in the new data, 15.6% of those screened were referred.

Discussion

Despite making a number of what seemed to be clinically informed changes to the BJMHS, when new data were collected at three of the four original study sites and a fourth, new site was added, the original BJMHS turned out to be more powerful. These results reinforce the value of this screen for men and suggest that the earlier reservations about its use for women were overstated. While the BJMHS is more accurate for men than for women, it can greatly facilitate the implementation of universal screening of all jail detainees for mental illness. It is quick; 2-3 minutes. It requires only modest training of correction officers who do the booking. And it remains the most accurate brief screen available.

Why was the 34.7% false negative rate from the original study reduced so much to 14.1%? It is really unclear. It would seem that, in effect, the confidence interval for false negatives for women for the BJMHS is between 14% and 37% and depending on the particular jails in which it is being used, the false negative rate will vary between these two figures. It is quite possible that the results for this screening tool vary not only by sample but may be influenced by other factors such as the base rate of mental illness in the jail. And while it is clear that the results vary over time, we are inclined to believe that this variation may reflect the

variation in practice, and inclined to put more stock in the validation study results where the number sampled was greater (for the women).

Given the false negative rate of 14.8% for the 12 item BJMHS-R which added four questions specifically to identify depression and PTSD, there would seem to be no value added by using the longer instrument. However, we are unable to say whether this 14.8% figure is the upper or lower end of a confidence interval of the BJMHS-R. Were it the upper end, then it would be superior to the BJMHS. However, without another sample using this methodology, we cannot say definitively.

Our observation that women booking officers were slightly more likely to elicit responses on the BJMHS-R that resulted in referral was a difference greater than one would expect by chance. This difference was not as pronounced with the BJMHS (8 item version that did not contain the additional depression and PTSD questions) as with the 12 item BJMHS-R but still significantly different. It is important to note that the overall accuracy results from the BJMHS do not significantly differ from female booking staff to male booking staff (75.8% v. 77.9 % respectively). This is explained by the fact that while female officers tended to refer more individuals and had a lower false negative rate, they also had a higher false positive rate resulting in an overall equivalency in accuracy. While these observations could be interpreted to mean the BJMHS should only be done by female booking staff we do not believe this to be the case primarily because it is simply impractical in most jails. The only practical way to use this tool is to have it administered as part of the regular booking process by the officers doing the booking regardless of gender. Regardless of the effectiveness of any screen, there will always be inmates with serious mental illness who are missed which is why training correctional staff to observe inmates over time for signs of mental illness throughout their jail stay is essential.

At this time, the BJMHS, at very low expense, provides a very strong ability to accurately identify those detainees with current symptoms of mental illness. It produces a reasonable proportion of those screened (15.6%) who should be referred for more intensive assessment by medical staff. It does miss some detainees that are symptomatic (between 7.7% and 14.6% of males and between 14.1% and 34.7% of the females). Within the constraints of time, staff, and money in U.S. jails, this instrument that can be administered by regular corrections staff in 2-3 minutes offers the strongest empirical basis for regular use as a practical tool of any instruments currently available.

Future research efforts should focus on further validation of the BJMHS in other jurisdictions and within different subpopulations. Additional data on specific minorities or subpopulations within jail jurisdictions would be useful given our results that demonstrate that the identification rate and predictive accuracy of the BJMHS may vary slightly depending on the characteristics of the jail population.

Dissemination

The results from this research as set forth in this report have been prepared for publication, submitted and accepted (Steadman et al, forthcoming 2007) at Psychiatric Services—a journal of the American Psychiatric Association. In addition these results were presented at the June 2007 meeting of the International Association of Forensic Mental Health Services. And while we believe that this publication and presentation will reach a large and appropriate audience we are also concerned with getting the BJMHS into the hands of practitioners. We will further this effort through distribution to our GAINS project listserv to individuals who are serving those persons with mental illness who are justice-involved. Since our results conclude that the BJMHS is the most reliable efficient tool for jails to use in screening for mental illness without any changes to the

original screening tool, there is no need to re-distribute the BJMHS to all U.S. jails as was done at the conclusion of the prior study. But we do intend to post the results from our findings on the GAINS Center website (operated under contract with the Center for Mental Health Services, Substance Abuse and Mental Health Services Administration of the U.S. Department of Health and Human Services) with a link to the published findings and the screen itself. Additional information about the BJMHS will be available from Center staff. This will further our goal of getting information about the BJMHS and its validity into the hands of practitioners.

BRIEF JAIL MENTAL HEALTH SCREEN

Section 1

Date: __ __ / __ __ / __ __ __ __	Time: _____ AM PM	Detainee #: _____	Gender: □ M □ F
Date of Birth: __ __ / __ __ / __ __ __ __	**Admission Status:**	□ Pretrial □ Sentenced	□ Parole Violation □ Probation Violation

Race/Ethnicity (check ALL that apply):	□ American Indian or Alaskan Native □ Asian □ Black or African American	□ Native Hawaiian or Pacific Islander □ Spanish, Hispanic, or Latino □ White or Caucasian	□ Other (specify): _____

Section 2

Right now…	No	Yes	General Comments
1. Do you currently believe that someone can control your mind by putting thoughts into your head or taking thoughts out of your head?			
2. Do you currently feel that other people know your thoughts and can read your mind?			
3. Have you currently lost or gained as much as two pounds a week for several weeks without even trying?			
4. Have you or your family or friends noticed that you are currently much more active than you usually are?			
5. Do you currently feel like you have to talk or move more slowly than you usually do?			
6. Have there currently been a few weeks when you felt like you were useless or sinful?			

	No	Yes	
7. Have you *ever* been in a hospital for emotional or mental health problems?			
8. Are you currently taking any medication prescribed for you by a physician for any emotional or mental health problems?			

Section 3

Officer's Comments/Impressions (check ALL that apply):
□ Language barrier   □ Under the influence of drugs/alcohol   □ Non-cooperative
□ Difficulty understanding questions   □ Other, specify: _____

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INSTRUCTIONS FOR COMPLETING THE BRIEF JAIL MENTAL HEALTH SCREEN

GENERAL INFORMATION:

This Brief Jail Mental Health Screen is being used for research purposes. The goal of this research is to develop an efficient mental health screen that will aid in the early identification of severe mental illnesses and other acute psychiatric problems during the intake process.

This screen should be administered by Correctional Officers during the jail's intake/booking process.

INSTRUCTIONS FOR SECTION 1:

DATE:	Enter today's month, day, and year.
TIME:	Enter the current time and circle AM or PM.
DETAINEE #:	Enter detainee number.
GENDER:	Check **M** for Male or **F** for Female.
DATE OF BIRTH:	Enter detainee's date of birth in month, day, and year.
ADMISSION STATUS:	Check appropriate custodial status.
RACE/ETHNICITY:	Check all categories that apply. Please note that in most cases, you will only need to check one box. However, there may be cases where an individual could be classified as Hispanic in terms of ethnicity and White/Caucasian in terms of race. In such a case it would be appropriate to check Hispanic and White/Caucasian.

INSTRUCTIONS FOR SECTION 2:

ITEMS 1-6:

Place a check mark in the appropriate column (for "NO" or "YES" response).

If the detainee REFUSES to answer the question or says that he/she DOES NOT KNOW the answer to the question, do not check "NO" or "YES". Instead, in the General Comments section, indicate REFUSED or DON'T KNOW and include information explaining why the detainee did not answer the question.

ITEMS 7-8:

ITEM 7: Include any stay of one night or longer. Do NOT include contact with an Emergency Room if it did not lead to an admission to
         the hospital.
ITEM 8: This refers to any *prescribed* medication for any emotional or mental health problems.

If the detainee REFUSES to answer the question or says that he/she DOES NOT KNOW the answer to the question, do not check "NO" or "YES". Instead, in the General Comments section, indicate REFUSED or DON'T KNOW and include information explaining why the detainee did not answer the question.

General Comments Column:

As indicated above, if the detainee REFUSES to answer the question or says that he/she DOES NOT KNOW the answer to the question, do not check "NO" or "YES". Instead, in the General Comments section, indicate REFUSED or DON'T KNOW and include information explaining why the detainee did not answer the question.

All "YES" responses require a note in the General Comments section to document:
   (1) Information about the detainee that the officer feels relevant and important
   (2) Information specifically requested in question

INSTRUCTIONS FOR SECTION 3:

OFFICER'S COMMENTS: Check any one or more of the four problems listed if applicable to this screening. If any other problems occurred, please check OTHER, and note what it was.

Table 1 – Predicted mental illness with the revised 12 item Brief Jail Mental Health Screen by serious mental illness diagnosis on the SCID

				46	67.6%	
		11	8.0%	22	32.4%	
				66	61.7%	
		22	14.6%	41	38.3%	

Table 2 – Predicted mental illness with revised Brief Jail Mental Health Screen but looking only at the 8 original items by serious mental illness diagnosis on the SCID

				28	57.1%		
		12	7.7%	21	42.9%		
				48	55.8%		
		24	14.1%	38	44.2%		

Table 3: Comparing results of current and previous BJMHS studies

	Original 8 item BJMHS-Original Data	Revised 12 Item BJMHS-Validation Data	Original BJMHS 8 item subset-Validation Data
Males			
N	211	206	205
SCID Sample Prevalence rate	35.1% (9.6%)	33.0% (18.4%)	23.9% (13.1%)
% correctly classified	73.5%	72.3%	80.5%
Sensitivity	65.5%	66.7%	63.6%
Specificity	76.5%	73.4%	83.7%
False negative rate	14.6% (137)	8.0% (138)	7.7% (156)
False positive rate	48.6% (74)	67.6% (68)	57.1% (49)
ROC	0.710	0.700	0.737
Females			
N	146	258	256
SCID Sample Prevalence rate	34.9% (22.4%)	41.5% (40.6%)	33.6% (33.1%)
% correctly classified	61.6%	65.9%	71.9%
Sensitivity	45.9%	65.1%	61.3%
Specificity	72.9%	66.2%	75.3%
False negative rate	34.7% (95)	14.6% (151)	14.1% (170)
False positive rate	45.1% (51)	61.7% (107)	55.8% (86)
ROC	0.594	0.656	0.683

Note

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