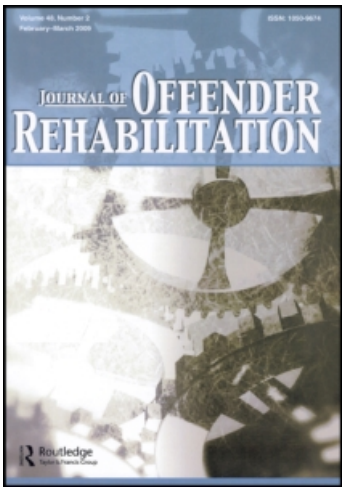
This article was downloaded by: *[Canadian Research Knowledge Network]*
On: *25 May 2009*
Access details: *Access Details: [subscription number 783016864]*
Publisher *Routledge*
Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Journal of Offender Rehabilitation
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t792306909

Co-Morbidity of Conditions Among Prisoners

Alison J. Shinkfield [a]; J. Graffam [a]; Sharn Meneilly [a]
[a] School of Psychology, Deakin University, Victoria, Australia

Online Publication Date: 01 May 2009

To cite this Article Shinkfield, Alison J., Graffam, J. and Meneilly, Sharn(2009)'Co-Morbidity of Conditions Among Prisoners',Journal of Offender Rehabilitation,48:4,350 — 365

To link to this Article: DOI: 10.1080/10509670902851125

URL: http://dx.doi.org/10.1080/10509670902851125

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: http://www.informaworld.com/terms-and-conditions-of-access.pdf

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

Journal of Offender Rehabilitation, 48:350–365, 2009
Copyright © Taylor & Francis Group, LLC
ISSN: 1050-9674 print/1540-8558 online
DOI: 10.1080/10509670902851125

Routledge
Taylor & Francis Group

Co-Morbidity of Conditions Among Prisoners

ALISON J. SHINKFIELD, J. GRAFFAM, and SHARN MENEILLY
School of Psychology, Deakin University, Victoria, Australia

Eighty seven adult prisoners (58 males, 29 females) completed the Beck Depression Inventory (BDI-II), Beck Anxiety Inventory (BAI), and a questionnaire on current health in order to examine both the prevalence of co-morbid conditions and the relation of depression and anxiety to ill-health and prior substance use. High prevalence rates of co-morbid conditions were detected among prisoners, with substance use history identified as the primary contributor to co-morbidity. In addition, better perceived mental health was associated with lower depression among prisoners, and a higher number of mental health conditions was associated with greater anxiety. Implications of co-morbid conditions of ill-health for the support of prisoners are discussed.

KEYWORDS co-morbidity, mental health, physical health, prisoner, substance use

Downloaded By: [Canadian Research Knowledge Network] At: 17:08 25 May 2009

The prisoner population is at high risk of chronic health conditions and infectious diseases, substance use, and mental health problems. In terms of physical ill-health, extant research has shown particularly high prevalence rates for many infectious diseases among prisoners (e.g., Hepatitis C virus and Tuberculosis) in comparison to the general population (National Commission on Correctional Health Care [NCCHC], 2002) due to risk factors that are common among prisoners prior to prison entry. These risk factors include injection drug use and unsafe sex practices (Baillargeon et al., 2004).

This project was funded by a research grant from the Victorian Department of Justice and WISE Employment Limited. We thank the program staff for their support and the participants for their willingness to be involved in the project.

Address correspondence to Alison J. Shinkfield, PhD, School of Psychology, Deakin University, 221 Burwood Highway, Burwood, 3125, Victoria, Australia. E-mail: alison.shinkfield@deakin.edu.au

The few studies that have investigated the many other chronic illnesses affecting prisoners have found asthma to be more prevalent among prisoners than the general community, and prevalence rates of diabetes and hypertension are also considered high (e.g., NCCHC, 2002).

With respect to mental ill-health, it is estimated that the incidence of mental illness among incarcerated individuals (incorporating schizophrenia/psychosis, major depression, bipolar disorder, and post-traumatic stress disorder) is at least twice that of the general population of the United States (Ditton, 1999; Fazel & Danesh, 2002), Britain, and Australia (Fazel & Danesh, 2002). Estimates for antisocial personality disorder have been reported to be about ten times higher among prisoners than for the general population (Fazel & Danesh, 2002).

Clearly, physical health and mental health problems are a real issue of concern for the prisoner population, as well as being a critical health issue for the general community into which these individuals return. Moreover, a large number of prisoners with mental illness also have a history of alcohol and/or drug abuse (Ditton, 1999), compounding the health problems that may be experienced upon release. Consideration of the 12-month to lifetime prevalence rates show that substance use disorders are more common among prisoners than the general community (Butler, Andrews, Allnutt, Sakashita, Smith, & Basson, 2006; Tye & Mullen, 2006), affirming that substance use is a pressing health concern among the prisoner population.

As indicated above, the prevalence of physical ill-health conditions, mental ill-health conditions, and substance use among prisoners is well documented. Despite this observation, there is evidence that a large majority of prisoners perceive their physical health to be good or excellent both while in prison and in the months following release (La Vigne, Visher, & Castro, 2004). In addition, it is apparent that prisoners, as a group, have a more complex clinical picture than the general population as they show a higher co-morbidity of disorders (Abram, 1990; Edens, Peters, & Hills, 1997; Lurigio et al., 2003; Swartz & Lurigio, 1999). Swartz and Lurigio (1999), for example, reported serious co-morbid psychiatric disorders among adult male arrestees in a drug treatment program.

Despite the need for such epidemiological data on co-occurring disorders, studies have rarely investigated the multiplicity of these conditions in prisoners, with the vast majority of studies focusing mainly on the presence or absence of single disorders (Butler, Allnutt, Cain, Owens, & Muller, 2005; Butler et al., 2006; Fotiadou, Livaditis, Manou, Kaniotou, & Xenitidis, 2006; Tye & Mullen, 2006). The few studies that have examined the co-morbidity of disorders among prisoners have found that possessing only one disorder is rare among this population (Cote, Lesage, Chawky, & Loyer, 1997); that prisoners with depression are more likely to have a co-morbid disorder (Abram, 1990; Abram & Teplin, 1991); and that prisoners with co-morbid disorders report significantly higher rates of substance use than those with zero

Downloaded By: [Canadian Research Knowledge Network] At: 17:08 25 May 2009

or one disorder (Simpler & Langhinrichsen-Rohling, 2005). Clearly, in order to meet the health needs of prisoner populations it is necessary to examine interrelationships of conditions of ill-health. The present study adds to the limited body of knowledge on co-morbidity of conditions among prisoners by examining interrelationships of physical and mental ill-health and substance use with depression and anxiety.

One concern regarding prisoners with co-morbid conditions is the potential impact that a constellation of disorders may have on the ability of an ex-prisoner to successfully reintegrate into the community. A goal of community reintegration is reduced recidivism; however, recidivism rates have been found to be higher for ex-prisoners with co-morbid conditions (Hartwell, 2004; Messina, Burdon, Hagopian, & Prendergast, 2004). In addition, ex-prisoners with co-morbid conditions tend to be among the least likely to receive virtually all types of community-based care, further impeding their reintegration into the community.

The prevalence of co-morbid conditions with depression and anxiety is of particular interest in this study. The emotional states of depression and anxiety may play a role in influencing the behavior of individuals, potentially affecting intrinsic states such as motivation and readiness to change, as well as general lifestyle factors. In addition, depression and anxiety have the potential to impact the successful reintegration of ex-prisoners into the general community. There is a wide range of empirical research documenting the relationship between depression and anxiety to ill-health and substance use. For example, among community samples, there is evidence of a frequent and positive association between depression and substance use (Hickie, Koschera, Davenport, Naismith, & Scott, 2001) and depression and physical health problems (Coghlan, Lawrence, Holman, & Jablensky, 2001). As well, there is a positive association between psychological stress and physical health problems (e.g, van Harreveld, van der Pligt, Claassen, & van Dijk, 2007). Despite the negative impact of co-morbid conditions on the reintegration of ex-prisoners, there is an obvious gap in this area of prisoner health research that inhibits a clear understanding of the complexity of conditions that exist among prisoners.

The present study examined co-morbidity of conditions of ill-health and substance use with depression and anxiety among prisoners. The aims of this study were to a) identify the extent of co-morbidity of physical ill-health, mental ill-health, and substance use among a sample of Australian prisoners approaching release; and b) examine the degree to which conditions of physical ill-health, mental ill-health (other than depression and anxiety), and substance use predict depression and anxiety among prisoners. In order to achieve this aim, a questionnaire was administered to prisoners approaching release from prison that incorporated several indicators of physical and mental ill-health and substance use. In addition to the pre-release questionnaire, depression and anxiety were assessed using the Beck Depression

Downloaded By: [Canadian Research Knowledge Network] At: 17:08 25 May 2009

Inventory – Second Edition (BDI-II; Beck, Steer, & Brown, 1996) and the Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988; Beck & Steer, 1990). These measures have been used quite widely among offender populations (e.g., Boothby & Durham,1999; Sacks, Banks, McKendrick, & Sacks, 2008), with recent studies extending this work to examine depression and/or anxiety post-prison release (e.g., Shinkfield, 2006), including potential links to reintegration outcomes (Shinkfield, 2006).

It was hypothesised, first, that the prevalence of co-morbid conditions of physical ill-health, mental ill-health, and substance use would be consistent with prior research showing higher rates of co-morbid conditions among prisoners than the general population. Second, it was hypothesised that higher depression and anxiety scores, reflecting greater depression and greater anxiety, would be associated with co-morbid conditions of ill-health and substance use. More specifically, lower ratings of current physical and mental health, indicative of poorer perceived physical and mental health, a higher number of current diagnosed physical and mental ill-health conditions, and a history of substance use were expected to predict greater depression and anxiety among prisoners.

Downloaded By: [Canadian Research Knowledge Network] At: 17:08 25 May 2009

METHOD

Participants

Participants were 87 prisoners (58 males; 29 females) ranging in age from 18 to 61 years ($M = 35$, $SD = 10.08$). The sample was selected from four minimum-medium security prisons in Queensland and eight minimum to maximum security prisons in Victoria. Participants who met the eligibility criteria for participation had served at least three months in prison, had a normal (or higher) level of intelligence as assessed on a standard IQ test upon entry to prison, an eighth grade or higher education, and were approaching release from prison (within one month of release). The type of offenses committed and the sentence lengths of participants varied. The sample is over-representative of the Victorian and Queensland prisoner population in terms of the proportion of females (33% in this investigation versus 6 and 7% respectively in Victorian and Queensland prisons). The average age of the male prisoner participants in this investigation ($M = 35.0$) is very close to that reported among Australian male prisoners ($M = 34.9$ years), and the age breakdowns for both males and females closely resemble figures for Australian prisoners (Australian Bureau of Statistics, 2007).

Instruments

Three instruments were used for the present study including a pre-release questionnaire, the BDI-II and the BAI.

Pre-release questionnaire

A pre-release questionnaire was developed as part of a larger study on prisoner reintegration (Shinkfield, 2006). The sections of relevance to this study included 16 self-report questions that related to the physical and mental health status of participants, and the nature and extent of substance use prior to prison entry. Participants were asked to report whether they had any current diagnosed physical or mental ill-health conditions, and to identify the number and type(s) of existing conditions. Ratings of current physical health and mental health were used to assess participants' perceived physical and psychological health on a likert scale ranging from 1 = *Extremely poor* to 6 = *Extremely good*. In addition, participants were asked to report on the number of substances used in the six months prior to entering prison and the length of time since any physical and mental ill-health conditions were initially diagnosed.

Downloaded By: [Canadian Research Knowledge Network] At: 17:08 25 May 2009

BDI-II

The BDI-II was also administered to each participant. The BDI-II is a 21-item self-report instrument that assesses the presence and severity of symptoms of depression in adolescents and adults from clinical and normal populations. Respondents are asked to pick out the one statement in each group that best describes the way they have been feeling during the past two weeks, including the day of administration. For each item there is a list of statements arranged in increasing severity from 0 to 3. The BDI-II is scored by summing each of the 21 items corresponding to a symptom of depression, with total scores ranging from 0 to 63. Cut-off scores distinguish depression in the minimal range (0–13), mild range (14–19), moderate range (20–28), and severe range (29–63). The BDI-II is a well-validated and robust measure of depression (see Beck et al., 1996).

BAI

The BAI is designed to measure the presence and severity of anxiety symptoms in adults, particularly those that distinguish anxiety from depression. The scale consists of 21 items, each describing a common symptom of anxiety. The respondent is asked to rate how much he or she has been bothered by each symptom over the past week on a 4-point scale ranging from 0 to 3. The BAI is scored by summing the ratings for the 21-items to obtain a total score than can range from 0 to 63. Cut-off scores distinguish minimal anxiety (0–9), mild-moderate anxiety (10–18), moderate to severe anxiety (19–29), and severe anxiety (30–63). The BAI demonstrates high reliability and is well-validated with a range of special populations (e.g., Beck et al., 1988).

Procedure

Prisoner participants in Victoria were recruited by unit managers within the prisons, and prisoner participants in Queensland were recruited by program staff. Ninety four individuals were recruited from Victoria and 17 were recruited from Queensland, of which nine were not eligible to participate. Of the remaining 102 individuals who met the eligibility criteria, 15 subsequently declined to participate. Participants who met the eligibility criteria were invited to participate by reading the plain language statement and completing the consent form if they volunteered to participate. All questionnaires were individually administered to participants in a quiet interview room within the prison. Given that this paper originates from a larger study on reintegration, participants were told that participation involved completion of a number of surveys which looked at their thoughts and feelings, and the challenges they may face in prison and upon release, including their current health and prior drug use, as examples. After administration of the pre-release questionnaire, the BDI-II and the BAI were administered in counterbalanced order. Prisoner participants were not paid for their participation due to Department of Justice rules.

Downloaded By: [Canadian Research Knowledge Network] At: 17:08 25 May 2009

Data Analysis

The number of current diagnosed physical and mental ill-health conditions was calculated for each participant. In addition, the number of substances used by participants in the six months prior to prison entry was determined; this figure included whether or not participants had over-used alcohol prior to prison. Mean BDI-II and BAI scores were calculated, as were the proportions of individuals who scored within each level of severity of depression and anxiety. In addition, the proportions of participants with co-morbid conditions were calculated and gender effects were examined.

Regression analyses were conducted to determine the effect of current ratings of physical and mental health, number of current diagnosed physical and mental ill-health conditions, and the number of drugs used by participants in the six months prior to prison entry on depression and anxiety scores. Criterion variables were the total depression score (BDI-II) and the total anxiety score (BAI) of participants at pre-release. The five predictor variables were the rating of current physical health, rating of current mental health, number of physical health conditions, number of drugs used (including over-use of alcohol), and number of mental health conditions. Current diagnosed depression and anxiety conditions were excluded from the regression analyses when the equivalent emotional state was the criterion variable due to the bias associated with correlating two variables that measure the same construct.

Downloaded By: [Canadian Research Knowledge Network] At: 17:08 25 May 2009

RESULTS

Proportion of Participants with Current Diagnosed Conditions of Ill-Health and a History of Substance Use

Overall, approximately two-thirds of the participants reported having no current diagnosed physical (63.2%, $N=87$) or mental ill-health (66.7%, $N=87$) condition. Chi-square analyses revealed no significant difference ($p>.05$) in the proportion of current diagnosed physical and mental ill-health conditions for male and female participants. Over one-third (36.7%) of participants had at least one physical ill-health condition, with the mean number of current diagnosed physical ill-health conditions being .45 ($SD=.65$). Similarly, mental ill-health conditions were also common among participants, with one in three prisoners (33.3%) reporting at least one current diagnosed mental ill-health condition. The mean number of current diagnosed mental ill-health conditions was .49 ($SD=.83$). There was no significant main effect for gender with respect to the number of physical ill-health conditions ($p>.05$) or mental ill-health conditions ($p>.05$). Fifty-two percent of participants had received physical health treatment in prison and 68% of participants had received mental health treatment in prison.

Of the 87 participants interviewed, all but 14 participants (83.9%) reported using at least one substance in the six months prior to entering prison, indicating that substance use is highly prevalent among this group. Chi-square analyses revealed no significant difference ($p>.05$) in reported substance use prior to prison for male and female participants. The two most frequently reported drugs used prior to prison were marijuana and opiates. In addition, a measure of overuse of alcohol was utilized. Consistent with recommended upper limits of drinking, over-use of alcohol was defined as more than four standard drinks per day for men (or more than 28 standard drinks per week) and more than two standard drinks per day for women (or more than 14 standard drinks per week) (National Health and Medical Research Council, 2001). Sixty percent of participants indicated that they had regularly used alcohol in the six months prior to prison entry, with about one-quarter of participants (26.4%) indicating that they had over-used alcohol. This placed a considerable number of individuals at risk for short-term and long-term ill-health. The mean number of substances used by participants (incorporating over-use of alcohol) in the six months prior to prison entry was 1.67 ($SD=1.62$). There was no significant main effect for gender with respect to the number of substances used by participants prior to prison ($p>.05$).

Current Depression and Anxiety

The mean score obtained for the BDI-II was 13.35 ($SD=9.32$), and the mean score obtained for the BAI was 6.29 ($SD=7.71$), placing this sample

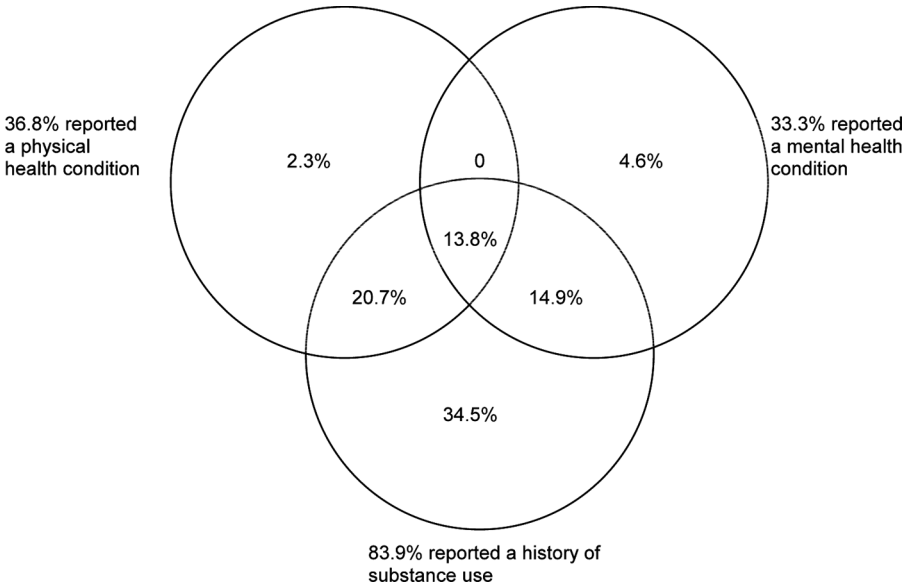


FIGURE 1 Co-morbidity of physical ill-health, mental ill-health, and substance use history.

Downloaded By: [Canadian Research Knowledge Network] At: 17:08 25 May 2009

of participants, on the whole, in the minimal (normal) range for both depression and anxiety. However, the distribution of scores tells a somewhat different story. At pre-release, 63.2% of participants were in the minimal (normal) range of depression, 14.9% were in the mild range, 13.8% were in the moderate range, and 8.1% were in the severe range of depression. In terms of anxiety levels, 78.2% of participants were in the normal range of anxiety, 12.6% were in the range reflecting mild to moderate anxiety, 6.9% were in the moderate-severe range, and 2.3% were in the severe range of anxiety. These scores indicate greater depression and anxiety among this sample of prisoners than among the general population. Further analysis of the mean BDI-II and BAI scores indicated no significant main effects for gender ($p > .05$).

Co-Morbidity of Conditions

The prevalence rates of co-morbid conditions among participants were analysed in order to examine the nature and extent of co-morbidity in a prisoner sample. As indicated in Figure 1, 20.7% of participants reported both a physical ill-health condition and a history of substance use, 14.9% reported both a mental ill-health condition and a history of substance use, and 13.8% reported having all three conditions.

Regression Analyses

Inter-correlations between ratings of physical and mental health, the number of drugs used (including over-use of alcohol), and the number of physical

TABLE 1 Inter-Correlations Between Ratings of Health, Number of Drugs Used, and Number of Ill-Health Conditions (Excluding Depression) Among Participants ($N=87$)

	1	2	3	4	5
1. Rating of physical health	1	.525***	−.173	.052	−.067
2. Rating of mental health	.525***	1	−.014	−.082	−.164
3. No. of physical health conditions	−.173	−.014	1	.230*	.262**
4. No. of drugs used[a]	.052	−.082	.230*	1	.074
5. No. of mental health conditions[b]	−.067	−.164	.262**	.074	1

[a]Calculation of the number of drugs used incorporated a measure of overuse of alcohol.
[b]Calculation of the number of mental health conditions excluded a diagnosis of depression.
*$p<.05$. **$p<.01$. ***$p<.001$.

Downloaded By: [Canadian Research Knowledge Network] At: 17:08 25 May 2009

and mental ill-health conditions are presented in Tables 1 and 2. As shown in Table 1, there was a significant positive correlation between the rating of current mental health and the current rating of physical health ($r=.525$, $p<.001$), indicating that better perceived mental health was associated with better perceived physical health. There was also a significant positive correlation between the number of drugs used by the participants in the six months prior to prison and the number of current diagnosed physical ill-health conditions ($r=.230$, $p<.05$). In addition, the number of mental health conditions was positively correlated with the number of diagnosed physical health conditions ($r=.262$, $p<.01$).

As shown in Table 2, there was a significant negative correlation between the number of diagnosed mental ill-health conditions and the rating of mental health ($r=-.298$, $p<.01$), indicating that an increased number of diagnosed mental ill-health conditions was associated with poorer perceived mental health.

In order to examine the hypotheses that higher depression and higher anxiety scores, reflecting greater depression and greater anxiety, would be associated with co-morbidity of conditions, two regressions were performed

TABLE 2 Inter-Correlations Between Ratings of Health, Number of Drugs Used, and Number of Ill-Health Conditions (Excluding Anxiety) Among Participants ($N=87$)

	1	2	3	4	5
1. Rating of physical health	1	.525**	−.173	.052	−.094
2. Rating of mental health	.525**	1	−.014	−.082	−.298**
3. No. of physical health conditions	−.173	−.014	1	.230*	.274
4. No. of drugs used[a]	.052	−.082	.230*	1	.172
5. No. of mental health conditions[b]	−.094	−.298**	.274	.172	1

[a]Calculation of the number of drugs used incorporated a measure of overuse of alcohol.
[b]Calculation of the number of mental health conditions excluded a diagnosis of anxiety.
*$p<.05$. **$p<.01$.

TABLE 3 Regression Analysis for the Prediction of Depression (BDI-II) Among Prisoner Participants ($N = 87$)

Model 1	*B*	*SE B*	*β*	*p*
Rating of current mental health	−3.606	1.090	−.408	.001**
Number of physical health conditions	−1.754	1.614	−.121	.280
Rating of current physical health	.922	1.071	.107	.392
Number of drugs used[a]	.522	.612	.091	.396
Number of mental health conditions[b]	.500	1.601	.033	.756

[a]Calculation of the number of drugs used incorporated a measure of overuse of alcohol.
[b]Calculation of the number of mental health conditions excluded a diagnosis of depression.
**$p < .01$.

Downloaded By: [Canadian Research Knowledge Network] At: 17:08 25 May 2009

using the Enter method. In the Enter approach, all predictor variables are fitted in the model simultaneously so that the partial effect of individual variables can be assessed after adjusting for the potential confounding effects of all other variables in the equation. The first regression was used to examine whether co-morbidity of conditions predicted depression scores on the BDI-II, and the second regression was used to examine whether co-morbidity of conditions predicted anxiety scores on the BAI. The results of the two regression analyses are shown in Tables 3 and 4.

Table 3 shows that the rating of current mental health was significantly negatively correlated to depression scores on the BDI-II, indicating that better perceived mental health was associated with lower depression. This variable was associated with the greatest change in depression scores, decreasing depression by three points ($B = -3.606$). Together, the five variables contributed 16% of the variance in depression scores, $R^2 = .16$, F (5, 81) = 3.18, $p = .01$. One significant contributor to the predicted variance in depression scores was the rating of current mental health, contributing to 11.9% of its variance.

The number of mental ill-health conditions (excluding anxiety) reported by prisoners was significantly positively associated with their scores on the

TABLE 4 Regression Analysis for the Prediction of Anxiety (BAI) Among Prisoner Participants ($N = 87$)

Model 1	*B*	*SE B*	*β*	*p*
Number of mental health conditions[a]	2.531	1.128	.238	.028*
Rating of current mental health	−1.649	.884	−.226	.066
Rating of current physical health	−1.462	.842	−.204	.086
Number of drugs used[b]	.645	.480	.135	.182
Number of physical health conditions	−1.088	1.266	−.091	.393

[a]Calculation of the number of mental health conditions excluded a diagnosis of anxiety.
[b]Calculation of the number of drugs used incorporated a measure of overuse of alcohol.
*$p < .01$.

BAI, indicating that a higher number of mental ill-health conditions was associated with greater anxiety. This variable was associated with the greatest change in anxiety scores, increasing anxiety by two points ($B = 2.531$). Together, the five variables contributed 25% of the variance in anxiety scores, $R^2 = .25$, F (5, 81) = 5.52, $p < .001$. One significant contributor to the predicted variance in anxiety scores was the number of mental ill-health conditions, which contributed to 5.8% of its variance.

DISCUSSION

The primary purpose of this study was to examine co-morbidity of conditions of ill-health and substance use with depression and anxiety among prisoners. The discussion section that follows addresses the research aims identified previously.

Co-Morbid Conditions of Ill-Health and Substance Use

Consistent with prior research, the present study indicated high prevalence rates of physical and mental ill-health conditions among prisoners, in addition to high rates of substance use prior to prison entry (e.g., Bushnell & Bakker, 1997; NCCHC, 2002). In addition, although average current depression and anxiety experienced by prisoners was within the normal range, the proportion of participants who experienced levels of depression and anxiety above the normal range was much greater than other research has found among the general population. This finding may suggest that the pre-release period is, potentially, a time of heightened depression and anxiety for some prisoners. In order to clarify any effects that impending release may have on emotional state, it would be useful in future work to measure depression and anxiety at different points in the prison sentence and following release. Nevertheless, our findings are consistent with prior research showing higher prevalence rates of depression among prisoners and jail detainees than among community residents (e.g., Ditton, 1999; Fazel & Danesh, 2002; Swartz & Lurigio, 1999). Likewise, the present findings confirm that anxiety disorders are relatively common in the prisoner population, with prevalence rates above that reported for an Australian community sample ($n = 10{,}600$ adults) at 9.7% (Henderson, Andrews, & Hall, 2000).

Of significance, substance use was found to be the main contributor to co-morbidity among prisoners, more so than conditions of physical and mental ill-health, with around one in five and one in seven prisoners, respectively, reporting a history of substance use with a condition of physical ill-health or mental ill-health. The frequent association between depression and substance use (Hickie et al., 2001) suggests that these individuals may self-medicate with substances including alcohol as a means of

Downloaded By: [Canadian Research Knowledge Network] At: 17:08 25 May 2009

coping with the effects of their physical or mental ill-health condition(s). A history of self-medicating behaviour may also reflect a failure to properly treat the physical and mental ill-health conditions of these individuals. In-prison health care should be a priority because general health upon release can affect the reintegration process (Hartwell, 2004; Messina et al., 2004).

The Extent to Which Co-Morbid Conditions of Ill-Health and Substance Use Predict Depression and Anxiety

There was only partial support for the hypothesis that lower ratings of current physical and mental health, a higher number of diagnosed physical and mental ill-health conditions, and a history of substance use would predict greater depression and greater anxiety. Findings showed that a higher number of diagnosed mental ill-health conditions among prisoners was associated with greater anxiety. This result suggests that prisoners might become increasingly stressed and anxious due to the effects of their mental ill-health conditions. It is also clear that living in prison is to some degree anxiety-provoking (Haney, 2002), as is getting out and dealing with the many challenges of reintegration (Shinkfield, 2006). In addition, it is possible that feelings of anxiety may be associated with returning to an at-risk environment, given that many prisoners return to the physical and social environments associated with criminality. The fact that many prisoners also have to deal with a mental ill-health condition both in prison and upon release is also a potential source of anxiety.

Moreover, there was a significant relationship between perceived mental health and depression, with lower depression associated with better perceived mental health. Co-occurrence of depression with other types of mental illness is well documented (e.g., Henderson et al., 2000). Our results suggest that attending to a prisoner's emotional state may have a more general positive effect on their mental health. This, in turn, may impact positively on their reintegration into the community.

Of interest, the present study found that a higher number of physical or mental ill-health conditions were not associated with higher depression scores among prisoners. This finding appears contrary to prior investigations that have found that prisoners with depression are more likely to have co-morbid disorders than only one disorder (Abram, 1990; Abram & Teplin, 1991). One possible explanation for our result is that the complexity of depression minimized any effects between these two variables. The fact that there was no association between the number of physical ill-health conditions and predicted anxiety among prisoners was also unexpected. This finding may reflect either an indifference of prisoners toward their level of physical health, or alternatively, that this group are desensitized to the effects of chronic physical ill-health conditions on general well-being.

Downloaded By: [Canadian Research Knowledge Network] At: 17:08 25 May 2009

Limitations of the Study and Directions for Future Research

The low predicted variability for depression and anxiety scores from the variables assessed is not surprising as these emotional states are highly complex. One limitation of the present study was the relatively small sample size. Future studies with a larger sample size may enable greater understanding of the contribution that different combinations of variables may have on the predicted variance of depression and anxiety among prisoners. Another limitation of the present study was its focus on a select few variables relevant to physical health, mental health, and substance use. Future research could extend the present work to examine the effects of prison-related variables and social support variables on the emotional state of prisoners, in combination with conditions of physical ill-health, mental ill-health, and substance use.

Co-morbid conditions may indirectly increase the likelihood of recidivism, via the influence of conditions of ill-health and substance use on behavior. To move toward changing this outcome for prisoners, future research needs to investigate how increased involvement by community services in the treatment and support of ex-prisoners with co-morbid conditions of ill-health and substance use can improve their reintegration into the community and reduce recidivism. It would also be of benefit to examine how different combinations of co-morbid conditions of ill-health differentially affect the reintegration of ex-prisoners into the general community.

Implications for Practice

It is clear that the emotional state of prisoners may be influenced by numerous health problems that are highly prevalent among this population. The emotional states of depression and anxiety have implications for prison management, such that decreasing the severity of these emotional states among prisoners may lead to fewer infractions, reduced aggressive behavior, fewer suicide attempts, and fewer returns to custody following release. Moreover, the results from this study suggest that the health needs of individuals that enter prisons with conditions of ill-health and a history of substance use, especially co-morbid conditions with substance use, needs to be addressed as a matter of some urgency.

Providers of prison-based and community-based transition programs need to be cognizant of the fact that a relatively high proportion of prisoners experience levels of depression and anxiety beyond the normal range. It is not sufficient, therefore, to simply provide practical support to ex-prisoners as is typically the case. Moreover, appropriate treatment and support for health problems must be provided to affected individuals at their time of greatest need, whether that be in the prison environment, immediately following release, or in the months, or even years, following prison release.

Downloaded By: [Canadian Research Knowledge Network] At: 17:08 25 May 2009

Indicative of the complexity in conditions, our results also suggest that a relatively large number of prisoners have chronic conditions of physical ill-health and psychological ill-health that they may take with them when they leave prison, and that these individuals typically have a history of substance use. In other words, it appears that co-morbidity is more the 'rule' than the exception; as a result, support needs are often comprehensive. Thus, comprehensive and sustained intervention in the form of on-going health education, counseling, and drug education and treatment would likely benefit this group. In this way, reintegration outcomes may also be facilitated for ex-prisoners.

The most important implication that can be drawn from this investigation is that prisoner reintegration within the community cannot be viewed as one dimensional. Being healthy upon release from prison is of obvious importance. However, various forms of co-morbidity of health conditions are common. Personal health is, in itself, just one dimension. Successful reintegration is dependent on several very complex conditions. Those conditions are often dynamic as well. That is why an ecological model of prisoner reintegration, one that includes intra-personal variables such as health as well as social and material conditions, is necessary to both explain and manage the reintegration process.

Downloaded By: [Canadian Research Knowledge Network] At: 17:08 25 May 2009

REFERENCES

Abram, K. M. (1990). The problem of co-occurring disorders among jail detainees. *Law and Human Behavior*, *14*, 333–345.

Abram, K. M., & Teplin, L. A. (1991). Co-occurring disorders among mentally ill jail detainees: Implications for public policy. *American Psychologist*, *46*, 1036–1045.

Australian Bureau of Statistics. (2007). *Prisoners in Australia* (No. 4517.0). Canberra, Australian Capital Territory: Author. Retrieved August 3, 2008, from http://www.abs.gov.au/ausstats/subscriber.nsf/0/F618C51B775B2CF7CA25751B0014.$File/45170_2008.pdf

Baillargeon, J., Black, S. A., Leach, C. T., Jenson, H., Pulvino, J., Bradshaw, P., et al. (2004). The infectious disease profile of Texas prison inmates. *Preventive Medicine*, *38*, 607–612.

Beck, A. T., Epstein, N., Brown, G. K., & Steer, R. A. (1988). An inventory for measuring anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology*, *56*, 893–897.

Beck, A. T., & Steer, R. A. (1990). *Manual for the Beck Anxiety Inventory*. San Antonio, TX: Psychological Corporation.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Beck Depression Inventory manual* (2nd ed.). San Antonio, TX: Psychological Corporation.

Boothby, J. L., & Durham, T. W. (1999). Screening for depression in prisoners using the Beck Depression Inventory. *Criminal Justice and Behavior*, *26*, 107–124.

Bushnell, J. A., & Bakker, L. W. (1997). Substance use disorders among men in prison: A New Zealand study. *Australian and New Zealand Journal of Psychiatry*, *31*, 577–581.

Butler, T., Allnutt, S., Cain, D., Owens, D., & Muller, C. (2005). Mental disorder in the New South Wales prisoner population. *Australian and New Zealand Journal of Psychiatry*, *39*, 407–413.

Butler, T., Andrews, G., Allnutt, S., Sakashita, C., Smith, N. E., & Basson, J. (2006). Mental disorders in Australian prisoners: A comparison with a community sample. *Australian and New Zealand Journal of Psychiatry*, *40*, 272–276.

Coghlan, R., Lawrence, D., Holman, C. D. J., & Jablensky, A V. (2001). *Duty to care: Physical illness in people with mental illness*. Perth, Australia: The University of Western Australia.

Cote, G., Lesage, A., Chawky, N., & Loyer, M. (1997). Clinical specificity of prison inmates with severe mental disorders: A case-control study. *The British Journal of Psychiatry*, *170*, 571–577.

Ditton, P. M. (1999). *Mental health and treatment of inmates and probationers*. Bureau of Justice Statistics, Special Report. Washington, DC: U.S. Department of Justice, Office of Justice Programs. Retrieved July 12, 2007, from http://www.ojp.usdoj.gov/bjs/pub/pdf/mhtip.pdf

Edens, J. F., Peters, R. H., & Hills, H. A. (1997). Treating prison inmates with co-occurring disorders: An integrative review of existing programs. *Behavioral Sciences and the Law*, *15*, 439–457.

Fazel, S., & Danesh, J. (2002). Serious mental disorder in 23,000 prisoners: A systematic review of 62 surveys. *The Lancet*, *359*, 545–550.

Fotiadou, M., Livaditis, M., Manou, I., Kaniotou, E., & Xenitidis, K. (2006). Prevalence of mental disorders and deliberate self-harm in Greek male prisoners. *International Journal of Law and Psychiatry*, *29*, 68–73.

Haney, C. (2002). *The psychological impact of incarceration: Implications for post-prison adjustment*. Washington, DC: Urban Institute Justice Policy Center. Retrieved June 18, 2007, from http://www.urban.org/UploadedPDF/410624_PsychologicalImpact.pdf

Hartwell, S. W. (2004). Comparison of offenders with mental illness only and offenders with dual diagnoses. *Psychiatric Services*, *55*, 145–150.

Henderson, S., Andrews, G., & Hall, W. (2000). Australia's mental health: An overview of the general population survey. *Australian and New Zealand Journal of Psychiatry*, *34*, 197–205.

Hickie, I. B., Koschera, A., Davenport, T. A., Naismith, S. L., & Scott, E. M. (2001). SPHERE: A National Depression Project. Comorbidity of common mental disorders and alcohol or other substance misuse in Australian general practice. *Medical Journal of Australia*, *175* (Suppl.), S31–S36.

La Vigne, N. G., Visher, C., & Castro, J. (2004). *Chicago prisoners' experiences returning home*. Washington, DC: Urban Institute Justice Policy Center. Retrieved May 10, 2007, from http://www.urban.org/url.cfm?ID=311115

Lurigio, A. J., Cho, Y. I., Swartz, J. A., Johnson, T. P., Graf, I., & Pickup, L. (2003). Standardized assessment of substance-related, other psychiatric, and comorbid disorders among probationers. *International Journal of Offender Therapy and Comparative Criminology*, *47*, 630–652.

Messina, N., Burdon, W., Hagopian, G., & Prendergast, M. (2004). One year return to custody rates among co-disordered offenders. *Behavioral Sciences and the Law*, *22*, 503–518.

Downloaded By: [Canadian Research Knowledge Network] At: 17:08 25 May 2009

National Commission on Correctional Health Care. (2002). *The health status of soon-to-be-released inmates*. (Vol. 1). Washington, DC: National Institute of Justice. Retrieved April 2, 2007, from http://www.ncchc.org/pubs/pubs_stbr.vol1.html

National Health:Medical Research Council. (2001). *Australian alcohol guidelines: Health risks and benefits*. Canberra, Australia: Commonwealth of Australia. Retrieved August 2, 2007, from http://www.nhmrc.gov.au

Sacks, S., Banks, S., McKendrick, K., & Sacks, J. Y. (2008). Modified therapeutic community for co-occurring disorders: A summary of four studies. *Journal of Substance Abuse Treatment*, *34*, 112–122.

Shinkfield, A. J. (2006). *A three-part ecological model of community reintegration of ex-prisoners*. Unpublished doctoral dissertation, Deakin University—Burwood, Victoria.

Simpler, A. H., & Langhinrichsen-Rohling, J. (2005). Substance use in prison: How much occurs and is it associated with psychopathology? *Addiction Research and Theory*, *13*, 503–511.

Swartz, J. A., & Lurigio, A. J. (1999). Psychiatric illness and comorbidity among adult male jail detainees in drug treatment. *Psychiatric Services*, *50*, 1628–1630.

Tye, C. S., & Mullen, P. E. (2006). Mental disorders in female prisoners. *Australian and New Zealand Journal of Psychiatry*, *40*, 266–271.

Van Harreveld, F., van der Pligt, J., Claassen, L., & van Dijk, W. W. (2007). Inmate emotion coping and psychological and physical well-being. The use of crying over spilled milk. *Criminal Justice and Behavior*, *34*, 697–708.

Downloaded By: [Canadian Research Knowledge Network] At: 17:08 25 May 2009