

Out and Down: Incarceration and Psychiatric Disorders

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Abstract

Psychiatric disorders are unusually prevalent among current and former inmates, but it is not known what this relationship reflects. A putative causal relationship is contaminated by assorted influences, including childhood disadvantage, the early onset of most disorders, and the criminalization of substance use. Using the National Comorbidity Survey Replication ($N = 5692$), we examine the relationship between incarceration and psychiatric disorders after statistically adjusting for multidimensional influences. The results indicate that (1) some of the most common disorders found among former inmates emerge in childhood and adolescence and therefore predate incarceration; (2) the relationships between incarceration and disorders are smaller for current disorders than lifetime disorders, suggesting that the relationship between incarceration and disorders dissipates over time; and (3) early substance disorders anticipate later incarceration and other psychiatric disorders simultaneously, indicating selection. Yet the results also reveal robust and long-lasting relationships between incarceration and certain disorders, which are not inconsequential for being particular. Specifically, incarceration is related to subsequent mood disorders, related to feeling “down,” including major depressive disorder, bipolar disorder, and dysthymia. These disorders, in turn, are strongly related to disability, more strongly than substance abuse disorders and impulse control disorders. Although often neglected as a health consequence of incarceration, mood disorders might explain some of the additional disability former inmates experience following release, elevating their relevance for those interested in prisoner reintegration.

Keywords

disparities, incarceration, mental health, methods, stratification

Incarceration has risen dramatically over the past 30 years, and sociologists are beginning to document its negative consequences for life chances and, more recently, health (Massoglia and Schnittker 2009; Schnittker and John 2007; Wakefield and Uggen 2010). Understanding the impact of incarceration on psychiatric disorders presents special challenges. On one hand, it is clear that the prevalence of psychiatric disorders is higher among inmates than among those outside of prison. It also seems likely that psychiatric disorders are related to at least some of the difficulties former inmates experience after they are released. On the other hand, the relationship between incarceration and psychiatric disorders presents a complicated set of empirical concerns. It is not clear whether incarceration is causally related

to psychiatric disorders, even if it is clear that former inmates suffer from higher rates. Both incarceration and psychiatric disorders are strongly related to early childhood experiences, potentially explaining their association but casting doubt on the

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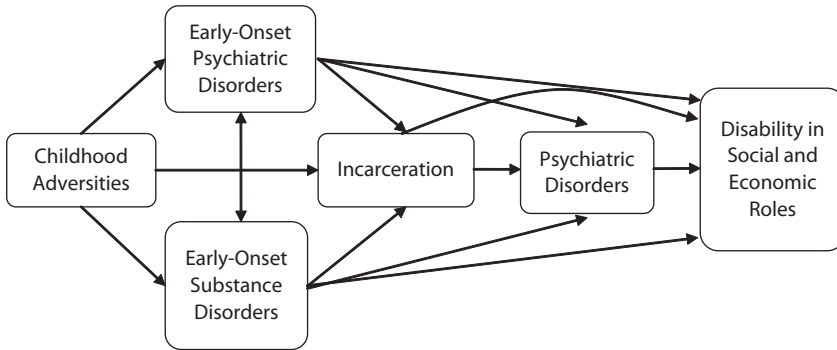


Figure 1. Conceptual Model Illustrating Influences in the Incarceration-Psychiatric Disorder Relationship

effects of incarceration. A related problem concerns selection. The criminalization of many common psychiatric disorders, especially substance use, implies that some inmates end up in prison at least partially because of their psychiatric disorders.

In this study, we explore the relationship between incarceration and psychiatric disorders using a design sensitive to these concerns. We do so in two ways. First, we explore whether the relationship is robust to controls for background factors and social selection, paying particular attention to timing. In addition to using a variety of control variables, we explore a variety of psychiatric disorders, assuming that not all disorders will be equally sensitive to selection. The ability to make more granular claims is not inconsequential in a highly charged debate. In a review of the psychological effects of incarceration, Walker (1995) noted the tendency toward “sweeping exaggerations” made “chiefly by sociologists,” especially those focused on life in total institutions (p. 104). Second, we explore the consequences of psychiatric disorders for disability, testing whether psychiatric disorders are related to some of the difficulties inmates experience after release in terms of their social roles. We do so using the National Comorbidity Survey Replication (NCS-R), a nationally representative survey of psychiatric disorders in the United States (Kessler et al. 2006; Kessler and Merikangas 2004; Kessler and Ustun 2004).

BACKGROUND

The incarceration rate has increased substantially in the United States over the past 40 years. In 1980, the incarceration rate was 149 per 100,000, but by 2009, it was five times higher, at 749 per 100,000 (U.S. Department of Justice 2005; West

2010). In addition, the prison system is dynamic: The vast majority of those in prison will be released, and all told, more than 700,000 people reenter their communities from prison every year (West and Sabol 2009). Considering the stock and flow of inmates, Uggen, Manza, and Thompson (2006) estimated that 7.5 percent of the adult population, approximately 16 million people, are felons or ex-felons, a figure that approximates the number of unemployed persons during the deep economic recession of 2008 to 2009 (Wakefield and Uggen 2010).

This increase means that incarceration is no longer uncommon, so if incarceration is to be considered a social determinant of mental health, medical sociologists should not consider it an especially rare one. What, however, is the relationship between incarceration and mental health? Certainly its potential effects are large, but it must be understood in a broader epidemiological and institutional context, which altogether casts considerable doubt over causal claims, especially sweeping ones. Figure 1 provides a framework for understanding the relationship between incarceration and psychiatric disorders. The figure presents a number of elements and pathways that will be considered shortly, but the immediate question is whether there is a direct pathway from incarceration to psychiatric disorders, which is presented at the center of the figure.

The Total Institution and the Pains of Imprisonment

Goffman (1961) was perhaps the first to conceptually formalize the effects of living in a total institution on mental health, but research on the social structure of prison life predates his work (Weinberg

1942), and subsequent work has expanded the debate considerably, focusing on the broad consequences of *prisonization* (Haney 2006; Wheeler 1961). Regardless of the focus, the stress of prison life remains clear: In being denied their freedom, features of their identities, and many goods and services, inmates often suffer high levels of anxiety and distress.

Consistent with this premise, the prevalence of psychiatric disorders within the prison environment is relatively high (Fazel and Danesh 2002; Wilper et al. 2009). About 1 in 10 inmates experience major depression, and among male inmates, 1 in 2 experiences antisocial personality disorder (Fazel and Danesh 2002). By some estimates, most inmates returning to the community have psychiatric disorders, even if a large fraction of those cases remain undiagnosed (Mallik-Kane and Visser 2008). Other studies have estimated a diagnosed prevalence between 15 and 26 percent (Ditton 1999; Wilper et al. 2009) but characterized mental health problems as “ubiquitous” relative to the general population (Wilper et al. 2009:669). These studies focused on currently or soon to be released inmates, but the effects of incarceration likely extend to life after release. A major theme of the reintegration literature concerns the difficulties ex-inmates face in readjusting to traditional roles (Pager 2007). If these difficulties provide ongoing stress, then the total effects of incarceration will reflect both prison experiences and the postrelease consequences of prior prison terms. Nevertheless, the threat of confounding is powerful all along the pathway.

Confounding and the Effects of Incarceration

From a descriptive standpoint, the high prevalence of psychiatric disorders among inmates is clear, but the source of this elevated prevalence is not. The problem stems, in part, from the focus of many studies and the lack of integration across them: Much of the conceptual research focuses on life in a total institution, while much of the descriptive work focuses on the mental health of current inmates, but recent research on psychiatric disorders focuses increasingly on the early developmental and social antecedents of psychiatric disorders, as does much of the recent research on crime. Similarly, some research has focused on the treatment needs of former inmates, but this research is mostly agnostic to what caused the disorders. Some scholars recognize this limitation, as when

Liebling (1999) argued that the observational nature of research on total institutions has largely failed to convince scholars that incarceration causes psychological harm. This failure, such as it is, stems in no small part from the many complications involved.

Figure 1 presents the contaminating influences in a path diagram and illustrates two sorts of complications. The first pertains to confounding, which has several dimensions. Development antecedents are presented to the left of incarceration, exerting an influence on incarceration and outcomes further down the pathway. To the degree that childhood disadvantage is associated with both incarceration and adult psychiatric disorders, the apparent relationship between the two may be confounded. On this point, there is already considerable indirect evidence. Childhood adversities have been linked to adult psychiatric disorders (Green et al. 2010), and many of the same adversities have been linked to both the early onset of delinquency and the stability of criminal behavior (Sampson and Laub 1992). Moving to the right, Figure 1 also presents early-onset psychiatric disorders. Many psychiatric disorders emerge early in life and will therefore predate adult incarceration (Kessler, Berglund, et al. 2005; Kessler and Wang 2008; Paus, Keshavan, and Giedd 2008). Indeed, this is perhaps especially true among former inmates, insofar as some of the most common psychiatric disorders found among inmates have unusually early onsets. For example, most impulse control disorders, characterized by a predisposition toward swift action in pursuit of gratification with little regard for long-term negative consequences, begin in childhood (Kessler and Wang 2008). This point is not merely one about psychiatric disorders; the idea is consistent with Gottfredson and Hirschi’s (1990) general theory of crime, which locates the root cause of criminality in the failure to develop self-control early in life. Of course, not all criminal behavior reflects a psychiatric disorder, and not all inmates are mentally ill. Nevertheless, these patterns suggest that those with histories of incarceration may have distinct psychiatric patterns regarding, for example, age of onset and chronicity.

A related complication stems from patterns of comorbidity between substance-specific disorders and other disorders. Many commonly occurring disorders are comorbid with others (Kessler and Wang 2008), and an especially common pairing is between substance disorders and mood and anxiety disorders (Kessler, Chiu, et al. 2005). This pattern has specific implications for those interested in

incarceration. Because many crimes either reflect the behavioral disinhibition associated with substance use or are a direct reflection of possessing controlled substances, the prevalence of certain disorders among former inmates could reflect the natural co-occurrence of these disorders with criminalized conditions and behaviors (Abram and Teplin 1991). Along these lines, Swartz and Lurigio (2007) found that the relationship between arrest and serious mental illness can be explained either entirely or substantially by substance use, depending on the offense. Furthermore, substance disorders might set in motion subsequent disorders. Early-onset substance abuse, for example, is related to the subsequent onset of a variety of other disorders, as well as delinquency and criminal behavior (Ellickson, Tucker, and Klein 2003). Although the influences depicted on the left side of Figure 1 do not suggest that the relationship between incarceration and psychiatric disorders is entirely spurious, they do suggest that those interested in identifying the influence of incarceration must control for a variety of anterior factors.

Psychiatric Disorders and Disability

Unpacking the relationship between incarceration and psychiatric disorders requires a focused and granular evaluation, but it is important to recognize the broader stakes. Figure 1 presents two lines from incarceration, one going directly to disability and the other passing through psychiatric disorders on the way to disability. Current research on incarceration tends to focus on its social and economic consequences, rather than its consequences for health, and thus has focused on direct pathways (Wakefield and Uggen 2010), but if health is related to disability—impairments in the ability to assume ordinary social roles—the crime, stratification, and health literatures may have more in common than a concern with confounding.

A good deal of evidence points to the daunting challenges of prisoner reintegration (see Wakefield and Uggen 2010 for a review). These challenges are usually interpreted in terms of human capital or stigma, as when former inmates are not hired because of their interrupted work histories, when state laws regulate their eligibility for certain occupations, or when employers engage in outright

discrimination. Mental health problems could pose another barrier, and a parallel body of research has explored the needs of former inmates with psychiatric disorders (Mallik-Kane and Visser 2008). This literature often begins with current or former inmates with disorders and thereby brackets questions about what causes disorders, but it provides clear evidence that psychiatric disorders are relevant to successful reintegration (Steadman et al. 2009). There is a strong relationship between psychiatric disorders and disability in social, economic, and cognitive domains, reflecting the effects of psychiatric disorders on motivation, thought, and behavior (Merikangas et al. 2007). In this sense, disability may be related to the difficulties of reintegration insofar as both involve the inability to assume normal social roles. Yet here, too, it is important to consider the specificity of incarceration's effects, given variation between disorders in their relationship with disability.

Summary and Data Requirements

This study has two related goals: (1) to understand the effects of incarceration on psychiatric disorders in a framework sensitive to selection and confounding and (2) to consider the role of psychiatric disorders in explaining the disability former inmates experience. The data we use allow us to explore these goals in a nationally representative context. In addition, they allow us to explore a variety of psychiatric disorders and a multidimensional measure of disability, our key dependent variables.

DATA AND METHODS

The NCS-R

The NCS-R is a representative survey and the benchmark source for recent information on psychiatric disorders in the United States. It was carried out between 2001 and 2003 within the coterminous states among respondents aged 18 years and older (Alegria et al. 2008; Kessler et al. 2006; Kessler and Merikangas 2004). The overall sample size was 9,282, and the response rate was 74.6 percent. The primary purpose of the NCS-R was to assess change in the prevalence and correlates of psychiatric disorders (Kessler and

Merikangas 2004). The NCS-R was divided into two parts, each reflecting a different goal. Part I was administered to all respondents ($N = 9,282$) and contained questions about the core disorders included in the World Mental Health Survey Initiative Version of the World Health Organization Composite International Diagnostic Interview (WMH-CIDI), discussed in more detail below. Part II contained information on risk factors and other correlates of psychiatric disorders. Given the number of questions required to assess even the common disorders evaluated in part I, part II was not administered to all respondents. It was instead administered to respondents revealed in part I to have psychiatric disorders or significant symptoms (i.e., those who met the criteria for a lifetime disorder, who met subthreshold criteria and received some kind of treatment, or who had made plans to commit suicide), along with a probability subsample of other respondents ($N = 5,692$). Because our study is concerned with variables contained only in part II, we limit the analysis to part II respondents. All our models use survey weights, which adjust for survey design, nonresponse, and sample selection into part II. When weighted, the NCS-R part II sample very closely approximates sociodemographic information from the March 2002 Current Population Survey (Kessler et al. 2006).

Incarceration. Our primary variable of interest is, of course, incarceration. Respondents were asked whether they ever spent time in prison, jail, or a correctional facility since the age of 18 years. Our models include a dichotomous indicator: whether the respondent was ever incarcerated. Approximately 14 percent of respondents reported having been in prison or jail in their lifetimes, a rate that exceeds previous estimates of the number of former prisoners in the general population (Uggen et al. 2006), because the NCS-R also includes persons who have been incarcerated in local jails. Because of an unusual skip pattern, however, not all eligible respondents were asked this question. Respondents who reported that their religious beliefs were “not at all important” in their daily lives were not asked additional about questions about their religiosity, but, more important for our purposes, they were also not asked questions about incarceration (among other questions not used in

our study). This skip pattern is unfortunate, but it has little apparent consequence for our specific research questions, and the few missing cases it introduces can be approximately recaptured using multiple imputation. Very few respondents reported that religion was not at all important in their lives (7.6 percent). In addition, the response category adjacent to “not at all important” is quite similar in denotation (“not very important”), allowing us to test whether the incarceration coefficient varied between the meaningfully different observed levels of low religiosity. Interactions with this variable were almost entirely insignificant, and even among the few interactions that were, only half revealed linear patterns vis-à-vis adjacent categories, suggesting random variation. All results presented in this article were derived from multiply imputed data (Little and Rubin 2002), allowing us to recapture a complete set of 5,692 respondents over 20 data sets.

We focus on the effects of having ever been incarcerated, but incarceration varies greatly in duration and is highly skewed. The mean for the sample is 162 days, but the median is just under a week. In supplementary models, we explore the relationship between length of incarceration and psychiatric disorders using semiparametric methods. These models revealed that the length of a sentence was generally unrelated to psychiatric outcomes beyond the difference between those with and without histories of incarceration (Schnittker and John 2007). If anything, the relationship was nonlinear, such that it increased for years in prison but declined for terms beyond five years, consistent with the idea that long-term inmates may cope better than shorter term inmates. In general, these findings suggest that modeling the effects of incarceration as a dummy variable is appropriate.

WMH-CIDI. The primary diagnostic interview schedule used in the NCS-R was the WMH-CIDI (Kessler and Ustun 2004). The WMH-CIDI is a fully structured diagnostic interview that generates diagnoses consistent with the criteria contained in, for our study, the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition. The WMH-CIDI generates both lifetime and 12-month diagnoses, the former indicating those who experienced a given disorder at any point in their lifetimes

and the latter indicating those who experienced lifetime disorders and had significant symptoms consistent with the disorders in the preceding 12 months.

The WMH-CIDI is intended for lay administration, meaning that those who met the criteria for a disorder need not have been diagnosed by clinicians. Clinical reappraisal studies have revealed that the WMH-CIDI shows reasonably good concordance with structured clinical interviews (Kessler, Chiu, et al. 2005), but for our study, lay interviews rather than clinical interviews are even more essential than they are for other applications. First, by using a fully structured lay interview format, the WMH-CIDI avoids the biases that may result when a clinician evaluates a known former inmate, which are considerable (Rhodes 2000). Second, the fully structured interview format avoids contamination between diagnosis and self-reported treatment. This too is particularly important in the incarceration literature. On the basis of the prisonization literature, we expect that many former inmates will be reluctant to seek services for fear of appearing weak, leading to an especially strong disjuncture between diagnoses on the basis of self-reports of treatment seeking and those based on the lay administration of clinical criteria (Mallik-Kane and Visser 2008).

Childhood adversities. The NCS-R assessed a variety of childhood adversities, occurring before 18 years of age, divided into four types (Green et al. 2010). Parental maladjustment is the sum of four indicators: mental illness, substance abuse, criminality (whether either parent engaged in criminal behavior or was arrested), and violence. Interpersonal loss is the sum of three indicators: parental death, divorce, and other separation from parents or caregivers. Abuse or neglect is the sum of three indicators: physical abuse, sexual abuse, and neglect. And economic adversity is whether a respondent's family ever received welfare. These items were culled from a variety of sources, all of which are validated, including the first wave of the National Comorbidity Survey (Kessler, Davis, and Kendler 1997), related surveys (Courtney et al. 1998), the Family History Research Diagnostic Criteria Interview (Endicott, Andreasen, and Spitzer 1978; Kendler et al. 1991), and the Conflict Tactics Scales (Straus 1979).

World Health Organization Disability Assessment Schedule (WHO-DAS). Respondents were also administered the WHO-DAS (Rehm et al. 1999). We use the WHO-DAS in a descriptive fashion, to see whether psychiatric disorders might explain at least some of the disability former inmates experience. The WHO-DAS is valuable in this regard because it was designed to measure functional impairments across six different dimensions. The dimensions and their questions concern (1) role loss, defined as the number of days within the past 30 days in which the respondent was unable to complete normal activities; (2) self-care limitations, defined as days the respondent had difficulty washing, getting dressed, and staying alone; (3) mobility limitations, defined as days the respondent had difficulty standing for 30 minutes, moving inside the house, and walking a long distance; (4) cognition, defined as days the respondent had difficulty concentrating for 10 minutes, understanding what was going on, remembering to do important things, and learning a new task; (5) social functioning, defined as days the respondent had difficulty getting along with others, maintaining a conversation, dealing with people he or she did not know, maintaining friendships, making new friends, and controlling emotions around other people; and (6) social participation, defined as the amount of embarrassment and discrimination due to health problems. On the basis of established conventions, each of the domains was scaled to a theoretical range of 0 (no disability) to 100 (complete disability within the domain).

In our models, we explore the effects of incarceration on disability and attempt to explain these effects on the basis of psychiatric disorders. There are two important considerations in this regard. First, making accurate inferences about the mediating contributions of psychiatric disorders necessitates measuring other health conditions, including chronic physical health conditions. The chronic conditions checklist included in the NCS-R was adapted from the list used in the National Health Interview Survey, supplemented with additional questions. We include the sum of eight chronic conditions shown to be related to disability: arthritis, back pain, headache, chronic pain, stroke, asthma, chronic obstructive pulmonary disease, and epilepsy. Second, there is some natural overlap

Table 1. Lifetime and 12-Month Prevalence of Psychiatric Disorders among Those with and without Histories of Incarceration, National Comorbidity Survey Replication (N = 5,692)

Disorder	Lifetime Prevalence				12-Month Prevalence			
	No Incarceration		Incarceration		No Incarceration		Incarceration	
	%	SE	%	SE	%	SE	%	SE
Anxiety disorders								
Panic disorder	4.4	.3	7.4*	1.0	2.5	.2	4.5*	.8
Agoraphobia	2.3	.2	3.4	.7	1.2	.1	2.7*	.6
Specific phobia	12.2	.5	16.0*	1.6	8.4	.5	11.7*	1.3
Social phobia	11.3	.5	18.6*	1.5	6.2	.3	11.5*	1.2
Generalized anxiety disorder	7.6	.4	9.3	.9	3.9	.2	5.3	.8
Posttraumatic stress disorder	6.3	.5	10.8*	1.5	3.2	.2	6.3*	1.4
Adult separation anxiety	5.7	.3	13.2*	1.6	1.6	.2	4.0*	.8
Mood disorders								
Major depressive disorder	16.1	.6	19.8*	1.6	6.4	.3	9.2*	1.0
Dysthymia	3.8	.3	5.9*	.8	2.0	.2	4.1*	.7
Bipolar disorder	3.8	.3	8.5*	1.0	2.5	.2	5.8*	.8
Impulse control disorders								
Oppositional defiant disorder	4.5	.5	13.7*	1.4	.4	.1	2.4*	.7
Conduct disorder	3.4	.4	18.3*	2.3	.3	.1	2.2*	.8
Attention deficit disorder	3.5	.3	10.8*	1.2	1.7	.2	5.9*	1.2
Intermittent explosive disorder	6.7	.5	15.7*	1.6	3.4	.3	10.3*	1.7
Substance disorders								
Alcohol abuse	8.4	.7	47.0*	4.8	1.9	.2	10.0*	1.6
Alcohol dependence	3.1	.3	21.3*	2.4	.8	.2	5.2*	1.1
Drug abuse	4.9	.5	29.2*	3.1	.8	.1	4.8*	1.0
Drug dependence	1.7	.2	12.9*	1.7	.3	.1	1.5*	.6

Note: Models are based on 20 multiple-imputation data sets, imputing 488 missing cases.

* $p < .05$ (two-tailed test of mean difference between no incarceration and incarceration).

between the measurement of disability and the diagnostic criteria of psychiatric disorders. The diagnostic criteria for psychiatric disorders emphasize clinically significant impairment, while the measures of disability assess certain dimensions of that impairment. Although there is some overlap, the overlap is far from perfect, and furthermore, the diagnostic criteria for psychiatric disorders are generally more specific than the items constituting the WHO-DAS. Consistent with this idea, we show that some disorders defined by their clinical significance are not in fact correlated with the WHO-DAS. Even with some overlap between disorders and disability, it is still meaningful to compare among the effects of different types of disorders and physical health conditions. The key

question for our purposes is not simply whether they contribute at all but how much psychiatric disorders contribute relative to other things associated with incarceration.

Analytic Map and Empirical Considerations

In what follows, we explore the relationship between incarceration and psychiatric disorders, as well as the relationship between psychiatric disorders and disability. The analysis proceeds in stages. Table 1 begins with simple prevalence estimates of psychiatric disorders for those with and without histories of incarceration, allowing us to assess a baseline association. We use both lifetime and 12-month disorders. We then consider the characteristics of

psychiatric disorders in greater detail, assessing whether those with histories of incarceration have earlier onset disorders, implying disorders that began before incarceration, and whether those with histories of incarceration have more chronic disorders, implying more severe cases. We then turn a multivariate analysis of the relationship between incarceration and psychiatric disorders. Table 2 explores the relationship between incarceration and lifetime and 12-month disorders over three models. In Model 1, we estimate the relationship between incarceration and psychiatric disorders including only demographic control variables (i.e., education, race-ethnicity, age, and sex). Model 2 adds childhood background, and Model 3 adds early-onset substance disorders. In the final model, we adjust for early-onset disorders, either by dropping cases whose onset was prior to 18 years of age in the case of lifetime disorders or controlling for under-18 onset in the case of 12-month disorders. Because substance disorders become control variables in the final model for other psychiatric disorders, we do not estimate the final model when substance disorders are the dependent variable. Furthermore, we drop from consideration those disorders for which adult onset is impossible or uncommon. Table 3 then explores whether psychiatric disorders mediate the association between lifetime incarceration and disability.

RESULTS

Table 1 reveals pervasive differences in the prevalence of psychiatric disorders between those with and without histories of incarceration. The largest differentials are found with respect to substance use disorders: As many as 29 percent of former inmates have met the criteria for drug abuse during their lifetimes, and nearly half of those with histories of incarceration abused alcohol. These disorders are criminalized in the sense that the behavior described by the disorder is itself either illegal (e.g., using controlled substances) or closely associated with illegal activities (e.g., drunk driving). Yet the prevalence of psychiatric disorders is elevated across the full spectrum of disorders: Former inmates are more likely to experience anxiety disorders, mood disorders, and impulse control disorders. Former inmates also have a higher prevalence

of current disorders, and in this case, criminalized disorders such as substance abuse are less relevant. The most common 12-month disorders among former inmates are, in fact, phobias. In addition, major depressive disorder is more common than alcohol dependence, drug abuse, or drug dependence, despite the link between the latter and crime. Similarly, all three mood disorders are more common than either oppositional defiant disorder or conduct disorder.

In supplementary analyses, we explored the characteristics of disorders rather than their prevalence (available in an online supplement). Specifically, we explored the average age of onset for each of the disorders, along with a measure of persistence. Our measure of persistence was the fraction of 12-month cases to lifetime cases: A perfectly persistent disorder will yield a ratio of one, whereas a perfectly remitting disorder will, over a sufficiently long period of time, yield a ratio of zero (no lifetime disorder will also be a 12-month disorder). Those without lifetime disorders are not considered in this calculation. These figures allowed us to test whether the age of onset is earlier for those with histories of incarceration and whether psychiatric disorders are more persistent among former inmates, a difference anticipated by some psychologically driven theories of criminality. Because of trends in incarceration, the sample reporting any incarceration is slightly younger than the sample not reporting incarceration (40 vs. 46 years). Because of this, our test of persistence is conservative: All else equal, former inmates will have slightly more persistent cases because they have had fewer years in which the disorders could remit. Both groups, however, have an average age well in excess of the average age of onset for psychiatric disorders, meaning that most of the expected lifetime disorders in the sample are already apparent.

Although the prevalence of psychiatric disorders may be higher among former inmates, the characteristics of their disorders are generally no different. Former inmates have first onsets at significantly younger ages for 5 of the 18 disorders, but for most disorders, there is no difference; the significant differences exceed five years in only 1 case (dysthymia), and the few significant differences are occasionally in the opposite direction.

Table 2. Any Incarceration Coefficients from Logit Regression Models of Lifetime and 12-Month Disorders with Controls, National Comorbidity Survey Replication (N = 5,692)

Disorder	Model 1 (Basic Controls)		Model 2 (Model 1 + Childhood Background)		Model 3 (Model 2 + Early-Onset Substance Abuse)		Model 4 (Model 3 + Controls for Under-18 Onset of Primary Disorder)	
	Lifetime Coefficient	12-Month Coefficient	Lifetime Coefficient	12-Month Coefficient	Lifetime Coefficient	12-Month Coefficient	Lifetime Coefficient	12-Month Coefficient
Anxiety disorders								
Panic disorder	.829**	.855**	.574**	.570*	.473**	.464*	.559*	.509
Agoraphobia	.507	.731*	.210	.491	.114	.414	.117	.592
Specific phobia	.499**	.568**	.288*	.366**	.209	.311*	.939	.598**
Social phobia	.651**	.733**	.477**	.539**	.405**	.491**	.533	.324
Generalized anxiety disorder	.551**	.568**	.276*	.308	.235	.255	.367	.371
Posttraumatic stress disorder	1.004**	1.141**	.714**	.772*	.610**	.631*	.697**	.578
Adult separation anxiety	.917**	.759**	.672**	.540	.600**	.470	.797**	.504
Mood disorders								
Major depressive disorder	.500**	.597**	.322**	.395**	.288*	.383**	.375*	.392*
Dysthymia	.744**	.954**	.390*	.657**	.340	.626**	.537**	.748**
Bipolar disorder	.738**	.701**	.477**	.480**	.321*	.335*	.511*	.484
Impulse control disorders								
Intermittent explosive disorder	.653**	.915**	.481**	.737**	.371*	.628**	.527	.632*
Substance disorders								
Alcohol abuse	2.029**	1.468**	1.901**	1.304**				
Alcohol dependence	1.922**	1.709**	1.750**	1.486**				
Drug abuse	1.862**	1.420**	1.704**	1.224**				
Drug dependence	2.017**	1.549**	1.794**	1.241*				

Note: The basic controls are education, race-ethnicity, age, and sex. Models are based on 20 multiple-imputation data sets, imputing 488 missing cases. For lifetime disorders, Model 4 eliminates those with under-18 onset of the primary disorder. For 12-month disorders, Model 4 includes a control variable for under-18 onset of the primary disorder.
* $p < .05$. ** $p < .01$ (two-tailed tests).

Table 3. Linear Regression Models of World Health Organization Disability Assessment Schedule Disability Scores, National Comorbidity Survey Replication (N = 5,692)

	Self-Care			Cognitive			Mobility		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Any incarceration	.550* (.258)	.427 (.278)	.240 (.266)	.903** (.277)	.566* (.233)	.069 (.202)	3.312** (.940)	2.827** (.934)	1.921* (.893)
Condition counts									
Anxiety			.441* (.189)			1.365** (.189)			1.393** (.405)
Mood			.845* (.375)			2.312** (.357)			2.650** (.738)
Impulse			-.438 (.400)			.276 (.329)			-.568 (.701)
Substance			-.014 (.211)			-.167 (.260)			-.956* (.431)
Chronic physical conditions			.510** (.159)			.640** (.073)			3.126** (.225)
	Extent out of role			Social interaction			Social participation		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Any incarceration	8.499** (1.698)	6.965** (1.628)	4.262** (1.355)	1.004** (.282)	.801** (.264)	.400 (.209)	2.554** (.642)	1.918** (.588)	.997* (.446)
Condition counts									
Anxiety			4.152** (.501)			1.064** (.183)			2.018** (.311)
Mood			7.784** (1.026)			1.952** (.338)			3.819** (.520)
Impulse			1.539 (1.384)			.376 (.335)			.760 (.633)
Substance			1.598 (1.144)			.147 (.231)			.234 (.958)
Chronic physical conditions			5.321** (.424)			.286** (.063)			1.201** (.123)

Note: All models also include covariates for race-ethnicity, age, sex, and education. Models 2 and 3 add childhood background factors. Models are based on 20 multiple-imputation data sets, imputing 488 missing cases. Values in parentheses are standard errors.
*p < .05. **p < .01 (two-tailed tests).

For drug dependence, for example, former inmates have a significantly later onset (22.6 vs. 20.3 years). Mood disorders generally have the latest onset for both groups, which is an important observation for our later discussion. The persistence of psychiatric disorders also differs little between former inmates and others. Former inmates have significantly more persistent cases of agoraphobia and intermittent explosive disorder, as indicated by a higher ratio of 12-month cases to lifetime cases (expressed as the percentage of lifetime cases that are also 12-month cases: 79.6 vs. 54.4 percent and 65.7 vs. 51.0 percent, respectively). But none of the remaining differences is significant, and in the case of all four substance disorders, former inmates actually have slightly less persistent cases, as might be the case if former inmates are required to undergo drug treatment as a condition of parole or probation. Together with Table 1, these figures convey an important point: Although the prevalence of psychiatric disorders may be higher among former inmates, the characteristics of these disorders are not different from those found among those without histories of incarceration.

Former inmates are, however, at higher risk, and this risk begins in childhood. There are pervasive mean differences in the childhood background control variables between former inmates and others (results are available in the online supplement). Former inmates are more likely to experience interpersonal loss, family maladaptation, economic adversity, and abuse or neglect. They are also much more likely to experience early-onset drug or alcohol abuse, with 15 percent of former inmates abusing alcohol before the age of 18 years and 11 percent abusing drugs. These risk factors may explain some, and perhaps all, of the association between adult incarceration and adult psychiatric disorders.

In Table 2, we explore the association between incarceration and psychiatric disorders in a multivariate context. We consider only those conditions for which adult onset is diagnostically possible. This eliminates three of the four impulse control disorders discussed earlier, but we reconsider these disorders when discussing disability, because they could explain some of the disability former inmates experience even if they are not a consequence of incarceration. Table 2 presents two sets of

incarceration coefficients for each model, the first for lifetime disorders and the second for 12-month disorders. The models are presented in rows, rather than the conventional columns, but proceed left to right through progressively more stringent specifications, as discussed above.

Table 2 reveals several things. First, the relationship between incarceration and psychiatric disorders is highly sensitive to control variables, but not all the control variables are equally relevant. For all the disorders, the reduction in the incarceration coefficient, expressed as a percentage, is greater between Models 1 and 2 than between Models 2 and 3. Proceeding to the final model, the relationship between incarceration and mood disorders remains especially robust. Incarceration more than doubles the odds of 12-month dysthymia and increases the odds of 12-month major depression by nearly 50 percent. There are also assorted relationships between incarceration and certain anxiety disorders—notably, for example, posttraumatic stress disorder—but none of the relationships significant in the case of lifetime disorders is also significant in the case of 12-month disorders, and vice versa. Some relationships evident for lifetime disorders disappear for 12-month disorders, suggesting that the associations with incarceration, such as they are, fade with time. In sum, the evidence for a strong global effect of incarceration on psychiatric disorders is marginal, but we cannot rule out an association with mood disorders, and these associations, although particular, are strong.¹

Table 3 reveals that these particular associations are also consequential. The table presents three models for each of the six forms of disability in the WHO-DAS. The first model presents the relationship between incarceration and disability with basic controls, the second model adds childhood background, and the third model adds psychiatric disorders and chronic physical conditions. The results reveal, first, that former inmates suffer from more disability, manifest across multiple dimensions. The relationship between incarceration and disability is significant in all six cases and large relative to known benchmarks, such as education. In four of the cases, the difference between those with and without histories of incarceration exceeds the difference between those with 16 or

more years of education and those without high school diplomas. The table also reveals, however, that the problems former inmates experience do not stem from human capital deficits alone (or even primarily).

The difference between Models 2 and 3 reveals that mental and physical health problems explain anywhere from 32 percent (mobility disability) to 88 percent (cognitive disability) of the relationship between incarceration and disability. Notably, in the case of self-care and cognitive disability, the association between incarceration and disability is explained entirely in Model 3. A large fraction of this mediation stems from mood disorders specifically. Across the six different types of disability, the consequences of mood disorders exceed those of the other conditions, even those strongly associated with incarceration by virtue of criminalization. For example, neither substance disorders nor impulse control disorders are strongly related to disability, even in the case of social interaction or social participation. Similarly, although chronic physical conditions are associated with incarceration, they are not as strongly related to disability as mood disorders, except in the case of mobility disability. Although former inmates may suffer from substance disorders, impulse control disorders, and poor physical health, the additional disability they experience stems more from mood disorders.

DISCUSSION

A long-standing line of sociological research is concerned with the role of total institutions in the well-being of their inhabitants, but few studies have attempted to deal with the many potential threats to a causal relationship between incarceration and psychiatric disorders. This study reveals that the relationship between incarceration and psychiatric disorders is both stronger and weaker than anticipated. Although former inmates have higher rates of psychiatric disorder for virtually all common disorders, the association does not reflect, in most instances, a causal effect of incarceration. Precisely because of the intersection between childhood conditions, criminal offending, and psychiatric disorders, the relationship between incarceration and psychiatric disorders is highly sensitive to childhood background factors and, to a

lesser degree, early-onset substance abuse. In this way, our results highlight the considerable overlap between the life-course determinants of crime and the life-course determinants of psychiatric outcomes. Incarceration does, however, have a persistent relationship with mood disorders, and for this class of disorders, the relationships are quite strong. Incarceration is associated with a 45 percent increase in the odds of lifetime major depression, the most common psychiatric disorder in the general population (Kessler, Berglund, et al. 2005). The association with 12-month dysthymia is even stronger. Although the relationship between incarceration and 12-month bipolar disorder is not significant at conventional levels, the insignificant coefficient from the most rigorous specification (Model 4) is larger than the significant coefficient from a less rigorous specification (Model 3). It is possible that a larger sample would produce more consistent findings, and in this vein, it is notable that many of the incarceration coefficients for anxiety disorders are insignificant but quite substantial. Given the sample, however, our empirical confidence is limited to mood disorders, and even if the effects of incarceration are limited in this way, they are still quite important.

Mood disorders are strongly related to disability and play an important role in explaining the additional difficulties former inmates experience after release. Indeed, our results suggest that disability differences between former inmates and others could be reduced greatly by addressing psychiatric disorders. The mediation of the incarceration coefficient is driven primarily by mood disorders, whose relationship with disability exceeds that of almost all the other condition categories, whether mental or physical. This set of findings is important for several reasons. For one, it suggests that our intuitions regarding what matters for selection into prison are not a particularly good guide for hypotheses regarding what is most consequential following release (Uggen and Piliavin 1998). Although substance disorders and impulse control disorders are among the most common disorders among former inmates and are relevant to criminal behavior, they are not the most relevant for understanding disability. This asymmetric causation illustrates one specific way in which the segregation of the literatures on incarceration and mental health may come

at a cost: Focusing only on childhood disadvantage or social selection or reintegration might miss the interwoven nature of these topics. By the same token, focusing only on global conceptions of "mental health" might miss the particularity of incarceration's effects, leading to erroneous conclusions regarding whether selection is or is not globally important when, in fact, its relevance depends greatly on the outcome.

This finding is also relevant to social policy, especially to those responsible for providing services to returning inmates. And here, too, our results introduce questions regarding whether current theoretical frameworks are appropriate. There have been some efforts among service providers to more closely align the criminal justice system with the public health system, arguing that by protecting the health and well-being of former inmates, we can also protect the community (Freudenberg et al. 2008). Our study is consistent with this idea, adding that such programs might also promote reintegration. Yet mood disorders do not fit comfortably into most existing criminal-justice-as-public-health frameworks. Mood disorders are neither directly criminalized, like substance abuse disorders, nor are they infectious, like HIV/AIDS or tuberculosis. As a result, mood disorders might fall through the cracks of even the most broad and progressive frameworks.

The results also point to areas of mutual interest between those concerned with the health consequences of incarceration specifically and those interested in the negative effects of incarceration. To date, stigma and discrimination are perhaps the most commonly proffered mechanisms for understanding the consequences of incarceration. Yet psychiatric disorders are important in a number of respects and complementary to existing research agendas. For one, it is possible that the stigma of incarceration and psychiatric disorders work hand in hand. Employers, for example, may be reluctant to hire former inmates because they are perceived to be mentally ill, much as employers are reluctant to hire former mental patients because they are perceived to be dangerous. Mood disorders may also be significant in their own right, such that even if discrimination against former inmates were reduced or eliminated entirely, former inmates would continue to suffer. Indeed, because of their strong effects on

functioning and cognition, mood disorders provide scholars with a mechanism for explaining the self-defeating behavior of former inmates, a task for which discrimination alone is ill suited. For example, former inmates are discriminated against because employers believe former inmates have few skills, but insofar as this belief is true at all, it may have more to do with the mental health of former inmates than with their motivation, intelligence, or organization. By recognizing the consequences of mood disorders, it is possible to develop a more robust appreciation of former inmates' behavior and recognize some of its structural determinants.

Although our analysis focuses on the unique effects of incarceration, it is important to note that the disorders experienced by former inmates do not appear to be much different in kind from those experienced by others. It is true that psychiatric disorders among former inmates often begin in childhood and adolescence, but this is also true for those without histories of incarceration (Paus et al. 2008). Similarly, incarceration has a long-term association, linking the past with current disorders, but former inmates do not in fact suffer from more persistent disorders. Furthermore, the relationship between incarceration and lifetime disorders is often stronger than that the relationship with 12-month disorders, implying that the relationship is not necessarily enduring and that many disorders among former inmates are self-limiting in the same fashion they are in the population in general (Kessler and Wang 2008). In short, although psychiatric disorders are more prevalent among inmates, they may be just as amenable to treatment and intervention as they are among others.

Limitations

The strengths of this study stem from the NCS-R. The survey allows the analyst to explore psychiatric disorders with breadth and precision, a benefit available in few other surveys. But the weaknesses of the survey stem from the flip side of the same coin. Although we observe many influences relevant to incarceration, these influences are sensitive to measurement error. The age-of-onset controls, for example, involve retrospective accounts, which are imperfect. Similarly, childhood adversities are based on retrospection, which may be correlated

with current mental health (Kendler et al. 1991). Related to this is the lingering threat of confounding. Our models control for many relevant influences predating incarceration and the onset of disorder, but more complicated and contemporaneous selection processes are possible. We did not include adult life events for fear of mixing causes and effects, but adult processes might simultaneously lead to incarceration and psychiatric disorders much like childhood processes. Unemployment, for instance, is regularly considered an outcome of incarceration, but it might occasion both depression and criminal behavior. Despite this, there are signs that our control variables do account for many of the influences we are concerned with. If selection were the preeminent force behind the relationship between incarceration and psychiatric disorders, for instance, the effects of incarceration would be weaker for conditions with earlier onsets because they would be more likely to anticipate rather than follow incarceration. However, this pattern was not observed in our models. Anxiety disorders, for example, have an especially early onset, but their relationship with incarceration is no more sensitive to age-of-onset controls than the relationship between incarceration and other conditions. We also do not know the age at which incarceration first occurs, except that it occurs in adulthood. In future research, it will be important to systematically discern the timing and life-course sensitivity of the processes explored here.

It is also possible the taxometric properties of psychiatric disorders differ between former inmates and others, as when former inmates manifest psychiatric disorders in a fashion that does not cohere well with conventional diagnostic criteria. Something of the sort could be apparent in the unusually strong relationship we find between incarceration and dysthymia, a relationship that exceeds that between incarceration and the other mood disorders. If prisonization involves the suppression of emotions that convey weakness or vulnerability, former inmates might express their distress more through dysthymia, a milder form of sadness, rather than major depression. In this way, differences in the incarceration-disorder relationship could reflect meaningful taxometric asymmetries between former inmates and others, but if so, the incarceration coefficient is only diminished by a reporting bias.

Moreover, even if this sort of reporting differential is occurring, there is still a relationship between incarceration and major depression that is sufficiently strong to withstand a great many controls.

Our results may understate the total effects of incarceration in certain respects. Our analyses reveal that the relationship between incarceration and many (but not all) psychiatric disorders is spurious. We have emphasized the robust association between incarceration and mood disorders, but it is premature to rule out associations with other outcomes. Our measure of incarceration is based on self-reports, and it is likely that some people who were incarcerated are not classified as such, thereby underestimating the effects of incarceration (see Western, Lopoo, and McLanahan 2004). Future research should consider this possibility and use alternative measurement strategies.

A final limitation pertains to the meaning and interpretation of incarceration itself. It is unclear what process the incarceration-disorder relationship actually reveals. Incarceration is the outcome of a criminal arrest and conviction (or, in short stays, being held in the interim between these stages of criminal justice processing), but it reflects many other things besides, including, in most instances, the mark of a criminal record, exposure to the prison environment, and discrimination after release. Although we demonstrate associations attributable to having been previously incarcerated and thus provide some evidence for an enduring influence of incarceration, we were unable to specify whether these associations represent the lingering impact of the prison environment per se or other related processes, such as the effects of a criminal record, the stress of reintegration, or ongoing involvement in criminal behavior. To be sure, many of these experiences might stem from prison and thus be considered consequences of incarceration. If so, they do not undermine our basic claim of a significant association, but they nonetheless imply different processes and points of intervention and therefore deserve more fine-grained attention.

CONCLUSION

In closing, it is worth noting that our emphasis on psychiatric disorders as an outcome of incarceration and a mechanism for explaining poor reintegration

has an ironic edge. A long tradition in sociology casts psychiatric disorders as a means of labeling and thereby controlling deviant behavior—thus the well-known alignment of “madness” with “badness” (Conrad 1992). Although psychiatric disorders provide a convenient label for certain forms of abnormality, our results suggest that treating psychiatric disorders is a strategy for reintegrating ex-inmates and thereby a mechanism for normalizing deviants. In this light, we encourage the development of new frameworks for understanding incarceration’s consequences for mental health and reintegration. These frameworks should be sensitive to the different forces behind selection and those behind causation, as well as the distinction between what is legally criminalized and what is enduringly consequential.

NOTE

1. The tables focus on average effects for the entire sample, but other models were investigated. In supplementary analyses, we estimated interactions between incarceration and race-ethnicity and incarceration and sex. Of the 90 possible interactions with race (3 interactions, exhausting comparisons between four racial-ethnic groups), only 1 was significant, less than expected by chance (incarceration has a stronger relationship with social phobia among “other” racial-ethnic groups). Similarly, of the 30 possible interactions with sex, only 2 were significant, with both interactions suggesting larger negative effects for women (for lifetime intermittent explosive disorder and 12-month adult separation anxiety disorder).

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