



Pathways to Depressive Symptoms among Former Inmates

Lauren C. Porter & Meghan A. Novisky

To cite this article: Lauren C. Porter & Meghan A. Novisky (2017) Pathways to Depressive Symptoms among Former Inmates, Justice Quarterly, 34:5, 847-872, DOI: [10.1080/07418825.2016.1226938](https://doi.org/10.1080/07418825.2016.1226938)

To link to this article: <http://dx.doi.org/10.1080/07418825.2016.1226938>



Published online: 14 Sep 2016.



[Submit your article to this journal](#)



Article views: 182



[View related articles](#)



[View Crossmark data](#)

Pathways to Depressive Symptoms among Former Inmates

Lauren C. Porter and Meghan A. Novisky

Drawing on data from the National Longitudinal Study of Adolescent Health (Add Health), we examine the association between incarceration and depressive symptoms among a sample of 13,131 young adults. We find that a history of incarceration is associated with a higher expected rate of depressive symptoms and that this relationship operates most strongly through material hardship. We find no differences in the main effect of incarceration across groups, but we find that the role of certain mediating variables may vary, with marital and employment status being a stronger mediator for males than females, and marriage being a stronger mediator for whites compared to blacks and Hispanics. Our results suggest that incarceration constitutes a potent stressor, but that the pathways to depressive symptoms may differ.

Keywords incarceration; depressive symptoms; race; sex

There are more than two million people incarcerated in the US and each year roughly 700,000 individuals are released from prison (Carson & Golinelli, 2013). Taken together, research suggests that incarceration leads to a host of harmful outcomes related to financial wellbeing, social integration, political participation, and health (Pettit & Western, 2004; Schnittker & John, 2007; Uggen, Manza, & Thompson, 2006; Western, 2006). With respect to health in particular, Wilper and colleagues (2009) find that between 38 and 43% of inmates suffer from a chronic medical condition. In terms of mental health,

Lauren C. Porter is an Assistant Professor of Criminology and Criminal Justice at the University of Maryland. Her main research interests are in the consequences of incarceration, the demography of crime and justice, and geographic variations in crime. Meghan A. Novisky is an Assistant Professor of Criminology at Cleveland State University. Her main research interests include the collateral consequences of criminal justice system intervention and intimate partner violence. Correspondence to: Lauren C. Porter, Department of Criminology, University of Maryland, 2220 Samuel J. LeFrak Hall, 7251 Preinkert Drive, College Park MD 20742. E-mail: lporter1@umd.edu

roughly half of prisoners and 60% of jail inmates report recent symptoms of major depression or mania (Glaze & James, 2006). Former inmates also exhibit psychiatric symptoms at roughly double the rates observed in the general population (Schnittker, 2014).

Individuals in poor mental health are more likely to be incarcerated, yet research suggests that going to prison may also exacerbate psychological wellbeing (Schnittker, Massoglia, & Uggen, 2012). Indeed, imprisonment is a stressful life event that generates numerous chronic stressors after release (Massoglia, Remster, & King, 2011; Western, 2006). Given the strong link between chronic stressors and symptoms of depression (Pearlin, Menaghan, Lieberman, & Mullan, 1981; Turner & Avison, 2003), it follows that former inmates boast relatively high rates of depression. In turn, depressive symptoms and distress are also associated with a wide range of serious physical health outcomes, including heart disease (Whooley et al., 2008), obesity (de Wit et al., 2010), physical disability (Merikangas et al., 2007), suppressed immune function (Segerstrom & Miller, 2004), and mortality (Zhang et al., 2005).

Research on the association between incarceration and mental health remains limited in a number of ways. For one, most research focuses on current inmates, while less is known about former inmates (Schnittker, 2014). Second, a "focus on the causal mechanisms linking incarceration to poor health outcomes" is lacking (Massoglia & Pridemore, 2015, p. 23). That is, relatively little is known about the pathways leading to poor health among ex-inmates. Third, this area requires "greater research on female (ex-) inmates" (Massoglia & Pridemore, 2015, pp. 23–24). Indeed, males comprise more than 90% of all prison inmates (Carson, 2014) and more than 80% of all jail inmates (Minton & Zeng, 2015). However, the rate of incarceration for women has been increasing faster than the rate of incarceration for men (see Frost, Greene, & Pranis, 2006) and this group of offenders represents a particularly disadvantaged segment of the population.

This study adds to this burgeoning area of research by examining the association between incarceration and depressive symptoms among a sample of young adults from the National Longitudinal Study of Adolescent Health (Add Health). We also investigate the mechanisms linking incarceration to depressive symptoms and whether these relationships (both direct and indirect effects) vary across race or sex. We find that incarceration is associated with higher levels of depressive symptoms and that this association operates most strongly through material hardship across all groups. We find no differences in the main effect of incarceration, but we do find that marriage more strongly mediates the relationship for males and for whites, while employment is a stronger mediator for males compared to females. We surmise that incarceration is a particularly disruptive stressor, harming more uniformly than discriminately. However, some of the secondary stressors of incarceration may be more consequential for certain groups.

Background

The Pains of Imprisonment

In his classic study of a maximum security prison, Sykes (1958/2007) describes life in prison as “depriving or frustrating in the extreme” (p. 63). Among the pains of imprisonment he identifies are deprivation of liberty, loss of autonomy, diminished status, and being stripped of one’s identity. The loss of identity is also noted by Goffman (1963), who refers to this adjustment as the “curtailment of self” (p. 14). Incarcerated individuals are severed from the outside world and from past roles such as “employee,” “citizen,” or “parent.” In addition to these losses, life in prison exposes inmates to a range of harmful experiences. For example, research suggests that the threat of violent victimization may be higher in prison (Wooldredge & Steiner, 2014) and that fear of other prisoners may lead to consequences such as high blood pressure (Ostfeld, Kasl, D’Atri, & Fitzgerald, 1987). Inmates are also isolated and typically without much social support (Zamble & Porporino, 1988). Nearly 40% of prisoners are not visited by friends or family (Duwe & Clark, 2011) and one study finds that 58% of prisoners in state prisons with children had no visits with their children since admission (Glaze & Maruschak, 2008). Further, inmates with social support may struggle to maintain it, since incarceration increases the chances of marital dissolution (Lopoo & Western, 2005). Inmates are also often sent to institutions distant from their families, especially women, making the feasibility of regular visits daunting (Christian, 2005). For example, in 2004, 62% of parents in state prison were more than 100 miles from home (Schirmer, Nellis, & Mauer, 2009).

The hardships confronted during incarceration are typically conceptualized as primary stressors, consistent with stress proliferation theory (Pearlin, Aneshensel, & Leblanc, 1997), while secondary stressors surface once inmates are released back into the community. Although ex-inmates may be able to reclaim some previous roles, some losses are “irrevocable and may be painfully experienced as such” (Goffman, 1963, p. 15). For example, ex-inmates encounter barriers to employment, education, political involvement, housing, and parenting (Petersilia, 2009; Pettit & Western, 2004; Western, 2006; Wheelock & Uggen, 2008). Ex-inmates also encounter more informal consequences such as trouble forming social ties (Massoglia et al., 2011). For many criminologists, post-release hardships are interpreted as the “enduring stigma of a felony conviction” (Behrens, 2004, p. 260). Although stigma may indirectly affect ex-inmates through these channels, the effects may also be more direct. For example, feeling stigmatized may damage feelings of self-worth and social standing (Schnittker & Bacak, 2013) and Marmot (2004) postulates that social standing is a significant source of health variation, as it reflects “the degree of autonomy and control individuals have and their opportunities for full social engagement” (p. 46).

It is perhaps not surprising that prior research finds a link between incarceration and depression—a mental illness often catalyzed by exposure to stressors. For example, Schnittker and colleagues (2012) find that incarceration more than doubles the likelihood of dysthymia and increases the odds of major depression by 50%. Yet few studies investigate the mechanisms linking incarceration to poor mental health. A notable exception is Turney, Wildeman, and Schnittker (2012), who find that higher levels of depression among formerly incarcerated fathers are partially explained by decreased socioeconomic status and family functioning. However, due to limited knowledge in this area, our first aim is to investigate *why* incarceration may increase depressive symptoms. Also, few studies examine differences in the consequences of incarceration across race and sex—the second aim of our study.

Demographic Patterns of Depression

One of the most consistent findings in mental health research is that women are more likely to report depressive symptoms than men (Adkins, Wang, & Elder, 2009; Rosenfield & Mouzon, 2013). Also, studies examining race differences in depressive symptoms tend to find higher rates among blacks and Hispanics compared to whites (Kim, 2013). Disparities are typically conceptualized as resulting from differential vulnerability or exposure to stressors. A differential exposure perspective asserts that certain groups are disproportionately exposed to stressors, while a differential vulnerability perspective argues that even when exposure is equal, some groups are more susceptible. Notably, these are not mutually exclusive explanations and presumably operate in tandem to generate disparities in mental health. For example, Brown, Meadows, and Elder, Jr., (2007) find that blacks are more likely to experience stressors (differential exposure), but that these events also account for more of the variation in depressive symptoms among blacks than whites (differential vulnerability). Similarly, George and Lynch (2003) find that loss-related events are more common among black respondents, but that these events also explain more variation in depression among blacks than for whites.

Differential exposure and vulnerability are thought to explain sex differences in depression as well. Women encounter more daily stressors related to their social positions, gender expectations, and responsibilities (Gibson, Baker, & Milner, 2016; Kessler, 2003; Kessler, 1997), and they may be more psychologically vulnerable to certain stressors, such as those relating to family and interpersonal relationships (Kendler & Gardner, 2014; Kessler, 2003). However, men are also shown to be more susceptible to specific types of stressors—those related to financial wellbeing and employment (Kessler, 2003; Kendler & Gardner, 2014). Differences across gender may also be due to departures in how women and men react to stressors. Women are more likely to ruminate, which is shown to increase depressive symptoms (Nolen-Hoeksema, 2001). Women are also more likely to internalize negative feelings in general, while

men are more likely to externalize, leading to behaviors such as aggression (Gjerde, Block, & Block, 1988). Women may be more likely to adopt a negative mindset as well, believing that the occurrence of negative life events (e.g. divorce) reflect their own personal deficiencies (Robinson & Alloy, 2003; Safford, Alloy, Abramson, & Crossfield, 2007). However, little is known about whether men and women respond to the incarceration experience differently.

Incarceration and Depressive Symptoms: Considering Race and Sex

Research suggests that the incarceration experience may vary across race, although the direction of this variation is uncertain. Blacks tend to rate the quality of race relations in prison as poorer than other groups, indicating that prison life may be more stressful for this demographic (Cheliotis & Liebling, 2005). Pager (2007) also argues that having a criminal record is more detrimental for blacks in terms of finding employment because it adds to an existing racial stigma. Alternatively, another line of research suggests stronger effects of incarceration for whites. Patterson (2010) finds that incarceration results in years of life gained for blacks and years of life lost for whites. Similarly, Wildeman (2010) finds that mortality rates are lower than expected for black men behind bars, a difference partially mediated by homicide rates across groups. He surmises that “young black men are so marginalized that they may be safer as captives than as free men” (p. 26). Post-release, Rosen, Schoenbach, and Wohl (2008) argue that the relatively common occurrence of incarceration in black communities may dampen the stigma associated with having been behind bars. Thus, blacks should encounter fewer barriers than whites in reestablishing social and financial support. Consistent with that argument, Pettit and Lyons (2007) find that the negative effect of incarceration on wages is greatest for those “who are least likely to spend time in prison and for whom spending time in prison is strongly counter-normative” (p. 204). Huebner (2007) also finds that incarceration lowers the likelihood of marriage among whites more than blacks and Hispanics. Finally, Massoglia and colleagues (2013) find that incarceration affects residential attainment more negatively for whites than for blacks.

As noted, research on sex-specific effects of incarceration is lacking, as is research on women’s experiences in the criminal justice system in general. The more disadvantaged backgrounds of women entering correctional facilities could increase women’s vulnerability to prison stressors. In addition, incarceration may be more traumatic for women compared to men. The prison system is built for men and has historically struggled to meet the unique needs of women (Petersilia, 2009), including adequate reproductive healthcare and more tailored counseling. Also, being incarcerated is strongly counter-normative for women and confinement restricts a mother’s ability to raise her children. Although many men behind bars are fathers, incarcerated women in state prisons are more likely to be the primary caregiver to their children prior

to admission (Mumola, 2000). This means that losing daily contact with children could represent a more drastic change for women, on average, compared to men. In addition, mothers who are incarcerated are far more likely to have their children placed in foster care than fathers (Mumola, 2000) and report higher levels of anger (Roxburgh & Fitch, 2013).¹ Conversely, the extreme disadvantages and health conditions of women relative to men entering prisons and jails (Binswanger et al., 2010) may mean that incarceration has a more protective effect for this population. Women may be especially likely to benefit from counseling, restricted access to illicit drugs, and treatment for mental or physical health ailments.

A few studies examine sex or gender variation in the effects of incarceration. The majority of these have been interested in mortality outcomes, each finding that the mortality penalty of incarceration is stronger for women (Massoglia, Pare, Schnittker, & Gagnon, 2014; Patterson, 2010). In addition, a recent study finds that the association between victimization in prison and mental health is contingent on sex (Schnittker & Bacak, 2015). Victimization is more strongly associated with feelings of anger among women, but feelings of sadness among men. In short, this body of work suggests that there should be differences in the effects of incarceration on depressive symptoms across sex, although like race/ethnicity, the directionality of this difference is uncertain.

Current Study and Hypotheses

Our research builds on prior work by investigating the association between incarceration and depressive symptoms as well as the potential mechanisms linking incarceration to poor mental health. We predict a positive relationship between incarceration and depressive symptoms. Extant research suggests that incarceration worsens wellbeing chiefly through social isolation, financial strife, and stigma, but there is little theory or research suggesting which consequences should have the most profound effects on wellbeing. Therefore, we expect incarceration to operate on depressive symptoms through a combination of these factors, but do not expect one stressor to be particularly dominant. The second aim of our study is to examine these relationships across race and sex. We put forward competing hypotheses here, since some research suggests that blacks, Hispanics, and women may be more vulnerable to the pains of imprisonment—while another line of research suggests that incarceration may have protective effects for these populations. We also expect that mediators will operate differently across groups, but there is not enough

1. We also acknowledge that certain strains of being a former inmate could be felt more acutely by men. For example, job loss may be especially harmful to men, since men are more likely to consider their job status as integral to their identity (Michniewicz, Vandello, & Bosson, 2014).

theory and research to put forward specific hypotheses about which mediators will be more consequential across groups.

Data and Methods

Sample

The current study draws on data from waves I and IV of the National Longitudinal Study of Adolescent Health (Add Health). Add Health is a nationally representative survey of adolescents enrolled in grades 7–12 during the 1993–1994 academic year. At wave I, an in-school survey was distributed to more than 90,000 students at 132 schools. Following the initial survey, approximately 20,000 participants were selected for in-home interviews. These interviews lasted between one and two hours and covered an array of topics, including respondents' health, decision-making processes, educational aspirations, family dynamics, delinquency, and sexual behaviors. Three follow-up interviews have been conducted since the initial survey, the most recent of which was administered between 2007 and 2008 (wave IV). At this point, respondents were between the ages of 24 and 32.

By wave IV, approximately 24% of the sample had dropped out of the study, leaving 15,730 remaining cases. To adjust for sample attrition, we use survey weights for all analyses (see Harris, 2012). In addition, 11% of the remaining sample was missing on at least one variable used in the analysis. We use listwise deletion to handle these missing data, which is argued to be even more robust than alternative methods, such as multiple imputation, to violations of the "Missing at Random" assumptions (Allison, 2001). The main drawback of listwise deletion is the loss of cases, but since only a small portion of the sample is missing on one or more variables, this drawback is negligible.

Variables

Depressive symptoms

Depressive symptoms are measured using items from the Centers for Epidemiologic Studies–Depression Scale (CES-D). At wave IV, respondents were asked how often during the past seven days they experienced ten symptoms, including feeling depressed, too tired to do things, sad, and having trouble focusing. Responses were summed to create a single scale ranging from 0 to 30, with higher scores indicating relatively severe depression. We use depressive symptoms as our outcome rather than diagnoses of depression because not all groups are equally likely to seek medical attention or to have access to care. For example, blacks are less likely to seek medical assistance for symptoms of depression than whites, which means that whites are both more likely to be

diagnosed and treated (Simpson, Krishnan, Kunik, & Ruiz, 2007). Reliance on medical diagnoses as a measure of depression therefore results in underreporting of depression and underrepresentation of certain groups in particular.

Incarceration

Incarceration is measured at wave IV using the following survey item: *Have you ever spent time in a jail, prison, juvenile detention center or other correctional facility?* Responses were coded as a dichotomous variable where a value of 1 indicates that a respondent has served time in a correctional institution.

Controls

The association between incarceration and depressive symptoms may be spurious due to a number of background factors. For one, we control for demographic characteristics of respondents, including *race*, *age*, and *sex*. Models also control for *parent education* (measured at wave I) and whether the respondent is a *high school graduate*. Self-reported *prior health* is included from wave I, which is measured as a scale ranging from 1 to 5, where higher values indicate better general health. Importantly, *prior depressive symptoms* at wave I is included in the models as well, which is calculated using the same items as the wave IV variable. We control for whether the respondent was ever a *child abuse victim*, including sexual and non-sexual, and a measure of *perceived life expectancy*. This variable, along with similar measures tapping into fatalism and future orientation, have strong ties to criminal behavior and health during adolescence and young adulthood (Adams & White, 2009; Duke, Borowsky, Pettingell, & McMorris, 2011; Gottfredson & Hirschi, 1990; Schwarzer, 2008). Theoretically, adolescents who do not expect to live well into their adulthood years are more likely to engage in risky behavior because they do not place as much importance on potential consequences. Although the relationship with depressive symptoms is not well-understood, presumably those who do not think they will live long may suffer from mental health problems as well. This variable is measured as a scale reflecting how likely a respondent thinks it is that s/he will live to be 35 years old. Models also control for *prior drug use* at wave I, which reflects whether a respondent had ever tried any drug besides marijuana—such as heroin, cocaine, mushrooms, LSD, and methamphetamine. We include *prior delinquency* at wave I, which is measured using a scale that gives heavier weight to more serious crimes (see Ramchand, MacDonald, Haviland, & Morral, 2009).

Mediators

We include a slate of mediating variables based on prior theory and research. First, we include a dichotomous variable indicating whether the respondent is

employed by the wave IV interview. Second, we include *material hardship* in the last year, which is measured as a scale combining responses to a series of questions about whether a respondent reported not being able to pay bills on time, not having enough money to pay them, not having enough food in the house, and having services shut off in the household due to payment delinquency. We include two measures of social integration as well: *perceived isolation* and whether a respondent is *married*. Finally, we include measures of *perceived discrimination* and *social standing*. Perceived discrimination captures how often respondents feel treated with respect in their daily lives. Social standing is measured using a survey item in which respondents were asked to look at a picture of a 10-step ladder. They were instructed to think of people at step 10 as having the “most money and education, and the most respected jobs.” At step 1, on the other hand, are people who have the “least money, education, and least respected jobs or no jobs at all.” Respondents indicated where they stood on the ladder relative to other people in the US (Schnittker & Bacak, 2013).²

Analytic Strategy

The distribution of depressive symptoms is positively skewed and overdispersed. Therefore, a negative binomial regression is used to model the relationship. We then use a general approach to causal mediation to identify significant mediators of the incarceration-depressive symptoms link (Imai, Keele, & Yamamoto, 2010). This method overcomes some of the limitations of more traditional methods, such as linear structural equation modeling, because it can be applied to non-linear models and to models that include discrete and/or binary mediators. The approach uses a “potential outcomes” framework that has been mostly applied to identifying average treatment effects. Similarly, each respondent has a potential value on the mediator (social standing) under the treatment condition (ever-incarcerated), and they have a corresponding value on depressive symptoms based on their values on the independent and mediating variables. Similar to identifying an average treatment effect, we only observe one potential outcome, which depends on the treatment status and the social standing value under the observed treatment status. What we want to know in this approach is how much depressive symp-

2. The temporal ordering of social standing, perceived discrimination, perceived isolation, employment, and material hardship can all be reasonably placed after incarceration. However, it is not possible to assess change in these variables across waves. Thus, it is possible that any differences observed in these mediators across groups reflect pre-existing differences that are also associated with the likelihood of incarceration (e.g. socioeconomic disadvantage) (see Wakefield & Uggen, 2010). Marital status is also harder to place as temporally occurring after incarceration, since this status may have pre-existed incarceration and therefore may not have been causally influenced by time spent behind bars.

toms would change if an ex-inmate had the same value on social standing as those under the “control” condition (never-incarcerated).

Model parameters are simulated from their sampling distribution and then potential values are estimated for the mediator and for the potential outcomes (given the potential values of mediators). The average causal mediation effect and standard error is then calculated by drawing on a quasi-Bayesian Monte Carlo distribution of potential outcomes. It is therefore possible to assess the significance of any mediation and the proportion of the association mediated. These analyses were carried out using the *medeff* command available in Stata (Hicks & Tingley, 2011).

We repeat the above steps for each model, but differences across models in whether a mediator is statistically significant or not do not necessarily tell us whether the indirect effects are significantly *different* across groups. Thus, to compare indirect effects we use a product of coefficients method in which we standardize coefficients to account for the fact that not all mediators are continuous (Kenney, 2008; MacKinnon & Dwyer, 1993). We use the *binary_mediation* program in Stata, which adjusts for binary variables in the model such as marital and employment statuses. The coefficients are rescaled (standardized) using the standard deviations of the observed variables and the indirect effects are calculated as the product of (1) the coefficient for the independent variable when the mediating variable is regressed on the independent variable as well as controls, and (2) the coefficient for the mediating variable when the dependent variable is regressed on the mediating variable, independent variable, and controls. When comparing indirect effects, we test each mediator separately (without including other mediators in the model) since there is some overlap between these variables, especially between social standing, material hardship, and employment. In short, our aim is to ascertain how much influence each mediator exerts on its own and whether there are differences across groups. We then use the following equation to test the equality of coefficients (Paternoster, Brame, Mazerolle, & Piquero, 1998):

$$z = \frac{b_1 - b_2}{\sqrt{(s_1^2) + (s_2^2)}} \quad (1)$$

where b_1 and b_2 are the coefficients and s_1 and s_2 are the standard errors.

We compare the main and indirect effects across groups using this test. All analyses use survey weights to adjust for the Add Health sampling design and attrition.

Results

Descriptive statistics for our sample are shown in Table 1. Fourteen percent of respondents spent time in a correctional facility by wave IV. A little over half of the sample is female and the majority of respondents are non-Hispanic

Table 1 Descriptive statistics

	Mean	SE	Minimum	Maximum
<i>Outcome variable</i>				
Depressive symptoms ($\alpha = .84$)	5.944	.080	0	30
<i>Independent variable</i>				
Incarceration	.144	.006	0	1
<i>Controls</i>				
Age	28.29	.117	24	34
Female	.501	.007	0	1
Black	.144	.020	0	1
Hispanic	.113	.016	0	1
Other race	.067	.008	0	1
Parent educational attainment	2.39	.069	0	5
High school graduate	.921	.007	0	1
Prior delinquency ($\alpha = .79$)	.784	.028	0	19.2
Prior drug use	.125	.008	0	1
Child abuse victim	.203	.007	0	1
Perceived life expectancy	1.58	.018	1	5
Prior depressive symptoms ($\alpha = .81$)	6.49	.086	0	30
Prior health	3.89	.014	1	5
<i>Mediators</i>				
Social standing	5.02	.046	1	10
Perceived discrimination	.974	.014	0	3
Material hardship ($03B1 = .74$)	.492	.021	0	6
Employed	.828	.006	0	1
Married	.424	.012	0	1
Perceived isolation	.962	.016	0	3

white (67.5%). As might be expected, the average level of depressive symptoms decreased between adolescence and adulthood for the full sample.

Mean levels of depressive symptoms of respondents at wave IV are shown in Figure 1. Averages are shown for all respondents as well as by former incarceration status, race/ethnicity, and sex. As shown, former inmates have higher levels of depression compared to never-incarcerated individuals. This disparity is apparent within race and sex categories.

To more formally investigate these relationships we regress depressive symptoms on incarceration for the full sample ($N = 13,131$). Results suggest that the predicted level of depressive symptoms among former inmates is 1.14 times greater than that of never-incarcerated respondents (see Table 2). Notably, blacks and females show elevated levels of depressive symptoms consistent with abovementioned literature. In addition, education variables are negatively related with depressive symptoms and child victimization predicts

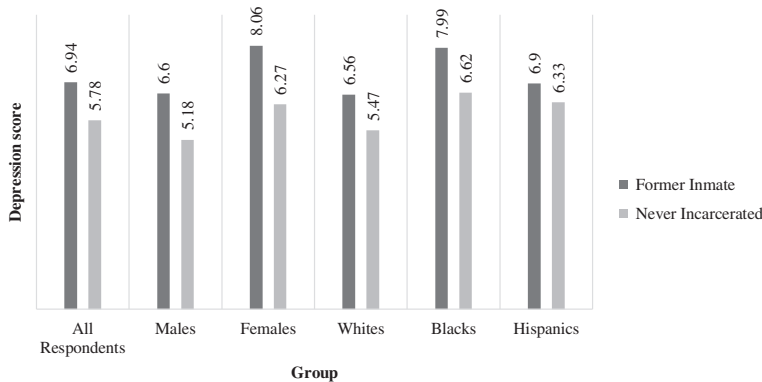


Figure 1 Mean depressive symptoms across groups.

higher levels of depression, as do perceived life expectancy, prior depressive symptoms, and prior health at wave 1. In model 2 we adjust the model for potential mediators. All mediating variables are significant in this model, but results of the causal mediation analysis suggest that only four of six are significant mediators of the incarceration-depression link: social standing, material hardship, employment, and marriage. Material hardship is the strongest, accounting for 52.5% of the total effect of incarceration on depressive symptoms.

We next investigate whether the relationship between incarceration and depressive symptoms is contingent on sex. In model 3 of Table 2 we show that males who have been incarcerated have 1.14 times the expected rate of depressive symptoms compared to males who have never been incarcerated, similar to the full model. The association is no longer significant after the inclusion of potential mediators, and once again material hardship emerged as the most significant mediator, accounting for 51% of the total effect. Marital status, employment, and social standing were also significant for males. This similarity between the male-only model and the full sample could reflect that the majority of former inmates in the sample are in fact male (77%). In models 5–6, results are shown for females. Former female inmates have 1.13 times the expected rate of depressive symptoms compared to those who have not been incarcerated. There is no difference across males and females in the direct effects of incarceration on depressive symptoms ($z = .07$). Interestingly, the inclusion of potential mediating variables reduces this effect to practically zero and it is no longer significant (see model 6). As before, material hardship is most salient, accounting for an estimated 44% of the total effect. Marriage and social standing retain a significant effect for females as well, but employment has no discernible influence.

In Table 3 we show results for depressive symptoms regressed on incarceration across racial/ethnic groups. The associations remain remarkably similar. The expected rate of depressive symptoms among ex-inmates is between 1.13

Table 2 Depressive symptoms regressed on incarceration and other covariates for full sample, males, and females

	All		Males		Females	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Incarceration	1.139** (.027)	1.023 (.022)	1.137** (.031)	1.020 (.025)	1.132** (.047)	1.005 (.039)
Female	1.123** (.020)	1.119** (.018)	—	—	—	—
Black	1.146** (.034)	1.080** (.027)	1.172** (.048)	1.108** (.037)	1.123** (.041)	1.056 (.034)
Hispanic	1.064 (.046)	1.090** (.033)	1.071 (.054)	1.131** (.044)	1.063 (.060)	1.057 (.040)
Other race	1.093** (.032)	1.087** (.034)	1.104* (.0508)	1.102* (.048)	1.078 (.042)	1.074 (.042)
Age	.990 (.006)	1.000 (.005)	.989 (.007)	1.000 (.006)	.989 (.007)	.998 (.006)
Parent education	.983** (.006)	.986** (.005)	.987 (.007)	.991 (.007)	.978* (.009)	.982* (.007)
High school grad	.802** (.029)	.909** (.029)	.779** (.042)	.920* (.032)	.824** (.038)	.900* (.041)
Prior delinquency	1.001 (.005)	.999 (.005)	1.001 (.006)	.996 (.005)	.998 (.009)	1.001 (.009)
Prior drug use	1.017 (.026)	.990 (.028)	1.047 (.041)	1.013 (.034)	.988 (.036)	.964 (.042)
Child victimization	1.208** (.023)	1.074** (.018)	1.183** (.037)	1.057* (.026)	1.241** (.035)	1.095** (.028)
Perceived life exp.	1.027* (.023)	1.011 (.018)	1.034* (.037)	1.008 (.026)	1.017 (.035)	1.011 (.028)

(Continued)

Table 2 (Continued)

	All		Males		Females	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Prior depression	(.013) 1.043** (.002)	(.010) 1.030** (.001)	(.016) 1.052** (.004)	(.012) 1.036** (.003)	(.017) 1.037** (.003)	(.015) 1.026** (.003)
Prior health	.976* (.011)	1.006 (.010)	.997 (.016)	1.018 (.014)	.956** (.016)	.993 (.015)
Social standing		.954** (.005)		.958** (.006)		.951** (.008)
Perceived discrimination		1.167** (.012)		1.198** (.018)		1.140** (.017)
Material hardship		1.069** (.008)		1.089** (.011)		1.056** (.009)
Employed		.937** (.021)		.885** (.033)		.970 (.029)
Married		.935** (.014)		.928** (.021)		.942* (.022)
Perceived isolation		1.287** (.013)		1.300** (.018)		1.271** (.019)
Constant	6.719** (1.206)	3.994** (.595)	6.039** (1.341)	3.496** (.651)	8.701** (2.037)	5.234** (.956)
N	13,131	13,131	6,074	6,074	7,057	7,057
F stat	71.39	163.97	35.38	87.51	37.46	70.20

**p<.01; *p<.05

Table 3 Depressive symptoms regressed on incarceration across race/ethnicity

	Whites		Blacks		Hispanics	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Incarceration	1.134** (.035)	1.002 (.031)	1.145* (.062)	1.046 (.037)	1.131* (.063)	1.079 (.046)
Female	1.127** (.025)	1.133** (.022)	1.092* (.044)	1.074 (.047)	1.151* (.065)	1.104** (.041)
Age	.990 (.007)	1.002 (.006)	.982 (.012)	.981 (.010)	.996 (.019)	.998 (.011)
Parent education	.985 (.008)	.992 (.007)	.956** (.011)	.959** (.008)	.990 (.019)	.982 (.013)
High school grad	.806** (.038)	.947 (.039)	.765** (.058)	.845** (.050)	.910 (.071)	.934 (.045)
Prior delinquency	1.000 (.006)	.997 (.006)	1.006 (.010)	1.002 (.010)	.999 (.012)	.997 (.009)
Prior drug use	1.034 (.034)	1.007 (.035)	1.033 (.105)	1.001 (.071)	.906 (.058)	.889* (.053)
Child victimization	1.218** (.033)	1.071** (.025)	1.209** (.053)	1.050 (.042)	1.162** (.050)	1.086 (.046)
Perceived life exp.	1.029 (.016)	1.012 (.015)	1.034 (.023)	1.019 (.013)	1.004 (.029)	.992 (.026)
Prior depression	1.047** (.002)	1.031** (.002)	1.033** (.004)	1.026** (.003)	1.030** (.007)	1.021** (.006)
Prior health	.967* (.014)	1.006 (.014)	.964 (.018)	.989 (.016)	1.005 (.033)	1.003 (.026)
Social standing		.948**		.964**		.970

(Continued)

Table 3 (Continued)

	Whites		Blacks		Hispanics	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Perceived discrimination		(.006) 1.182** (.016)		(.010) 1.144** (.021)		(.019) 1.115** (.034)
Material hardship		1.084** (.008)		1.052** (.017)		1.068** (.016)
Employed		.921** (.028)		.929 (.047)		1.037 (.066)
Married		.931** (.019)		.968 (.041)		.946 (.034)
Perceived isolation		1.295** (.017)		1.234** (.025)		1.337** (.033)
Constant	6.672* (1.462)	3.550** (.682)	11.993** (4.173)	9.435** (2.973)	5.487** (2.947)	4.206** (1.614)
N	7,188	7,188	2,629	2,629	2,029	2,029
F stat	78.97	126.88	26.04	52.20	10.93	35.13

**p<.01; *p<.05

and 1.15 times greater than their never-incarcerated counterparts across all groups. Not surprisingly, these differences in direct effects are not statistically significant. The relationships between incarceration and depressive symptoms are also fully mediated by the slate of mediators.

As before, material hardship is the most significant mediator across racial/ethnic groups. However, there were some differences in terms of which mediators emerged as significant in the causal mediation analysis. For whites, employment, material hardship, marriage and social standing all emerged as significant mediators. For blacks, material hardship and perceived discrimination significantly mediate the relationship. For Hispanics, material hardship and social standing are significant.

Comparing Indirect Effects

Importantly, a mediator being significant for one group and not another should not be interpreted as a significant *difference* across groups. Thus, our next step in our analysis is to formally investigate the differences in mediators by computing indirect effects and testing the equality of coefficients. Using the product of coefficients method, we obtain indirect effects for each group and bootstrapped standard errors that adjust for survey design. We assess each mediator separately, since there is some overlap between these variables and because this approach tells us how much of the total effect can be accounted for by a single variable. Our results suggest that employment and marital status are stronger mediators of the incarceration-depressive symptoms link for males compared to females ($z = 3.79$; $z = 2.44$). Marital status is also a stronger mediator for whites compared to blacks ($z = 2.13$). Although these results highlight potentially important differences in mechanisms across groups, two caveats must be discussed with respect to interpretation.

For one, the temporal ordering of marital status is difficult to place as occurring after incarceration in all cases. Unmarried individuals are also more likely to engage in criminal behavior and be incarcerated, just as incarceration is found to affect the chances of marriage or divorce. However, even if marital status does not change as a result of incarceration in all cases, this finding should still be interpreted as a risk factor that may be more pronounced for whites and males who have been incarcerated. Second, a total of 24 comparison tests were carried out, increasing the chances of finding a false positive result. A conservative course of action is to do a Bonferroni correction, in which the traditional alpha level of .05 would be divided by the number of tests (24), and all tests would be conducted using the corresponding critical value. At an alpha of .002, only one of the test statistics is greater than the critical value ($z = 2.87$), which is the difference in the mediating effect of employment across males and females. Thus, this result can be interpreted with more confidence than differences in the influence of marriage.

Discussion

In this study we find that incarceration is associated with increased symptoms of depression. This association is primarily driven by relatively high levels of material hardship among ex-inmates, which captures problems paying bills, having utilities shut off, and not having enough money for food. This is perhaps not surprising since incarceration is consistently shown to negatively affect financial stability and labor market chances (Western, 2006), which also exhibit robust associations with depression (Heflin & Iceland, 2009). Also, these results comport with a recent study, which finds that socioeconomic status partially accounts for the link between incarceration and depressive symptoms among fathers (Turney et al., 2012).

The strength and direction of the association between incarceration and depressive symptoms does not differ significantly across race or sex. This finding runs counter to our hypotheses, in which we postulated that there *should* be differences across groups. For instance, some research suggests that women are more vulnerable to chronic stressors than men and blacks are more vulnerable to stressors related to economic stability compared to other racial/ethnic groups (Adkins et al., 2009). Studies also find that the associations between incarceration and other outcomes, such as employment, are contingent on race or sex (Massoglia, Firebaugh, & Warner, 2013; Massoglia et al., 2014; Mears, Cochran, & Bales, 2012; Pettit & Lyons, 2007). Moreover, whites who enter the correctional system represent a starkly different population than blacks and Hispanics, as do women compared to men. Blacks and Hispanics tend to be more marginalized and socioeconomically disadvantaged compared to whites, while women are significantly more disadvantaged, on average, compared to men. From these vantages, it is surprising that such disparate groups would be similarly affected by imprisonment.

One possibility is that the severity of incarceration-related stressors is so strong that its effects are similarly impactful across groups. That is, our results may lend support to an "equal vulnerability" perspective. Research shows, for example, that involuntary job loss is universally harmful across both sex and race (Burgard, Brand, & House, 2007; Strully, 2009). Widowhood is another example, as both blacks and whites who are widowed report indistinct levels of overall grief, yearning, intrusive thoughts, shock, depressive symptoms, and anxiety (Carr, 2004). While the decision to incarcerate is arguably fraught with bias (Spohn, 2000), incarceration itself may exert considerably less bias on its captives.

Alternatively, our results could support an *equal exposure* perspective. The experiences encountered by current and former inmates may be fairly similar. We think this explanation is less likely, however, given prior research suggesting different experiences across groups. For example, whites are more likely than blacks to be victims of physical violence and theft while incarcerated (Wolff, Shi, & Siegel, 2009; Wooldredge & Steiner, 2012). Women also

encounter more difficulties addressing gender-specific health and childcare strains while incarcerated (Glaze & Maruschak, 2008; Mumola, 2000; Petersilia, 2009).

Although material hardship emerged as the most salient mediator across groups, we do find evidence that some reintegration hurdles may be more consequential for certain groups. Across sex, employment and marital status were stronger mediators for males. In each case, the difference can be traced to the association between the mediator and depressive symptoms, rather than differences in the effects of incarceration on marriage and employment. Being unemployed exhibits a stronger association with depressive symptoms among males. This finding is consistent with some research suggesting that employment has a more central place in the construction of masculine identities (Collinson & Hearn, 2005; Michniewicz et al., 2014), meaning that being unemployed may have a more profound impact on feelings of self-worth for men. Recent work also suggests that employment may be less integral to the material hardship of former female inmates, since they are more likely to receive housing and financial assistance from family than males (Western, Braga, Davis, & Sirois, 2015). Being unmarried is also a stronger predictor of depressive symptoms for males. A long tradition of research on the relationship between marriage and health suggests that marriage may hold more psychological benefits for men than for women (Marks & Lambert, 1998) and that it reduces risky health behaviors such as drug use (Duncan, Wilkerson, & England, 2006). This finding of a "mediation" difference for marriage should be interpreted with caution, however, since marital status may have pre-existed bouts of incarceration.

Across racial/ethnic groups, the decreased likelihood of being married was more salient for whites than for blacks. In this case, the difference is due to the fact that being a former inmate is a stronger predictor of marital status for whites than it is for blacks. Some scholars have argued that being an ex-inmate may be less stigmatizing in black communities given its higher prevalence (Rosen et al., 2008). In fact, 60% of black males without a high school degree are expected to experience at least one spell of imprisonment during their life course (Pettit & Western, 2004). As a result, having a criminal record may be less of a deterrent for potential romantic partners in these communities. Despite limitations in the temporal ordering of these relationships, being unmarried should be considered as a risk marker that differs across groups. Former inmates who are male or white may be particularly susceptible to the effects of not being married, regardless of whether their incarceration was a causal factor in the marital dissolution or decreased likelihood of being married.

A few limitations are worth noting. First, there is much overlap between the predictors of incarceration and depression—and it is possible that unobserved factors could bias the associations we evidence. On a related note, some of our variables that are conceptualized as mediators (e.g. social standing) may

have pre-existed bouts of incarceration. Unfortunately, it is not possible to track changes in these variables and to claim with confidence that the “mediating effect” is in fact causal. For example, those who are socioeconomically disadvantaged are more likely to be incarcerated, so differences in material hardship may in part reflect pre-existing differences (see Wakefield & Uggen, 2010). Consistent with other research that utilizes Add Health data (see Porter, 2014; Siennick, Stewart, & Staff, 2014), our measure of incarceration is also unable to specify whether incarceration took place at a jail or prison. We see this latter limitation as an important direction for future research, since the experience of incarceration may be contingent on facility type. Although it is sometimes assumed that prisons are more harmful than jails (Schnittker & John, 2007), this remains an open question that requires additional examination. Third, we acknowledge that due to attrition bias the Add Health sample at wave IV may not be completely representative of the general population. For example, former inmates, especially poor black males, may be particularly likely to be missing from national surveys (Pettit, 2012). However, this means that our estimates of the difference in depressive symptoms between former inmates and never-incarcerated individuals are likely conservative.

In conclusion, this study represents an important contribution to extant literature on the relationship between incarceration and health as well as the broader literature on the consequences of incarceration. The vast majority of criminological research focuses on men, and research on incarceration and mental health primarily focuses on current inmates (see Massoglia & Pridemore, 2015; Schnittker, 2014). Additionally, this study answers a call for more research on the causal mechanisms linking incarceration to poor health (Massoglia & Pridemore, 2015, p. 23). We find that incarceration exhibits a robust association with depressive symptoms that is most strongly mediated by material hardship. Also, particularly important is the fact that significant differences were not found across groups with respect to depressive symptoms, despite differences being theoretically likely. This reinforces the idea that incarceration is a particularly powerful stressor that carries serious consequences for health and well-being. Given that some of the pathways to depression varied by race and sex, we suggest that future work should continue to examine differences across groups, not only in regards to mental health but other outcomes as well (e.g. STDs, divorce, chronic disease). Incarceration disproportionately ensnares certain members of the population, most notably poor and young black men, and understanding why incarceration matters is essential to addressing its harmful consequences.

Disclosure statement

No potential conflict of interest was reported by the authors.

Acknowledgements

The authors would like to thank Kristin Turney and Matt Vogel for their feedback on this work.

References

- Adams, J. & White, M. (2009). Time perspective in socioeconomic inequalities in smoking and body mass index. *Health Psychology, 28*, 83-90.
- Adkins, D. E., Wang, V., & Elder, G. H. (2009). Structure and stress: Trajectories of depressive symptoms across adolescence and young adulthood. *Social Forces, 88*, 31-60.
- Allison, P. D. (2001). *Missing data* (Vol. 136). Thousand Oaks: Sage.
- Behrens, A. (2004). 'Less than the average citizen': Stigma, role transition and the civic reintegration of convicted felons. In C. Uggen, J. Manza, & A. Behrens (Eds.), *After crime and punishment: Pathways to offender reintegration* (pp. 261-293). Portland, OR: William Publishing.
- Binswanger, I. A., Merrill, J. O., Krueger, P. M., White, M. C., Booth, R. E., & Elmore, J. G. (2010). Gender differences in chronic medical, psychiatric, and substance-dependence disorders among jail inmates. *American Journal of Public Health, 100*, 476-482. doi:10.2105/AJPH.2008.149591
- Brown, J. S., Meadows, S. O., & Elder, Jr., G. H. (2007). Race-ethnic inequality and psychological distress: Depressive symptoms from adolescence to young adulthood. *Developmental Psychology, 43*, 1295-1311. doi:10.1037/0012-1649.43.6.1295
- Burgard, S. A., Brand, J. E., & House, J. S. (2007). Toward a better estimation of the effect of job loss on health. *Journal of Health and Social Behavior, 48*, 369-384. doi:10.1177/002214650704800403
- Carr, D. S. (2004). Black/white differences in psychological adjustment to spousal loss among older adults. *Research on Aging, 26*, 591-622. doi:10.1177/0164027504268495
- Carson, A. E. (2014). *Prisoners in 2013*. U.S. Department of Justice, Bureau of Justice Statistics: NCJ#: 247282. Retrieved from <http://www.bjs.gov/content/pub/pdf/p13.pdf>
- Carson, A. E., & Golinelli, D. (2013). *Prisoners in 2012—Advance counts*. U.S. Department of Justice, Bureau of Justice Statistics: NCJ#: 242467. Retrieved from <http://www.bjs.gov/content/pub/pdf/p12ac.pdf>
- Cheliotis, L., & Liebling, A. (2005). Race matters in British prisons: Towards a research agenda. *The British Journal of Criminology, 46*, 286-317. doi:10.1093/bjc/azi058
- Christian, J. (2005). Riding the bus: Barriers to prison visitation and family management strategies. *Journal of Contemporary Criminal Justice, 21*, 31-48. doi:10.1177/1043986204271618
- Collinson, D. L. & Hearn, J. (2005). Men and masculinities in work, organizations and management. In M. S. Kimmel, J. Hearn & R. W. Connell (Eds.), *Handbook of studies on men and masculinities* (pp. 289-310). Thousand Oaks: Sage.
- de Wit, L., Luppino, F., van Straten, A., Penninx, B., Zitman, F., & Cuijpers, P. (2010). Depression and obesity: A meta-analysis of community-based studies. *Psychiatry Research, 178*, 230-235. doi:10.1016/j.psychres.2009.04.015
- Duke, N. N., Borowsky, I. W., Pettingell, S. L., & McMorris, B. J. (2011). Examining youth hopelessness as an independent risk correlate for adolescent delinquency and violence. *Maternal & Child Health Journal, 15*, 87-97.

- Duncan, G. J., Wilkerson, B., & England, P. (2006). Cleaning up their act: The effects of marriage and cohabitation on licit and illicit drug use. *Demography*, 43, 691-710.
- Duwe, G., & Clark, V. (2011). Blessed be the social tie that binds: The effects of prison visitation on offender recidivism. *Criminal Justice Policy Review*, 24, 271-296. doi:10.1177/0887403411429724
- Frost, N. A., Greene, J., & Pranis, K. (2006). *Hard hit: The growth in the imprisonment of women, 1977-2004*. New York, NY: Institute on Women & Criminal Justice: Women's Prison Association.
- George, L. K., & Lynch, S. (2003). Race differences in depressive symptoms: A dynamic perspective on stress exposure and vulnerability. *Journal of Health and Social Behavior*, 44, 353-369.
- Gibson, P. A., Baker, E. H., & Milner, A. N. (2016). The role of sex, gender, and education on depressive symptoms among young adults in the United States. *Journal of Affective Disorders*, 189, 306-313.
- Gjerde, P. F., Block, J., & Block, J. H. (1988). Depressive symptoms and personality during late adolescence: Gender differences in the externalization-internalization of symptom expression. *Journal of abnormal Psychology*, 97, 475.
- Glaze, L. E., & James, D. J. (2006). *Mental health problems of prison and jail inmates*. Office of Justice Programs, Bureau of Justice Statistics: NCJ# 213600. Retrieved from <http://www.bjs.gov/content/pub/pdf/mhppji.pdf>
- Glaze, L. E., & Maruschak, L. M. (2008). *Parents in prison and their minor children*. Office of Justice Programs, Bureau of Justice Statistics: NCJ # 222984. Retrieved from <http://www.bjs.gov/content/pub/pdf/pptmc.pdf>
- Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. London: Penguin Press.
- Gottfredson, M. R. & Hirschi, T. (1990). *A general theory of crime*. Stanford: Stanford University Press.
- Harris, K. M. (2012). *The add health study: Design and accomplishments*. Carolina Population Center, University of North Carolina at Chapel Hill. Retrieved from <http://www.cpc.unc.edu/projects/addhealth/data/guides/DesignPaperWIIV.pdf>
- Heflin, C. M., & Iceland, J. (2009). Poverty, material hardship, and depression. *Social Science Quarterly*, 90, 1051-1071.
- Hicks, R., & Tingley, D. (2011). *Causal mediation analysis*. *Stata Journal*, 11, 1-14.
- Huebner, B. M. (2007). Racial and ethnic differences in the likelihood of marriage: The effect of incarceration. *Justice Quarterly*, 24, 156-183. doi:10.1080/07418820701201073
- Imai, K., Keele, L., & Yamamoto, T. (2010). Identification, inference and sensitivity analysis for causal mediation effects. *Statistical Science*, 25, 51-71.
- Kendler, K. S. & Gardner, C. O. (2014). Sex differences in the pathways to major depression: A study of opposite-sex twin pairs. *American Journal of Psychiatry*, 171, 426-435.
- Kenny, D. A. (2008). Reflections on mediation. *Organizational Research Methods*, 11, 353-358.
- Kessler, R. C. (1997). The effects of stressful life events on depression. *Annual Review of Psychology*, 48, 191-214.
- Kessler, R. C. (2003). Epidemiology of women and depression. *Journal of Affective Disorders*, 74, 5-13.
- Kim, M. (2013). Racial/ethnic disparities in depression and its theoretical perspectives. *Psychiatric Quarterly*, 85, 1-8. doi:10.1007/s11126-013-9265-3
- Lopoo, L. M., & Western, B. (2005). Incarceration and the formation and stability of marital unions. *Journal of Marriage and Family*, 67, 721-734. doi:10.1111/j.1741-3737.2005.00165.x

- MacKinnon, D. P., & Dwyer, J. H. (1993). Estimating mediated effects in prevention studies. *Evaluation Review*, 17, 144-158.
- Marks, N. F., & Lambert, J. D. (1998). Marital status continuity and change among young and midlife adults: Longitudinal effects on psychological well-being. *Journal of Family Issues*, 19, 652-686.
- Marmot, M. (2004). *The status syndrome: How social standing affects our health and longevity*. New York, NY: Owl Books.
- Massoglia, M., Firebaugh, G., & Warner, C. (2013). Racial variation in the effect of incarceration on neighborhood attainment. *American Sociological Review*, 78, 142-165.
- Massoglia, M., Pare, P. P., Schnittker, J., & Gagnon, A. (2014). The relationship between incarceration and premature adult mortality: Gender specific evidence. *Social Science Research*, 46, 142-154. doi:10.1016/j.ssresearch.2014.03.002
- Massoglia, M., & Pridemore, W. (2015). Incarceration and health. *Annual Review of Sociology*, 41, 291-310. doi:10.1146/annurev-soc-073014-112326
- Massoglia, M., Remster, B., & King, R. D. (2011). Stigma or separation? Understanding the incarceration-divorce relationship. *Social Forces*, 90, 133-155. doi:10.1093/sf/90.1.133
- Mears, D. P., Cochran, J. C., & Bales, W. D. (2012). Gender differences in the effects of prison on recidivism. *Journal of Criminal Justice*, 40, 370-378.
- Merikangas, K. R., Ames, M., Cui, L., Stang, P. E., Ustun, T. B., Von Korff, M., & Kessler, R. C. (2007). The impact of comorbidity of mental and physical conditions on role disability in the US adult household population. *Archives of General Psychiatry*, 64, 1180-1188. doi:10.1001/archpsyc.64.10.1180
- Michniewicz, K. S., Vandello, J. A., & Bosson, J. K. (2014). Men's (mis)perceptions of the gender threatening consequences of unemployment. *Sex Roles*, 70, 88-97. doi:10.1007/s11199-013-0339-3
- Minton, T. D., & Zeng, Z. (2015). *Jail inmates at midyear 2014*. U.S. Department of Justice, Bureau of Justice Statistics: NCJ# 248629. Retrieved from <http://www.bjs.gov/content/pub/pdf/jim14.pdf>
- Mumola, C. J. (2000). *Incarcerated parents and their children*. Office of Justice Programs, Bureau of Justice Statistics, NCJ#: 182335. Retrieved from <http://www.bjs.gov/content/pub/pdf/iptc.pdf>
- Nolen-Hoeksema, S. (2001). Gender differences in depression. *Current Directions in Psychological Science*, 10, 173-176.
- Ostfeld, A. M., Kasl, S. V., D'Atri, D. A., & Fitzgerald, E. G. (1987). *Stress, crowding and blood pressure in prison*. Hillsdale: Lawrence Erlbaum Associates.
- Pager, D. (2007). Two strikes and you're out: The intensification of racial and criminal stigma. In S. D. Bushway, M. A. Stoll, & D. Weiman (Eds.), *Barriers to reentry? The labor market for released prisoners in post-industrial America* (pp. 151-173). New York, NY: Russell Sage.
- Paternoster, R., Brame, R., Mazerolle, P., & Piquero, A. (1998). Using the correct statistical test for the equality of regression coefficients. *Criminology*, 36, 859-866.
- Patterson, E. J. (2010). Incarcerating death: Mortality in U.S. state correctional facilities, 1985-1998. *Demography*, 47, 587-607.
- Pearlin, L., Aneshensel, C. S., & Leblanc, A. J. (1997). The forms and mechanisms of stress proliferation: The case of AIDS caregivers. *Journal of Health and Social Behavior*, 38, 223-236.
- Pearlin, L. I., Menaghan, E. G., Lieberman, M. A., & Mullan, J. T. (1981). The stress process. *Journal of Health and Social Behavior*, 22, 337-356.
- Petersilia, J. (2009). *When prisoners come home: Parole and prisoner reentry*. New York, NY: Oxford University Press.

- Pettit, B. (2012). *Invisible men: Mass incarceration and the myth of black progress: Mass incarceration and the myth of black progress*. New York, NY: Russell Sage Foundation.
- Pettit, B., & Lyons, C. (2007). Status and the stigma of incarceration: The labor-market effects of incarceration by race, class, and criminal involvement. In S. D. Bushway, M. A. Stoll, & D. Weiman (Eds.), *Barriers to reentry? The labor market for released prisoners in post-industrial America* (pp. 203-226). New York, NY: Russell Sage.
- Pettit, B., & Western, B. (2004). Mass imprisonment and the life course: Race and class inequality in U.S. incarceration. *American Sociological Review*, 69, 151-169. doi:10.1177/000312240406900201
- Porter, L. C. (2014). Incarceration and post-release health behavior. *Journal of Health and Social Behavior*, 55, 234-249. doi:10.1177/0022146514531438
- Ramchand, R., MacDonald, J. M., Haviland, A., & Morral, A. R. (2009). A developmental approach for measuring the severity of crimes. *Journal of Quantitative Criminology*, 25, 129-153. doi:10.1007/s10940-008-9061-7
- Robinson, M. S., & Alloy, L. B. (2003). Negative cognitive styles and stress-reactive rumination interact to predict depression: A prospective study. *Cognitive Therapy and Research*, 27, 275-291.
- Rosen, D. L., Schoenbach, V. J., & Wohl, D. A. (2008). All-cause and cause-specific mortality among men released from state prison, 1980-2005. *American Journal of Public Health*, 98, 2278-2284. doi:10.2105/AJPH.2007.121855
- Rosenfield, S., & Mouzon, D. (2013). Gender and mental health. In C. S. Aneshensel, J. C. Phelan, & A. Bierman (Eds.), *Handbook of the sociology of mental health* (pp. 277-296). Netherlands: Springer.
- Roxburgh, S., & Fitch, C. (2013). Parental status, child contact, and well-being among incarcerated men and women. *Journal of Family Issues*, 35, 1394-1412. doi:10.1177/0192513X13498593
- Safford, S. M., Alloy, L. B., Abramson, L. Y., & Crossfield, A. G. (2007). Negative cognitive style as a predictor of negative life events in depression-prone individuals: A test of the stress generation hypothesis. *Journal of Affective Disorders*, 99, 147-154.
- Schirmer, S., Nellis, A., & Mauer, M. (2009). *Incarcerated parents and their children: Trends 1991-2007*. Washington, DC: The Sentencing Project. Retrieved from <http://www.sentencingproject.org/wp-content/uploads/2016/01/Incarcerated-Parents-and-Their-Children-Trends-1991-2007.pdf>
- Schnittker, J. (2014). The psychological dimensions and the social consequences of incarceration. *The ANNALS of the American Academy of Political and Social Science*, 651, 122-138. doi:10.1177/0002716213502922
- Schnittker, J., Massoglia, M., & Uggen, C. (2012). Out and down: Incarceration and psychiatric disorders. *Journal of Health and Social Behavior*, 53, 448-464. doi:10.1177/0022146512453928
- Schnittker, J., & Bacak, V. (2013). A mark of disgrace or a badge of honor? Subjective status among former inmates. *Social Problems*, 60, 234-254. doi:10.1525/sp.2013.12057
- Schnittker, J., & Bacak, V. (2015). Orange is still pink: Mental illness, gender roles, and physical victimization in prisons. *Society and Mental Health*, 1, 1-15. doi:10.1177/2156869315609733
- Schnittker, J., & John, A. (2007). Enduring stigma: The long-term effects of incarceration on health. *Journal of Health and Social Behavior*, 48, 115-130. doi:10.1177/002214650704800202
- Schwarzer, R. (2008). Modeling health behavior change: How to predict and modify the adoption and maintenance of health behaviors. *Applied Psychology*, 57(1), 1-29.

- Segerstrom, S. C., & Miller, G. E. (2004). Psychological stress and the human immune system: A meta-analytic study of 30 years of inquiry. *Psychological Bulletin*, 130, 601-630. doi:10.1037/0033-2909.130.4.601
- Siennick, S., Stewart, E., & Staff, J. (2014). Explaining the association between incarceration and divorce. *Criminology*, 52, 371-398. doi:10.1111/1745-9125.12040
- Simpson, S. M., Krishnan, L. L., Kunik, M. E., & Ruiz, P. (2007). Racial disparities in diagnosis and treatment of depression: A Literature review. *Psychiatric Quarterly*, 78, 3-14. doi:10.1007/s11126-006-9022-y
- Spohn, C. C. (2000). Thirty years of sentencing reform: The quest for a racially neutral sentencing process. In J. Horney (Ed.), *Criminal justice 2000: Policies, processes, and decisions of the criminal justice system* (pp. 427-501). Washington, DC: U.S. Department of Justice.
- Strully, K. (2009). Racial-ethnic disparities in health and labor market: Losing and leaving jobs. *Social Science & Medicine*, 69, 768-776. doi:10.1016/j.soc-scimed.2009.06.025
- Sykes, G. M. (1958/2007). *The society of captives: A study of a maximum security prison*. Princeton, NJ: Princeton University Press.
- Turner, R. J., & Avison, W. (2003). Status variations in stress exposure: Implications for the interpretation of research on race, socioeconomic status, and gender. *Journal of Health and Social Behavior*, 44, 488-505.
- Turney, K., Wildeman, C., & Schnittker, J. (2012). As fathers and felons: Explaining the effects of current and recent incarceration on major depression. *Journal of Health and Social Behavior*, 53, 465-481. doi:10.1177/0022146512462400
- Uggen, C., Manza, J., & Thompson, M. (2006). Citizenship, democracy, and the civic reintegration of criminal offenders. *The Annals of the American Academy of Political and Social Science*, 605, 281-310. doi:10.1177/0002716206286898
- Wakefield, S., & Uggen, C. (2010). Incarceration and stratification. *Annual Review of Sociology*, 36, 387-406.
- Western, B. (2006). *Punishment and inequality*. New York, NY: Russell Sage.
- Western, B., Braga, A. A., Davis, J., & Sirois, C. (2015). Stress and hardship after prison. *American Journal of Sociology*, 120, 1512-1547. doi:0002-9602/2015/12005-0006
- Wheelock, D., & Uggen, C. (2008). Race, poverty and punishment: The impact of criminal sanctions on racial, ethnic, and socioeconomic inequality. In D. Harris & A. C. Lin (Eds.), *The colors of poverty: Why racial and ethnic disparities persist* (pp. 261-292). New York, NY: Russell Sage.
- Whooley, M. A., De Jonge, P., Vittinghoff, E., Otte, C., Moos, R., Carney, R. M., ... Browner, W. S. (2008). Depressive symptoms, health behaviors, and risk of cardiovascular events in patients with coronary heart disease. *Journal of the American Medical Association*, 300, 2379-2388. doi:10.1001/jama.2008.711
- Wildeman, C. (2010). *Imprisonment and (inequality in) population health*. University of Kentucky Center for Poverty Research Discussion Paper Series, DP2010-12. Retrieved May 28, 2011, from www.ukcpr.org/Publications/DP2010-12.pdf
- Wilper, A. P., Woolhandler, S., Boyd, J. W., Lasser, K. E., McCormick, D., Bor, D. H., & Himmelstein, D. U. (2009). The health and health care of US prisoners: Results of a nationwide survey. *American Journal of Public Health*, 99, 666-672. doi:10.2105/AJPH.2008.144279
- Wolff, N., Shi, J., & Siegel, J. A. (2009). Patterns of victimization among male and female inmates: Evidence of an enduring legacy. *Violence and Victims*, 24 469-484.
- Wooldredge, J., & Steiner, B. (2012). Race group differences in prison victimization experiences. *Journal of Criminal Justice*, 40, 358-369. doi:10.1016/j.jcrim-jus.2012.06.011

- Wooldredge, J., & Steiner, B. (2014). A bi-level framework for understanding prisoner victimization. *Journal of Quantitative Criminology*, 30, 141-162. doi:[10.1007/s10940-013-9197-y](https://doi.org/10.1007/s10940-013-9197-y)
- Zamble, E., & Porporino, F. J. (1988). *Coping, behavior, and adaptation in prison inmates*. New York, NY: Springer.
- Zhang, X., Norris, S. L., Gregg, E. W., Cheng, Y. J., Beckles, G., & Kahn, H. S. 2005. Depressive symptoms and mortality among persons with and without diabetes. *American Journal of Epidemiology*, 161, 652-660. doi:[10.1093/aje/kwi089](https://doi.org/10.1093/aje/kwi089)